

The NHS Atlas of Variation in Healthcare

Reducing unwarranted variation to increase value and improve quality

November 2011

The NHS Atlas of Variation in Healthcare

Reducing unwarranted variation to
increase value and improve quality

The NHS Atlas has been prepared in partnership with a wide range of organisations:

British Association of Day Surgery (BADs)
British Society of Gastroenterology (BSG)
British Pain Society (BPS)
Certificate of Vision Impairment (CVI)
CHKS
Connecting for Health (CfH)
Diabetes Health Intelligence (DHI)
Diabetic Retinopathy Screening (DRS)
Dr Foster Intelligence
East of England Public Health Observatory (ERPHO)
East Midlands Quality Observatory (EMQO)
Health Quality Improvement Partnership (HQIP)
HRUK Audit Group
Joint Advisory Group on GI Endoscopy (JAG)
Myocardial Ischaemia National Audit Project (MINAP)
NHS Alliance
NHS Blood and Transplant (NHSBT)
NHS Information Centre for health and social care (NHS IC)
NHS Midlands and East
National Cancer Intelligence Network (NCIN)
National Child and Maternal Health Observatory (ChiMat)
National Diabetes Information Service (NDIS)
National End of Life Care Intelligence Network
National Obesity Observatory (NOO)
National Prescribing Centre (NPC)
Neonatal Data Analysis Unit (NDAU)
Newborn Hearing Screening Programme (NHSP)
Solutions for Public Health (SPH)
South West Public Health Observatory (SWPHO)
Trauma Audit & Research Network (TARN)
Warrington Health Consortium (WHC)



Right Care continues to pay homage to the inspirational publication, *The Dartmouth Atlas of Health Care 1998*, and the vision and commitment of Professor Jack Wennberg who first charted this territory.

Contents

Foreword	11
What's new in Atlas 2.0?	13
Reducing unwarranted variation: right care for patients and populations	17
Unwarranted variation: the challenge facing health services	18
Maximising value	19
Achieving the optimal allocation of resources	19
Achieving maximum value from the resources allocated	20
Variation in total expenditure on healthcare in England	22
Right Care tools for reducing unwarranted variation	27
NHS Programme Budget Review	27
Commissioning for Value Packs	28
Toolkit for evaluating the value of innovations	28
Essential Knowledge	28
Right Care Casebooks	28
Right Care Shared Decision-Making: Patient Decision Aids	28
Clinical Procedures Explorer Tool	28
Right Care Systems Design Support	29
Right Care Systems Planning Glossary	29
Right Care Webinar series	30
Right Care NHS Atlas Online	30
Right Care Website	30
Right Care Online	30
Engaging stakeholders: progress since November 2010	31
Blood disorders	31
Cardiothoracic surgery	31
Ear, nose and throat (ENT)	31
Elective surgery	31
Frail elderly population	32
General surgery	32
Imaging services	32
Infectious diseases	32
Liver disease	32
Mental health	32
Neurological disease	32
Ophthalmology	32
Orthopaedics	32
Plastic surgery	32
Respiratory disease	32
Skin diseases	33
Spinal surgery	33

Contents

Thyroid disorders.....	33
Urology.....	33
Value improvement using data	35
Introduction	35
Making decisions using data.....	35
Shifting the curve.....	36
Reducing the variance	36
Using the data to encourage standardisation	37
Extending the coverage	39
Data availability and accessibility: positron emission tomography (PET) scan activity	39
Data quality: ambulance quality indicators, and pathology analytes.....	40
Data characteristics: trauma services, and pain services.....	49
Exploring variation in different dimensions	55
Trends in activity	55
Trends in variation	55
What do the time trends reveal?.....	55
Options for action	60
The fourth dimension	60
Time trends glossary.....	60
Map and chart presentation	61
Classification	61
Standardisation	61
Confidence intervals.....	61
Exclusions.....	62
Domains in the NHS Outcomes Framework.....	62
Table S.1: Summary of indicators in Atlas 2.0	63
Cancers and Tumours	
Map 1: Rate of colonoscopy procedures and flexisigmoidoscopy procedures per population by PCT 2009/10.....	68
Additional column chart showing Ratio of flexisigmoidoscopy procedures to colonoscopy procedures by PCT 2009/10	69
Map 2: Rate of urgent GP referrals for suspected cancer per population by PCT 2010/11	70
Map 3: Number of emergency cancer bed-days per new cancer registration by PCT 2009/10	72
Map 4: Mean length of stay for elective breast surgery by PCT 2009/10.....	74
Map 5: Percentage of histologically confirmed non-small cell lung cancer (NSCLC) patients receiving surgery by cancer network 2009	76
Additional column chart showing Percentage of histologically confirmed non-small cell lung cancer patients receiving surgery by hospital Trust 2009	77

Endocrine, Nutritional and Metabolic Problems

Map 6: Percentage of people in the National Diabetes Audit (NDA) with Type 1 diabetes receiving all nine key care processes by PCT 1 January 2009 to 31 March 2010.....	78
Map 7: Percentage of people in the National Diabetes Audit (NDA) with Type 2 diabetes receiving all nine key care processes by PCT 1 January 2009 to 31 March 2010.....	80
Map 8: Percentage of people in the National Diabetes Audit (NDA) having major amputations five years prior to the end of the audit period by PCT 1 January 2009 to 31 March 2010.....	82
Map 9: Excess length of stay (%) in hospital among people with diabetes when compared with people without diabetes by PCT 2009/10	84
Map 10: Insulin total net ingredient cost per patient on GP diabetes registers by PCT 2010/11	86
Map 11: Non-insulin anti-diabetic drugs total net ingredient cost per patient on GP diabetes registers by PCT 2010/11	88
Map 12: Rate of bariatric procedures in hospital per population by PCT 2007/08–2009/10.....	90
Additional chart showing Rate of bariatric procedures per population over time by SHA 2004/05–2009/10	91

Mental Disorders

Map 13: Reported numbers of dementia on GP registers as a percentage of estimated prevalence by PCT 2009/10.....	92
Map 14: Anti-dementia drug items prescribed per weighted population (STAR-PU) in primary care by PCT 2009/10	94
Map 15: Rate of admissions to hospital for patients >74 years with a secondary diagnosis of dementia by PCT 2009/10	96
Map 16: Total bed-days in hospital per population for patients >74 years with a secondary diagnosis of dementia by PCT 2009/10	98
Map 17: Rate of inpatient admissions >3 days' duration in children per population aged 0–17 years for mental health disorders by PCT 2007/08–2009/10	100

Problems of Learning Disability

Map 18: Percentage of primary school children in state-funded schools with a statement of special educational needs (SEN) by local authority at January 2011	102
--	-----

Neurological Problems

Map 19: Parkinson's disease drug items prescribed per weighted population (STAR-PU) in primary care by PCT 2009/10	104
Additional column chart showing Parkinson's disease drug costs per weighted population (STAR-PU) in primary care by PCT 2009/10	105
Map 20: Emergency admission rate for children with epilepsy per population aged 0–17 years by PCT 2007/08–2009/10	106

Problems of Vision

Map 21: Percentage of the diabetic population receiving screening for diabetic retinopathy by PCT January to March 2011	108
Map 22: Rate per population of certificates of vision impairment (CsVI) issued with a main cause of diabetic eye disease by PCT 2008/09–2009/10	110

Contents

Problems of Hearing

- Map 23: Rate of audiology assessments undertaken per population by PCT 2010 112
- Map 24: Mean time from referral to assessment for hearing tests in newborns by PCT 2010..... 114

Problems of Circulation

- Map 25: Percentage of adults who participate in sport and active recreation at moderate intensity (equivalent to 30 minutes on 3 or more days a week) by local authority 2009–2011 116
- Map 26: Reported numbers of people with hypertension on GP registers as a percentage of estimated prevalence by PCT 2009/10..... 118
- Map 27: Reported numbers of people with coronary heart disease (CHD) on GP registers as a percentage of estimated prevalence by PCT 2009/10..... 120
- Map 28: Percentage of STEMI patients receiving primary angioplasty by PCT 2010 122
- Map 29: Rate of elective admissions to hospital for angioplasty per population by PCT 2009/10..... 124
- Map 30: Rate of pacing devices implanted for the first time per population by PCT 2010..... 126
- Map 31: Rate of implantable cardioverter-defibrillator (ICD) devices implanted for the first time per population by PCT 2010..... 128
- Map 32: Rate of cardiac resynchronisation therapy (CRT) devices implanted per population by PCT 2010 130
- Map 33: Percentage of transient ischaemic attack (TIA) cases with a higher risk who are treated within 24 hours by PCT January–March 2011 132
- Map 34: Percentage of patients admitted to hospital following a stroke who spend 90% of their time on a stroke unit by PCT January–March 2011..... 134

Problems of the Respiratory System

- Map 35: Rate of sleep studies undertaken per population by PCT 2010 136
- Map 36: Rate of all admissions to hospital with a primary diagnosis of chronic obstructive pulmonary disease (COPD) per population by PCT 2009/10..... 138
- Map 37: Rate of expenditure on home oxygen therapy per population by PCT 2010/11 140
Additional column chart showing Rate of expenditure on home oxygen therapy in 2010/11 per people on GP COPD registers 2009/10..... 141
- Map 38: Rate of emergency admissions to hospital in people aged 18 years and over with asthma per population by PCT 2009/10 142
- Map 39: Emergency admission rate for children with asthma per population aged 0–17 years by PCT 2007/08–2009/10..... 144

Dental Problems

- Map 40: Mean number of decayed, missing and filled teeth in 12-year-olds by PCT 2008/09 146
- Map 41: Percentage of people who succeeded in gaining access to NHS dentistry services after requesting an appointment in the last two years by PCT October–December 2010 148

Problems of the Gastro-Intestinal System

- Map 42: Rate of activity for gastroscopy (upper gastro-intestinal endoscopy) per population by PCT 2009/10..... 150
- Map 43: Admission rate for children for upper and/or lower gastro-intestinal endoscopy per population aged 0–17 years by PCT 2007/08–2009/10 152
- Map 44: Rate of cholecystectomies per population by PCT 2009/10..... 154

Map 45: Percentage of elective adult day-case laparoscopic cholecystectomy per all elective cholecystectomies by PCT 2010/11	156
Map 46: Proportion (%) of admissions attributed to liver disease that are emergency admissions to hospital by PCT 2009/10.....	158
Map 47: Rate of liver transplants from deceased donors per population by SHA 2010/11	160

Problems of the Musculo-Skeletal System

Map 48: Rate of metal-on-metal hip resurfacing procedures undertaken per population by PCT 2009/10.....	162
Map 49: Rate of knee washout procedures undertaken per population by PCT 2009/10.....	164
Map 50: Rate of all diagnostic knee arthroscopy procedures undertaken per population by PCT 2009/10.....	166
Map 51: Rate of all therapeutic knee arthroscopy procedures undertaken per population by PCT 2009/10.....	168
Map 52: Proportion (%) of cementless knee arthroplasty procedures per all knee arthroplasty undertaken in hospital by PCT 2009/10.....	170
Map 53: Average patient-reported health gain (Oxford Knee Score; OKS) from knee replacement procedures by PCT 2009/10	172

Problems of the Genito-Urinary System

Map 54: Rate of urodynamic (pressures and flows) tests undertaken per population by PCT 2010	174
Map 55: Rate of admissions for acute kidney injury (AKI) per all emergency admissions to hospital by PCT 2009/10.....	176
Map 56: Rate of kidney transplants from living donors per population by SHA 2010/11	178
Map 57: Rate of kidney transplants from deceased donors per population by SHA 2010/11	180

Maternity and Reproductive Health

Map 58: Proportion (%) of medical abortions to all legal abortions undertaken at 13 weeks' gestation and under by PCT 2010	182
--	-----

Conditions of Neonates

Map 59: Proportion (%) of full-term babies (≥ 37 weeks' gestational age at birth) of all babies admitted to specialist neonatal care by PCT 2010	184
Map 60: Emergency admission of home births and re-admissions to hospital of babies within 14 days of being born per all live births by PCT 2009/10.....	186

Care of Alcohol-Related Conditions

Map 61: Rate of alcohol-related admissions to hospital per population by PCT 2009/10	188
--	-----

Emergency Care

Map 62: Rate of accident and emergency (A&E) attendances per population by PCT 2010	190
Map 63: Rate of conversion from accident and emergency (A&E) attendance to emergency admissions by PCT 2010.....	192
Map 64: Rate of admissions with emergency ambulatory care conditions (EACCs) per population by PCT 2010	194

Contents

Care of Older People

Map 65: Admission rate for people aged >74 years from nursing or residential care home settings per population by PCT 2009/10.....	196
--	-----

End-of-Life Care

Map 66: Percentage of all deaths at usual place of residence by PCT 2010.....	198
Map 67: Percentage of all deaths that occur in hospital for children aged 0–17 years with life-limiting conditions by PCT 2005–2009	200

Imaging Services

Map 68: Rate of magnetic resonance imaging (MRI) activity per weighted population by PCT 2010/11	202
Map 69: Rate of computed axial tomography (CT) activity per weighted population by PCT 2010/11	204
Map 70: Rate of dual-energy X-ray (DEXA) scan activity per weighted population by PCT 2010/11	206

Prescribing

Map 71: Hypnotics drug items prescribed per weighted population (STAR-PU) in primary care by PCT 2009/10.....	208
---	-----

Dealing with unwarranted variation locally..... 211

Understanding unwarranted variation at a local level	211
--	-----

Taking steps to reduce unwarranted variation at a local level.....	211
--	-----

Right Care for Patients, Right Care for Populations 215

Case-study 1: Delivering improved healthcare in Warrington from indicative data

The setting.....	217
------------------	-----

The situation or problem	217
--------------------------------	-----

What action was taken?.....	217
-----------------------------	-----

What happened as a result?	217
----------------------------------	-----

Learning points	218
-----------------------	-----

Case-study 2: Examining the variation in orthopaedic thresholds and highlighting the need for change

The setting.....	219
------------------	-----

The situation or problem	219
--------------------------------	-----

What action was taken?.....	219
-----------------------------	-----

What happened as a result?	220
----------------------------------	-----

Learning points	220
-----------------------	-----

Glossary of Essential Terms 221

Table S.2: List of indicators in Atlas 1.0 and Atlas 2.0 224

Acknowledgements..... 228

Foreword

I was impressed by *The NHS Atlas of Variation in Healthcare November 2010*, and warmly welcome the November 2011 edition.

Variation in health services is a global phenomenon, and we need to collaborate both within and among countries to understand it better. Greater understanding will provide the foundation for engaging with clinicians and patient groups to increase the value we are able to offer our populations in healthcare.

Mapping variations presents some clear directions of travel. For instance, if there is variation in rates of admission to stroke units, it is obvious that the rate of admission needs to increase in those populations in which the rate of admission is low. Unwarranted variations offer health services in every country the opportunity to obtain greater value from healthcare resources.

The meaning of many variations is, however, not as clear as the case for the treatment of acute stroke. There is an urgent need for clinical researchers to turn their attention to improving our understanding of variation in the rates of many medical interventions, for example, laboratory testing, imaging or elective surgery.

Apart from the effect on population health, unwarranted variation is of vital importance to individual patients because the balance of good to harm for an individual depends not only on the evidence of the effectiveness of the intervention but also on the rate at which the intervention is offered. If a patient does not understand the probabilities of harms and benefits of the intervention when they consent to treatment, we may be giving the intervention to the wrong patient. This underscores the need to embrace shared decision-making as an important component of patient-centred care. For an individual, shared decision-making helps to ensure that the treatment given accords with their values and tolerance of risk; for populations, it helps to ensure a reduction in unwarranted variation and the maximisation of value from healthcare.



*Professor John Wennberg
Founder and Director Emeritus
The Dartmouth Institute for
Health Policy and Clinical Practice*

November 2011

What's New in Atlas 2.0?

“As geographers, Sosius, crowd into the edges of their maps parts of the world which they do not know about, adding notes in the margin to the effect that beyond this lies nothing but sandy deserts full of wild beasts, and unapproachable bogs.”

Plutarch's *Life of Theseus*

The NHS Atlas of Variation in Healthcare was first published in November 2010. It received much positive media coverage, and stakeholders were very supportive.

Over 135,000 copies have been downloaded from the Right Care website, and thousands of hard copies distributed.

Right Care also received a great deal of feedback, in meetings, in writing, through the website and at conferences, which we have tried to take into account. However, the aim in publishing *The NHS Atlas of Variation in Healthcare November 2011* is not to provide answers to all the questions that need to be asked, but to enable clinicians and managers and commissioners and providers to focus on the questions that need to be addressed. What has emerged from this work is that much uncertainty still exists in the pursuit of evidence-based healthcare.

The Atlas is published alongside:

- the NHS Outcomes Framework 2011/12, which acts as a catalyst for driving improvements in quality, outcome and value measurement throughout the NHS by encouraging a change in culture and behaviour, including a renewed focus on tackling inequalities in outcomes;
- NICE guidance and the development of standards.

Since the publication of the November 2010 edition of the Atlas, other organisations – the King's Fund and the Nuffield Trust – have brought out documents either key to the debate about unwarranted variation in England, or describing methods key to preventing and reducing unwarranted variation, such as population-based integrated systems of care (see Box P.1).

In addition to informal feedback on *The NHS Atlas of Variation in Healthcare November 2010*, an evaluation on the use of the document by local commissioners and providers was undertaken by Laura Schang at the London School of Economics, under the supervisorship of Gwyn Bevan (see Box P.2 for some of the findings). Right Care will also commission an evaluation of the use of the November 2011 edition of the Atlas.

Box P.1: Recently published documents key to reducing unwarranted variation

Appleby J, Raleigh V, Frosini F, Bevan G, Gao H, Lyscom T (2011) *Variations in Health Care: The good, the bad and the inexplicable*. The King's Fund, London.

<http://www.kingsfund.org.uk/publications/>

Smith J, Ham C, Eastmure E (2011) *Commissioning integrated care in a liberated NHS*. The Nuffield Trust, London.

<http://www.nuffieldtrust.org.uk/publications/commissioning-integrated-care-liberated-nhs>

Shaw S, Rosen R, Rumbold B (2011) *What is integrated care?* The Nuffield Trust, London.

<http://www.nuffieldtrust.org.uk/publications/what-integrated-care>

Lewis R, Rosen R, Dixon J (2010) *Where next for integrated care organisations in the English NHS*. The Nuffield Trust, London.

<http://www.nuffieldtrust.org.uk/publications/where-next-integrated-care-organisations-english-nhs>

Ham C (2008) *Integrating NHS care: lessons from the frontline*. The Nuffield Trust, London.

<http://www.nuffieldtrust.org.uk/publications/integrating-nhs-care-lessons-frontline>

For *The NHS Atlas of Variation in Healthcare November 2011*, we have built on and extended what we did in November 2010.

- The introduction "Reducing unwarranted variation: right care for patients and populations" explores the concept of value in healthcare in much greater depth and describes the relationship of value to effectiveness and quality.
- There is a section on the tools Right Care has developed during the last 12 months to support action to reduce unwarranted variation, followed by a series of vignettes about the work Right Care is doing in collaboration with a wide range of partners and stakeholders in the healthcare sector.
- There is more than double the number of maps – 71 in Atlas 2.0 compared with 34 in Atlas 1.0. Six of the maps have been updated using the same

geography, one has been updated using a different geography, one has been re-run with an improved coding procedure, leaving a total of 63 new indicators that have been mapped, four of which are similar to indicators in Atlas 1.0.

- Right Care has worked with a much wider range of people to generate suggestions for Atlas 2.0 – as for Atlas 1.0, the national clinical directors and national clinical leads, and their teams, were consulted, but Right Care also worked with NHS organisations, public health observatories, quality observatories, networks, universities, specialist societies, and a few third sector organisations, although it has not always been possible to obtain the data needed to take forward some of the suggestions.
- A greater number of programme budget categories (PBCs) has been covered – 15 in Atlas 2.0 compared with 11 in Atlas 1.0, with the aim of covering all 23 in time; there are also two new categories of care which appear after the maps relating to PBCs.
- There are several new sections including "Value improvement using data", in which the potential to shift the curve and reduce the variance is explored as part of a process to encourage standardisation and a virtuous cycle of quality improvement.
- In another new section, a few of the challenges of making maps with the data available are outlined, and some of the new sources of data Right Care has sought are presented, giving a snapshot of what it might be possible to map in future.
- In a third new section, time trends are investigated in relation to both rate and variation for seven surgical interventions to provide further insights into unwarranted variation.
- After the maps section, the focus is on action that can be taken locally and there is a new section on the process local commissioners and providers can take to reduce unwarranted variation in their locality, outlining which tools are available to support the process.
- There are case-studies showing how Atlas 1.0 was used to reduce unwarranted variation in Warrington (Case-study 1) and in the East of England Strategic Health Authority (SHA; Case-study 2).
- Finally, there is a glossary of essential terms which will

contribute to developing a shared understanding of the concepts in variation analysis.

In addition to these developments for the November 2011 edition of the Atlas, Right Care is producing a series of themed atlases for publication from January 2012 onwards, which includes Child Health, Diabetes, Organ Donation and Transplantation, Kidney Care, Diagnostics, Respiratory Disease and Liver Disease, and possibly Cancer, and Mental Health. Many of the clinical teams working with Right Care to develop the themed atlases have collaborated with a wide range of stakeholders, including the third sector and patient groups, not only to generate the suggestions for indicators but also to help generate the text.

Of increasing importance in future will be the “carbon” cost of healthcare, which it is not possible to address as yet because there is no robust population-based measure for carbon costs. However, carbon will become a constraint in future as the NHS tries to meet the commitment to reduce its carbon footprint by 80% by the year 2050. In 2007, the NHS England carbon footprint was 21 million tonnes CO₂ equivalents (MtCO₂e).¹ A reasonable starting assumption could be that the distribution of expenditure among primary care trusts (PCTs; see Map I.1 in “Reducing unwarranted variation: right care for patients and populations”) reflects the distribution of carbon generation.

Finally, for *The NHS Atlas of Variation in Healthcare November 2011* and for the series of themed atlases, Right Care gave much thought to which geography to select for the maps, given the impending changes to commissioning architecture in England. However, it was agreed to use PCT boundaries for the main geography because PCTs remain the statutory bodies until 2013, and it is from within these boundaries that clinical commissioning groups (CCGs) will develop. We anticipate that CCGs will work with the relevant PCTs in order to understand not only their position in relation to variation, but also the degree of unwarranted variation for different disease groups, interventions, and the population subgroups for whom they will become responsible.

Box P.2: Evaluation of the use of Atlas 1.0 (adapted from Schang²)

The aim was to explore the use of NHS Atlas 1.0 by commissioners, and its usefulness in identifying and addressing unwarranted variation in healthcare.

The NHS Atlas was appreciated as an illustrative tool to raise awareness and provoke discussions, especially among clinicians. PCTs also used the Atlas to identify priorities for policy development. The Atlas appeared to be useful in raising questions about population need and value for money in the use of healthcare resources.

The Atlas pointed PCTs to areas where they appeared to be an “outlier” relative to other PCTs. Analysis of “outlier” levels of healthcare utilisation and expenditure revealed diverse underlying causes of variation.

Apart from requests for wider coverage, more indicators, and “new” indicators each year to maintain salience, suggestions about criteria for indicator selection in future atlases included:

- Procedures of limited clinical value;
- Procedures showing a high degree of variation across the country
- Outcome indicators from datasets in the NHS Outcomes Framework, and the Public Health and Social Care Outcomes Frameworks;
- Expenditure data, especially for issues not adequately covered by NHS Comparators or programme budgeting, such as mental health or community expenditure;
- Healthcare issues linked to the commissioning envelope of PCTs/CCGs.

Requests were also made for trends, or a means of tracking change, and for additional “themed” atlases, e.g. on patient pathways for long-term conditions.

*Sir Muir Gray and Philip DaSilva
Joint National Directors, QIPP Right Care Workstream*

1 [http://www.sdu.nhs.uk/documents/publications/UPDATE_NHS_Carbon_Reduction_Strategy_\(web\).pdf](http://www.sdu.nhs.uk/documents/publications/UPDATE_NHS_Carbon_Reduction_Strategy_(web).pdf)

2 Schang L (2011) Dare to Compare, Brace for Change? Exploring the Use and Usefulness of the NHS Atlas of Variation in Healthcare. MSc Thesis, London School of Economics.

Reducing unwarranted variation: right care for patients and populations

“A good map is worth a thousand words, cartographers say, and they are right: because it produces a thousand words: it raises doubts, ideas. It poses new questions, and forces you to look for new answers.”

Franco Moretti (1998)
Atlas of the European Novel 1800–1900

There are two main aims for the publication of *The NHS Atlas of Variation in Healthcare November 2011*. The first is to offer clinicians and commissioners a fresh opportunity to identify variation and take action to reduce unwarranted variation, defined by Professor John Wennberg as:

“Variation in the utilization of health care services that cannot be explained by variation in patient illness or patient preferences.”¹

The second is to highlight the work being done by Right Care to support anyone – whether commissioner or provider, clinician or manager – wanting to reduce unwarranted variation within their locality or between their locality and other areas of the country.

In *The NHS Atlas of Variation in Healthcare November 2010*,² it was emphasised that some variation is warranted because different populations have different levels of need. However, highlighting variation, not only in activity and cost but also in quality, safety and outcome, is fundamental to the achievement of better value in healthcare, because:

- It is a first step towards reducing unwarranted variation;
- It is a way of promoting transparency and increasing accountability in the NHS;
- It is an important driver for improving not only the quality of services but also patient-determined and population health outcomes.

Commissioners are responsible for allocating NHS resources. Clinicians and managers alike are responsible for the use of the NHS resources allocated to them, and for controlling that use. This responsibility entails being accountable for transparency, sharing information openly (such as non-patient-identifiable clinical datasets), and

1 Wennberg JE (2010) *Tracking Medicine. A Researcher's Quest to Understand Healthcare*. Oxford University Press.
See also: <http://www.dartmouthatlas.org/>

2 <http://www.rightcare.nhs.uk/atlas/>

using that information within their locality to involve patients and the population in the debate about achieving greater value, that is, better outcomes at lower cost.

Since the publication of Atlas 1.0, as a matter of priority, the Right Care team has actively engaged with commissioners, providers, clinicians, managers and patient groups, both nationally and locally, to work towards achieving better value for populations by reducing unwarranted variation, and improving value for individual patients by responding to the imperative for shared decision-making.

Berwick suggests that some professionals may feel threatened by action to reduce unwarranted variation, but greater understanding of what is involved can allay any fears arising from this perceived threat,³ and help to prevent the common reaction of defending poor data. *The NHS Atlas of Variation in Healthcare* is intended to support and inform the discussion. A good starting point is to develop a shared understanding of variation and of unwarranted variation.

Unwarranted variation: the challenge facing health services

Over the last 60 years, the achievements of the NHS have been considerable. Owing to a combination of factors – high-quality research and development, a progressive shift to evidence-based clinical practice, patient-centred care, professional training, effective

management and the investment of resources – life-expectancy and the years of life free from disability have increased dramatically. This transformation has had a highly beneficial impact on population health.

However, every health service in the world, irrespective of its structure or model of financing, faces five major challenges (see Box I.1).

Box I.1: Five major challenges for all health services⁴

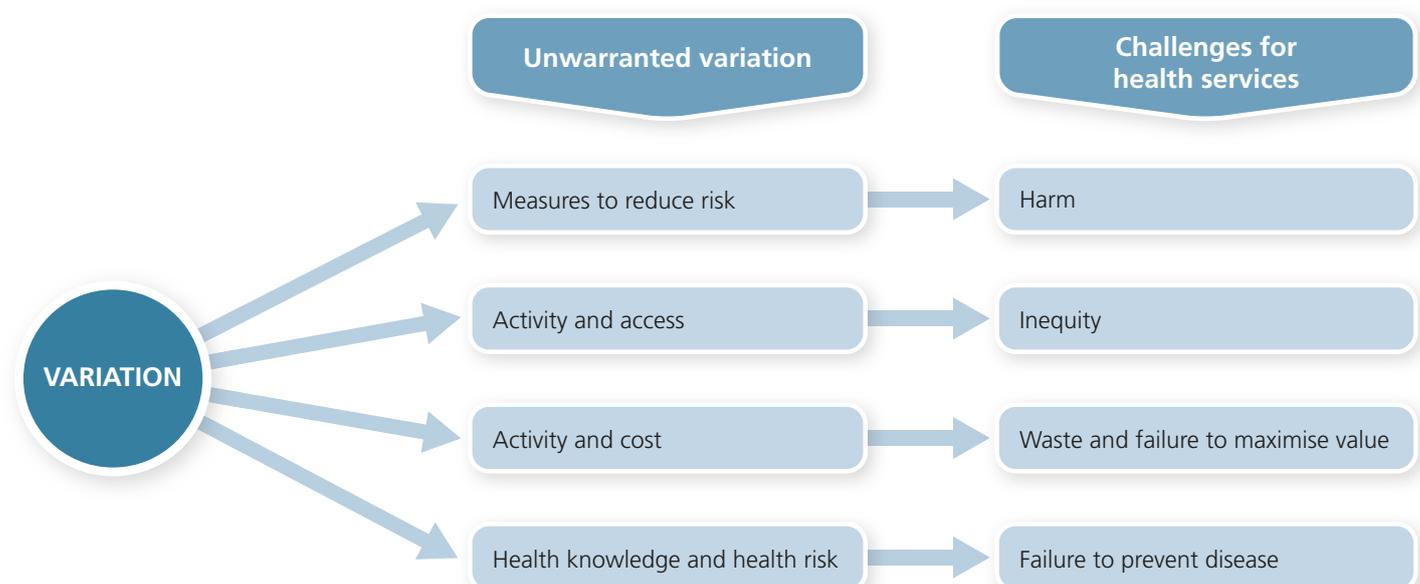
- › Unwarranted variation in quality and outcome
- › Harm to patients
- › Waste, and failure to maximize value
- › Health inequalities and inequities
- › Failure to prevent disease

The key to meeting these challenges is:

- › identifying variation, and ascertaining whether it is warranted or unwarranted;
- › reducing unwarranted variation in quality, safety and outcome, and in activity and cost.

The relationship of variation to the challenges facing all health services is shown in Figure I.1.

FIGURE I.1: Relationship between variation and the challenges for health services



³ Berwick D (1991) Controlling variation in health care: a consultation from Walter Shewhart. *Medical Care* 29:1212–1225.

⁴ Gray JAMG (2011) *How To Build Healthcare Systems*. Oxford Press, Oxford.

Maximising value

From its inception to the present day, a dominant paradigm has underpinned the operation of the NHS, but that paradigm shifts with time.

- From 1948 to the early 1970s, it was care and treatment for “free”.
- Following the publication of Cochrane’s work in 1972,⁵ and into the 1980s, it was effectiveness, particularly in clinical decision-making (known as an evidence-based approach).
- In the 1990s, it was extended beyond clinical effectiveness to encompass cost-effectiveness.
- In the first 10 years of the 21st century, quality and safety have been embraced.

However, the dominant paradigm for the NHS for the next decade, and perhaps beyond, is value.

Michael Porter has encapsulated value in the following way.

“Value in any field must be defined around the customer, not the supplier. Value must also be measured by outputs, not inputs. Hence it is patient health results that matter, not the volume of services delivered. But results are achieved at some cost. Therefore the proper objective is the value of health care delivery, or the patient health outcomes relative to the total cost (inputs) of attaining those outcomes. Efficiency, then, is subsumed in the concept of value. So are other objectives like safety, which is one aspect of outcomes.”⁶

Value is the relationship between outcomes and costs. As the overall outcome is actually the difference between good outcomes and bad outcomes, quality improvement and greater safety continue to be vitally important. The usage of the term “costs” requires definition. Costs are often equated with money and, although it is important to deliver high-value care with the least possible financial outlay (sometimes referred to as high productivity), money is only one aspect of resource use (other aspects include knowledge, staff time, and carbon). However, the most important cost is

the opportunity cost. If more lower-value interventions are undertaken, the cost is borne not by the taxpayer but by those patients whose needs could have been met if the resources spent on lower-value interventions had been transferred to another service providing higher-value interventions for a different group of patients.

$$\text{Value} = \frac{(\text{Good outcome} - \text{Bad outcome})}{\text{Opportunity cost}}$$

The 21st century will be the century of value. Understanding the causes of variation and the need to reduce unwarranted variation is critical to maximising value, by transferring resources from lower-value to higher-value interventions:

- First, by allocating resources optimally;
- Second, by ensuring that, within each allocated budget, resources are used to deliver most benefit for least harm.

Achieving the optimal allocation of resources

Although there is much discussion about efficiency in the NHS, most of the concern centres on what economists call “technical efficiency”, that is, the relationship of outcomes to resources or “inputs”. However, there is another, equally important, type of efficiency known as “allocative efficiency”. Allocative efficiency is maximised at the point when it is not possible to shift resources from one budget (intervention, service, disease group, etc.) to another and achieve greater benefit for the population (also referred to as Pareto optimality).

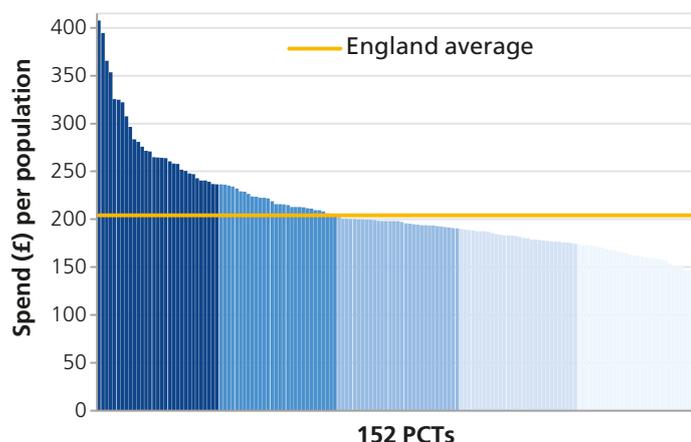
In Table I.1, the rate of expenditure among primary care trusts (PCTs) in England for each programme budget category is presented, showing that the degree of variation differs from programme to programme. Even when applying the “Richards heuristic” of excluding the top five and bottom five returns, it is common to see twofold or greater differences among PCTs (see Figure I.2). Furthermore, even when the degree of variation is less, for instance, around 1.5-fold (see Figure I.3), the difference in the amounts that PCTs serving a similar population spend on services can vary by millions or tens of millions of pounds per year.

5 Cochrane A (1972) *Effectiveness and Efficiency*. Nuffield Provincial Hospitals Trust, London.

6 Porter ME (2010) What is value in health care? *New England Journal of Medicine* 363: 2477-2481.

FIGURE I.2

Mental health disorders



It would appear that as yet no commissioner has reached the point of maximum allocative efficiency, and very few have discussed in detail the allocation of resources in this way. For most programme budget categories, it would seem that PCTs tend to allocate resources on the basis of historical patterns, which are the result of years, perhaps decades, of incremental change that they have inherited.

It is important to appreciate and emphasise that the mean spend on a particular programme may not be the right spend for the level of need in the population served. Some variation is to be expected because need is not uniform, but it is unlikely that the degree of variation in spend among PCTs for each programme budget category (see Table I.1) can be justified by variation in need, and much of the variation in expenditure is likely to be unwarranted.

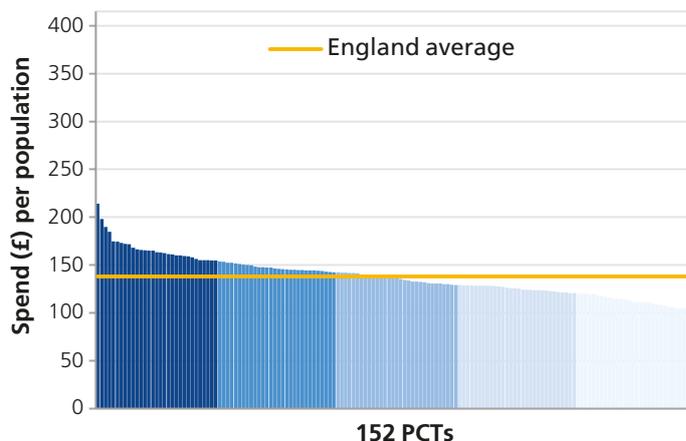
Achieving maximum value from the resources allocated

Once resources have been allocated to meet a particular need, value is maximised by:

- Ensuring that the interventions delivered are supported by strong evidence of cost-effectiveness;
- Delivering the service not only at high levels of quality to ensure good outcome, but also at high levels of safety to minimise the risk of harm;
- Good case selection supported by shared decision-making – intervening on the “right” patients to ensure that they are likely to experience considerable benefit according to their judgement and values;

FIGURE I.3

Problems of circulation

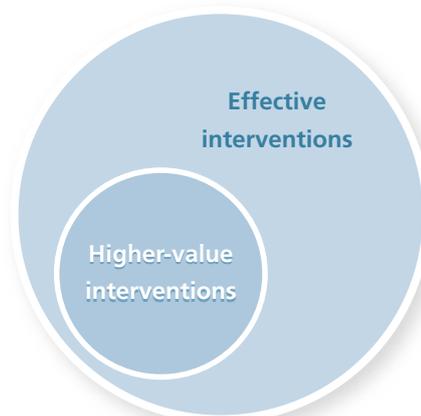


- Minimising the cost of the service delivered.

Although these steps are essential, they are not sufficient to ensure that value is maximised from the resources allocated to a particular need or a particular type of patient.

It is important to distinguish between value, effectiveness and quality. During Right Care’s active engagement of clinicians, managers and patient groups, challenges have been made about some commissioners limiting the use of particular interventions which have evidence of effectiveness. However, although all high-value interventions must be effective, not all effective interventions are of high value (see Figure I.4). The value of the resources invested must be judged in the light of their opportunity costs, that is, by comparing the value of the investment with that which could have been obtained if those resources had been used for another patient group.

FIGURE I.4

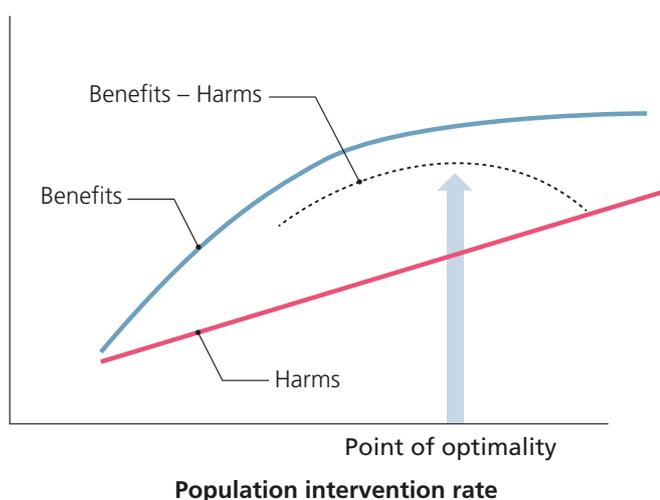


Value to the population can change over time

The value of a service is not constant: it changes over time.

Avedis Donabedian pointed out that as resources are increased – by increasing the rate at which an elective procedure is performed or the proportion of people receiving a drug or by decreasing the interval between screening tests – value increases quickly at first, but then the rate of increase slows down (known as the Law of Diminishing Returns). However, all healthcare, even when delivered at high quality, can do harm as well as good but, unlike the benefit, harm is directly proportional to the resources invested. For each unit increase of resources invested, each increment of benefit decreases whereas each increment of harm remains constant.⁷ When the increase in both benefit and harm is plotted on the same graph, it reveals the maximum benefit to harm, called the point of optimality by Donabedian (see Figure I.5).

FIGURE I.5



Thus, an intervention when provided at a higher rate will remain effective, but the added value will be less for the population. It is possible that greater benefit could be obtained for the whole population if the resources expended on providing higher rates of activity for one group of patients, such as people with asthma, were invested to help another group of patients with the same type of disease, such as people with chronic obstructive pulmonary disease, or another group of patients with a different type of disease, such as people with cancer.

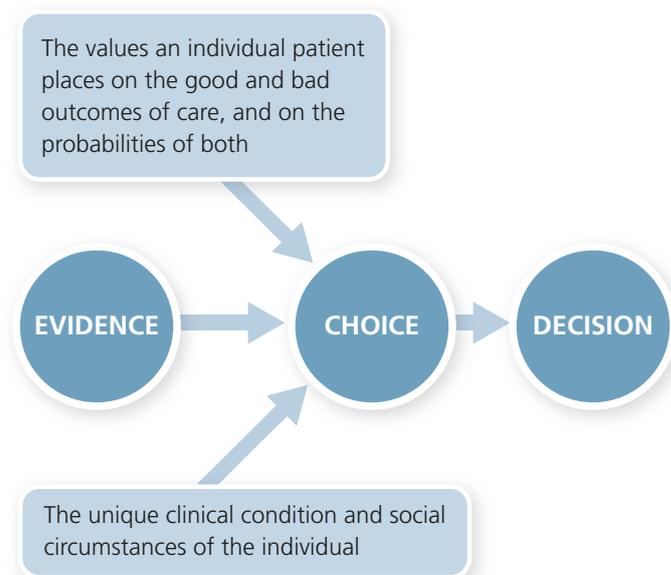
7 Donabedian A (2002) *An Introduction to Quality Assurance In Healthcare*. Oxford University Press.

Value to the individual can change over time

The value of a service to the individual patient can also change over time. If increasing the number of interventions changes the balance of benefit to harm for the population, from the perspective of an individual patient, increasing the rate of intervention means there is a point at which the clinical indication for an intervention starts to change.

Although the focus of *The NHS Atlas of Variation in Healthcare* is primarily population-based, taking action to reduce unwarranted variation is also of vital importance to the individuals in a population because, through the promotion of shared decision-making, it helps to ensure that the right patient gets the right treatment at the right time in accord with their particular values (see Figure I.6). Thus, the need for shared decision-making increases as the rates of intervention increase.

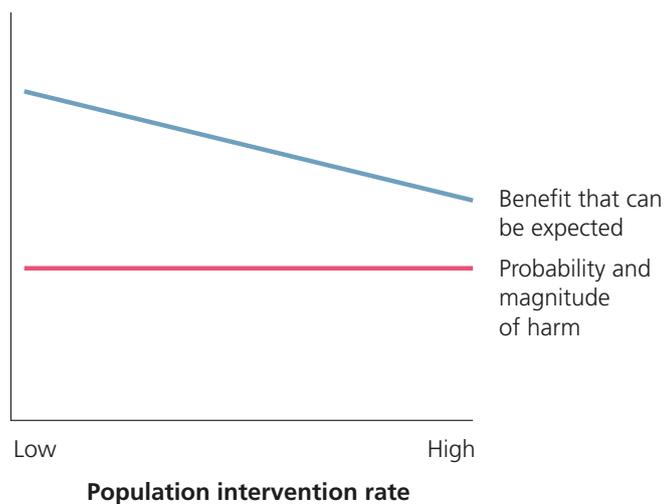
FIGURE I.6



To illustrate this point, consider the situation 10 years ago: patients undergoing elective surgery were primarily those in severe need who were likely to benefit greatly and who accepted the possibility of harm. Although harm occurs in all services, even those of high quality, for patients in severe need the intervention is perceived as a risk worth taking because the likely benefit is greater than the risk, and the intervention is of high value to them. However, as the backlog of people in severe need on the waiting list is reduced, the number of people in severe need consists only of those who deteriorate to that extent during the course of a year,

referred to as the incidence of people in severe need. If the rate of surgery remains at a high level, the operation will be offered to people with less severe need. The benefit for people with less severe need is likely to be smaller because their suffering prior to operation is not as great as that for people in severe need. However, for people in less severe need, the probability that they may be harmed, and the magnitude of that harm, is the same as that for people in severe need, therefore, the offer made to people in less severe need is different from that made to people in severe need (see Figure I.7).

FIGURE I.7



To help ensure that the right patient gets the right treatment, thereby maximising value for individuals, Right Care is commissioning a suite of patient decision aids (PDAs). Given the time constraints in a consultation, it is impossible for clinicians to communicate all the information necessary to help a patient weigh up the risks and benefits of an intervention and relate them to their own values and preferences for testing and/or treatment. The first eight Right Care PDAs (see Box I.2) are now available through NHS Direct so that patients are able to access them when making decisions about whether to have medical tests or treatments (for further details, see “Right Care tools for reducing unwarranted variation”).

To assist commissioners and Health and Wellbeing Boards responsible for judging value in healthcare over time, we have included an analysis of seven surgical procedures – see “Exploring variation in different dimensions” – in which we present the rate of the intervention and the coefficient of variation over 10 years, together with the degree of variation for the most recent year of activity. This type of analysis provides a deeper understanding of variation, and is a necessary starting point when assessing the value of high rates of intervention for populations and for individual patients.

Box I.2: Right Care’s shared decision-making tools: the first eight

- › CVS and Amniocentesis
- › Benign prostatic hyperplasia
- › Breast cancer
- › Cataracts
- › Knee arthritis
- › Localised prostate cancer
- › Osteoarthritis of the hip
- › PSA testing

Variation in total expenditure on healthcare in England

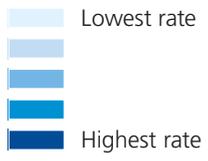
The formula for the allocation of financial resources for healthcare, although based on sound economic and epidemiological methods, is a subject for continuing debate, as some areas which receive less money per head perceive that the allocation does not meet their population’s needs, whereas others which receive more money per head perceive their population’s needs have been recognised.

The variation in total expenditure on healthcare per head of DH unified weighted population among 152 PCTs in England for 2009/10 can be seen in Map I.1.

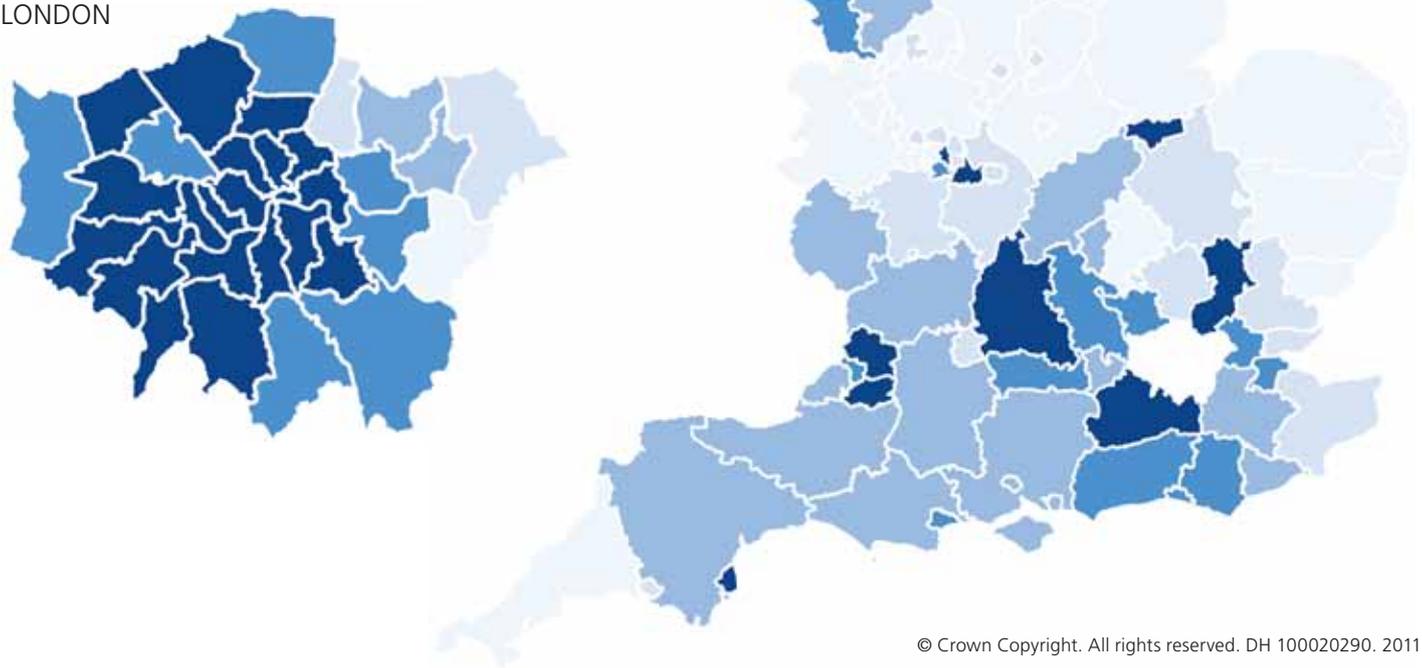
- › The England average is £1681.30 per head of population.
- › The range is from £1526 to £2094.40 per head of population, with a variation of 1.37-fold.

The configuration and patterning of Map I.1 will evolve as the changes to the commissioning architecture enshrined in the Health and Social Care Bill are implemented, and as the distribution of resources is altered to reflect the needs of newly defined populations coming under the care of the clinical commissioning groups (CCGs).

MAP I.1: Rate of total expenditure (£ per head of DH unified weighted population) by PCT, 2009/10



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011

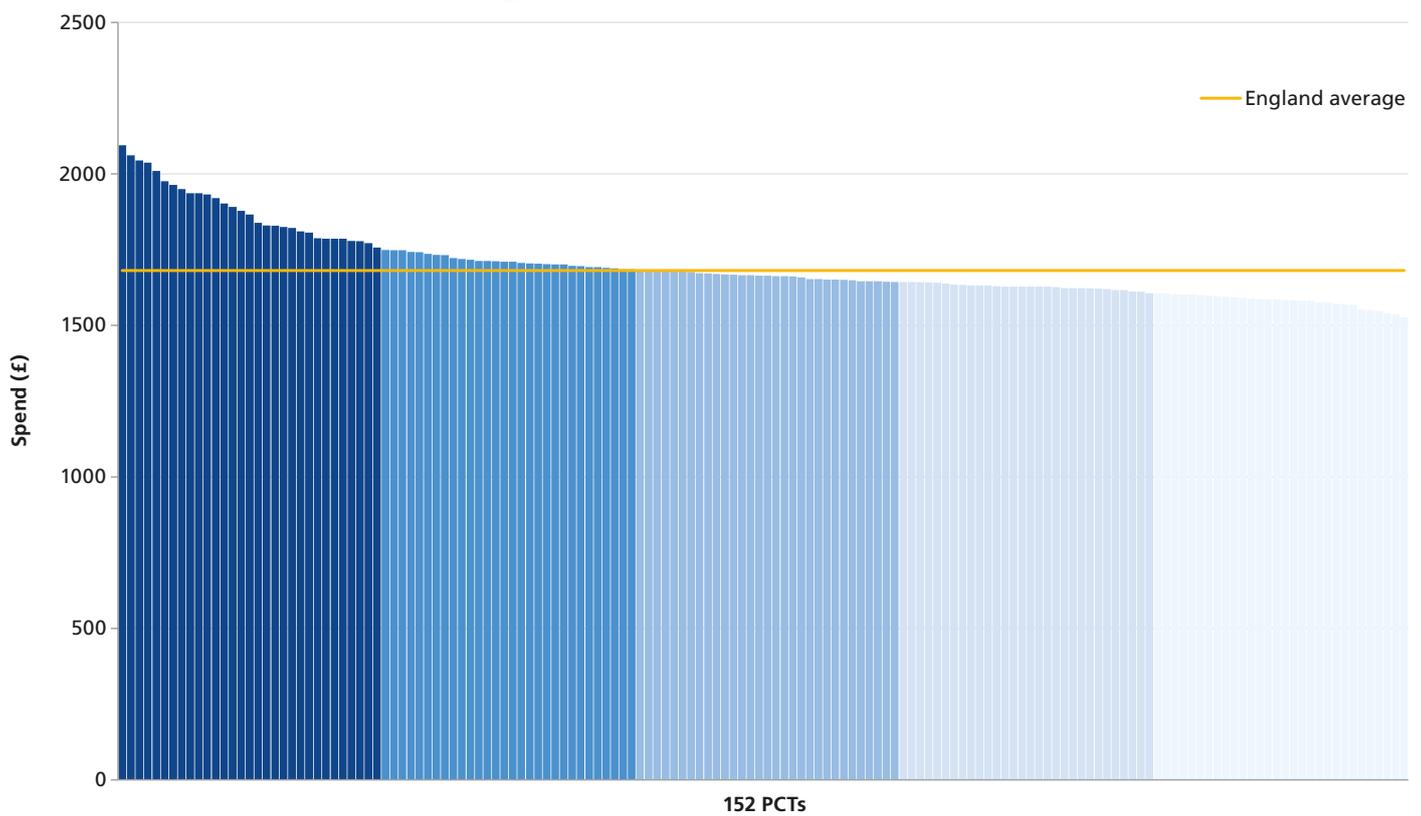


Table I.1: Rate of expenditure (£ per head of DH unified weighted population) by PCT on 21 programme budget categories (PBCs),⁸ 2009/10 (PBCs are listed in order of mean expenditure)

Programme budget category	Mean for England (£/head population)	Maximum expenditure (£/head population)	Minimum expenditure (£/head population)
Mental Health Disorders	204.2	407.5	134.2
Problems of the Circulation	137.9	214.1	99.9
Cancers and Tumours	107.1	135.7	67.8
Problems of the Musculo-Skeletal System	88.8	142.4	52.2
Problems of the Gastro-Intestinal System	86.2	133.1	56.7
Problems of the Genito-Urinary System	84.0	134.5	57.8
Problems of the Respiratory System	84.0	119.7	53.3
Neurological Problems	75.5	113.1	40.6
Problems due to Trauma and Injuries	70.9	127.6	17.2
Maternity and Reproductive Health	70.8	168.3	28.5
Dental Problems	66.9	107.7	43.3
Problems of Learning Disability	58.1	165.3	20.3
Endocrine, Nutritional and Metabolic Problems	49.0	73.0	29.4
Problems of Vision	38.1	66.5	20.7
Problems of the Skin	37.6	65.0	19.9
Infectious Diseases	26.9	145.4	10.0
Disorders of the Blood	22.8	57.9	8.1
Adverse Effects and Poisoning	20.3	31.8	9.5
Conditions of Neonates	19.5	73.7	2.7
Problems of Hearing	9.6	23.9	3.3
Healthy Individuals	38.7	91.4	3.7
All PBCs	1681	2094	1526

⁸ Two PBCs are not shown for the following reasons: Social Care Needs shows extreme variation among PCTs; 'Other' includes miscellaneous costs.

Variation	Maximum expenditure excluding that of highest five PCTs (£/head population)	Minimum expenditure excluding that of lowest five PCTs (£/head population)	Variation after exclusions
3-fold	324.9	151.7	2.1-fold
2.1-fold	174.2	106.1	1.6-fold
2-fold	131.3	78.3	1.7-fold
2.7-fold	116.9	57.0	2.1-fold
2.3-fold	107.0	68.7	1.6-fold
2.3-fold	114.0	63.8	1.8-fold
2.2-fold	107.9	68.3	1.6-fold
2.8-fold	94.1	55.8	1.7-fold
7-fold	105.7	46.6	2.3-fold
6-fold	115.3	45.0	2.6-fold
2.5-fold	91.3	51.4	1.8-fold
8-fold	92.4	29.2	3.2-fold
2.5-fold	62.8	37.3	1.7-fold
3.2-fold	47.9	27.0	1.8-fold
3.3-fold	53.2	27.2	2-fold
15-fold	94.3	12.2	8-fold
7-fold	38.6	12.5	3.1-fold
3.3-fold	27.6	12.9	2.1-fold
28-fold	42.7	7.2	6-fold
7-fold	20.5	4.6	4.5-fold
25-fold	71.7	14.8	4.8-fold
1.4-fold	1976	1552	1.3-fold

Right Care tools for reducing unwarranted variation

The aim of the Right Care Workstream is to increase value by doing the right things for patients and populations. The right things are those of high value, provided at least cost and highest quality

The purpose of *NHS Atlas of Variation in Healthcare* is to highlight variation thereby giving decision-makers the potential to ascertain whether particular variation is unwarranted in their locality. If there is unwarranted variation locally, this should trigger action to reduce variation by decreasing the rate of lower-value interventions and by increasing the rate of higher-value interventions.

Thus, *The NHS Atlas of Variation in Healthcare* is a catalyst, to stimulate analysis and reflection, and as such is only the first stage in helping commissioners and providers work towards achieving better value in healthcare.

To complement the Atlas, the Right Care team is producing many other tools and resources to support

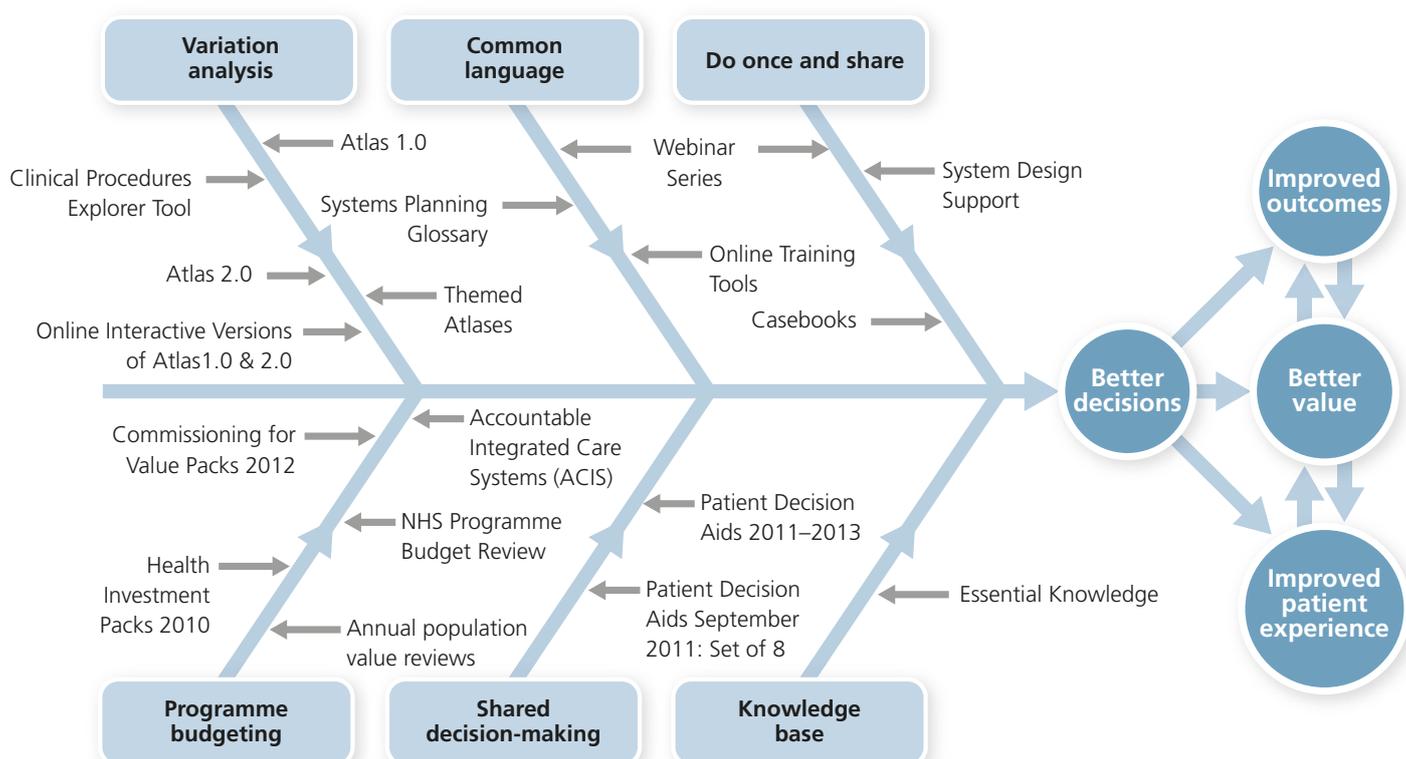
decision-makers throughout the NHS in implementing the changes necessary to maximise value. Right Care tools and resources, and their relationship to one another, have been set out in Figure T.1.

NHS Programme Budget Review

Programme budgeting requires decision-makers to prioritise and make decisions to increase value. Right Care will publish an NHS Programme Budget Review in early 2012, which will provide a contextual guide to the health investment process. It has been developed:

- To encourage commissioners to reflect on the pattern of spending created or inherited;
- To enable commissioners to manage unplanned demands for resources by first working within the relevant programme budget. This approach obviates the need to transfer resources from another programme budget.

Figure T.1



The NHS Programme Budget Review will extend work undertaken on the Annual Population Value Reviews 2007 and 2008.¹

Commissioning for Value Packs

Every PCT Cluster will be given a Commissioning for Value Pack, which commissioners can use to identify whether and understand why they are an outlier for expenditure or outcome, or both, for each of the programme budget categories. The Commissioning for Value packs will build on work done for the Health Investment Packs (HIPs) 2010.²

Toolkit for evaluating the value of innovations

Right Care will support the work of The Health Foundation and partners, who are developing a toolkit to allow commissioners, clinicians and the public to compare the benefit of an innovation with the benefit that would be obtained if the resources needed to fund the innovation were put to another use for the same group of patients.

Essential Knowledge

There is a growing evidence base from both research and experience about the ways in which value can be increased. Evidence from research is captured in Right Care's Essential Knowledge, a series of reading lists on specific themes relevant to the Right Care Workstream.³ Each reading list contains a brief introduction to the subject, and provides access to evidence in the clinical and management science literature that will help to transform thinking about ways to maximise value. The first two reading lists deal with the "Accountable Care Organisation" and "Unwarranted Variation in Healthcare".

Right Care Casebook

There is a growing evidence base from both research and experience about the ways in which value can be increased. Evidence from experience is gathered in the Right Care Casebook. Volume 1, "Sharing Commissioning Experiences", contains six case-studies,

designed to facilitate the sharing of good practice. Right Care is compiling examples of local commissioning work that demonstrate either the philosophy behind value improvement or showcase the effective use of tools available through the Right Care Workstream.

Right Care Shared Decision-Making: Patient Decision Aids

Right Care's patient decision aids (PDAs) are a series of self-administered information tools that prepare individual patients for making informed decisions about medical tests or treatments. The first eight are available through NHS Direct, a telephone support service (see Box I.2); PDAs that will be forthcoming over the next 18 months are shown in Box T.2.

Box T.2: Right Care's shared decision-making: patient decision aids available starting Winter 2011 through to Spring 2013

- › Abdominal aortic aneurysm screening and repair
- › End-stage renal failure
- › Multiple sclerosis
- › Serous otitis media
- › Sciatica
- › Chronic obstructive pulmonary disease (COPD)
- › Stable angina
- › Inguinal and umbilical hernia
- › Cholecystitis, acute or recurrent
- › Non-insulin dependent diabetes
- › Carpal tunnel syndrome
- › Menorrhagia/menstrual disorders
- › Recurrent tonsillitis
- › End-of-life care
- › Atrial fibrillation
- › Obesity

Clinical Procedures Explorer Tool

Right Care has developed a Clinical Procedures Explorer Tool, populated with national SUS data, which can be used:

1 <http://www.rightcare.nhs.uk/index.php/tools-resources/population-value-reviews/>

2 <http://www.rightcare.nhs.uk/index.php/tools-resources/health-investment-packs/>

3 <http://www.rightcare.nhs.uk/index.php/tools-resources/essential-reading/>

- By commissioners to understand how commissioning actions can influence variation in spend and outcomes at a granular level;
- By providers to understand how their behaviour can influence outcomes, which may be different from those of other providers across the country.

See Box T.1 for further details about how this tool has been used by Right Care in partnership with national organisations representing clinicians and patient groups.

Right Care Systems Design Support

The Right Care Systems Design Support (SDS) is a set of questions that commissioners and their local populations need to ask about common health issues, such as Parkinson's disease, or specific population groups, such as frail elderly or single homeless people.

The SDS is prepared by focusing national organisations on a population, in a specific locality, and using their local activity and expenditure data to complement nationally available evidence in a way that commissioners and clinicians can use to develop integrated care systems, accountable to the population they serve.

The knowledge arising from the discussion of the best current evidence and statistical information, combined with the experience of clinicians and patient groups, will be made available online so that others can access the information and collaborate in the production of a shared knowledge base.

Priority is being given to designing and sharing high-value commissioning pathways for elective surgical procedures. The principle of "Do Once Locally and Share" has been enthusiastically adopted.

Right Care Systems Planning Glossary

The Right Care Systems Planning Glossary contains key terms used in value improvement, variation analysis, programme budgeting, and systems, network and pathway development. The Systems Planning Glossary helps people answer important questions such as:

"What is the difference between efficiency and productivity?"

"What is the difference between value and quality?"

"What do we mean by value?"

Box T.1: Clinician and patient engagement using the Clinical Procedures Explorer Tool

The Clinical Procedures Explorer Tool has played a central role in the work Right Care has done since the publication of *The NHS Atlas of Variation of Healthcare November 2010* and the compilation of a database of commissioning policies on interventions deemed to be of "lower clinical value".

In partnership with the Medical Director of the NHS through the Strategic Health Authority Medical Directors in London and the East Midlands, detailed work has been undertaken with:

- The Royal College of Surgeons
- The Association of Surgeons of Great Britain and Northern Ireland
- The British Orthopaedic Association
- The British Association of Urological Surgeons
- The British Association of Dermatologists
- ENT UK
- The Royal College of Ophthalmology
- The British Association of Neurological Surgeons
- The British Association of Plastic and Reconstructive Surgeons
- The British Association of Maxillo-Facial Surgeons
- The British Association of Cardiothoracic Surgeons

An interim report was produced in November 2011.⁴ A workshop on the need for research into surgical variation will be organised with the National Institute for Health Research (NIHR) in early 2012.

Right Care has also engaged with several national patient organisations to ensure that they are involved in the process of reducing unwarranted variation.

4 <http://www.rightcare.nhs.uk/index.php/tools-resources/procedures-explorer-tool/>

Right Care Webinar series

The Right Care Webinar series will assist anyone engaged in clinical commissioning to find practical solutions to commissioning questions. Guest speakers will provide practical perspectives on emerging areas in clinical commissioning. Throughout the series, participants will have opportunities to build and develop a network of colleagues, and to review how local activities can be shared and knowledge translated into their own programmes.

Right Care NHS Atlas Online

All Right Care Atlases are available as interactive online versions using the InstantAtlas™ data presentation software. The online version allows PCTs to view their own indicator data for all maps and to access the metadata and underlying data tables.

www.rightcare.nhs.uk/atlas

Right Care Website

The Right Care website will be populated with a growing number of resources to support commissioners, clinicians, managers and patient groups.

Right Care Online

Contact the team or comment on Right Care using the feedback page.

Subscribe to Right Care on the website to receive occasional eBulletins and obtain Right Care blog alerts in your Inbox including "Document of the Week".

Follow us on twitter @qipprightcare

Engaging stakeholders: progress since November 2010

"A map is by nature multidisciplinary."

P. C. Muehrcke

Blood disorders

Right Care is working with the Director of the NHS Sickle Cell and Thalassaemia Screening Programmes, GPs and patient groups to design best-value care pathways for sickle cell anaemia and thalassaemia.

Cardiothoracic surgery

Right care is working with the Cardiovascular Society (CVS), Royal College of Surgeons of England (RCS), GPs and commissioners to combine local activity data, using QlikView, and best available evidence to design best-value care pathways for transcatheter aortic valve implantation (TAVI). A workshop will be organised with the objective of reducing unwarranted variation.

Ear, nose and throat (ENT)

Right Care is working with the London Strategic Health Authority, East Midlands Quality Observatory, ENT UK, GPs and commissioners to combine local activity data, using QlikView, and best available evidence to design best-value care pathways for acute sore throat, sino-nasal symptoms and childhood hearing loss.

Elective surgery

Right Care is planning a national workshop on research priorities in elective surgery, to be organised by the Nuffield Department of Surgery, Oxford, involving all the specialist surgical societies, the Royal College of Surgeons of England (RCS) and the Association of Surgeons of Great Britain and Ireland (ASGBI). Research is needed to understand both need and outcome for all elective operations. The focus of the workshop will be variation, the causes of variation, the evaluation of variation, and the effectiveness of measures to reduce unwarranted variation.

Frail elderly population

Right Care is working in Mid-Sussex with Brighton General Hospital, GPs, commissioners and patient groups to design best-value care pathways.

General surgery

Right Care is working with the Association of Surgeons of Great Britain and Ireland (ASGBI), the Royal College of Surgeons of England (RCS), GPs, commissioners and patient groups, in conjunction with the East Midlands Quality Observatory. Workshops have been held to combine activity data, using QlikView, and the best available evidence, to design best-value care pathways for hernias, rectal bleeding and obesity surgery.

Imaging services

Right Care will hold a workshop with the National Clinical Director for Imaging, the National Imaging Clinical Advisory Group (NICAG), the Royal College of Radiologists (RCR) and the Society and College of Radiographers (SCoR) on maximising value from imaging resources.

Infectious diseases

Right Care is working with the Health Protection Agency (HPA), GPs and patient and professional groups to design best-value care pathways for HIV and tuberculosis (TB).

Liver disease

Right Care is working with the National Clinical Director for Liver Disease, GPs, commissioners and patient groups to combine local activity data, using QlikView, and best available evidence to design best-value care pathways for liver disease. The outputs will be used to help commissioners and providers develop a standardised approach.

Mental health

Right Care is working with the National Clinical Director for Dementia, the Royal College of Psychiatrists (RCPsych), the Royal College of Physicians (RCP), GPs and patient groups to design best-value care pathways for dementia and bipolar disorder.

Neurological disease

Right Care is working with neurologists, GPs, commissioners and patient groups to design best-value care pathways for epilepsy, motor neurone disease (MND), Parkinson's disease and multiple sclerosis (MS).

Ophthalmology

Right Care is working with the London Strategic Health Authority, East Midlands Quality Observatory (EMQO), the Royal College of Ophthalmologists (RCOph), the College of Ophthalmology, GPs and commissioners to combine local activity data, using QlikView, and best available evidence to design best-value care pathways for diabetic retinopathy, cataract surgery, acute macular degeneration (AMD), glaucoma and low vision.

Orthopaedics

Right Care is working with the London Strategic Health Authority, East Midlands Quality Observatory (EMQO), the British Orthopaedic Association (BOA), GPs and commissioners to combine local activity data, using QlikView, and best available evidence to design best-value care pathways for knee pain and hip pain.

In addition, Right Care is organising a workshop on joint replacement with the BOA to build on their forthcoming report "Improving the Quality of Orthopaedic Care within the National Health Service in England" by Professor Briggs. The information needed to take action on unwarranted variation will be addressed in this workshop, and also in the national workshop on research priorities in elective surgery (see Elective surgery).

Plastic surgery

Right Care is working with the British Association of Plastic, Reconstructive and Aesthetic Surgeons (BAPRAS), the Royal College of Surgeons of England (RCS), GPs and commissioners to combine local activity data, using QlikView, and best available evidence to design best-value care pathways in plastic and reconstructive surgery. During this work, high-cost plastic surgery interventions have been identified that were not previously known to commissioners.

Respiratory disease

Right Care is working with the National Clinical Directors for Respiratory Disease, IMPRESS,¹ GPs, commissioners and patient groups to design best-value care pathways for asthma, chronic obstructive pulmonary disease (COPD), sleep apnoea and pneumonia.

¹ Improving and Integrating Respiratory Services in the NHS – a joint initiative between the British Thoracic Society (BTS) and the Primary Care Respiratory Society (PCRS)-UK.

Skin diseases

Right Care is working with the British Association of Dermatologists (BAD), the Royal College of Physicians (RCP), GPs and patient groups to design best-value care pathways for skin diseases, such as psoriasis and skin cancer.

Spinal surgery

Right Care is working with the Society of British Neurological Surgeons (SBNS), the British Orthopaedic Association (BOA), the Royal College of Surgeons of England (RCS), the Royal College of Physicians (RCP), GPs and commissioners to combine local activity data, using QlikView, and best available evidence to design best-value care pathways for back pain.

Thyroid disorders

Right Care is working with the British Endocrine Society and patient groups to combine local activity data, using QlikView, and best available evidence to design best-value care pathways for thyroid disorders.

Urology

Right Care is working with the British Association of Urological Surgeons (BAUS), the Royal College of Surgeons of England (RCS), GPs, commissioners and patient groups, in conjunction with the East Midlands Quality Observatory (EMQO). Workshops have been held to combine activity data, using QlikView, and the best available evidence to design best-value care pathways for circumcision, lower urinary tract syndrome (LUTS), percutaneous tibial nerve stimulation (PTNS) and scrotal swellings.

Value improvement using data

Introduction

Much has been written about quality improvement in manufacturing industry, and the use of statistics to facilitate such improvements. Lean methodologies and six sigma arose during the 1980s building on the statistical process control of earlier decades. Such approaches focus on improving the quality and reproducibility of outputs, and removing the causes and numbers of errors. This can be achieved by minimising the variability in processes (both production processes and business processes), using statistical methods, implementing ways of working where quality and the avoidance of waste is everyone's business, and applying strong leadership focus to the issue. By doing this, manufacturing companies discovered an unexpected link between improving quality and decreasing costs largely due to:

- › the reduced costs of rectifying errors;
- › tighter control of production;
- › better business processes.

The key to success in this challenge of improving quality and reducing costs has been shown to be a determined focus on:

- › Achieving predictable results by reducing variation;
- › Measuring, analysing, improving and controlling processes;
- › Securing commitment from all staff, especially top-level management.

In addition, it is necessary to be able:

- › To make decisions about changes based on hard data;
- › To measure the impact of improvement projects.

There has been much discussion about the applicability of such quality improvement methodologies in the health sector. The translation is not always easy, but health does have numerous production processes, e.g. treatments and procedures, and many business processes, e.g. patient administration and the management of complaints.

There are many factors that influence:

- › how and why patients enter the health system;
- › how patients travel through the system;
- › how many resources are used up along the way;
- › what the outcomes are, whether clinical or of patient experience.

These factors include the wider determinants of health, such as demographic (age, gender, ethnicity) and socio-economic (poverty, deprivation, education) factors, as well as personal factors, such as genetic inheritance and an individual's approach to health and healthcare. Behaviours that are particularly influential include knowledge-seeking, compliance with agreed treatment regimes, and self-management.

As there is a wide range of patient types, a greater degree of variability might be anticipated in health service outcomes than outcomes found in a manufacturing process where raw materials are provided to a fixed specification. However, best practice can still be applied to all processes.

Making decisions using data

Making decisions using data is not always straightforward. The way in which data are analysed and presented will influence whether an issue or opportunity for improvement is presented and perceived.

It is common for people to consider "above average" as synonymous with being better, and "below average" as doing worse. However, the average performance might be unacceptably poor. Although it is now widespread practice to use the mathematical term "mean" instead of "average", there are still drawbacks to using the term "mean".

The problem with focusing only on the mean, and variance from the mean, is that within the health sector it can result in inertia, and an argument to do nothing from the majority in the middle. Being statistically clustered around the mean, there is safety in numbers:

- › 'We are in the pack.'
- › 'We are the same as everyone else.'

In which case, why change?

The small numbers of organisations statistically better than the mean may choose to sit back in complacency:

- › 'We are doing well.'
- › 'We don't need to worry about this area of practice.'

Especially when resources are very limited and time is pressured, such organisations may choose to focus elsewhere.

The small numbers of organisations statistically worse than the mean are those most likely to experience denial:

- › 'We must be a special case.'
- › 'There is something different about us.'
- › 'The data must be wrong.'

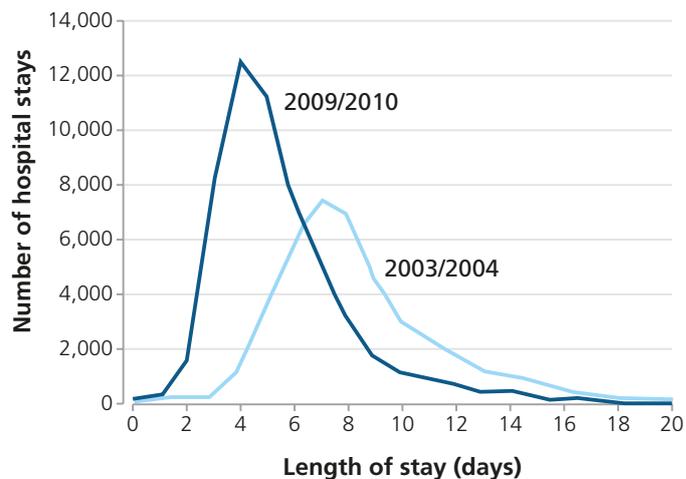
Such organisations may ignore the opportunity to improve altogether.

Shifting the curve

It is usual when presenting data such as those shown in Figure D.1 – variation in length of stay for primary hip replacement – for attention to be focused on the "best" and the "worst" performers, with the "best" receiving praise and the "worst" receiving some form of intervention to help them provide health services at an acceptable level of quality. However, even the "best" performers in the country may have room for improvement, and when performance in England is compared with that in other developed countries it is possible to identify not only targets that stretch even the "best" but also better ways of doing things. It is vital not simply to focus on the "best" and the "worst" but to encourage all services to improve.

Small changes in all services, delivered at a local level, add up over time to significant quality improvements for the NHS as a whole. For example, in Figure D.1, it shows the distribution of length of stay for primary hip replacements in England and how that distribution has changed over a six-year period, from 2003/04 to 2009/10.

Figure D.1: Variation in length of stay for primary hip replacement in England, 2003/04–2009/10 (ChiMat, 2011)



As a result of the concerted and sustained efforts at improvement of a large number of professional teams across many organisations, it can be seen that the distribution of performance has changed dramatically. The whole curve has shifted along the axis to the left. The length of stay for this procedure has decreased over time:

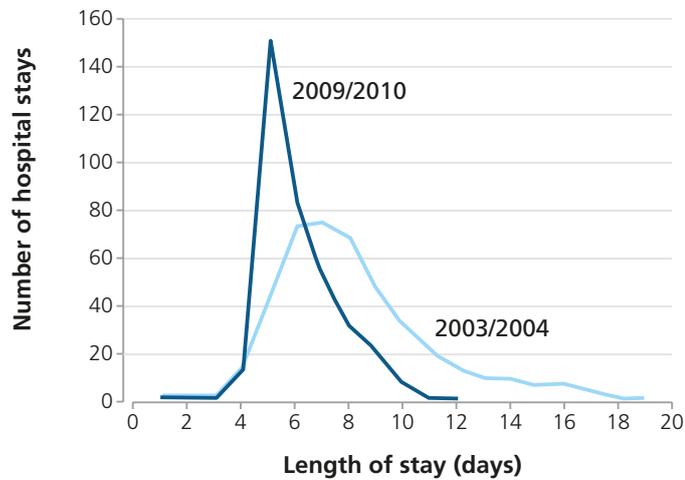
- › Resulting in reduced costs of delivery;
- › Representing a measurable improvement in both quality and productivity for this procedure.

Reducing the variance

Despite this overall reduction in length of stay, it can be seen from Figure D.1 that the variance in the length of stay, shown by the width of the distribution, has not changed very much. Each service has improved performance overall, but the "better" performers still outstrip the "poorer" performers by a considerable margin.

The next challenge, therefore, is to narrow the distribution, i.e. reduce the variability. Examples of this can be seen for the same indicator at a local level, where organisations have not only shifted the curve to the left along the axis but also narrowed the width of the curve, as shown in Figure D.2.

Figure D.2: Variation in length of stay for primary hip replacement in a local service, 2003/04–2009/10 (ChiMat, 2011)



Using data to encourage standardisation

Overall improvement in both quality and consistency of outcomes results from widespread standardisation of clinical and business processes and rigorous adaptation of best practice. Hence, in NHS England, we are capable of reducing variation, and improving clinical quality, patient experience and productivity by collectively doing more of what we do well and striving for continuous improvement. This is achieved by systematically identifying opportunities for improvement, making small changes at a local level, measuring the impact of those changes, and implementing what works, over and over and over again, thereby generating a virtuous cycle of quality improvement.

*Helen Duncan
Programme Director, ChiMat*

Extending coverage

Right Care's aims in selecting indicators to appear in Atlas 2.0 are twofold:

1. to provide indicators on activity, quality, safety, outcomes, expenditure and equity from the analysis of routinely available data;
2. to present indicators covering all major types of health problems and some groups within the population.

However, there are several challenges when trying to meet these aims with the respect to the availability, accessibility, quality and characteristics of data (see Box C.1).

Box C.1: Challenges when working with data

- Data availability – Are the data being collected? If so, what are the data sources?
- Data accessibility – Are the data accessible? Are the data publicly available or are they subject to permission from the data source? If so, what is the governance process to obtain those data? Is it possible to meet the governance criteria?
- Data quality – How reliable are these data? Are they valid? Are there any data missing?
- Data characteristics – At which geography are the data collected? Are the data continuous or categorical?

Data are collected primarily in relation to diagnoses and conditions, therefore it is difficult to obtain good-quality data relating to symptoms such as headache or pelvic pain. For some indicators, the available data do not cover all of England. It is possible that there are major causes of concern not included in the Atlas because data are not available or not accessible. In this section, data availability and accessibility, data quality and data characteristics are discussed, using one or more examples, to illustrate the challenges and opportunities presented by the available data.

Data availability and accessibility: positron emission tomography (PET) scan activity

In England, positron emission tomography (PET) scanning is a service delivered by several types of provider unit:

- NHS units under national contract;
- NHS units outside the national contract;
- Independent sector;
- Charities.

The fact that there are many different types of units providing PET scanning has implications for data availability and accessibility. Although some of the units delivering services outside the national contract were able to provide data by PCT and some were able to provide data only by provider unit, for the majority of PCTs, the data were either not available or not accessible.

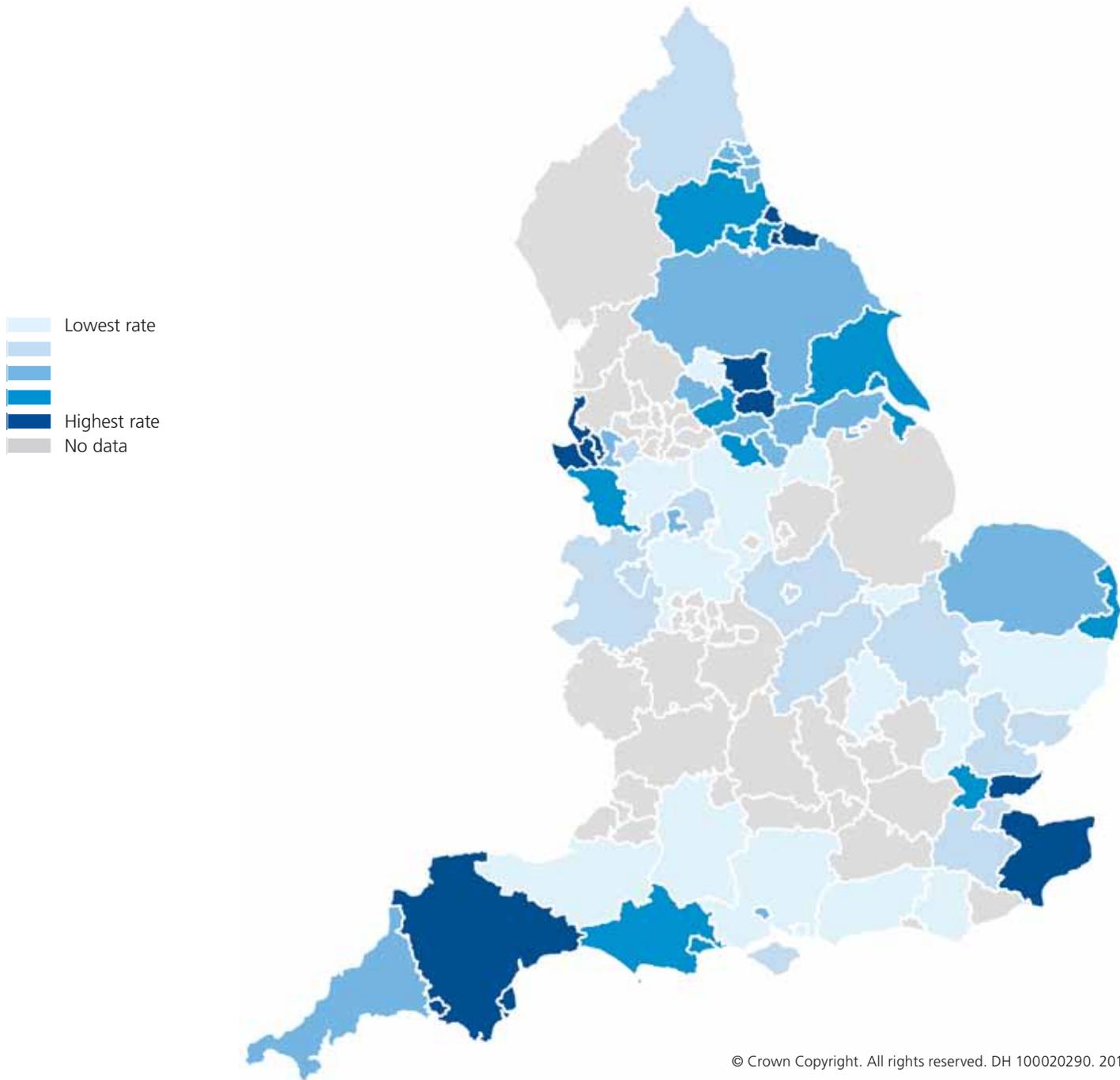
Positron emission tomography is a diagnostic imaging technique in which patients are given a special radioactive substance that emits positrons, which in turn give rise to gamma rays which are detected by a gamma camera.¹ In general, it is used in combination with other tests, such as computed axial tomography (CT), magnetic resonance imaging (MRI) or X-rays.

The main use of a PET scan is to investigate confirmed cases of cancer, for which it is possible to identify:

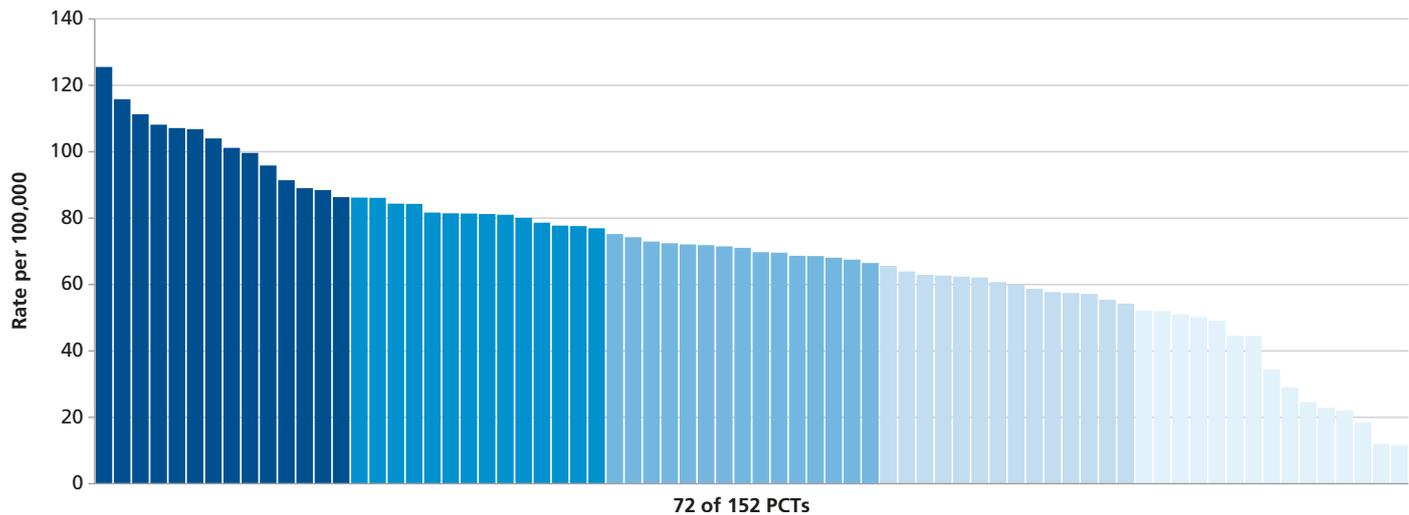
- The stage of the cancer (how far it has spread);
- How the cancer is responding to treatment;
- Whether any cancerous cells remain after the completion of a course of treatment.

1 <http://www.rcr.ac.uk/content.aspx?PageID=504>

Map C.1: Rate of PET/CT activity per population, by PCT, 2010/11



© Crown Copyright. All rights reserved. DH 100020290. 2011



72 of 152 PCTs

PET scans can also be used to diagnose some conditions that affect the brain and nervous system, such as dementia and Parkinson's disease, and to determine whether patients would benefit from certain types of heart surgery, such as coronary artery bypass grafting.

The advantage of a PET scan when compared with other types of scans is that it can show how a part of the body is functioning.

The variation in the rate of PET/CT activity per 1000 population for 2010/11 is shown in Map C.1 for the 72 (of 152) PCTs covered by units under national contract. PCTs for which there are no data are shaded grey. For PCTs in England for which there are data available through the national contract, the rate of PET/CT activity per 1000 population ranged from 11.6 to 125.5 (10.8-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 24.6-106.7 per 1000 population, and the variation is 4.3-fold. However, it is not possible to identify the degree of unwarranted variation for PET/CT scanning in the absence of data from more than half the PCTs in England. Moreover, it is difficult for commissioners to assess the value of the service they are receiving if they are not able to benchmark it against others.

Data quality: ambulance quality indicators, and pathology analytes

Ambulance quality indicators

The ambulance service is committed not only to standardising care but also to training paramedic staff so that they are able to deliver high-quality care. One of the traumatic events for which care has improved greatly in recent years is a heart attack (myocardial infarction). In September 2011, the Department of Health published a series of Ambulance Quality Indicators² including a set concerning Clinical Outcomes. These indicators show performance among the 12 Ambulance Trusts in England on a monthly basis for outcomes from acute ST-elevation myocardial infarction (STEMI), some of which are process measures and others of which are outcome measures.

The proportion (%) of patients with STEMI who received

an appropriate care bundle by Ambulance Trust, April 2011, is a process measure, and is shown in Map C.2. The range is from 55.0% to 86.2% of patients, and the variation among Ambulance Trusts is 1.6-fold.

The proportion (%) of patients in the Utstein comparator group³ who had return of spontaneous circulation on arrival at hospital by Ambulance Trust, April 2011, is an outcome measure, and is shown in Map C.3. The range is from 21.6% to 46.4% of patients, and the variation among Ambulance Trusts is 2.1-fold.⁴

There are two main reasons why these data have been presented under the data quality section:

1. The data cover only one month's activity, and may not be representative (one reason why no column charts have been presented);
2. For the outcome measure in particular, the data may not be comparable among Ambulance Trusts because the denominator, that is, the number of people who have developed a heart attack, may be difficult to define precisely, although the use of an Utstein comparator group is a means of mitigating this problem.

Despite these caveats, the ambulance quality indicators are to be welcomed and, as further data are collected, will provide a valuable resource for commissioners and providers seeking to increase value and improve quality by reducing any unwarranted variation in their locality.

Pathology analytes

Since the earliest days of medicine, biochemical, microbiological and other types of test have been used with increasing frequency. However, assessing the value of an individual test or a change in the rate of testing is not straightforward because tests are performed for many reasons:

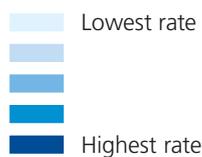
- To help obtain a diagnosis;
- To help exclude a diagnosis;
- To monitor the progress of a disease.

2 <http://www.dh.gov.uk/en/Publicationsandstatistics/Statistics/Perfomancedataandstatistics/AmbulanceQualityIndicators/index.htm>

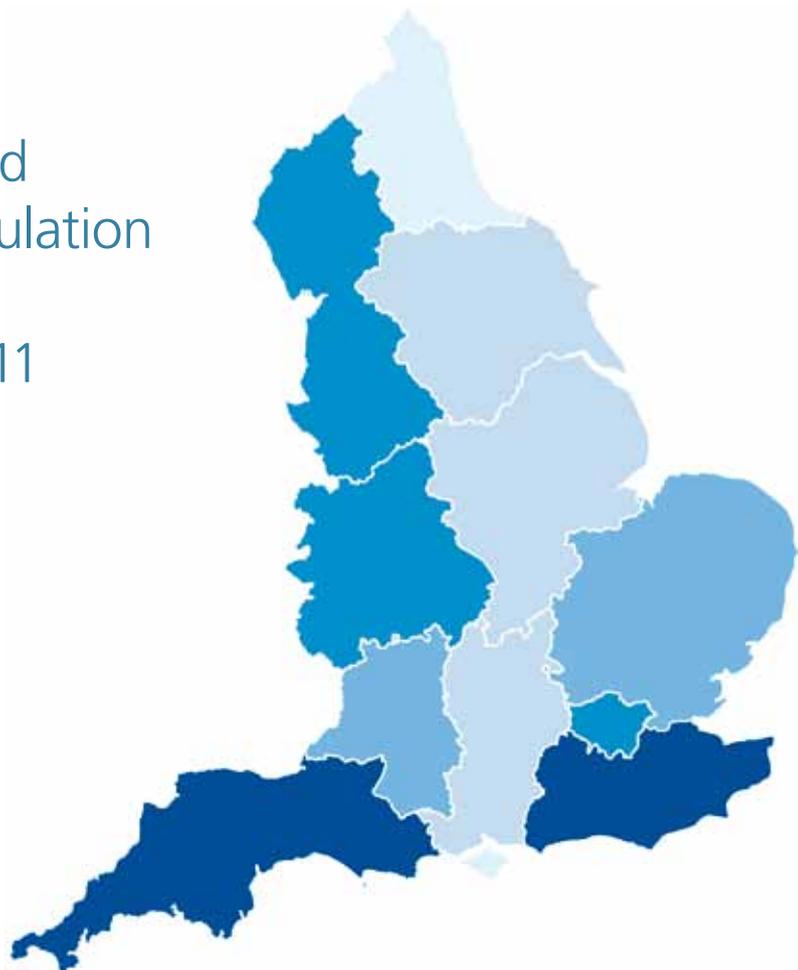
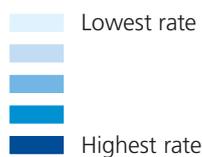
3 The Utstein comparator group provides a more comparable and specific measure of the management of cardiac arrests for the subset of patients where timely and effective emergency care can particularly improve survival (e.g. 999 calls where the arrest was not witnessed and the patient may have gone into arrest several hours before the 999 call are excluded from the Utstein comparator group figure).

4 Data for one Ambulance Trust have been removed because the local indicator value is created from less than five events.

Map C.2: Proportion (%) of patients with ST-elevation myocardial infarction who received an appropriate care bundle, by Ambulance Trust, April 2011



Map C.3: Proportion (%) of patients in the Utstein comparator group who had return of spontaneous circulation on arrival at hospital, by Ambulance Trust, April 2011



For biochemical tests, at least 50% of the workload is related to chronic disease management, such as monitoring cholesterol levels for people being treated with lipid-lowering drugs.

It has become progressively less expensive to carry out assays as technology has developed, with automatic analysis of blood and urine samples reducing reliance on manual methods. It is now possible to measure several variables using a single blood sample, a factor which has contributed to the dramatic increase in the number of assays carried out, and in the rate of testing per 1000 population. There has also been a rise in what is known as “defensive” testing in the last decade.

The fact that each of these assays is relatively inexpensive should not obscure the consequences of an increase in testing. As assays often have meanings that are unclear, they may lead to further action such as another clinic visit, an outpatient referral or some other investigation. As the number of tests performed increases, it is likely that the number of actions arising as a consequence of testing will increase. As the number of tests performed is very large, the number of actions arising is likely to be commensurate, generating pressure on clinical services. In 1993, Eddy described three battles to watch in the 1990s,⁵ and highlighted that one of the main factors increasing healthcare costs was “changes in the volume and intensity” of clinical practice. However, this apparently inexorable increase in the volume and intensity of clinical practice can be managed.

Connecting for Health and the Royal College of Pathologists have recently established the National Laboratory Medicine Catalogue (NLMC), and gave Right Care permission to use some of the emerging data, subject to strict governance protocols. Right Care selected 14 analytes covering eight common areas of pathology following consultation with Ian Barnes, National Clinical Director (NCD) for Pathology, Richard Jones, Leeds University Hospital Trust, and some of the National Clinical Directors (NCDs) for various conditions or disease groups. These data provide an exciting opportunity to begin to determine whether there is not only variation but also unwarranted variation in the rates of testing for pathology analytes, only a small selection of which are presented in this section. In partnership with key stakeholders, Right Care will be investigating the variation in some of these analytes further (for instance, rheumatoid factor, CA 125, and eGFR).

The rates of testing per 1000 population presented in Table C.1 are estimated annual rates of use based on two weeks’ data about tests ordered by GPs and taken from PCT population returns in QOF. As such, the data may not be representative of the true rate. The quality of the data will undoubtedly improve over time including coverage. At present, the data offer only an indication of what might be happening, but they also open up the possibilities for consideration and discussion in the drive to increase the value of laboratory services and identify the reasons for unwarranted variation. The issues will be explored in greater depth in the Diagnostics Themed Atlas scheduled for publication in 2012.

The degree of variation in the rates of testing among the 14 pathology analytes shown in Table C.1 ranged from 1.9-fold for haemoglobin tests and cholesterol tests to over 100-fold for rheumatoid factor tests. There could be several explanations for the degree of variation in the rates of testing for these analytes, including differences in use, funding, consistency of coding and clinical practice.

The rheumatoid factor or RF test is used to help:

- Diagnose rheumatoid arthritis;
- Distinguish it from other forms of arthritis and other conditions that cause similar symptoms of joint pain, inflammation and stiffness.⁶

However, it is not the only test that can be used to help diagnose rheumatoid arthritis, therefore, it is likely that some degree of variation in the rates of RF testing reflects the use of different tests in different areas, and may not represent a difference in clinical practice.

Parathyroid hormone (PTH) helps the body maintain stable levels of calcium in the blood; people are tested when calcium blood levels are higher or lower than normal or to determine the functioning of the parathyroid gland.⁷ At 23-fold, the variation in rates of PTH testing among PCTs in England appears to be very high, and it is unlikely that this degree of variation is due to differences in the prevalence of parathyroid- and non-parathyroid-related causes, or the need for monitoring the effectiveness of treatment alone. As testing for PTH is expensive, this degree of variation would seem to warrant investigation.

5 Eddy DM (1993) Three battles to watch in the 1990s. *Journal of the American Medical Association* 270: 520-526.

6 <http://www.labtestsonline.org.uk/understanding/analytes/rheumatoid/test.html>

7 <http://www.labtestsonline.org.uk/understanding/analytes/pth/test.html#>

Table C.1: Estimated annual rates of use for 14 pathology analytes from the National Laboratory Medicine Catalogue (with kind permission from Connecting for Health and the Royal College of Pathologists)

Analyte	Range (rate per 1000 population)	Range (rate per 1000 population) when five PCTs with highest rates and five PCTs with lowest rates are excluded	Fold difference after exclusions
Cancer			
CA125	0.2–9.8	0.9–7.7	9
PSA	2.6–41.7	8.1–32.6	4.0
Diabetes			
HbA1c	39.5–3692.8	533.8–2095.1	3.9
Thyroid			
TSH	33.3–253.9	119.7–241.1	2.0
Free T3	0.1–41.5	0.5–12.3	23
Free T4	4.8–233.1	15.3–202.7	13
Blood			
Folate	0.1–108.9	4.6–66.7	14
Haemoglobin	45.6–403.9	185.7–357.5	1.9
Vitamin B12	9.3–119.8	16.9–68.5	4.0
Psychiatry			
Lithium	0.3–8.6	0.5–4.4	9
Cholesterol			
Cholesterol tests	32.8–249.0	119.2–230.1	1.9
Musculo-skeletal			
Rheumatoid factor	0.05–21.9	0.2–16.9	107
Renal			
eGFR	0.1–686.0	45.2–375.7	8
PTH	0.1–21.3	0.2–4.7	27

Concern about thyroid disease has grown in recent years, partly because thyroid disease is one cause of obesity due to an underactive thyroid gland (hypothyroidism or myxoedema). Hypothyroidism is a more common reason for testing than hyperthyroidism. Testing for thyroid stimulating hormone (TSH) is used:

- To screen for thyroid disorders – all newborns in England are currently screened for congenital hypothyroidism;
- To diagnose thyroid disorders;
- To monitor the treatment of hypothyroidism and hyperthyroidism.⁸

The TSH test is often the first test used for evaluating thyroid function and/or symptoms of thyroid disorders, and is frequently measured with thyroxine (usually free T4).

The free T3 test measures the level of free tri-iodothyronine in the blood, which is one of the two main hormones produced by the thyroid gland, the other being thyroxine or T4. The majority of T3 in the blood is attached to a protein, the remainder is “free”. A free T3 test is used to help determine thyroid function, mainly to help diagnose hyperthyroidism (an overactive thyroid gland) – T3 levels can become abnormal earlier than T4 levels.⁹ The free T4 test measures the level of thyroxine in the blood, and is used to help diagnose hypothyroidism and hyperthyroidism in adults. The test can also be used to help evaluate patients with an enlarged thyroid gland, known as goitre.¹⁰

Despite the fact that the British Endocrine Society has done much to encourage a systematic approach to the investigation and treatment of people with thyroid disease, for PCTs in England, the degree of variation in the rates of testing:

8 <http://www.labtestsonline.org.uk/understanding/analytes/tsh/glance.html#>

9 <http://www.labtestsonline.org.uk/understanding/analytes/t3/glance.html#>

10 <http://www.labtestsonline.org.uk/understanding/analytes/t4/test.html#>

- › For TSH, is twofold;
- › For free T3, is 23-fold;
- › For free T4, is 13-fold.

The reasons for this degree of variation need to be reviewed to help develop a more standardised approach to thyroid disease, and the value of this level of testing needs to be assessed, especially in the light of any increase in the number of referrals to hospital.

Folate and vitamin B12 are both part of the B complex of vitamins, both of which are important for normal red cell formation, tissue and cell repair, and DNA synthesis; in addition, vitamin B12 is important for nerve health and folate is important for cell division, for example, in a fetus during pregnancy.¹¹ Levels of folate and vitamin B12 are measured:

- › To help diagnose causes of anaemia or nerve damage (neuropathy);
- › To evaluate a person's nutritional status;
- › To monitor effectiveness of treatment for vitamin B12 or folate deficiency.

The variation in rates of testing for folate and vitamin B12 among PCTs in England appears to be higher at 14-fold (see Figure C.1) and fourfold, respectively, than can be explained by differences in the prevalence of the conditions or deficiencies for which the tests are used.

Haemoglobin testing is undertaken as part of a full blood count (FBC), which can be requested for a variety of reasons. The haemoglobin test measures the amount of haemoglobin in the blood, and can be used:

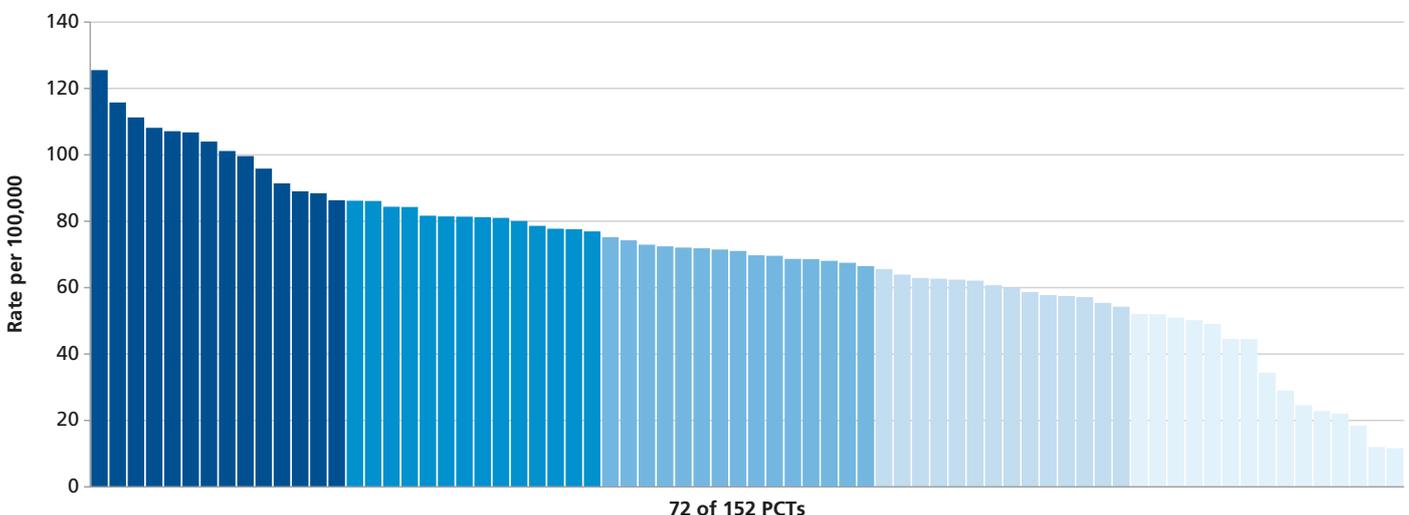
- › To detect and measure the severity of anaemia;
- › To monitor the response to treatment;
- › To help make decisions about blood transfusion.¹²

The variation in rates of haemoglobin testing among PCTs in England is 1.9-fold, probably representing a relatively well-managed aspect of pathology testing when compared with other analytes.

CA 125 is a protein often found on the surface of ovarian cancer cells, and in some normal tissues. The CA125 test is used to monitor treatment for ovarian cancer; it can also be used to detect whether cancer has returned after treatment has been completed.¹³ The variation in rates of testing for Ca 125 among PCTs in England appears to be high at ninefold (see Figure C.2), which is unlikely to be accounted for by differences in the prevalence of ovarian cancer across the country. Some of this variation probably reflects differences in professional practice and commissioning prioritisation.

PSA is a protein produced mainly by cells in the prostate gland, and can be an indicator for prostate cancer, although increased levels of PSA can also indicate an infection of the prostate gland or prostate enlargement. The PSA test is used:

Figure C.1: Estimated annual rate of use for folate tests ordered by GPs per practice population, by PCT, 2011



11 http://www.labtestsonline.org.uk/understanding/analytes/vitamin_b12/glance.html#

12 <http://www.labtestsonline.org.uk/understanding/analytes/hemoglobin/test.html#>

13 <http://www.labtestsonline.org.uk/understanding/analytes/ca125/test.html#>

- In the diagnosis of prostate cancer;
- To monitor response to treatment in prostate cancer.¹⁴

Although there is no evidence to support the use of PSA testing in population-wide screening for prostate cancer, the Department of Health has agreed that men who are concerned about their risk of prostate cancer can have a PSA test provided they are given information about the risks of testing: some men with prostate cancer have a type that will not progress, but having had the test it will change their life. The variation in rates of PSA testing among PCTs in England is relatively high at fourfold, and may reflect differences in both professional attitudes to PSA testing and men's needs and preferences. Although differences in need and preference are a source of

warranted variation, differences in professional attitude are a source of unwarranted variation.

Creatinine clearance provides an assessment of glomerular filtration rate (GFR), which is a measure of kidney function, and is used to look for evidence of early kidney damage.¹⁵ Early kidney damage can be caused by high blood pressure, diabetes or other diseases that can damage the kidney. Creatinine clearance is calculated according to age, weight, gender and serum creatinine, resulting in an estimated GFR (eGFR). The variation in rates of conducting eGFR among PCTs in England is high at eightfold (see Figure C.3), and the differences in the risk factors for kidney damage across the country are unlikely to explain the degree of variation.

Figure C.2: Estimated annual rate of use for cancer analyte CA125 tests ordered by GPs per practice population, by PCT, 2011

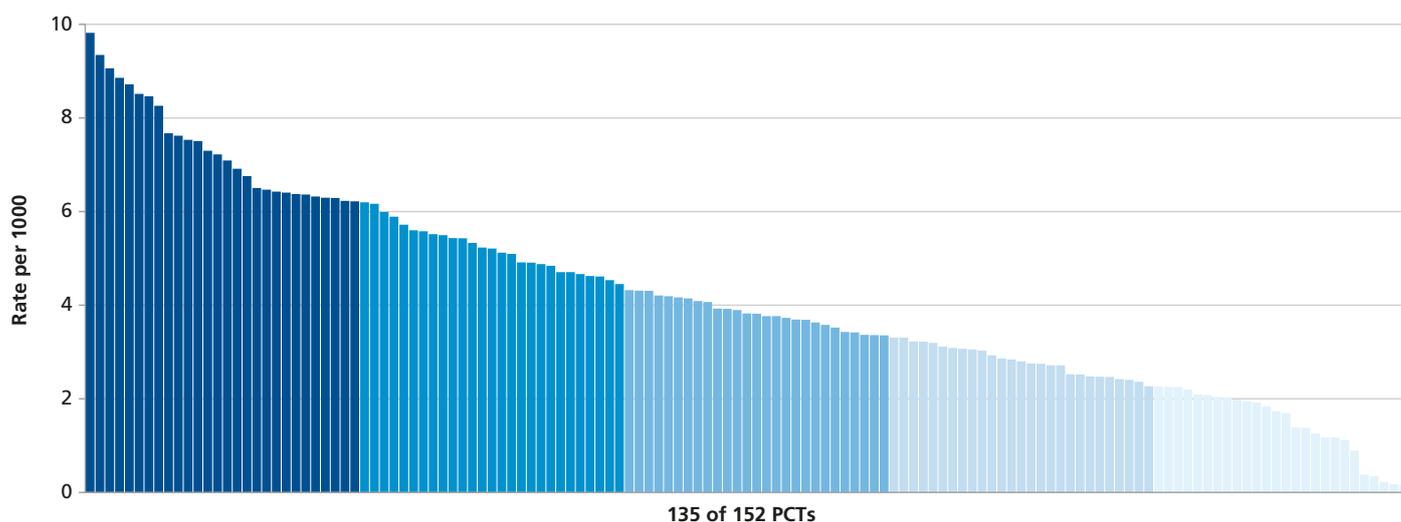
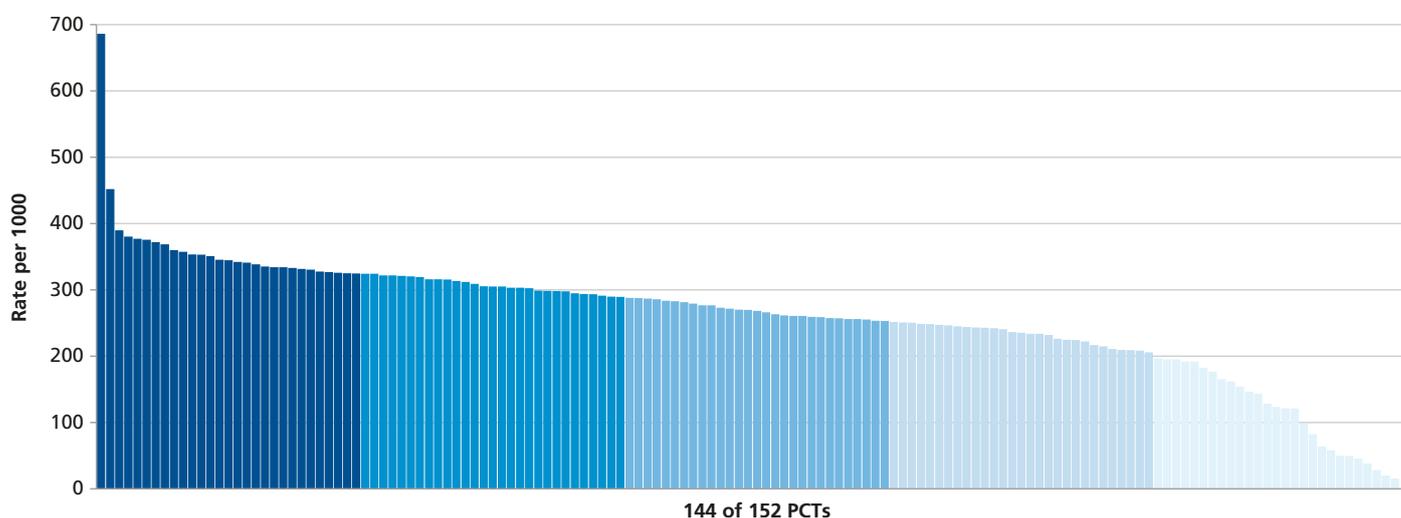


Figure C.3: Estimated annual rate of use for GFR tests for kidney function ordered by GPs per practice population, by PCT, 2011



¹⁴ <http://www.labtestsonline.org.uk/understanding/analytes/psa/test.html#>

¹⁵ <http://www.labtestsonline.org.uk/understanding/analytes/gfr/test.html#>

The haemoglobin A1c (HbA1c) test is used to monitor a person's diabetes – glucose in the blood binds to haemoglobin to form HbA1c, and the amount of HbA1c is directly related to the average level of glucose in the blood. If a person's diabetes is not well controlled, blood glucose levels will be high, as will HbA1c levels. Testing for HbA1c is undertaken when people are first diagnosed with diabetes, and then at least twice a year thereafter according to Department of Health recommendations. The test may be undertaken more frequently if:

- Blood glucose levels remain too high (>6.5%);
- A person's treatment plan changes.¹⁶

The variation in the rates of HbA1c testing among PCTs in England is 3.9-fold, and it is unlikely that this degree of variation reflects differences in the prevalence of diabetes or the need for HbA1c testing based on prevalence. Other aspects of diabetes care will be explored in the Diabetes Themed Atlas scheduled for publication in 2012.

Cholesterol testing is undertaken:

- To screen for the risk of developing heart disease;
- To monitor responses to interventions to reduce cholesterol levels.¹⁷

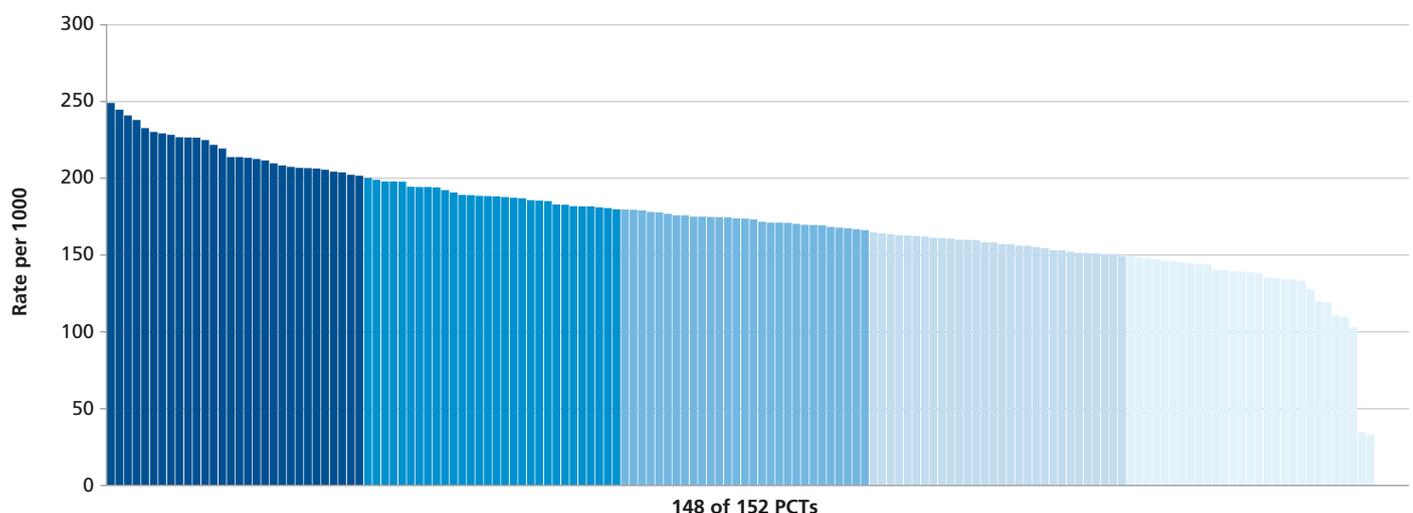
The results of cholesterol testing are considered together with other risk factors for heart disease. As the degree of variation in rates of cholesterol testing among PCTs in England is 1.9-fold (see Figure C.4), this probably represents a relatively well-managed aspect of pathology testing when compared with other analytes. The Quality and Outcomes Framework (QOF) in primary care – a payment by results or pay for performance system, in which GPs are paid for achieving certain levels of risk management – has probably contributed towards reducing some degree of unwarranted variation in this aspect of preventive healthcare.

Lithium is a drug used to treat people with bipolar disorder, a mental condition characterised by cycles of depression and mania; sometimes, lithium is also used to treat people with depression who are not responding to other drugs. The effect of lithium is to even out a person's mood, although it can take several weeks or months for lithium to affect a person's mood. Doses of the drug need to be adjusted until a steady concentration is achieved, and the amount of the drug needed to achieve steady state varies from person to person, and can be affected by age, health status and whether other drugs are being taken.¹⁸

To be effective, levels of lithium need to be maintained within a narrow therapeutic range:

- Too little, and the drug is not effective;
- Too much, and patients experience lithium toxicity.

Figure C.4: Estimated annual rate of use for cholesterol tests ordered by GPs per practice population, by PCT, 2011

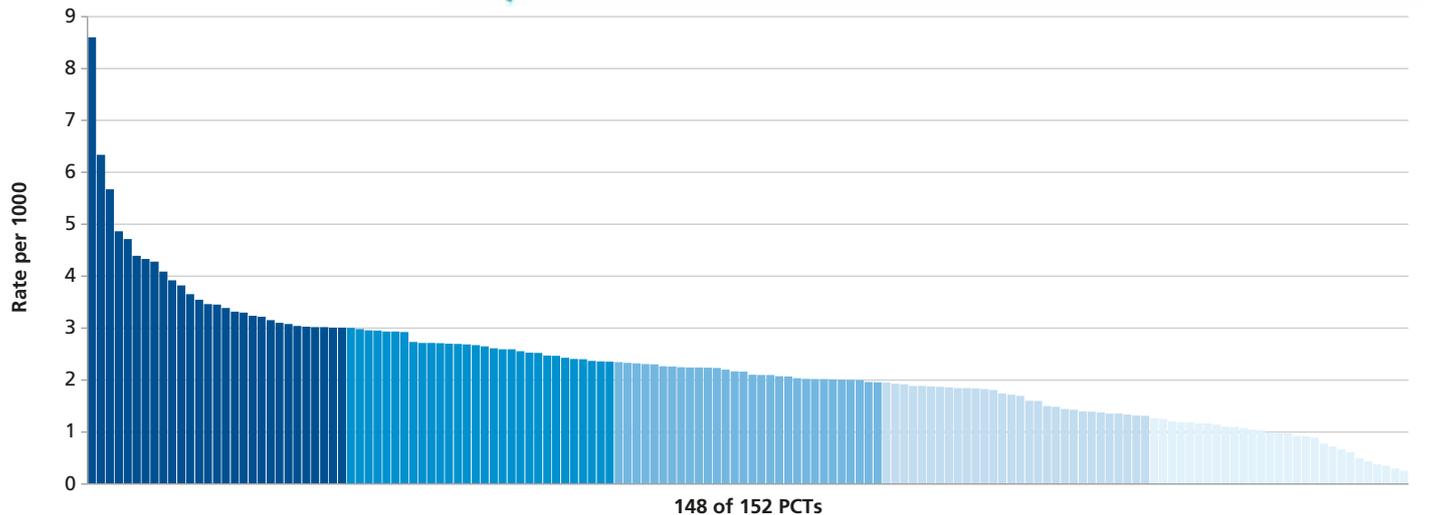
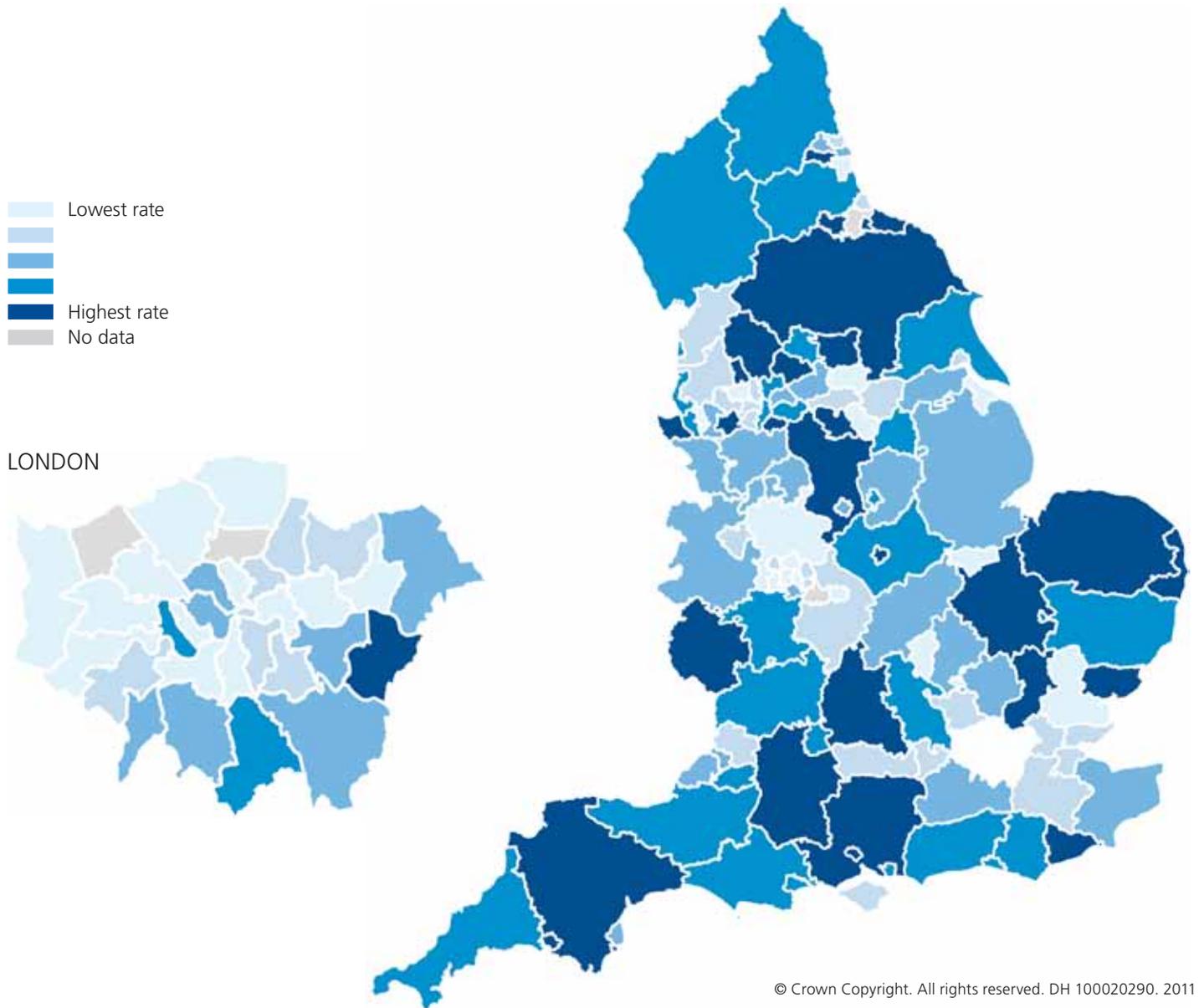


16 <http://www.labtestsonline.org.uk/understanding/analytes/a1c/glance.html#>

17 <http://www.labtestsonline.org.uk/understanding/analytes/cholesterol/test.html#>

18 <http://www.labtestsonline.org.uk/understanding/analytes/lithium/test.html#>

Map C.4: Estimated annual rate of use for psychiatry analyte lithium tests ordered by GPs per practice population, by PCT, 2011



© Crown Copyright. All rights reserved. DH 100020290. 2011

Extremely high levels of lithium are serious, and can lead to loss of consciousness and/or seizures, and can be fatal. Thus, the test is used to measure and monitor the amount of lithium in the blood to determine whether the concentration is within the therapeutic range.

When a patient first starts lithium treatment, tests are requested frequently (every few days) so that the dose can be adjusted to reach the therapeutic range. Once the concentration of lithium has reached the therapeutic range and is stable, lithium levels are monitored every 3–12 months to ensure they remain in the therapeutic range. The test may also be requested if a patient's condition does not appear to be responding to treatment.

The variation in rates of lithium testing among PCTs in England is ninefold (see Map C.4). It is unlikely that the differences in the incidence and prevalence of bipolar disorder across the country vary to this extent. This degree of variation in rates of testing probably reflects differences in what Wennberg has called the "psychiatric signature" of services, that is, differences in the beliefs and attitudes of various teams which become manifest as differences in practices and behaviour. Research is needed to identify the degree to which differences in prescribing reflect differences in diagnostic thresholds. In populations where rates of lithium testing are either higher or lower, an audit is needed to identify the proportion of patients who have stopped taking lithium, and may need to be admitted due to a crisis.

Data characteristics: trauma services, and pain services

Certain data characteristics make it difficult to map some datasets. In this section, the challenges presented by the following data characteristics are highlighted:

- Geography of the data, e.g. by provider unit, which is the case for trauma services;
- Categorical as opposed to continuous data, which is the case for pain services.

Trauma services

The Trauma Audit and Research Network (TARN)¹⁹ is a collaboration of hospitals from England, Wales, Ireland and other parts of Europe, established in 1989. The TARN database is the largest trauma database in Europe.

19 <https://www.tarn.ac.uk/>

The overall aim is to collect and analyse clinical and epidemiological data to provide a statistical base:

- To support clinical audit;
- To aid the development of trauma services;
- To inform the research agenda.

An online data collection and reporting system (EDCR System) was launched to all participating Trusts in England and Wales between September 2005 and March 2006.

TARN provided Right Care with data for two indicators at the provider level:

- Median hours to computed axial tomography (CT) scan of head from time of arrival of hospital. Patients meeting NICE head injury guidelines, where 5 or more direct admissions only, 2010/11 (see Figure C.5);
- Median hours to relevant orthopaedic operation from time of arrival to hospital. Patients meeting BOAST 4 injury guidelines, where 5 or more direct admissions only, 2010/11 (see Figure C.6).

The disadvantage of indicators of provider-level data is that they are difficult to visualise in relation to discrete geographical populations. The advantage of indicators of provider-level data on access to trauma services is that, unlike indicators for long-term conditions, they are not influenced by clinical bias or preferences.

For the indicator concerning time to CT scan for head injuries, the range is 0.4–12.7 hours (29-fold variation) across 101 hospitals in England. When the three hospitals with the highest median hours and the three hospitals with the lowest median hours are excluded, the range is 0.6–3.5 hours, and the variation is sixfold. For the indicator concerning time to relevant orthopaedic operation, the range is 3.5–19.9 hours, and the variation is 5.7-fold across 49 hospitals in England.

There are two issues associated with the data in addition to the geography, which are relevant to data quality:

- Some trauma-receiving hospitals care for only very small numbers of patients in these and other categories (hospital indicator values created from less than 5 events have been removed because of insufficient reliability and the potential to be disclosive);

Figure C.5: Median hours to CT scan of head from time of arrival to hospital. Patients meeting NICE head injury guidelines, where 5 or more direct admissions only, 2010/11

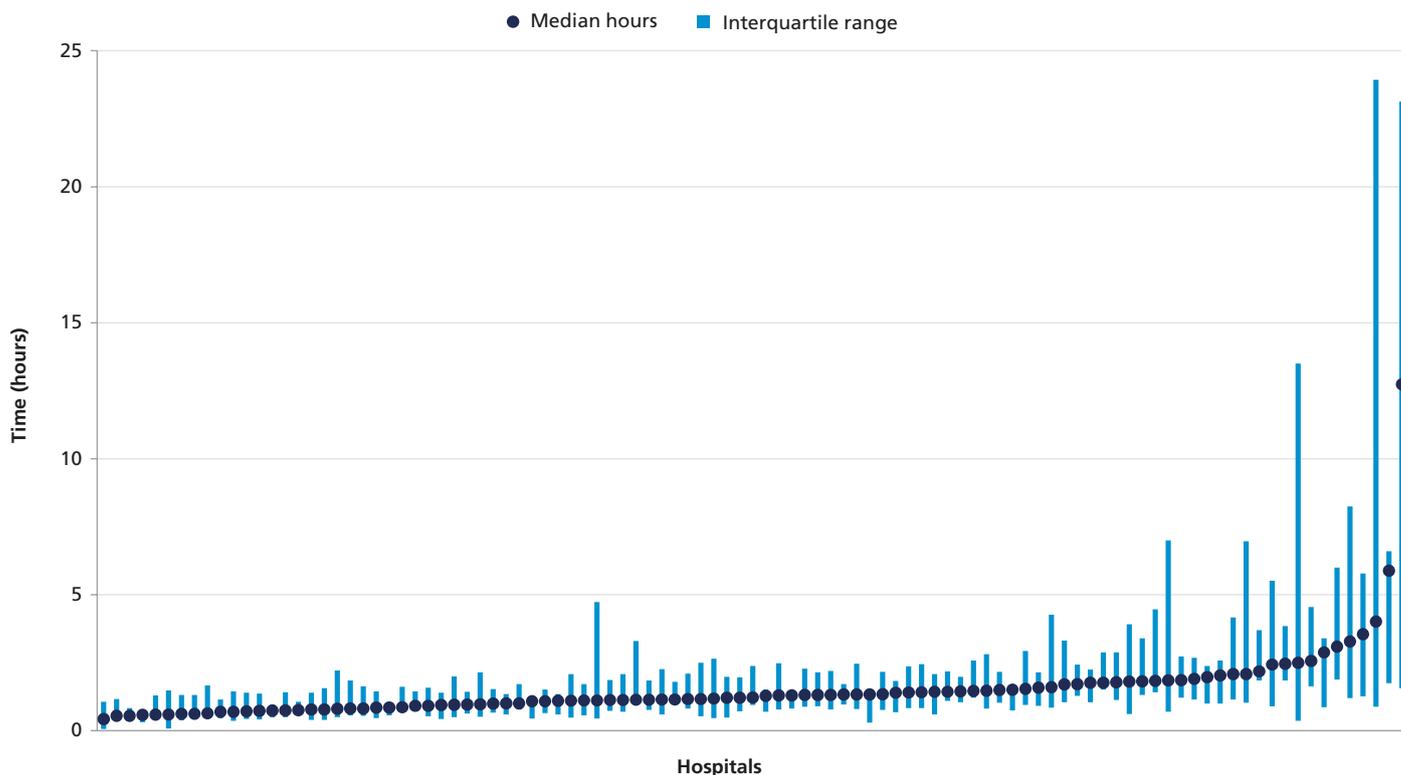
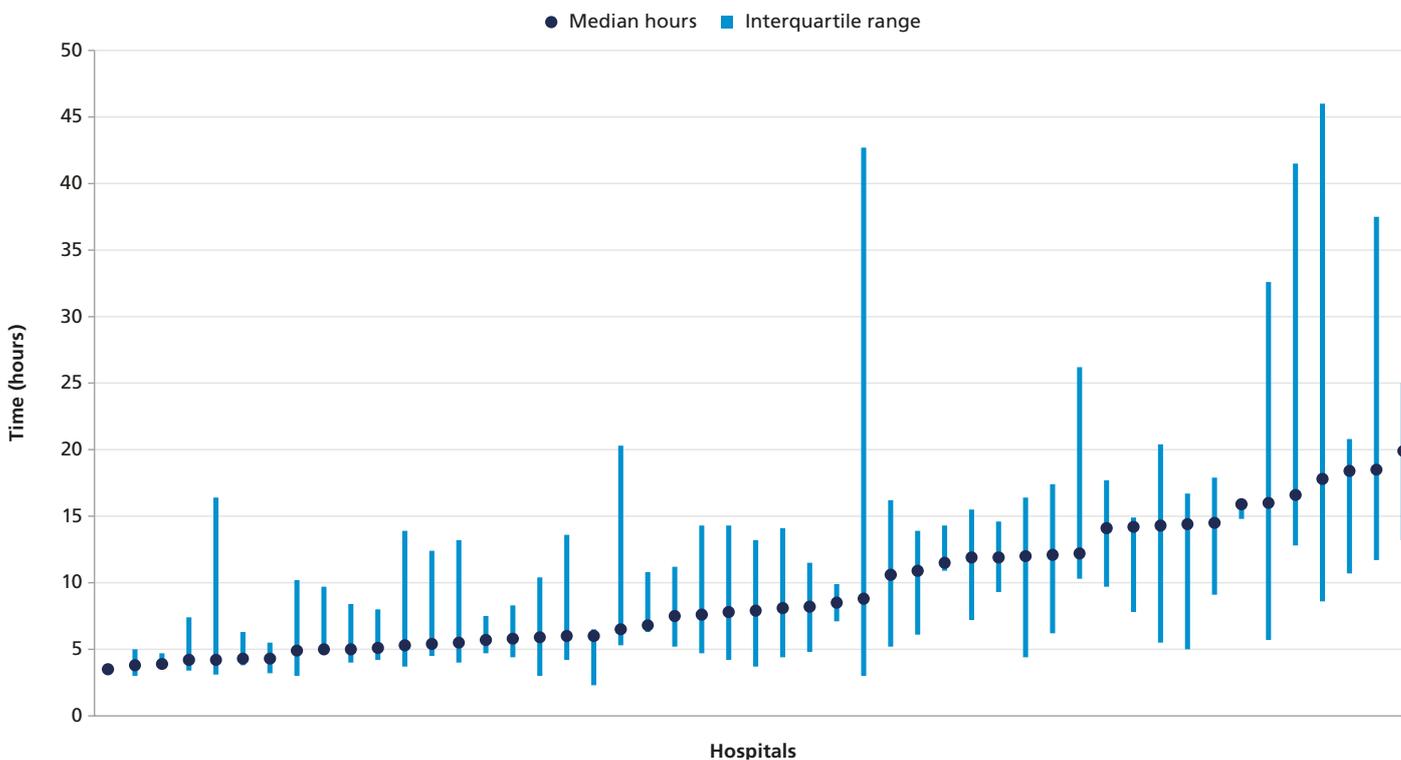


Figure C.6: Median hours to relevant orthopaedic operation from time of arrival to hospital. Patients meeting BOAST 4 injury guidelines, where 5 or more direct admissions only, 2010/11



- Some trauma-receiving hospitals do not submit any data, and therefore coverage of trauma-receiving hospitals is incomplete.

These data quality issues pose problems for commissioners, especially in areas where there is no data coverage.

Issues about data were highlighted in the National Audit Office (NAO) report on *Major trauma care in England* (see Box C.2 for some of the recommendations):

“There remains a lack of accurate and complete information in hospitals and ambulance trusts on the treatment of people who suffer major trauma. In addition, other than mortality rates, there is also no information on patient outcomes. Without much improved data, it will be difficult to plan networked services effectively, and improve both quality and safety.”²⁰

Following the NAO recommendations, and to ensure better data quality on which to base decisions concerning the commissioning and planning and provision of trauma services, from April 2012, the return of trauma data will be mandated. The major trauma networks go live in April 2012, and in Map C.5 the location of the 22 major trauma centres can be seen, together with indicative 45-minute isochrones for ambulance travel times. Not represented on this map are the air ambulance services, which cover all of England but especially areas not included within the 45-minute isochrones.²¹

Pain services: access to specialist multidisciplinary care for the management of pain

The National Pain Audit (NPA; see “Resources”) was set up to look at pain management in the UK over the next three years. The data in this section on access to specialist pain services are taken from responses to a survey, distributed to both NHS commissioners and providers in England and Wales, conducted by the NPA. However, the survey responses provide categorical and not continuous data.

An estimated 8 million people in the UK suffer from long-term chronic pain, which can persist due to an underlying long-term illness or because the body’s nervous system has begun functioning abnormally. A vicious cycle can

Box C.2: Recommendations from the NAO relating to data and its role in improving performance in major trauma care

- Primary care trusts should use their commissioning powers to require all acute and foundation trusts with emergency departments that receive trauma patients to submit data to TARN. The data collected should be used to inform the ongoing development of trauma networks.
- Using TARN data, hospital trusts should benchmark performance with other trusts to help identify best practice and ways to improve patient care.
- TARN data and ambulance trust data should be routinely analysed by strategic health authorities and primary care trusts, and used to performance manage trauma networks.

develop in which the brain and spinal cord amplify the pain signals. Pain medicine healthcare professionals describe pain as a ‘biopsychosocial phenomenon’ because it can be the result of complex mechanisms, and it has a spectrum of manifestations. Depending on its intensity, patient factors and general circumstances, persistent pain results in a range of sequelae from inconvenience to having a major impact on functioning, taking over and ruining a person’s life. In 2009, the Chief Medical Officer (CMO) for England called for improvement in NHS services for people with chronic pain.²²

Although all healthcare professionals are expected to manage pain, a specialist pain service provides support for patients whose pain is difficult to manage and who are experiencing the emotional and physical consequences of pain. A multidisciplinary approach is needed that can incorporate a range of healthcare professionals and approaches. The lack of a multidisciplinary service often results in a cascade of ineffectual referrals and treatments, rather than the patient being managed in accordance with an evidence-based pathway.

A multidisciplinary service can also provide leadership, education and input for other healthcare professionals to ensure the appropriate evaluation and treatment of patients with pain.

According to best available evidence, the most cost-effective treatments for complex pain are medicines

20 National Audit Office (2010) Major trauma care in England. http://www.nao.org.uk/publications/0910/major_trauma_care.aspx

21 http://www.airambulanceassociation.co.uk/find_your_air_ambulance.php

22 Donaldson L (2010) On the state of the public health: Annual report of the Chief Medical Officer 2009. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/AnnualReports/DH_113912

acting on the nervous system and interdisciplinary cognitive-behavioural therapy. The British Pain Society (BPS) recommends that the minimum core staff to deliver this range of services comprises a physician, a psychologist and a physiotherapist. Other treatments may also be effective (such as spinal cord stimulation, radiofrequency nerve ablation) and, although requiring a multidisciplinary approach, are less well investigated or are highly complex. Further staffing will be required to support the provision of these treatments.

Data from the NPA have been cross-validated with HES data to ensure that representation of access to specialist pain services in Map C.6 is as accurate as possible. A multidisciplinary pain service is defined as one with the minimum core staff as recommended by the BPS. Although several clinics described themselves as a multidisciplinary pain service in response to the survey, they did not report having the minimum core staff. Less than half of the services had psychologists and physiotherapists.

As the data are not continuous but categorical, in Map C.6:

- The darkest shade of blue has been used to denote PCTs with multidisciplinary pain services;
- The mid shade of blue has been used to denote PCTs with pain services that do not fulfil entry-level requirements for a multidisciplinary pain service;
- The lightest shade of blue has been used to denote PCTs with no pain services.

Wide geographical variation can be seen in the provision of multidisciplinary pain services, resulting in inequality of access for some patients, and the necessity to travel long distances to receive multidisciplinary care, which may be a significant challenge for people with severe pain and disability.

Variation may be warranted as it may be challenging to find appropriate staff in remote areas with smaller populations. In this case, special arrangements should be made to ensure the population can gain access to such care.

Commissioners and pain specialists need to work together to review local services. It is important:

- To implement evidence-based pathways for the assessment and treatment of pain, which include providing patients who have complex pain and do not respond to early treatment measures with timely access to a multidisciplinary pain service; some local Map of Medicine pathways for pain have been developed. The BPS is in the process of developing national maps;
- To ensure that the multidisciplinary pain service provides local leadership by educating and training all healthcare professionals whose patients experience pain;
- To ensure methods of delivery of services to patients in remote areas either by arranging outreach clinics or securing appropriate transport arrangements.

By improving the initial assessment and early treatment of pain, cost savings can be made:

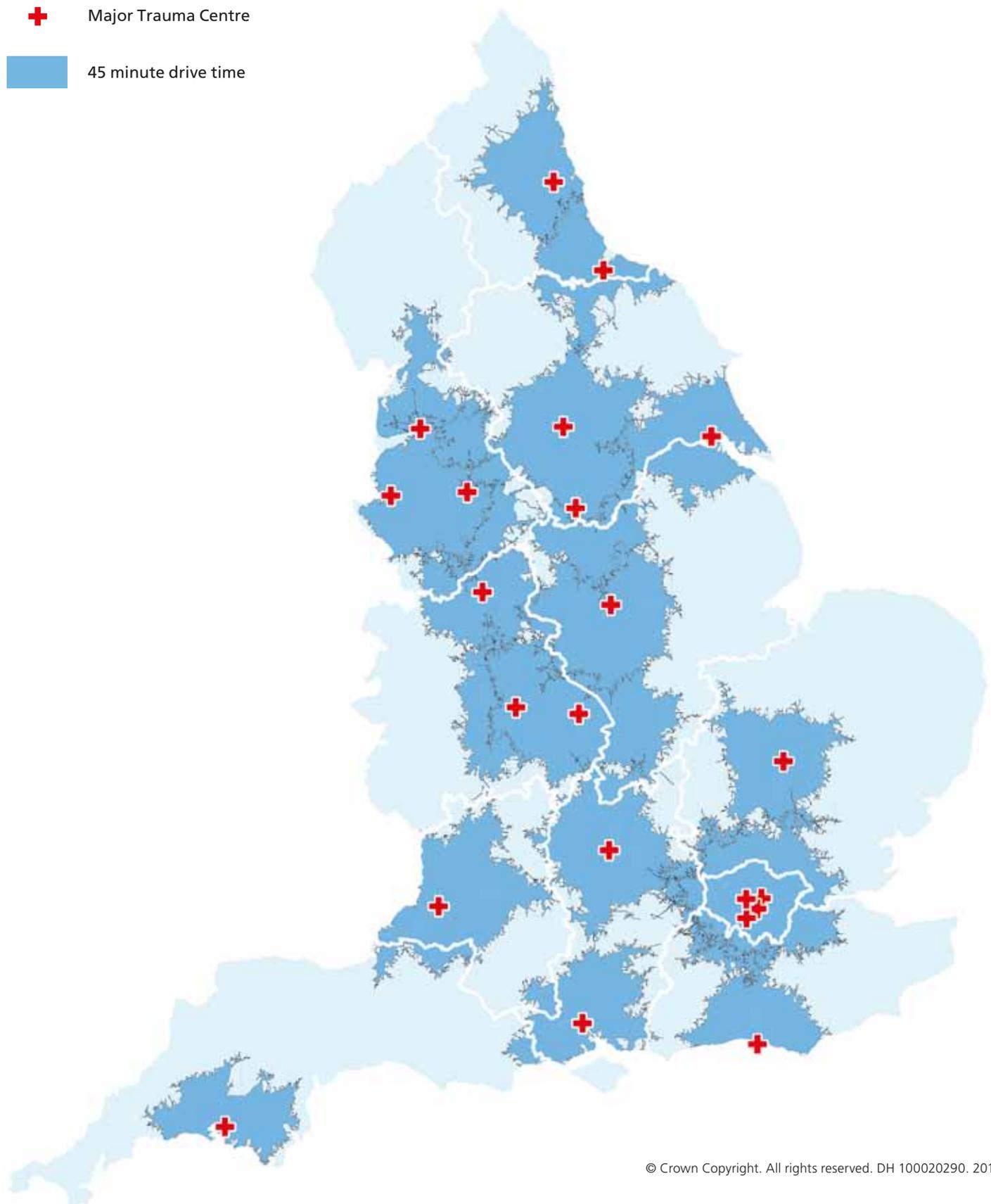
- Because fewer patients progress to chronic pain states;
- As a result of the timely and appropriate referral to multidisciplinary care of patients who require further management.

Avoidance of inappropriate, serial referrals and treatments can release the resources to reduce unwarranted variation in access to multidisciplinary pain services, and thereby improve patient care.

RESOURCES

- National Pain Audit: collaboration between The British Pain Society and Dr Foster Research, funded by Health Improvement Partnership (HQIP). <http://www.nationalpinaudit.org.uk>
- International Association for the Study of Pain (2011) Task Force on Wait-Times. Summary and Recommendations. http://www.dgss.org/fileadmin/pdf/Task_Force_on_Wait-Times.pdf
- British Pain Society (2007) Recommended guidelines for Pain Management Programmes for adults. http://www.britishpainsociety.org/book_pmp_main.pdf
- British Pain Society. Guidance on the management of pain for patients and carers: see "For Patients" section. http://www.britishpainsociety.org/patient_publications.htm
- The Chronic Pain Policy Coalition: several affiliated organisations have websites with useful resources. <http://www.policyconnect.org.uk/cppc/coalition>

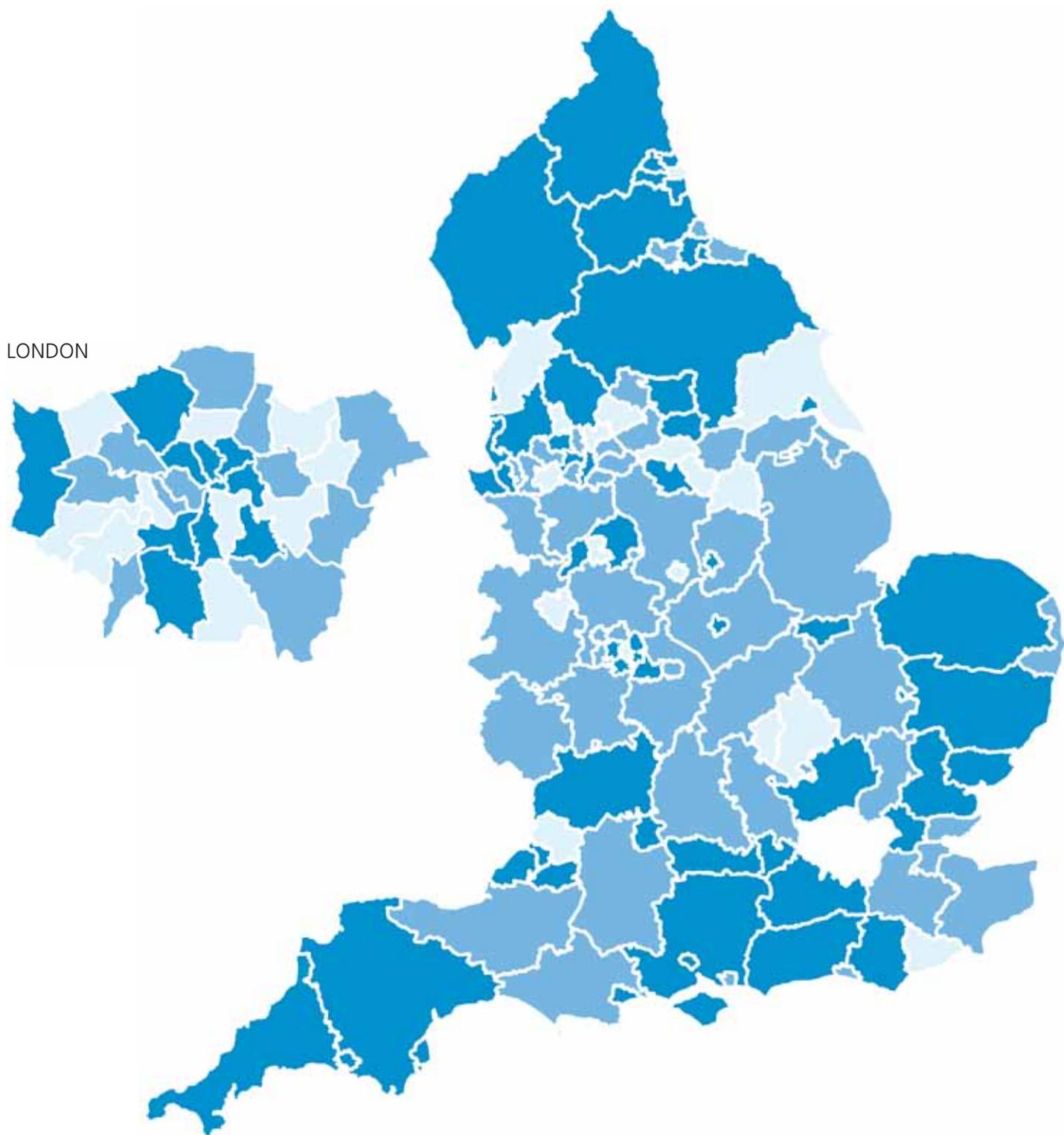
Map C.5: Boundaries of 45 minute category A ambulance driving time around major trauma centres in England, 2011



Map C.6: PCTs with pain services as recorded in 2010

Pain service in PCT

- Multidisciplinary service(s)
- Non multidisciplinary service(s)
- No service



Exploring variation in different dimensions

To explore how activity and variation change over time, trends in activity and variation for the following seven surgical procedures were assessed over a 10-year period from 2001 to 2010:

- Tonsillectomy;
- Grommets;
- Cataracts;
- Varicose veins;
- Lumbar disc prolapse;
- Surgery for benign prostatic conditions;
- Hysterectomy.

Three other procedures were investigated:

- For 'injection and fusion for back pain' and transcatheter aortic valve implantation (TAVI), the numbers of procedures were too low to be mapped, even at SHA level;
- For 'infertility treatments', only 10% of these procedures had the location recorded and a large number had ages of patients of over 100 years recorded, possibly as an intentional way of masking identity.

Trends in activity

Trends in activity are presented as a total rate per year for the seven surgical procedure as recorded in inpatient hospital care in England per 100,000 population.

Trends in variation

How to measure variation?

Variation is represented by the change in the coefficient of variation (CoV) over time. The CoV is a measure of spread.

The spread of data can be crudely calculated by subtracting the lowest rate from the highest rate (the range). It can also be measured using the variance and the standard deviation, which are more accurate means

of measuring spread than the range, however, they rely on the mean (average) value.

If the mean rate is markedly different among PCTs, it is useful to use the CoV, calculated by dividing the standard deviation by the mean. As the CoV is insensitive to the mean and population size when these vary significantly, it is a more powerful measure of variation. The CoV can be measured to assess how the variation, or the spread, in the rates of interventions is evolving over time.

What does it mean?

The CoV is the ratio of the standard deviation over the mean. It can be multiplied by 100 and presented as a percentage (see Figure TT.1):

- A CoV of 0% represents no difference among PCTs;
- A CoV of 100% means no two PCTs are the same.

What do the time trends reveal?

Results of the analysis are shown in Table TT.1 and in Figures TT.2–TT.8.

The analysis of trends in activity and variation over 10 years provides insights for the understanding of variation.

- For hysterectomy procedures, although the rate of activity is declining the percentage decrease in the CoV is very small (Figure TT.2), and the CoV for 2009/10 is high at 50%.
- For procedures for benign prostatic condition and for lumbar disc prolapse, the rates of activity are increasing and, while the CoV for both is decreasing (Figures TT.3 and TT.4, respectively), the CoV for 2009/10 is high in both cases (46% and 49%, respectively). The rate of hospital-admitted procedures for benign prostatic condition per population by PCT 2009/10 is shown in Map TT.1 highlighting the almost fivefold variation among PCTs.¹

- For grommet procedures and varicose veins procedures, although the rates of activity for both are declining, the CoV for both is increasing (Figures TT.5 and TT.6, respectively), and the CoV for 2009/10 is high for varicose veins (48%).
- For cataract procedures, there has been an increase in the rate of activity but a decrease in the CoV (Figure TT.7), with a CoV of 32% for 2009/10.
- For tonsillectomy procedures, there has been a decline in the rate of activity and in the CoV (Figure TT.8), although the CoV for 2009/10 is 23%.

Figure TT.1: Annotated figure of rate of varicose veins procedures recorded in inpatient hospital care in England. Directly standardised rate 2001/02–2009/10

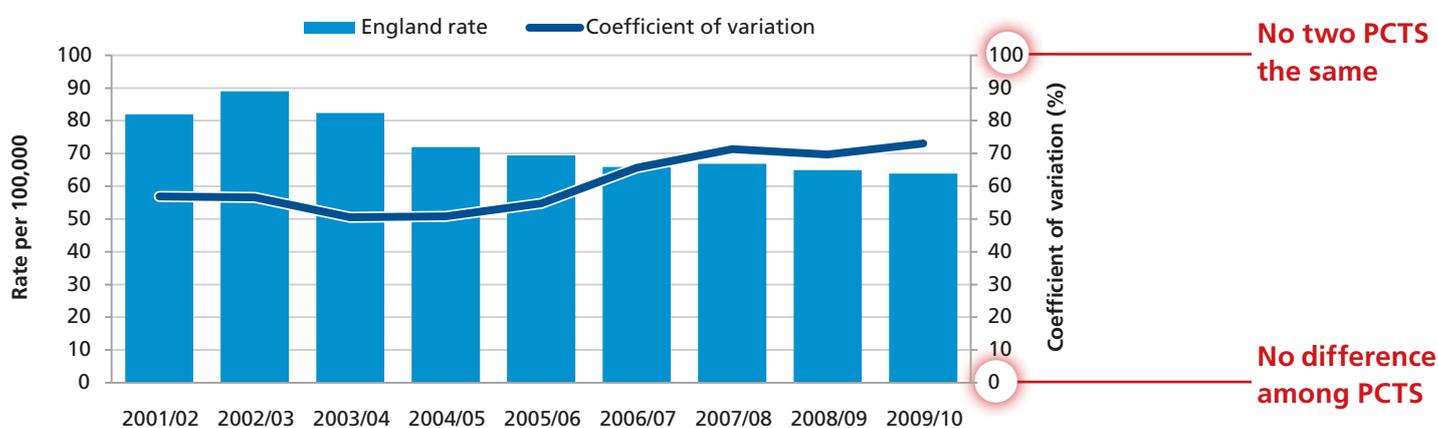


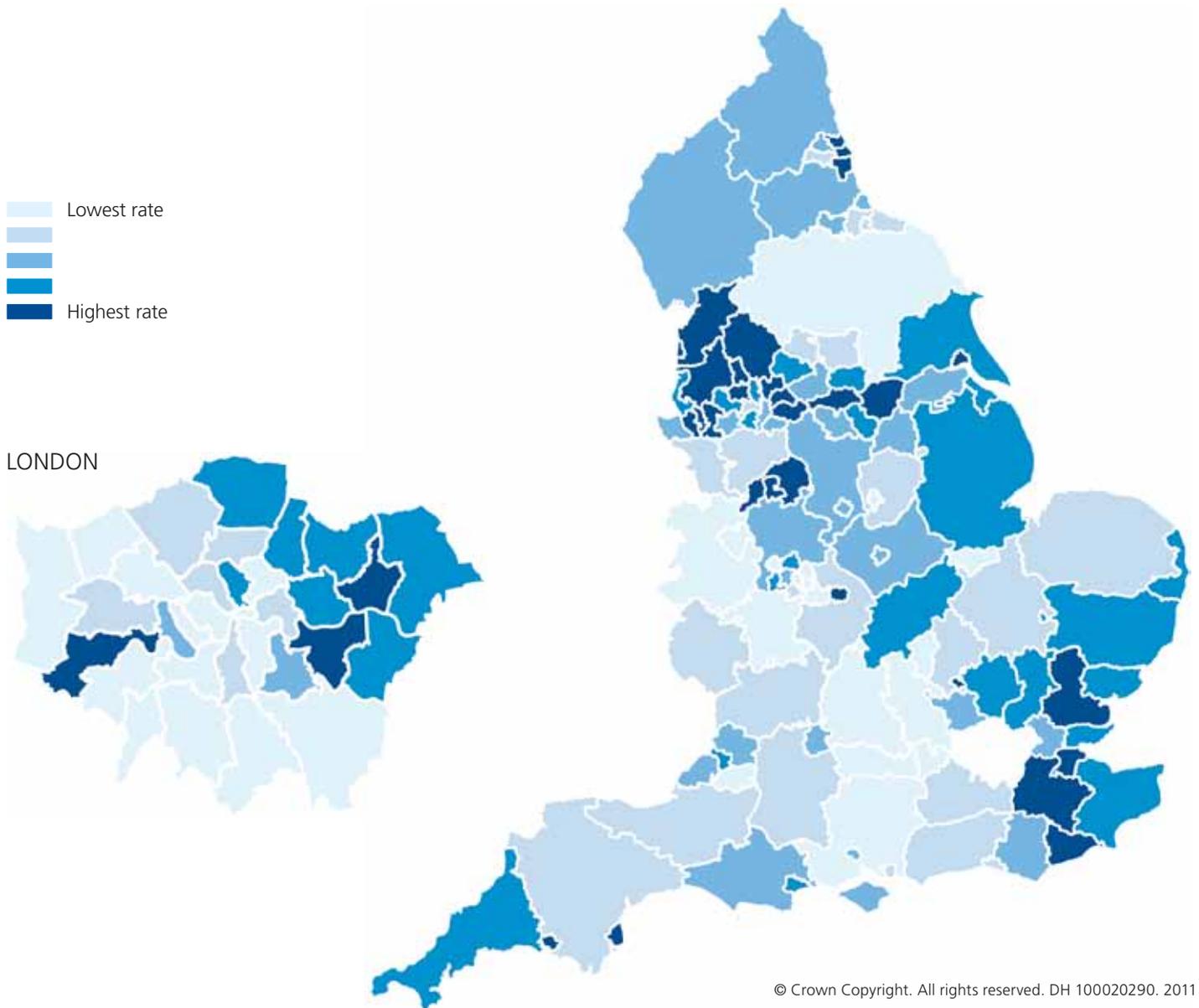
Table TT.1: Summary of results for the 10-year rate in activity and variation for seven surgical procedures

Procedure	Overall trend in rate, 2001–2010	Overall trend in variation (CoV), 2001–2010	Overall rate per 100,000 population, 2009/10	CoV, 2009/10	Variation over range, 2009/10 ¹
Tonsillectomy	<1% change	25% decrease	125.07	23%	2.4-fold
Grommets	11% decrease	3% increase	83.04	35%	4.3-fold
Cataract	48% increase	31% decrease	347.78	32%	3.2-fold
Varicose veins	22% decrease	30% increase	63.86	48%	7-fold
Lumbar disc prolapse	38% increase	11% decrease	15.91	49%	6-fold
Surgery for benign prostatic condition	73% increase	23% decrease	9.75	46%	4.9-fold
Hysterectomy	37% decrease	5% decrease	10.41	50%	7-fold

¹ This is the degree of variation after the five PCTs with the highest rates and the five PCTs with the lowest rates have been excluded.

Map TT.1: Rate of hospital-admitted procedures for benign prostatic condition per population by PCT

Directly standardised rate 2009/10



© Crown Copyright. All rights reserved. DH 100020290. 2011

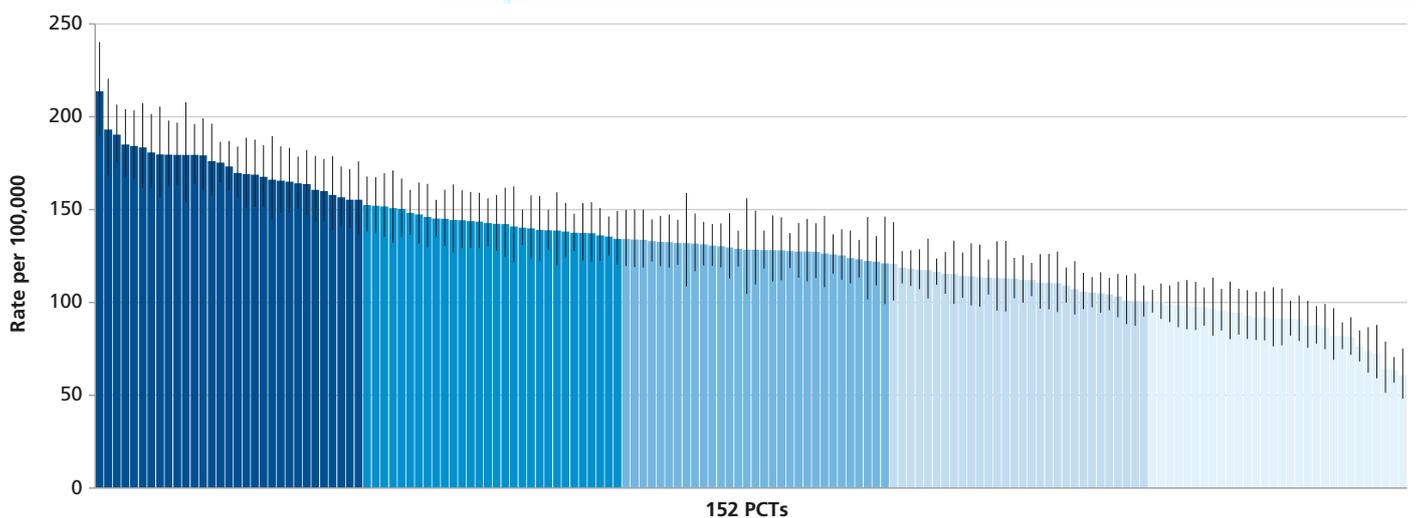


Figure TT.2:
 Rate of hysterectomy procedures recorded in inpatient hospital procedures in England. Directly standardised rate, 2001/02 to 2009/10

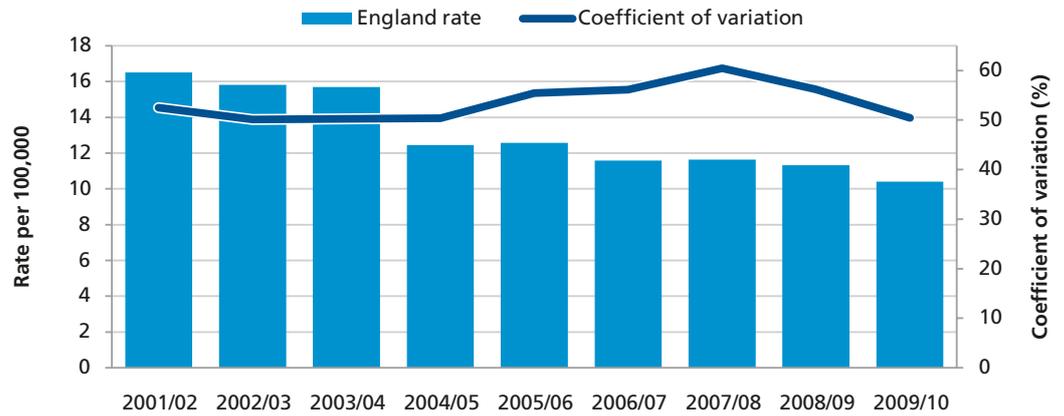


Figure TT.3:
 Rate of procedures recorded for benign prostatic condition in inpatient hospital care in England. Directly standardised rate, 2001/02 to 2009/10

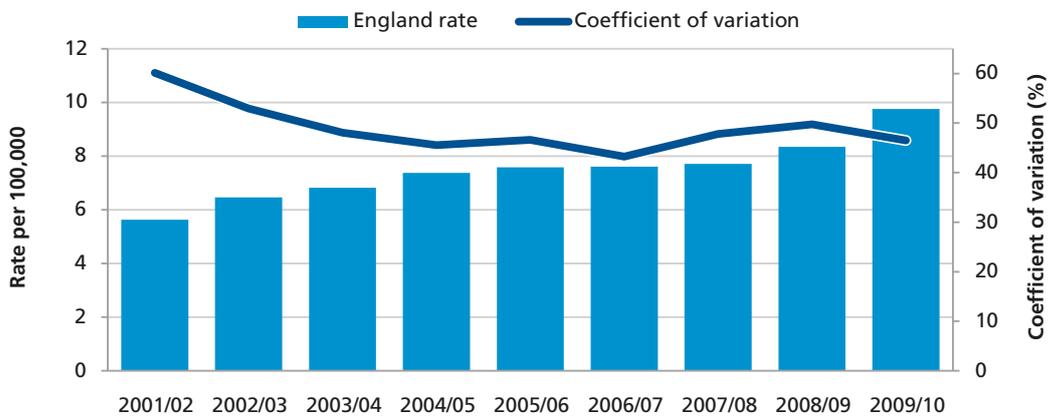


Figure TT.4:
 Rate of procedures for lumbar disc prolapse recorded in inpatient hospital care in England. Directly standardised rate, 2001/02 to 2009/10

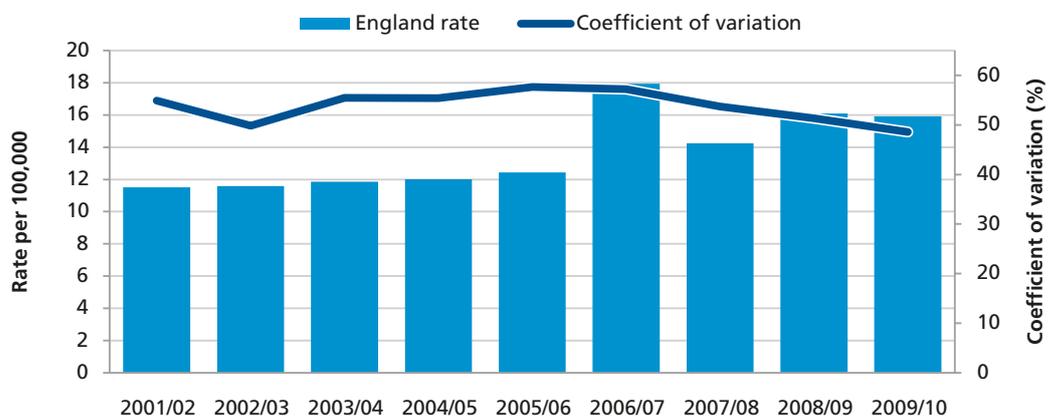


Figure TT.5:
 Rate of grommet procedures recorded in inpatient hospital care in England. Directly standardised rate, 2001/02 to 2009/10

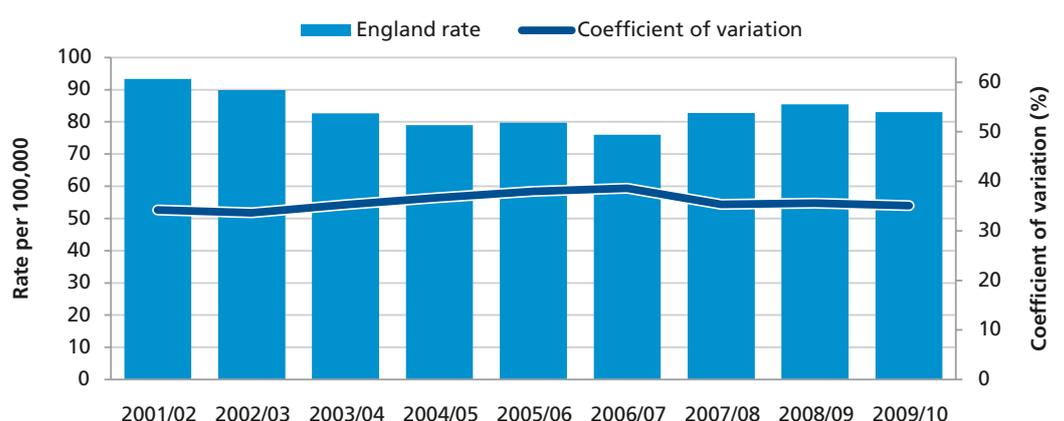


Figure TT.6:
Rate of varicose veins procedures recorded in inpatient hospital care in England.
 Directly standardised rate, 2001/02 to 2009/10

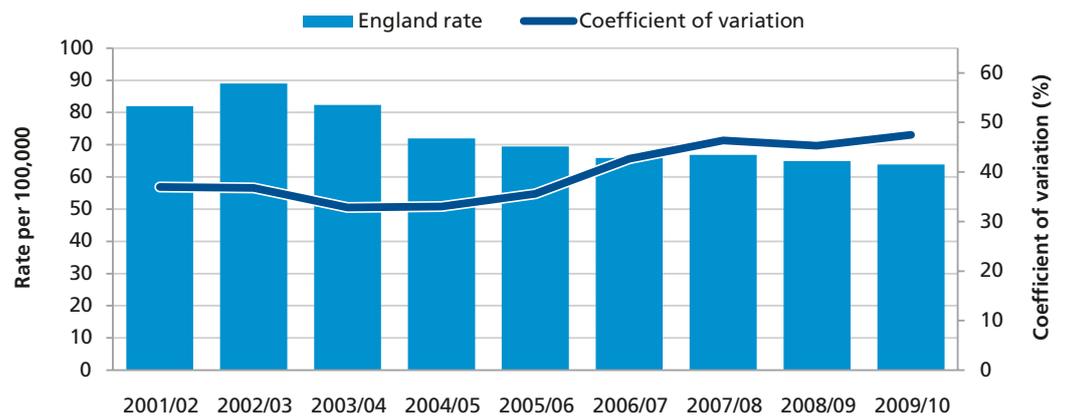


Figure TT.7:
Rate of cataract procedures recorded in inpatient hospital care in England.
 Directly standardised rate, 2001/02 to 2009/10

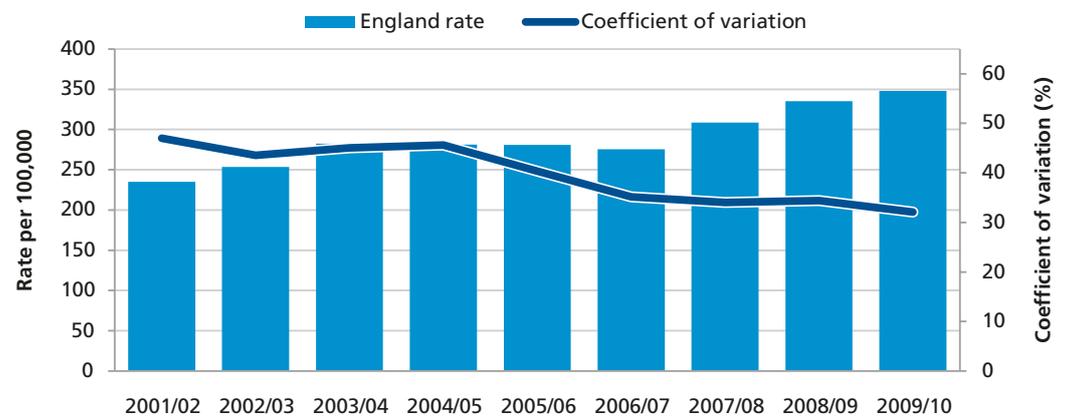
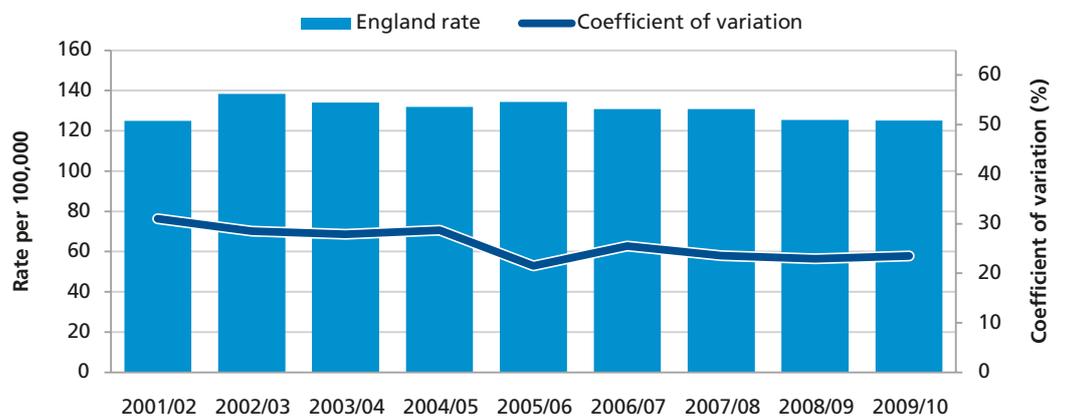


Figure TT.8:
Rate of tonsillectomy procedures recorded in inpatient hospital care in England.
 Directly standardised rate, 2001/02 to 2009/10



For most of the surgical procedures, there is either a sustained or an increased rate in surgical operations. Increasing the number of interventions increases the probability that the operation will be offered to people who are less severely affected and for whom the balance of benefit to risk of harm tends to “tilt” towards harm. Those that do show a decline in rate display a marked increase in variation

This analysis reveals persistent unwarranted variation in all seven procedures:

- For some procedures, there is an overall increase in variation;
- For other procedures, where there is a decrease in variation, the degree of variation is still quite high.

Rate and variation need to be assessed with equal emphasis when planning resources because they can display opposing patterns. When displayed together, they reveal that procedures showing a decline in activity may still display marked variation, and vice versa. Despite

the fluctuations described, there is still marked variation for all seven surgical procedures investigated.

Persistent variation for these surgical interventions among PCTs over the past 10 years calls into question the value offered to each patient when undergoing the interventions. Finding an answer will require much-needed focus on these trends and identification of how they can be influenced more effectively. This will be addressed in the workshop on research priorities for elective surgery (see page 31).

Options for action

Commissioners and providers need:

- To facilitate time-trend mapping of surgical procedures by encouraging accurate data collection;
- To review guidelines of surgical operations against the activity data to assess the overall value derived from the procedure;
- To understand that an increase in the rate of a surgical procedure does not necessarily equate to an increase in the overall value because the harm done increases proportionately. In situations where a surgical procedure is the final option in a pathway, resources may be needed to define a clear pathway for addressing symptoms, for example, by focusing on back pain rather than spinal surgery.

To implement these options for action requires the investment of resources in research to identify the causes of variation, and benefits, harms and costs of different rates of intervention, depending upon levels of need in the population. Such findings would provide a platform for planning.

The fourth dimension

Given the ageing population, the numbers of older people will increase the need for many services, such as joint replacement, cataract removal, and cancer care. In addition, technological developments may change the threshold for intervention: one definition of need states that it is a health problem for which there is an effective intervention. An understanding of the relationship between need and provision is of vital importance in planning services for the next decade.

Mehrunisha Suleman
Right Care Team

Time trends glossary

Mean (average)

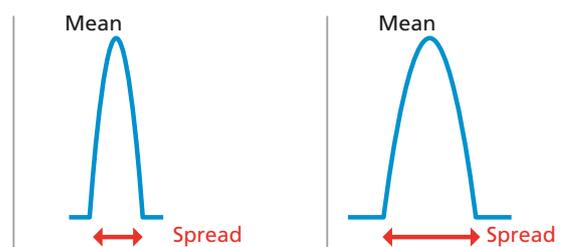
The mean is the sum of values, e.g. size of populations, divided by the number of values, e.g. number of populations in the sample.

Range

The range is the difference between the highest and lowest value in the sample. The range provides a crude measure of the spread of the data.

Variance

The variance is another measure of spread, which describes how far the values in the sample lie away from the mean value. It is the average of the squared differences from the mean and is a better measure of spread than the range.



This figure illustrates how two populations may have the same mean value, but different degrees of variation or spread: the second population shows greater variation than the first.

Standard deviation

The standard deviation is a measure of spread, and is the square root of the variance.

Coefficient of variation

The coefficient of variation is the ratio of the standard deviation over the mean, which can be multiplied by 100 to present the ratio as a percentage. It is another method of measuring spread with the advantage that it is insensitive to the mean and population size.

- A CoV of 0% represents no difference among PCTs;
- A CoV of 100% means no two PCTs are the same.

Map and chart presentation

Classification

Data for each of the indicators included in the Atlas are displayed as both a chart and map to show variation in terms of magnitude and geographical location within England. London is shown as a page inset on all PCT and local authority maps to keep detail that otherwise might be lost.

The charts and maps for all indicators are colour classified into thematic displays, which group the areas (e.g. PCTs) into categories and allow the reader to view and compare areas on the map without having to refer to individual values. A simple method of classification using equal counts of areas was used to display all indicators, regardless of distribution of data within indicators. Five equal counts of areas or 'quintiles' were classified for all indicator data where possible. However, as most of the indicators include a total number of areas that are not divisible by 5 (e.g. 152 PCTs), in most cases the classifications do not include exactly the same number of areas. The method used to create the classification was to rank order the areas from highest to lowest values, then divide the ranks into 5 equal categories. However, in some cases, indicators included tied ranks (i.e. where some area values were exactly the same) and no areas were split into different categories where the rank was equal; this meant that an equal split was not possible in these cases. For the few indicators where there were many tied ranks of equal data, the split between categories was adjusted to ensure a 'best fit' of equal numbers, without splitting areas with the same values.

The disadvantage with quintiles and equal counts of data is that it does not take into account the distribution of the data, and categories can be created with very different ranges of variation between the highest and lowest values. This should be taken into consideration when comparing areas in different categories within indicators.

The classification is shaded from light blue (lowest value) to dark blue (highest value) on both the charts and maps. The ranges and their shading do not indicate whether a high or low value for an area represents either good or poor performance.

The charts have been originally produced in Microsoft Excel 2007 and the maps originally created using MapInfo Professional 10.5.

Standardisation

Standardisation allows like to be compared with like, by making sure that differences in the number of events (e.g. deaths or infections) observed in two or more populations are not due to differences in the age and sex profile between the different populations. (For example, suppose population A has a higher death rate than population B. However, if population A also has a higher proportion of older people, then we would expect there to be more deaths and it would be misleading to infer that people are dying at a faster rate in population A than population B.) The two main methods of standardisation are directly standardised rates (DSRs) and indirectly standardised rates.

Directly standardised rates commonly adjust for differences in age and sex distribution by applying the observed rates (e.g. of death or infection) for each age band in the study population to a standard population structure to obtain a weighted average rate.

Indirectly standardised rates adjust for the differences in age and sex distribution by applying the observed rates (e.g. of death or infection) for each age band in a standard population (e.g. England) to the population of the same age groups in the study area.

Confidence intervals

Some of the indicators have error terms associated with them to give an indication of the level of uncertainty of the calculation, referred to as confidence intervals. Statistical uncertainties usually arise because the indicators are based on a random sample of finite size from a population of interest. Confidence intervals are used to assess what would happen if we were to repeat the same study, over and over, using different samples each time. The precise statistical definition of a 95% confidence interval states that, on repeated sampling, 95 times out of 100 the true population value would be within the calculated confidence interval range and

for 5 times out of 100 the true value would be either higher or lower than the range. Where these confidence intervals have been calculated for indicators in the Atlas, they are displayed on the bar graphs of the indicator as a banded line. The smaller the confidence interval, the more stable the indicator; a larger number of events leads to a smaller interval.

*Andrew Hughes
Solutions for Public Health*

Exclusions

For each of the indicators mapped to a PCT or upper-tier local authority geography, for the calculation of the range of variation presented in the accompanying commentaries, the highest five values and the lowest five values have been excluded. This is because “outliers” could be the result of errors in data management, e.g. some data may not have been returned or events may have been recorded twice. This exclusion was originally suggested by Professor Sir Mike Richards for Atlas 1.0, and Right Care has continued to use the “Richards heuristic” in Atlas 2.0.

For the indicator mapped to a local authority geography, the highest ten values and the lowest ten values have been excluded. For indicators mapped to an SHA geography, none of the values has been excluded.

For some indicators, where a local indicator value is created from less than five events, then these values are removed from the map and associated chart. (For example, where the indicator value is the rate of elective admissions to hospital per population, the events are the number of admissions to hospital). The indicator values are removed for two reasons:

- › they are not considered sufficiently reliable, where chance could have too much influence over the value;
- › they are considered potentially disclosive of individuals in the local area.

Domains in the NHS Outcomes Framework

Underneath the title for each indicator, the domain or domains in the NHS Outcomes Framework 20011/12 relevant to the indicator have been listed. The five domains are as follows:

- › Domain 1 Preventing people from dying prematurely
- › Domain 2 Enhancing quality of life for people with long-term conditions
- › Domain 3 Helping people to recover from episodes of ill health or following injury
- › Domain 4 Ensuring that people have a positive experience of care
- › Domain 5 Treating and caring for people in a safe environment and protecting them from avoidable harm

Table S.1: Summary of indicators in Atlas 2.0, showing the range and magnitude of variation before and after exclusions¹; each indicator has been assigned to one of the following categories – activity, cost, equity, outcome, quality (performance as compared with a standard), and safety. An asterisk next to the map number denotes that there is an additional related indicator but it is presented only in the form of a column chart

Map no.	Title	Range	Fold difference	Range after exclusions	Fold difference after exclusions	Category of indicator
1*	Rate of colonoscopy procedures and flexisigmoidoscopy procedures per 10,000 population by PCT 2009/10	71.6–194.1	2.7	88.0–175.6	2.0	Activity
2	Rate of urgent GP referrals for suspected cancer per 100,000 population by PCT 2010/11	919.8–2957.4	3.2	1084.3–2697.0	2.5	Activity
3	Number of emergency cancer bed-days per new cancer registration by PCT 2009/10	7.1–18.2	2.5	8.5–16.0	1.9	Activity
4	Mean length of stay (days) for elective breast surgery by PCT 2009/10	0.3–7.0	25	0.4–4.3	11	Cost
5*	Percentage of histologically confirmed non-small cell lung cancer (NSCLC) patients receiving surgery by cancer network 2009	12.5–23.5	1.9	15.7–21.4	1.4	Quality
6	Percentage of people in the National Diabetes Audit (NDA) with Type 1 diabetes receiving all nine key care processes by PCT 1 January 2009 to 31 March 2010	5.4–47.9	9	16.5–43.4	2.6	Quality
7	Percentage of people in the National Diabetes Audit (NDA) with Type 2 diabetes receiving all nine key care processes by PCT 1 January 2009 to 31 March 2010	7.0–71.4	10	30.9–66.2	2.1	Quality
8	Percentage of people in the National Diabetes Audit (NDA) having major amputations five years prior to the end of the audit period by PCT 1 January 2009 to 31 March 2010	0.1–0.5	6	0.1–0.4	3.8	Outcome
9	Excess length of stay (%) in hospital among people with diabetes when compared with people without diabetes by PCT 2009/10	–0.4–46.7	Not applicable	7.8–36.9	4.8	Outcome
10	Insulin total net ingredient cost (£) per patient on GP diabetes registers by PCT 2010/11	79–176	2.2	95–158	1.7	Cost
11	Non-insulin anti-diabetic drugs total net ingredient cost (£) per patient on GP diabetes registers by PCT 2010/11	65–180	2.8	73–154	2.1	Cost
12	Rate of bariatric procedures in hospital per 100,000 population by PCT 2007/08–2009/10	0.4–41.3	93	1.3–24.9	19	Activity
13	Reported numbers of dementia on GP registers as a percentage of estimated prevalence by PCT 2009/10	26.8–58.8	2.2	31.1–53.7	1.7	Quality
14	Anti-dementia drug items prescribed per weighted population (ADQ per STAR-PU) in primary care by PCT 2009/10	0.03–1.6	52	0.1–1.3	25	Activity

¹ For PCTs and upper-tier local authorities, the five highest values and the five lowest values have been excluded; for local authorities, the ten highest values and the ten lowest values have been excluded; for SHAs, none of the values has been excluded.

Map no.	Title	Range	Fold difference	Range after exclusions	Fold difference after exclusions	Category of indicator
15	Rate of admissions to hospital for patients >74 years with a secondary diagnosis of dementia per 1000 population by PCT 2009/10	24.9–103.1	4.1	30.7–87.9	2.9	Quality
16	Total bed-days in hospital per 1000 population for patients >74 years with a secondary diagnosis of dementia by PCT 2009/10	281.5–1343.0	4.8	367.9–1073.4	2.9	Quality
17	Rate of inpatient admissions >3 days' duration in children per 100,000 population aged 0–17 years for mental health disorders by PCT 2007/08–2009/10	3.4–166.1	49	4.4–30.3	7	Activity
18	Percentage of primary school children in state-funded schools with a statement of special educational needs (SEN) by local authority at January 2011	0.3–2.9	11	0.4–2.3	6	Activity
19*	Parkinson's disease drug items prescribed per weighted population (ADQ per STAR-PU) in primary care by PCT 2009/10	1.7–8.8	5	2.0–6.9	3.5	Activity
20	Emergency admission rate for children with epilepsy per 100,000 population aged 0–17 years by PCT 2007/08–2009/10	19.1–181.2	9	30.8–133.7	4.3	Quality
21	Percentage of the diabetic population receiving screening for diabetic retinopathy by PCT January to March 2011	7.4–91.8	12	57.7–87.0	1.5	Quality
22	Rate per 100,000 population of certificates of vision impairment (CsVI) issued with a main cause of diabetic eye disease by PCT 2008/09–2009/10	1.0–7.8	8	1.5–6.7	4.6	Outcome
23	Rate of audiology assessments undertaken per 1000 population by PCT 2010	2.3–75.1	32	8.8–41.2	4.7	Activity
24	Mean time (days) from referral to assessment for hearing tests in newborns by PCT 2010	10.5–57.2	5	13.3–43.6	3.3	Quality
25	Percentage of adults who participate in sport and active recreation at moderate intensity (equivalent to 30 minutes on 3 or more days a week) by local authority 2009–2011	13.9–30.3	2.2	16.9–27.9	1.7	Activity
26	Reported numbers of people with hypertension on GP registers as a percentage of estimated prevalence by PCT 2009/10	37.8–63.4	1.7	45.9–61.2	1.3	Quality
27	Reported numbers of people with coronary heart disease (CHD) on GP registers as a percentage of estimated prevalence by PCT 2009/10	38.8–103.4	2.7	47.9–94.6	2	Quality
28	Percentage of STEMI patients receiving primary angioplasty by PCT 2010	3.0–100.0	34	12.3–100.0	8	Quality
29	Rate of elective admissions to hospital for angioplasty per 100,000 population by PCT 2009/10	15.0–619.0	41	41.0–449.0	11	Activity

Map no.	Title	Range	Fold difference	Range after exclusions	Fold difference after exclusions	Category of indicator
30	Rate of pacing devices implanted for the first time per million population by PCT 2010	178.4–901.8	5	325.8–744.5	2.3	Activity
31	Rate of implantable cardioverter-defibrillator (ICD) devices implanted for the first time per million population by PCT 2010	11.4–196.8	17	32.7–138.9	4.2	Activity
32	Rate of cardiac resynchronisation therapy (CRT) devices implanted per million population by PCT 2010	4.5–305.8	68	37.3–237.1	6	Activity
33	Percentage of transient ischaemic attack (TIA) cases with a higher risk who are treated within 24 hours by PCT January–March 2011	11.1–100.0	9	14.7–100.0	7	Quality
34	Percentage of patients admitted to hospital following a stroke who spend 90% of their time on a stroke unit by PCT January–March 2011	31.5–100.0	3.2	53.8–97.9	1.8	Quality
35	Rate of sleep studies undertaken per 1000 population by PCT 2010	0.1–7.8	60	0.2–6.0	27	Activity
36	Rate of all admissions to hospital with a primary diagnosis of chronic obstructive pulmonary disease (COPD) per 100,000 population by PCT 2009/10	77.5–490.9	6	87.3–345.4	4	Quality
37*	Rate of expenditure (£) on home oxygen therapy per 1000 population by PCT 2010/11	1039–7422	7	1245–4721	3.8	Cost
38	Rate of emergency admissions to hospital in people aged 18 years and over with asthma per 100,000 population by PCT 2009/10	31.2–173.9	6	39.5–117.9	3	Quality
39	Emergency admission rate for children with asthma per 100,000 population aged 0–17 years by PCT 2009/10	25.9–641.9	25	97.6–468.5	4.8	Quality
40	Mean number of decayed, missing and filled teeth in 12-year-olds by PCT 2008/09	0.2–1.5	7	0.4–1.3	3	Outcome
41	Percentage of people who succeeded in gaining access to NHS dentistry services after requesting an appointment in the last two years by PCT October–December 2010	86.4–98.9	1.1	87.5–97.2	1.1	Quality
42	Rate of activity for gastroscopy (upper gastro-intestinal endoscopy) per 10,000 population by PCT 2009/10	77.4–225.7	2.9	91.4–185.9	2	Activity
43	Admission rate for children for upper and/or lower gastro-intestinal endoscopy per 100,000 population aged 0–17 years by PCT 2007/08–2009/10	39.9–226.3	6	62.5–168.4	2.7	Activity
44	Rate of cholecystectomies per 100,000 population by PCT 2009/10	51.1–170.8	3.3	60.2–150.7	2.5	Activity
45	Percentage of elective adult day-case laparoscopic cholecystectomy per all elective cholecystectomies by PCT 2010/11	1.1–69.0	61	6.9–56.7	8	Quality

Map no.	Title	Range	Fold difference	Range after exclusions	Fold difference after exclusions	Category of indicator
46	Proportion (%) of admissions attributed to liver disease that are emergency admissions to hospital by PCT 2009/10	3.4–54.1	16	8.5–42.0	5	Quality
47	Rate of liver transplants from deceased donors per million population by SHA 2010/11	8.1–14.4	1.8	Not applicable	Not applicable	Activity
48	Rate of metal-on-metal hip resurfacing procedures undertaken per 100,000 population by PCT 2009/10	1.3–18.2	14	1.8–12.6	7	Quality
49	Rate of knee washout procedures undertaken per 100,000 population by PCT 2009/10	3.7–48.1	13	7.5–35.5	4.8	Activity
50	Rate of all diagnostic knee arthroscopy procedures undertaken per 100,000 population by PCT 2009/10	3.5–95.5	27	8.0–69.8	9	Activity
51	Rate of all therapeutic knee arthroscopy procedures undertaken per 100,000 population by PCT 2009/10	59.3–276.0	4.7	71.8–223.6	3.1	Activity
52	Proportion (%) of cementless knee arthroplasty procedures per all knee arthroplasty undertaken in hospital by PCT 2009/10	0.8–78.5	102	1.5–31.3	22	Activity
53	Average patient-reported health gain (Oxford Knee Score; OKS) from knee replacement procedures by PCT 2009/10	11.0–17.2	1.6	11.9–16.8	1.4	Outcome
54	Rate of urodynamic (pressures and flows) tests undertaken per 1000 population by PCT 2010	0.01–8.3	831	0.2–5.0	33	Activity
55	Rate of admissions for acute kidney injury (AKI) per 1000 emergency admissions to hospital by PCT 2009/10	0.4–2.7	7	1.0–2.3	2.4	Quality
56	Rate of kidney transplants from living donors per million population by SHA 2010/11	11.6–22.3	1.9	Not applicable	Not applicable	Activity
57	Rate of kidney transplants from deceased donors per million population by SHA 2010/11	14.7–29.2	2	Not applicable	Not applicable	Activity
58	Proportion (%) of medical abortions to all legal abortions undertaken at 13 weeks' gestation and under by PCT 2010	13.5–97.8	7	19.5–89.0	4.6	Outcome
59	Proportion (%) of full-term babies (≥ 37 weeks' gestational age at birth) of all babies admitted to specialist neonatal care by PCT 2010	24.7–100.0	4	34.7–69.2	2	Outcome
60	Emergency admission of home births and re-admissions to hospital of babies within 14 days of being born per 1000 live births by PCT 2009/10	15.8–98.3	6	21.5–77.5	3.6	Quality
61	Rate of alcohol-related admissions to hospital per 100,000 population by PCT 2009/10	849.5–3114.3	3.7	1196.1–2903.7	2.4	Activity

Map no.	Title	Range	Fold difference	Range after exclusions	Fold difference after exclusions	Category of indicator
62	Rate of accident and emergency (A&E) attendances per 100,000 population by PCT 2010	148.9–2798.2	19	174.8–556.0	3.2	Activity
63	Rate of conversion from accident and emergency (A&E) attendance to emergency admissions per 100,000 population by PCT 2010	70.1–147.6	2.1	75.1–137.3	1.8	Activity
64	Rate of admissions with emergency ambulatory care conditions (EACCs) per 100,000 population by PCT 2010	14.5–97.2	7	15.0–41.9	2.8	Activity
65	Admission rate for people aged >74 years from nursing or residential care home settings per 100,000 population by PCT 2009/10	0.7–535.4	767	2.8–193.4	69	Activity
66	Percentage of all deaths at usual place of residence by PCT 2010	22.8–50.5	2.2	29.2–47.4	1.6	Outcome
67	Percentage of all deaths that occur in hospital for children aged 0–17 years with life-limiting conditions by PCT 2005–2009	47.4–100.0	2.1	56.3–93.3	1.7	Outcome
68	Rate of magnetic resonance imaging (MRI) activity per 1000 weighted population by PCT 2010/11	18.1–76.5	4.2	25.1–58.3	2.3	Activity
69	Rate of computed axial tomography (CT) activity per 1000 weighted population by PCT 2010/11	31.4–120.0	3.8	42.2–94.9	2.2	Activity
70	Rate of dual-energy X-ray (DEXA) scan activity per 1000 weighted population by PCT 2010/11	0.2–16.8	83	1.5–11.0	7	Activity
71	Hypnotics drug items prescribed per weighted population (ADQ per STAR-PU) in primary care by PCT 2009/10	2.3–9.2	4	2.7–7.8	2.8	Activity

“Then I thought with myself, who that goeth on Pilgrimage but would have one of these Maps about him, that he may look when he is at a stand, which is the way he must take?”

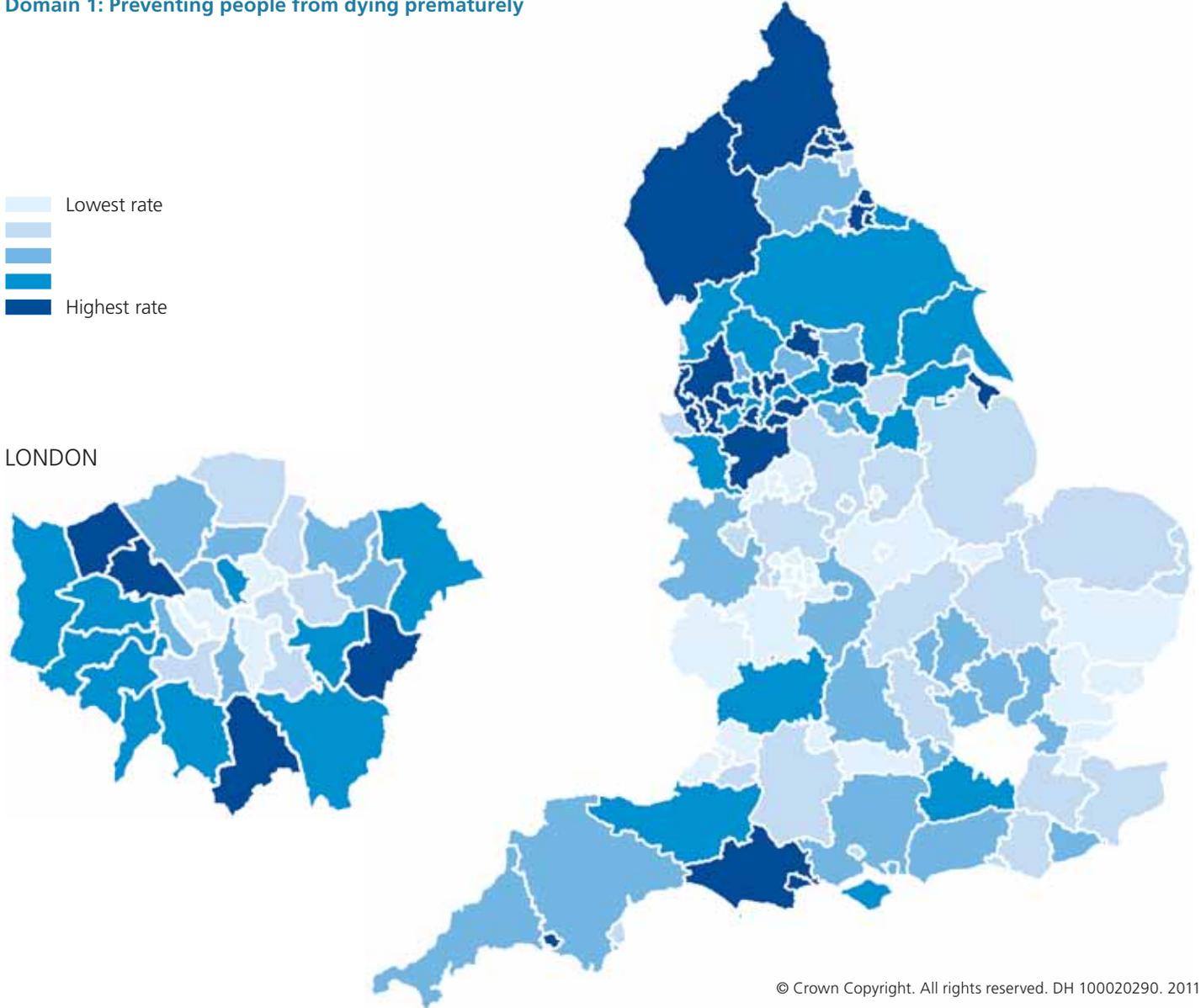
John Bunyan, *Pilgrim’s Progress*

CANCERS AND TUMOURS

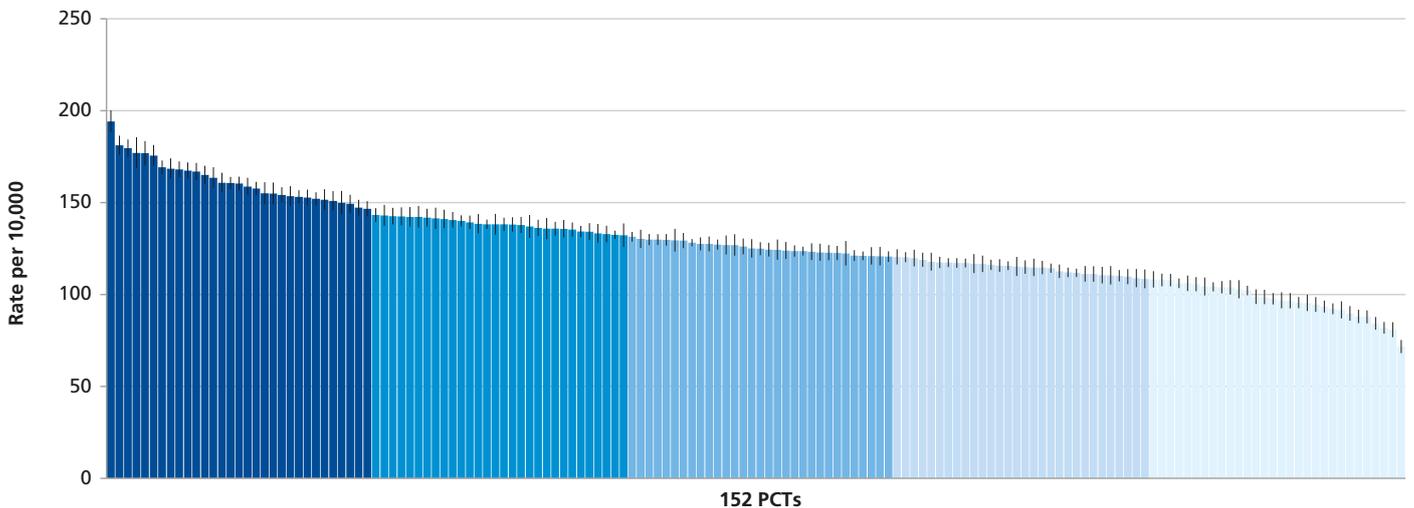
Map 1: Rate of colonoscopy procedures and flexisigmoidoscopy procedures per population by PCT

Indirectly standardised rate, adjusted for age, sex and deprivation 2009/10

Domain 1: Preventing people from dying prematurely



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Colonoscopy is an investigation of the lining of the entire large bowel (colon) using an endoscope. Flexisigmoidoscopy is similar to colonoscopy, but confined to an examination of the sigmoid colon (last part of the large bowel) using a flexible endoscope.

Both procedures are used to diagnose or exclude cancer of the bowel or to look for pre-cancerous polyps. If polyps are found on examination, they are often removed. Flexisigmoidoscopy and colonoscopy can also be used in the diagnosis of, and monitoring of treatment for, inflammatory bowel disease (IBD). About 60–70% of procedures are performed for the diagnosis of cancer, 15–20% for the diagnosis of and monitoring of treatment for IBD, and 10% for other reasons.

Flexisigmoidoscopy is the preferred procedure in some services because sedation is not required, and it is quicker and carries less risk than colonoscopy.

Other countries with developed economies have higher rates of colonoscopy than the UK. In the most recent national colonoscopy audit, Scotland and Northern Ireland had higher rates of colonoscopy than England. Increased demand (about 80 procedures per 10,000 population per year) will soon be generated by the national flexible sigmoidoscopy screening programme, doubling the current rate.

The National Cancer Awareness and Early Diagnosis (NAEDI) Programme is aimed at improving cancer survival outcomes for England, including that for bowel cancer. Early diagnosis is vital.

For this indicator, the rates of colonoscopy procedures and flexisigmoidoscopy procedures have been combined.

Magnitude of variation

For PCTs in England, the rate of colonoscopy procedures and flexisigmoidoscopy procedures ranged from 71.6 to 194.1 per 10,000 population (2.7-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 88.0–175.6 per 10,000 population, and the variation is twofold.

For PCTs in England, the ratio of flexisigmoidoscopy procedures to colonoscopy procedures ranged from 0.1 to 1.6 (20-fold variation). When the five PCTs with the highest ratios and the five PCTs with the lowest ratios are excluded, the range is 0.3–1.4, and the variation is sixfold.

Reasons for variation in the combined rate for colonoscopy and flexisigmoidoscopy procedures are differences in:

- › Regional cancer rates;
- › Number of procedures conducted in the independent sector – this is relatively high in the South East.

Possible reasons for unwarranted variation include differences in:

- › Professional practice for GPs and hospital clinicians;
- › Local service configuration.

Options for action

Commissioners need to discuss with local gastro-endoscopy service providers and bowel surgeons:

- › The referral rate for flexisigmoidoscopy and colonoscopy in relation to local population needs;
- › Local service configuration.

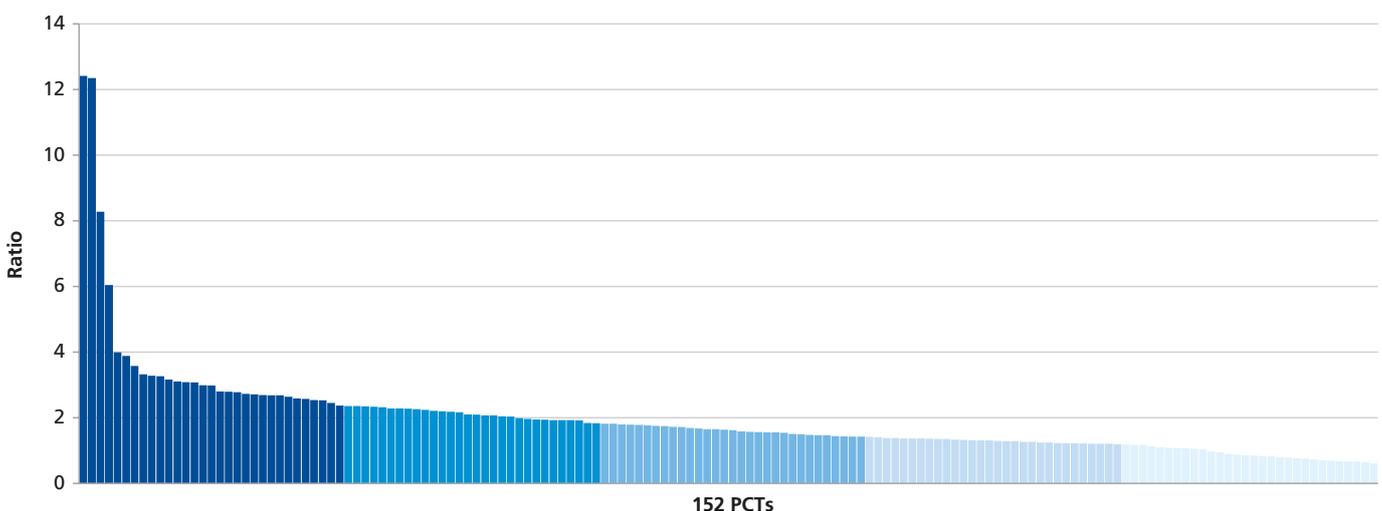
Commissioners and providers can use the results of the Global Rating Scale (GRS: see “Resources”), a tool that enables units to assess their provision of patient-centred care, including dimensions for quality and safety, and customer care. Applying the “Appropriateness item is important; it reassures commissioners that referrals are vetted against best practice. A planning and productivity assessment tool is now available: high scores indicate services are planning for future demand and resource use is efficient.

Although colonoscopy and flexisigmoidoscopy are high-value interventions, evidence for the use of upper gastro-intestinal endoscopy for the detection and prevention of cancer is less strong. Commissioners and providers need to consider the totality of resources used for endoscopy procedures to achieve maximal value for individual patients and the population.

RESOURCES

- › Joint Advisory Group (JAG) for GI endoscopy. JAG defines and maintains the standards by which endoscopy is practised in the UK. Website has a section on “Commissioning”. <http://www.thejag.org.uk/>
- › Endoscopy Global Rating Scale (GRS). <http://www.grs.nhs.uk/WhatIsGRS.aspx>

Ratio of flexisigmoidoscopy procedures to colonoscopy procedures by PCT 2009/10

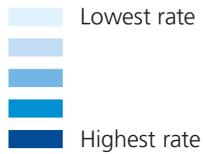


CANCERS AND TUMOURS

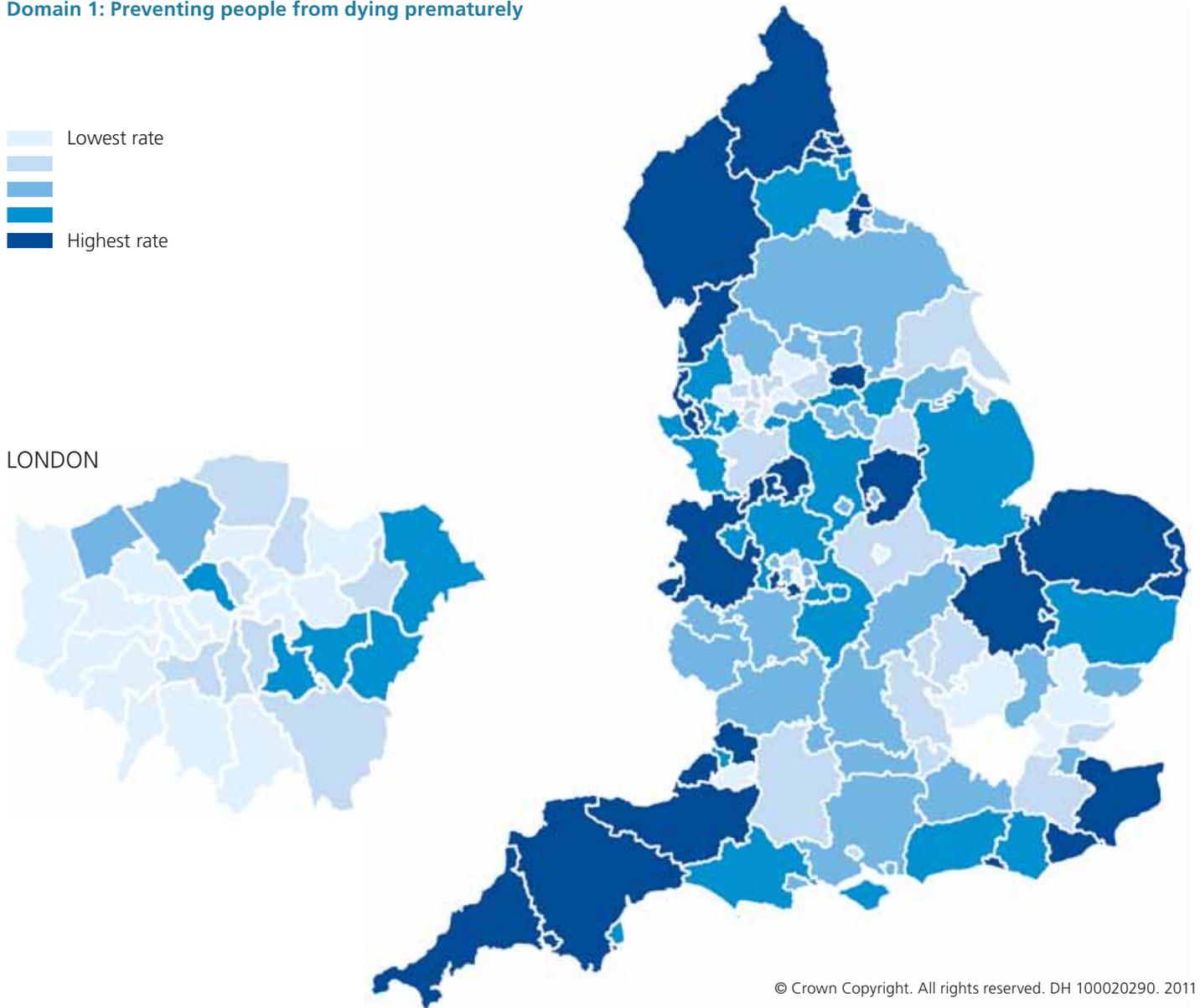
Map 2: Rate of urgent GP referrals for suspected cancer per population by PCT

2010/11

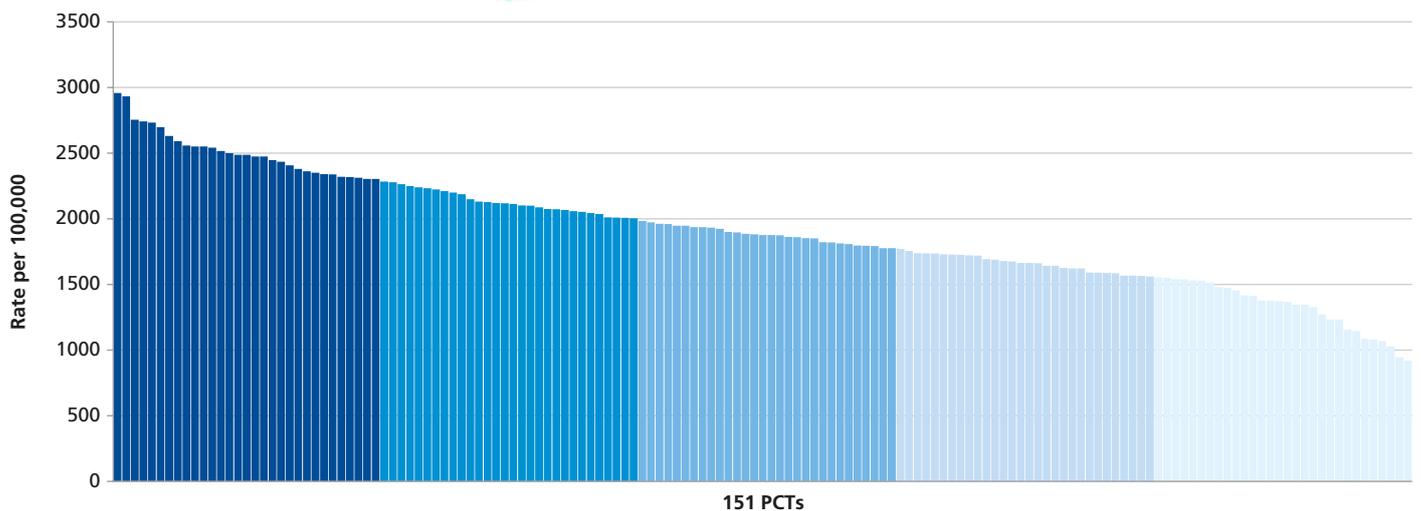
Domain 1: Preventing people from dying prematurely



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Across England, around one million urgent GP referrals are made for suspected cancer each year (based on all cancer two-week-wait data). On average, a GP will make around 25 urgent referrals a year, that is, one every fortnight. The overall number of urgent referrals has increased over recent years, from a baseline of around 600,000. However, it is still well below the number that was estimated a decade ago (around two million a year).

This indicator has been calculated by the National Cancer Intelligence Network (NCIN).¹

Magnitude of variation

For this indicator, the rates have not been adjusted for case-mix.

For PCTs in England, the rate of urgent GP referrals for suspected cancer per 100,000 population ranged from 919.8 to 2957.4 (3.2-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 1084.3–2697.0 per 100,000, and the variation is 2.5-fold.

Thus, there is wide variation in the uptake of the two-week-wait referral route among PCTs. At present, 13 PCTs have referral rates over 2500 per 100,000 population, whereas 23 PCTs have referral rates below 1500 per 100,000 population.

It is important to emphasise that there is no “right” or “wrong” level of referrals. Work is being undertaken at present to understand the reasons for variation.

The appropriate rate of referral will vary from one cancer to another, and will be influenced by the age structure of the population. However, the degree of variation observed for this indicator is probably greater than could be accounted for by the age distribution of populations.

Options for action

Commissioners may wish to examine variations in usage of the two-week-wait referral route at a general practice level.

Commissioners could also look at numbers of two-week-wait referrals in conjunction with other parameters, including:

- conversion rates, i.e. the proportion of patients with two-week-wait referrals who were subsequently found to have cancer;
- the overall proportion of patients with cancer who were diagnosed through the two-week-wait referral route, i.e. the detection rate.

In future, commissioners should also be able to look at two-week-wait referral rates in conjunction with other parameters such as:

- usage of diagnostic tests (see page 00);
- the proportion of new cases of cancer who present as emergencies.

Commissioners in areas with higher or lower overall two-week-wait referral rates could examine this further at tumour-group level, for example, breast, colorectal, or skin.

RESOURCES

- GP urgent referrals rates. National Cancer Intelligence Network (NCIN) data briefing, November 2011. <http://www.ncin.org.uk/home.aspx>
- To provide comparative information to drive improvements in cancer commissioning, the National Cancer Action Team and the NCIN have produced an online resource, the Cancer Commissioning Toolkit. http://www.ncin.org.uk/cancer_information_tools/cct.aspx
- Further information about cancer waiting times and related performance data: <http://www.dh.gov.uk/health/2011/08/commissioner-based-cwt/>

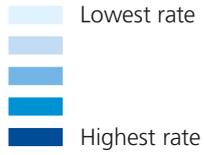
1 Sources: Number of GP two week wait referrals, Department of Health, Commissioner-based cancer waiting times, April 2010 to March 2011, annual reference volume. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsStatistics/DH_128719. GP registered populations 2010, The Information Centre Attribution dataset. <http://www.ic.nhs.uk/statistics-and-data-collections/population-and-geography/gp-registered-populations>.

CANCERS AND TUMOURS

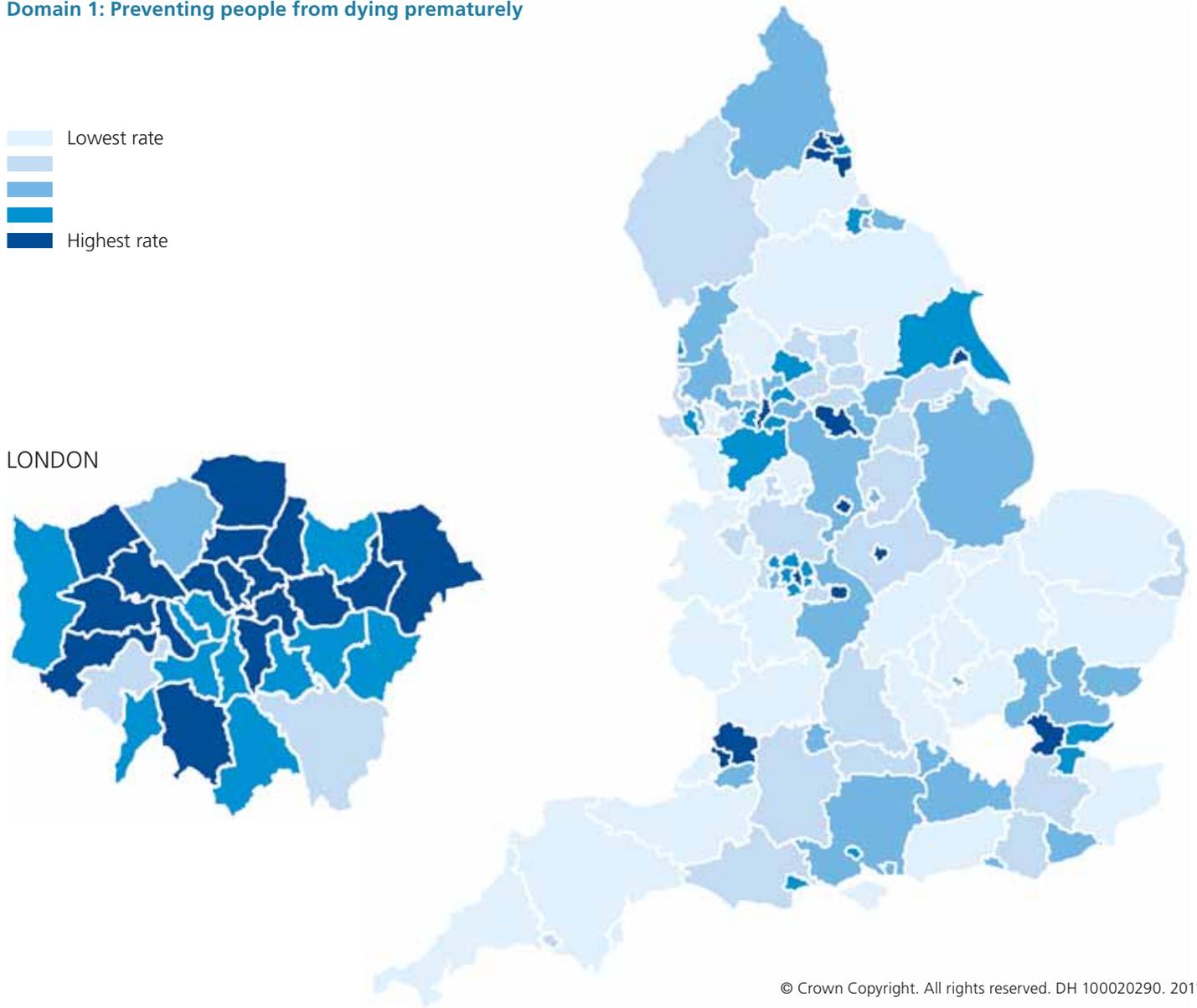
Map 3: Number of emergency cancer bed-days per new cancer registration by PCT

2009/10

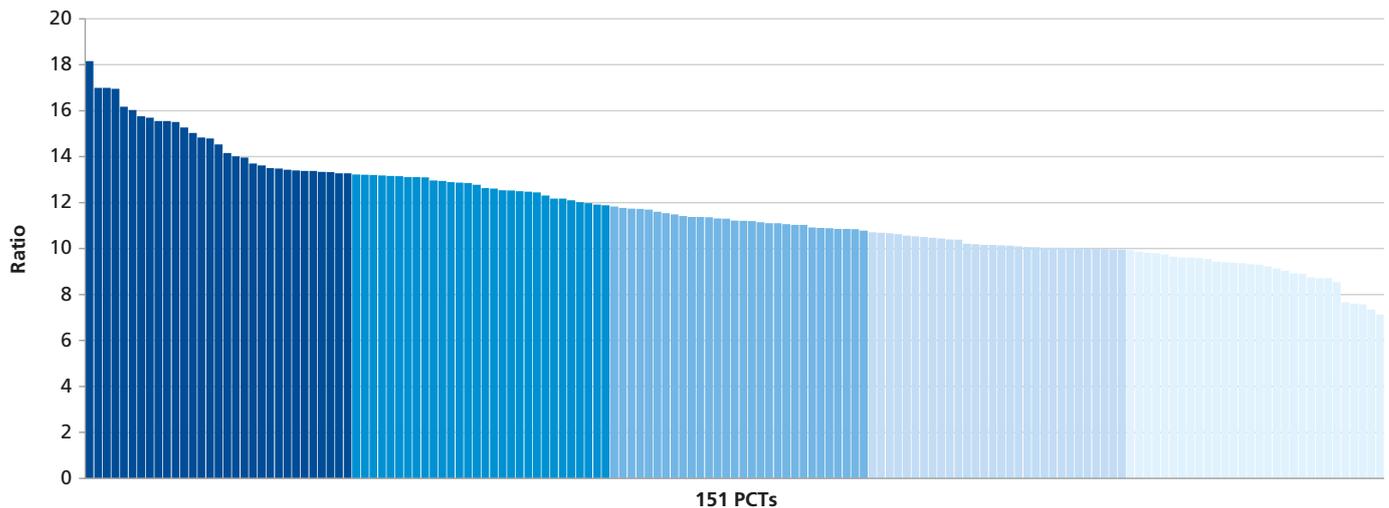
Domain 1: Preventing people from dying prematurely



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

In England, around one-quarter of all new cancer patients present as emergencies.¹ In addition, patients with known cancer may be readmitted as an emergency, either following complications of treatment, such as surgery or chemotherapy, or as a result of symptoms relating to progressive disease. Effective cancer systems will minimise the number of unnecessary emergency admissions and will keep length of stay as short as possible if they do occur. Together, these will impact on the total number of emergency bed-days.

Over the past decade, the number of emergency admissions related to cancer has risen markedly in England. However, the rate of rise in emergency admissions has slowed during the past few years and is now broadly in line with the increasing incidence of cancer. Lengths of stay for emergency admissions have reduced, but this reduction may now be reaching a plateau.

This indicator has been calculated by the National Cancer Intelligence Network (NCIN).²

Magnitude of variation

This indicator takes account of variations in the numbers of cases of cancer in different PCTs.

For PCTs in England, the number of emergency cancer bed-days per new cancer registration ranged from 7.1 to 18.2 (2.5-fold variation). When the five PCTs with the highest emergency bed-day ratios and the five PCTs with the lowest emergency bed-day ratios are excluded, the range is 8.5–16.0, and the variation is 1.9-fold.

At present, 13 PCTs have 15 or more emergency cancer bed-days per new cancer registration, whereas 30 have less than 10 emergency cancer bed-days per new cancer registration.

Some warranted variation may be related to differences in the numbers of cases by cancer type, but this is likely to account for only a small part of the observed variation.

Unwarranted variation may relate to later diagnosis in some areas when compared with others, leading to higher numbers of new emergency presentations with cancer.

However, the majority of emergency cancer bed-days relate to patients who are readmitted with complications of treatment of disease progression.

Options for action

Commissioners in areas where the number of emergency cancer bed-days per new cancer registration is above the national average (11 days) should work with providers to identify what improvements can be made in terms of both quality and productivity. For instance, whether appropriate services, such as acute oncology services, which can reduce the demand for emergency inpatient care, are in place.

RESOURCES

- To provide comparative information to drive improvements in cancer commissioning, the National Cancer Action Team and the National Cancer Intelligence Network (NCIN) have produced an online resource, the Cancer Commissioning Toolkit. http://www.ncin.org.uk/cancer_information_tools/cct.aspx

1 NCIN. Routes to Diagnosis. <http://www.ncin.org.uk/home.aspx>

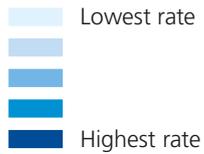
2 Sources: Number of emergency bed-days, 2009/10, Hospital Episode Statistics, NatCanSAT. Number of newly diagnosed cancer cases, 2008, UKCIS (accessed August 2011).

CANCERS AND TUMOURS

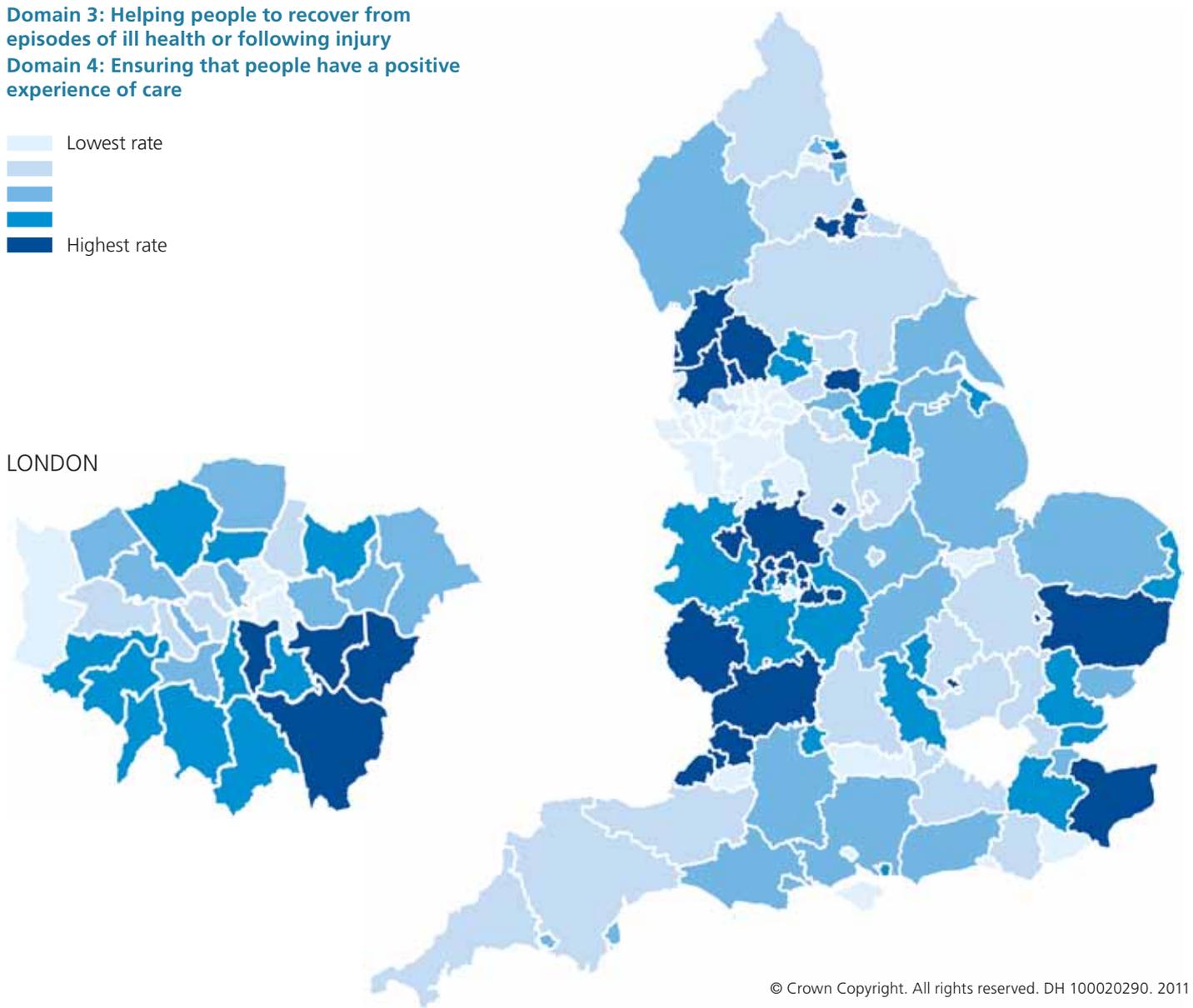
Map 4: Mean length of stay for elective breast surgery by PCT

2009/10

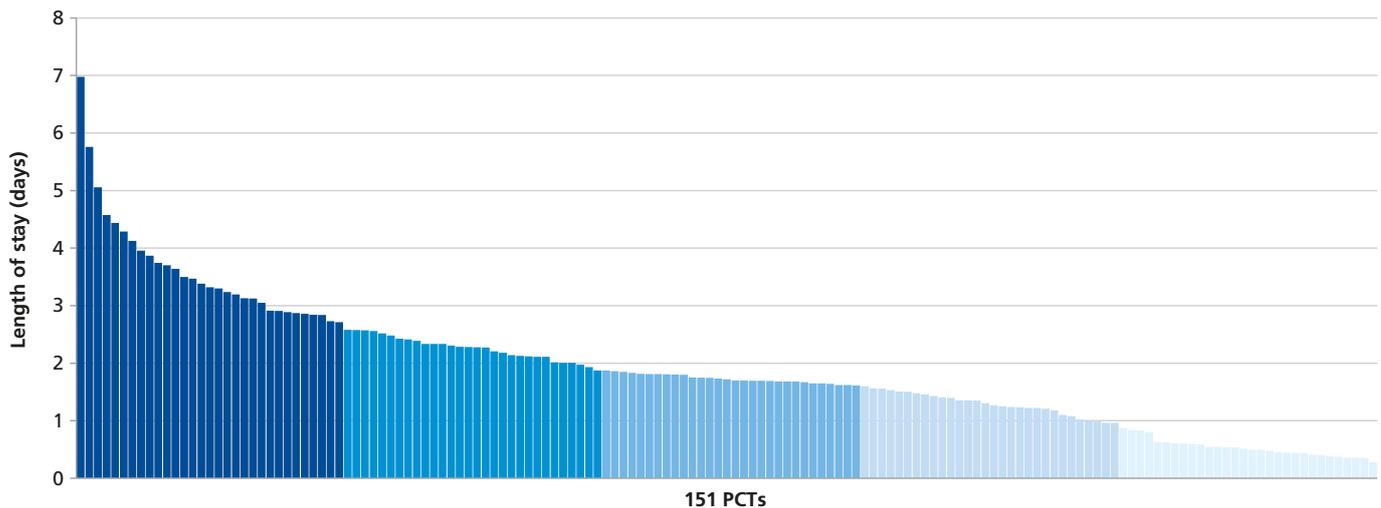
Domain 3: Helping people to recover from episodes of ill health or following injury
 Domain 4: Ensuring that people have a positive experience of care



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Most patients undergoing elective breast surgery can be safely managed as day cases or with a single overnight stay. One exception to this is patients who are undergoing immediate breast reconstruction.

NHS Improvement has led a major service improvement programme to facilitate the introduction of day-case and single-overnight breast surgery. This has been reflected in a marked decrease in overall bed-days for elective breast surgery across England.

Magnitude of variation

For PCTs in England, the mean length of stay for elective breast surgery¹ ranged from 0.3 to 7 days (25-fold variation). When the five PCTs with the highest mean lengths of stay and the five PCTs with the lowest mean lengths of stay are excluded, the range is 0.4–4.3 days, and the variation is 11-fold.

One reason for warranted variation is the number of patients undergoing breast reconstruction, which may be different in different areas.

There is a high degree of variation in mean lengths of stay among PCTs, which is persistent, indicating that some Trusts have not yet introduced the approach of managing patients as day cases or with a single overnight stay.

At present, over 20 PCTs have mean lengths of stay in excess of 3 days, while over 30 PCTs have mean lengths of stay of less than one day.

Options for action

Commissioners in areas where lengths of stay for breast surgery are greater than the mean should discuss the issue with the relevant provider organisation(s).

Commissioners could explore with providers:

- › the use of day-case surgery;
- › whether patients are admitted on the day of surgery;
- › reasons for not adopting single overnight stays as the norm for this group of patients.

RESOURCES

- › To provide comparative information to drive improvements in cancer commissioning, the National Cancer Action Team and the National Cancer Intelligence Network (NCIN) have produced an online resource, the Cancer Commissioning Toolkit. http://www.ncin.org.uk/cancer_information_tools/cct.aspx

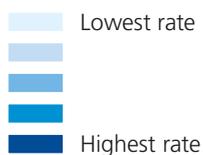
¹ Mean length of episode for elective breast surgery, 2009/10, Hospital Episode Statistics, NatCanSAT.

CANCERS AND TUMOURS

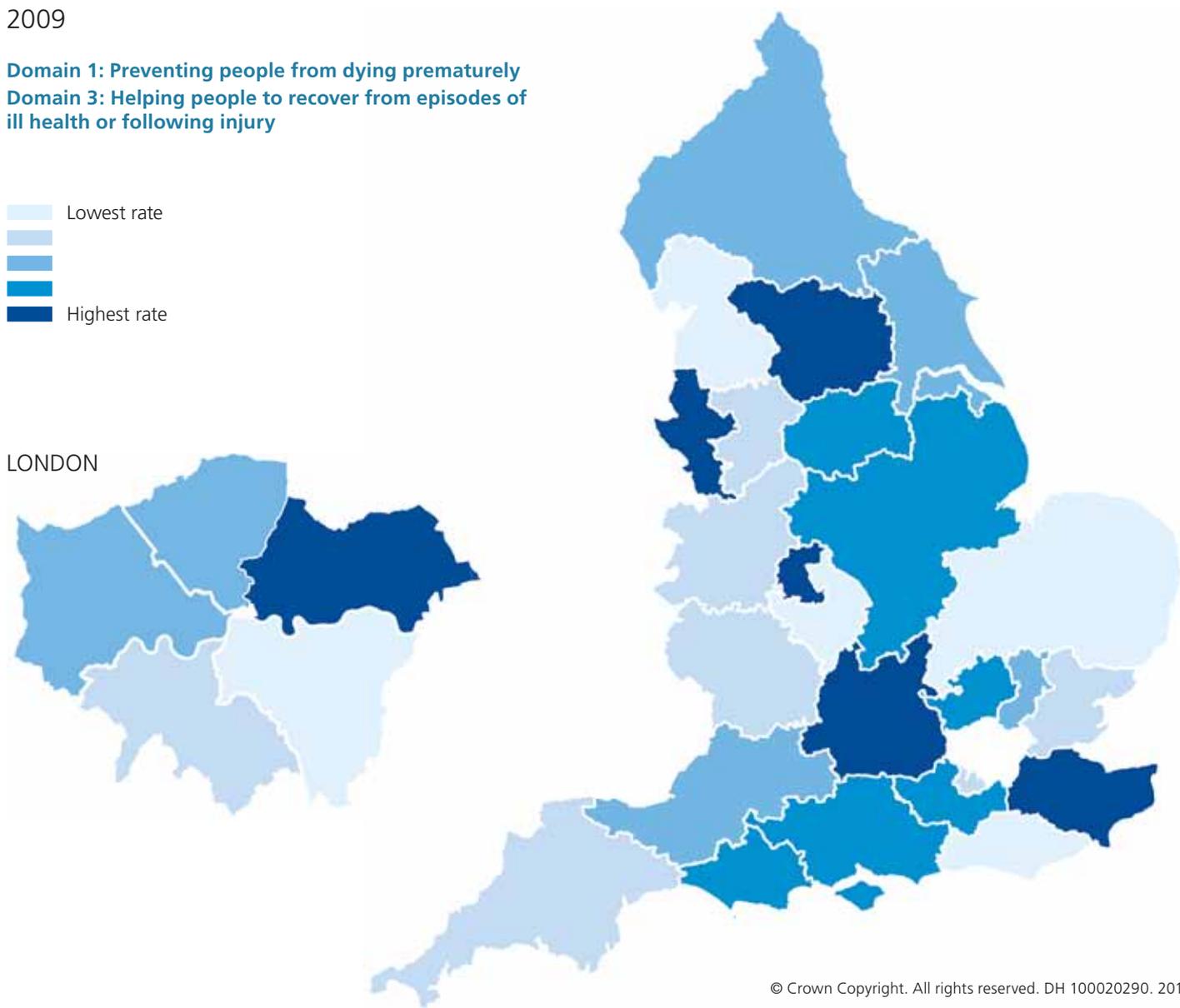
Map 5: Percentage of histologically confirmed non-small cell lung cancer (NSCLC) patients receiving surgery by cancer network

2009

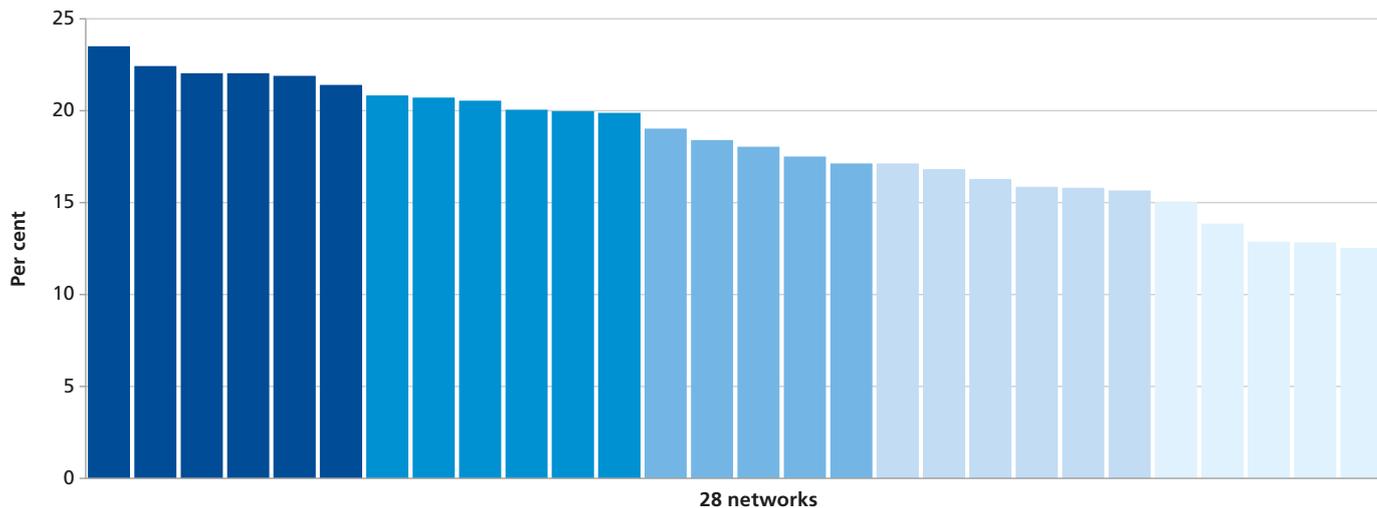
Domain 1: Preventing people from dying prematurely
 Domain 3: Helping people to recover from episodes of ill health or following injury



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

For patients with lung cancer, surgical resection is the treatment most likely to lead to long-term survival, i.e. five years and more. As lung cancer is deep-seated, many patients experience very few symptoms until the disease is quite advanced. There is robust evidence of considerable delays in some patients presenting to specialist care. Surgical treatment is mostly confined to the commonest group of lung cancers known as non-small cell lung cancer (NSCLC).

Survival rates for lung cancer in the UK are worse than those in many other developed countries. From the comparative data available, surgical treatment rates also appear to be lower. It is uncertain whether this is as a result of differences in the characteristics of UK patients or in how they are managed by clinical teams charged with their care.

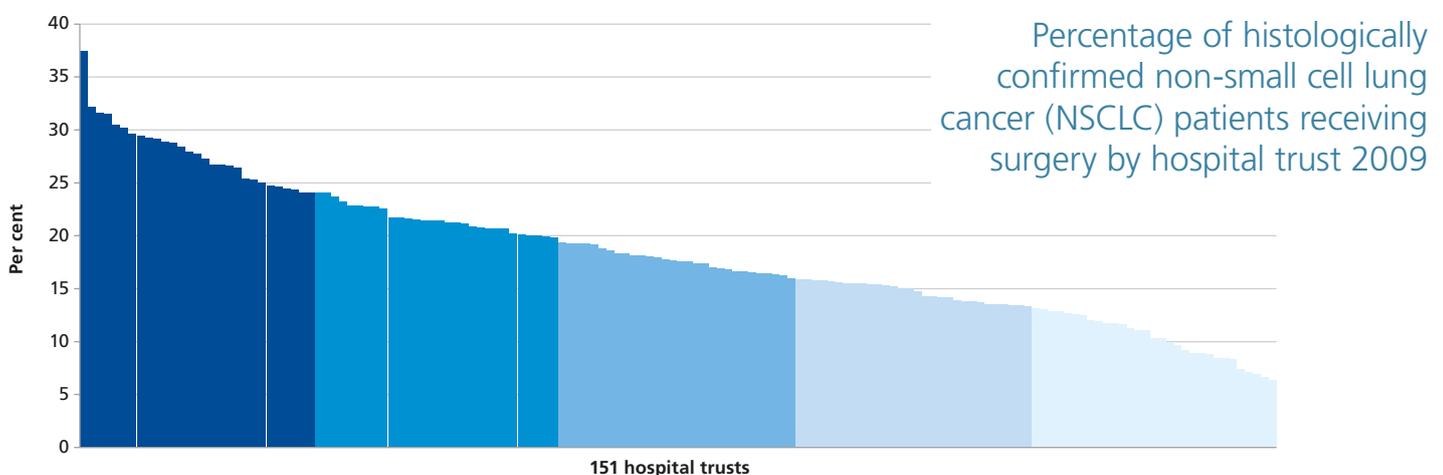
In the UK, surgical treatment rates have been shown to vary widely. In England for 2004–2006, surgical treatment rates for all lung cancer patients (including those in whom no tissue diagnosis has been confirmed) ranged from 3% to 18% by PCT area in which patients lived (based on National Cancer Data Repository managed by the National Cancer Intelligence Network, NCIN).¹ A positive relationship between surgical treatment rate and survival was also found.

Patients assessed first by multidisciplinary teams (MDTs) based in centres with thoracic (chest) surgery are more likely to be operated upon.² Specialist thoracic surgeons operate on a higher proportion of patients; employing specialist surgeons can increase surgical treatment rates in areas where rates have historically been low.³ According to the National Lung Cancer Audit (NLCA), surgical treatment rates have been increasing in recent years. This has coincided with a substantial increase in the number of specialist surgeons (from 44 to >70 in 5–6 years). It is likely that the two phenomena are connected.

Data are from the NLCA (see “Resources”), and include patients with histologically confirmed NSCLC first diagnosed in England in 2009.

Magnitude of variation

For cancer networks in England, the percentage of histologically confirmed NSCLC patients receiving surgery



ranged from 12.5% to 23.5%, a 1.9-fold variation. For hospital Trusts in England (see column chart below), the percentage of histologically confirmed NSCLC patients receiving surgery ranged from 5.6% to 37.5%, a sevenfold variation.

The proportions quoted are uncorrected for case-mix. When the NLCA adjusted for age, sex, performance status (assessment of overall fitness), stage of disease and socio-economic status, major variation in patients' likelihood of having surgical treatment remains.

Nationally, late diagnosis seems to be a major factor in low resection rates. However, the degree of variation in the UK is likely to be largely due to variation in the amount and level of specialisation of thoracic surgical input into treatment decisions in MDTs.

Options for action

Commissioners and providers should:

- collaborate to improve earlier diagnosis of NSCLC, which may affect the stage of disease at diagnosis and the fitness of patients undergoing surgery;
- ensure that support is given to initiatives such as the National Awareness and Early Diagnosis Initiative (NAEDI; see “Resources”) aimed at:
 - increasing public and primary care awareness of the early symptoms of lung cancer;
 - improving access to diagnostic tests, e.g. chest X-ray and CT scans.

Commissioners should review specialist thoracic surgical input into local lung cancer MDTs, and ensure that all patients have access to such advice during the decision-making process for treatment.

RESOURCES

- National Lung Cancer Audit. 2010 Annual Report. NHS Information Centre. http://www.ic.nhs.uk/webfiles/Services/NCASP/audits%20and%20reports/NHSIC_National_Lung_Cancer_Audit_2010_V1.0.pdf
- National Awareness and Early Diagnosis Initiative. <http://info.cancerresearchuk.org/spotcancerearly/naedi/lungtemp>

1 Riaz SP, Lüchtenborg M, Jack RH et al (2011) Variation in surgical resection for lung cancer in relation to survival: population-based study in England 2004-6. *European Journal of Cancer* (in press). epub ahead of publication online from www.sciencedirect.com

2 Rich AL, Tata LJ, Free CM et al (2011) Inequalities in outcomes for non-small cell lung cancer: the influence of clinical characteristics and features of the local lung cancer service. *Thorax* (in press).

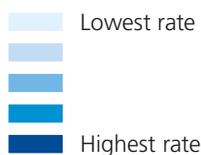
3 Martin-Ucar AE, Waller DA, Atkins JA et al (2004) The beneficial effects of specialist thoracic surgery on the resection rate for non-small cell lung cancer. *Lung Cancer* 46: 227-232.

ENDOCRINE, NUTRITIONAL AND METABOLIC PROBLEMS

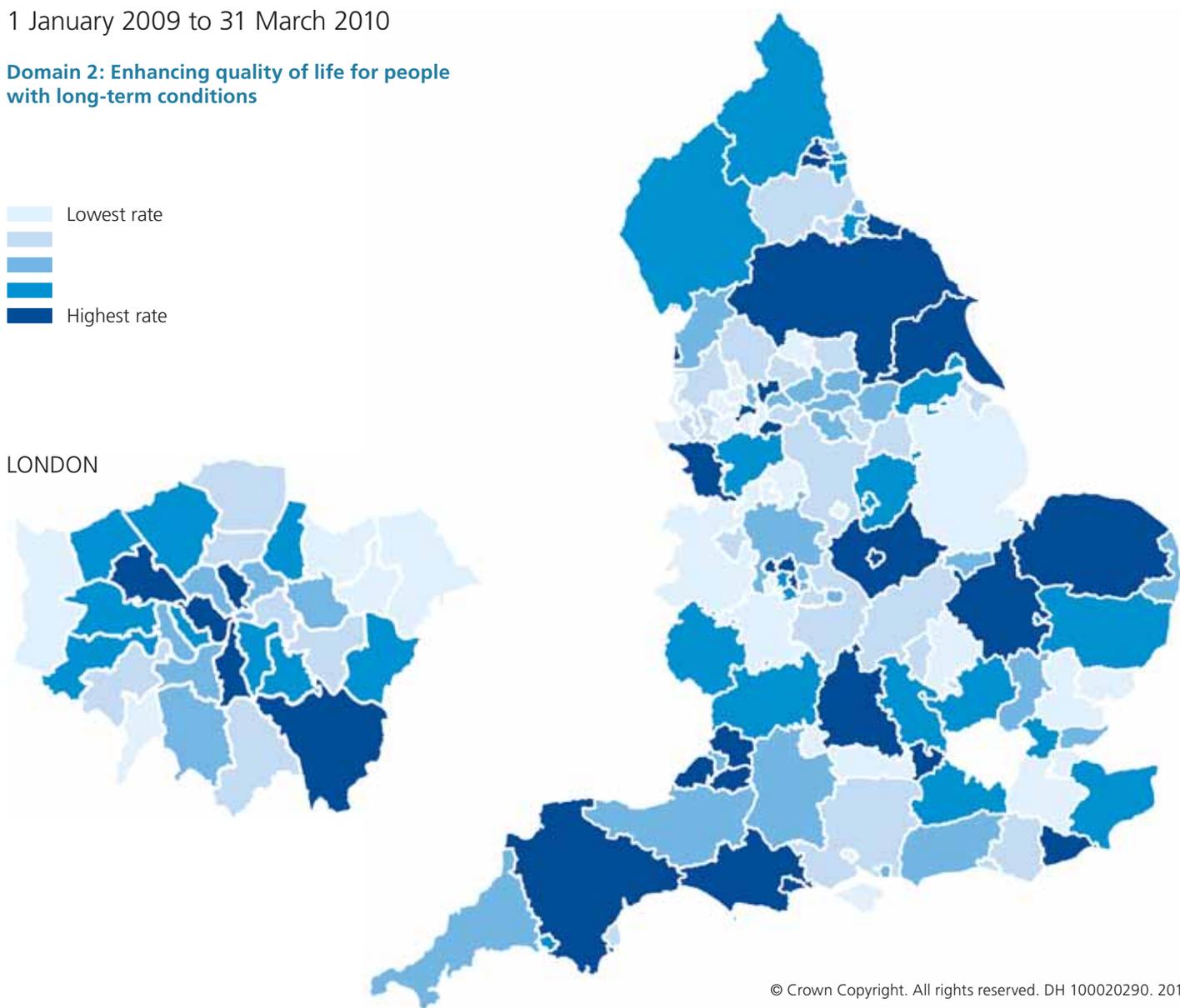
Map 6: Percentage of people in the National Diabetes Audit (NDA) with Type 1 diabetes receiving all nine key care processes by PCT

1 January 2009 to 31 March 2010

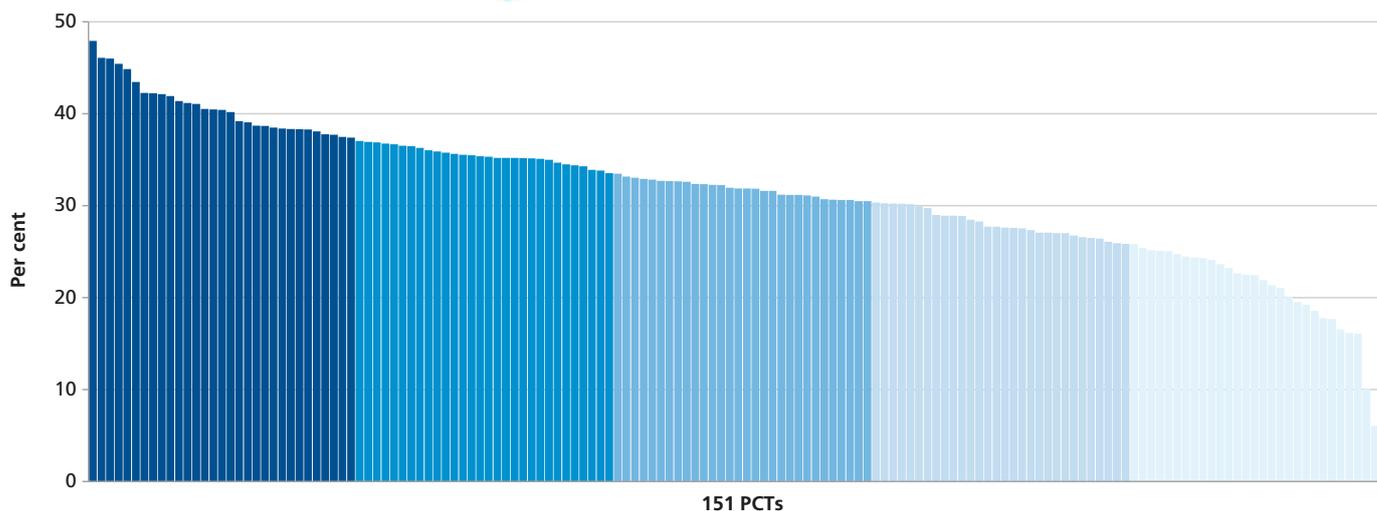
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Diabetes is a lifelong metabolic condition in which the body does not produce enough insulin to regulate blood glucose levels. Type 1 diabetes is an auto-immune condition where the cells that produce insulin are destroyed. It often presents in childhood. People with Type 1 diabetes require lifelong insulin to prevent death. It is estimated that 10% of people with diagnosed diabetes have Type 1 diabetes.

In NICE guidance (see "Resources"), it is recommended that all people with Type 1 diabetes should receive the following care processes at least once a year:

1. HbA1c measurement;
2. Cholesterol measurement;
3. Creatinine measurement;
4. Micro-albuminuria measurement;
5. Blood pressure measurement;
6. Body mass index measured;
7. Smoking status recorded;
8. Eye examination;
9. Foot examination.

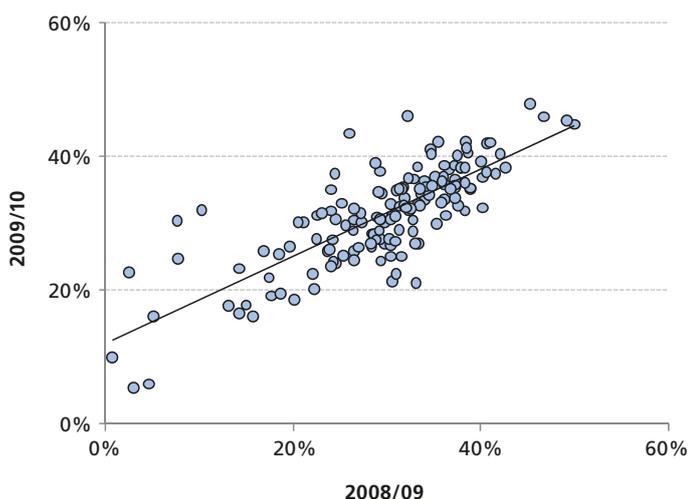
These care processes are essential for the ongoing management of diabetes and the early detection of complications. They are incentivised within the Quality and Outcomes Framework (QOF).

In England, only 31.9% of people with Type 1 diabetes included in the National Diabetes Audit (NDA) had received all nine key care processes between 1 January 2009 and 31 March 2010.

Magnitude of variation

For PCTs in England, the percentage of people in the NDA with Type 1 diabetes receiving all nine key care processes ranged from 5.4% to 47.9% (9-fold). When the five PCTs with the highest percentages and the five PCTs with the lowest percentages are excluded, the range is 16.5–43.4%, and the variation is 2.6-fold.

Figure 6.1: Type 1 diabetes patients (%) receiving all nine care processes over time



The degree of variation for this indicator is greater than that for the matching indicator for people with Type 2 diabetes (see Map 7).

There is a strong association between the percentage of people with Type 1 diabetes who received all nine key care processes in 2008/09 and the percentage in 2009/10 suggesting that the variation is persistent over time (correlation co-efficient=0.769; see Figure 6.1). There is no statistically significant correlation between this indicator and deprivation at PCT level (see Figure 6.2). Both these results suggest that the degree of variation observed is related to how services are organised.

Options for action

Commissioners and providers should ensure that robust arrangements are put in place for everyone with Type 1 diabetes to receive an annual review covering all nine key care processes, which could include:

- › Administrative systems that reliably invite all people with Type 1 diabetes for their annual checks;
- › Processes to follow-up and remind non-attenders;
- › Convenient access;
- › Ensuring that scheduled checks are undertaken on attendance, and accurate recording of the results.

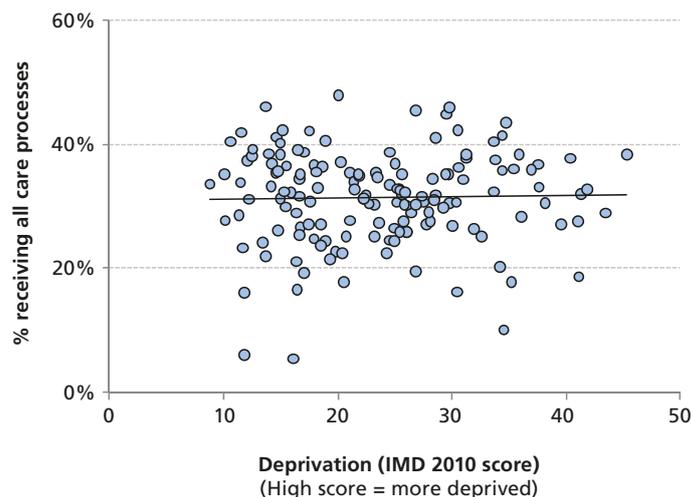
RESOURCES

- › NICE Guidance Type 1 diabetes. Diagnosis and management of type 1 diabetes in children, young people and adults. <http://guidance.nice.org.uk/CG15>
- › NICE Care pathway for diabetes. <http://pathways.nice.org.uk/pathways/diabetes>

This indicator is included in the Diabetes Themed Atlas.

A different methodology to illustrate the variation among PCTs has been used in the Diabetes Themed Atlas, therefore, the shading used in the map and the column chart differs between the two publications. However, the conclusions in the commentaries are based on analyses of the same data and are the same for both publications.

Figure 6.2: Type 1 diabetes patients (%) receiving all nine care processes in relation to deprivation

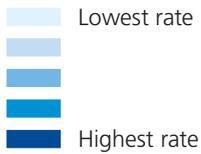


ENDOCRINE, NUTRITIONAL AND METABOLIC PROBLEMS

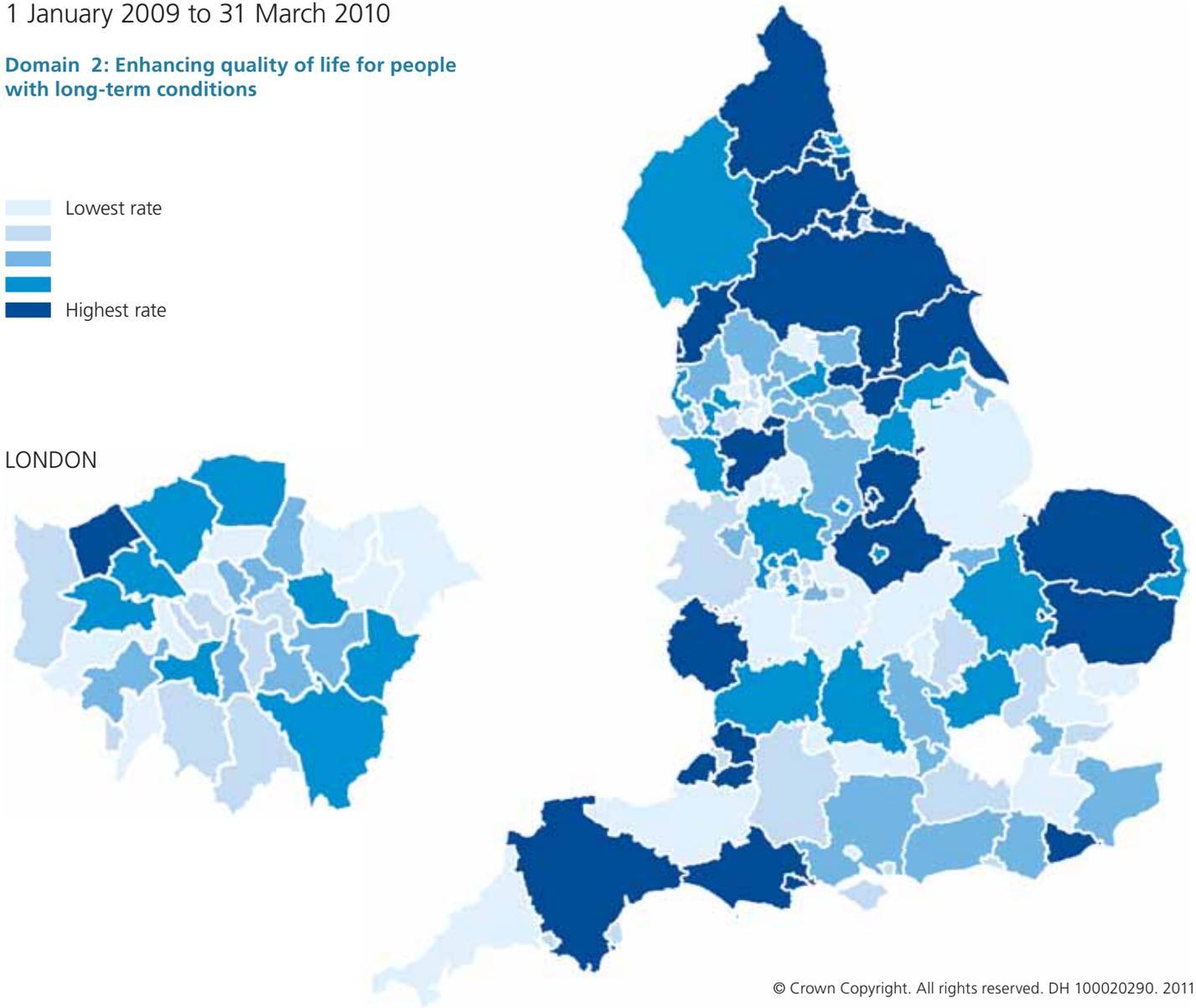
Map 7: Percentage of people in the National Diabetes Audit (NDA) with Type 2 diabetes receiving all nine key care processes by PCT

1 January 2009 to 31 March 2010

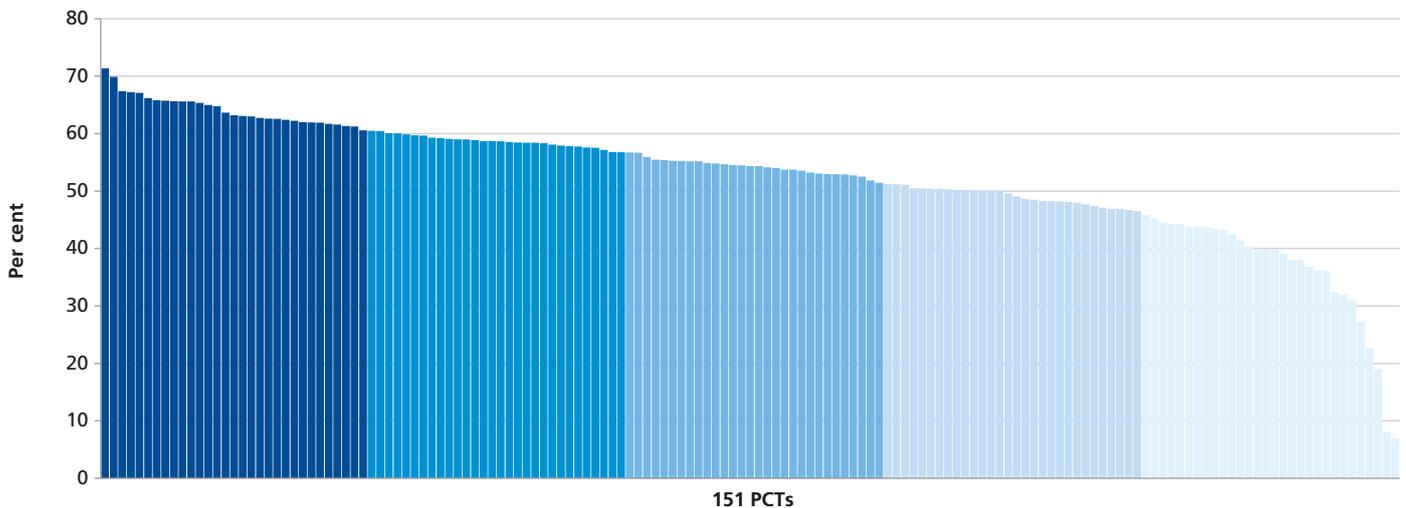
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Diabetes is a lifelong metabolic condition in which the body does not produce enough insulin to regulate blood glucose levels. Type 2 diabetes occurs when the body does not produce enough insulin for its needs. It is a progressive lifelong condition that requires lifestyle management (diet and exercise) at all stages followed by tablets and commonly insulin. The chance of developing Type 2 diabetes increases with age, overweight, and inactivity. People from Black, Middle Eastern and South Asian ethnic groups have a greater risk of developing Type 2 diabetes when compared with people from White ethnic groups.

In NICE guidance (see “Resources”), it is recommended that all people with Type 2 diabetes should receive the following care processes at least once a year:

- › HbA1c measurement;
- › Cholesterol measurement;
- › Creatinine measurement;
- › Micro-albuminuria measurement;
- › Blood pressure measurement;
- › Body mass index measured;
- › Smoking status recorded;
- › Eye examination;
- › Foot examination.

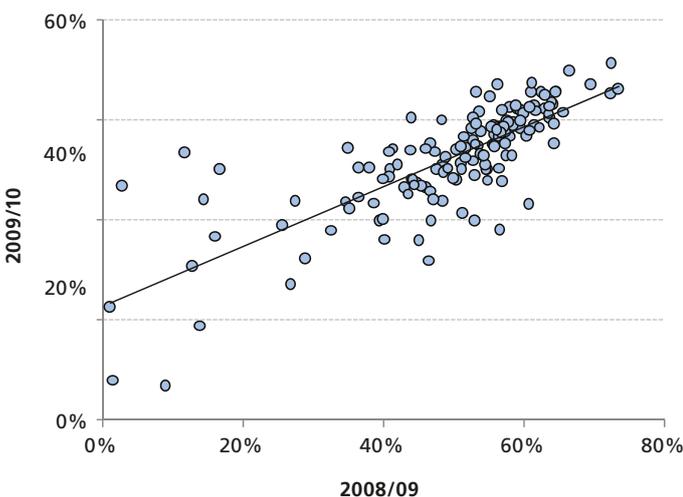
These care processes are essential for the ongoing management of diabetes and the early detection of complications. They are incentivised within the Quality and Outcomes Framework (QOF).

In England, only 52.9% of people in the National Diabetes Audit (NDA) with Type 2 diabetes had received all nine key care processes between 1 January 2009 and 31 March 2010.

Magnitude of variation

For PCTs in England, the percentage of people in the NDA with Type 2 diabetes receiving all nine key care processes ranged from 7% to 71.4% (10-fold variation). When the five PCTs with the highest percentages and the five PCTs with the lowest percentages are excluded, the range is 30.9–66.2%, and the variation is 2.1-fold.

Figure 7.1: Type 2 diabetes patients (%) receiving all nine care processes over time



The degree of variation for this indicator is less than that for the matching indicator for people with Type 1 diabetes (see Map 6).

There is a strong association between the percentage of people with Type 2 diabetes who received all nine care processes in 2008/09 and that in 2009/10 suggesting that the variation is persistent over time (correlation coefficient=0.798; see Figure 7.1). There is no statistically significant correlation between this indicator and deprivation at PCT level (see Figure 7.2). Both these results suggest that the degree of variation observed is related to how services are organised.

Options for action

Commissioners and providers should ensure that robust arrangements are put in place for everyone with Type 2 diabetes to receive an annual review covering all nine key care processes, which could include:

- › Administrative systems that reliably invite all people with Type 2 diabetes for their annual checks;
- › Processes to follow-up and remind non-attenders;
- › Convenient access;
- › Ensuring that scheduled checks are undertaken on attendance, and accurate recording of the results.

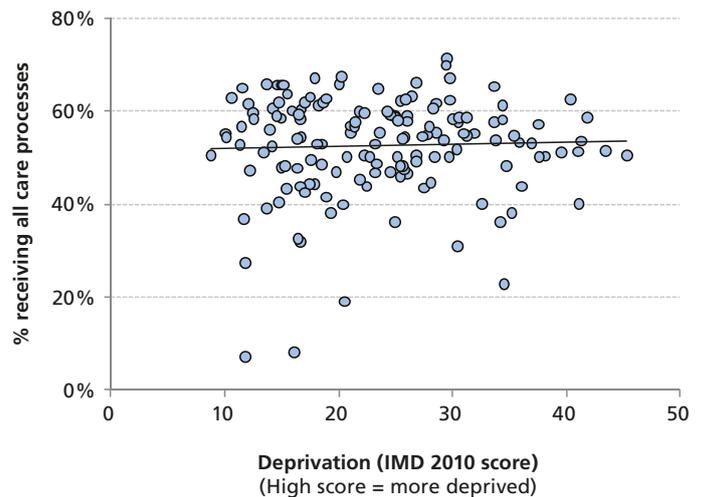
RESOURCES

- › NICE Guidance Type 2 diabetes (partially updated by CG87). Type 2 diabetes: the management of type 2 diabetes (update). <http://www.nice.org.uk/CG66>
- › NICE Care pathway for diabetes. <http://pathways.nice.org.uk/pathways/diabetes>

This indicator is included in the Diabetes Themed Atlas.

A different methodology to illustrate the variation among PCTs has been used in the Diabetes Themed Atlas, therefore, the shading used in the map and the column chart differs between the two publications. However, the conclusions in the commentaries are based on analyses of the same data and are the same for both publications.

Figure 7.2: Type 2 diabetes patients (%) receiving all nine care processes in relation to deprivation

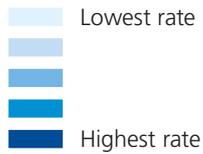


ENDOCRINE, NUTRITIONAL AND METABOLIC PROBLEMS

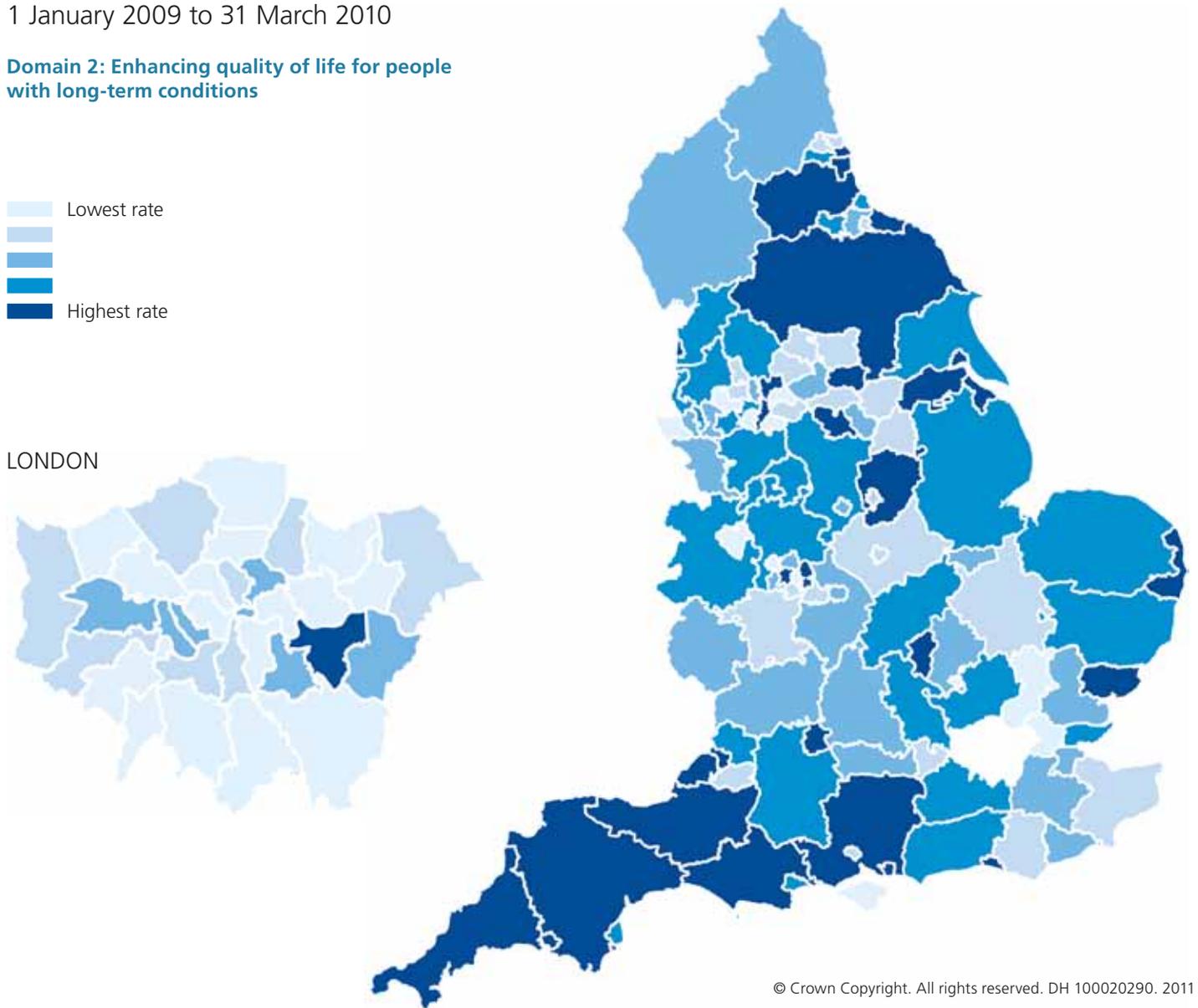
Map 8: Percentage of people in the National Diabetes Audit (NDA) having major lower limb amputations five years prior to the end of the audit period by PCT

1 January 2009 to 31 March 2010

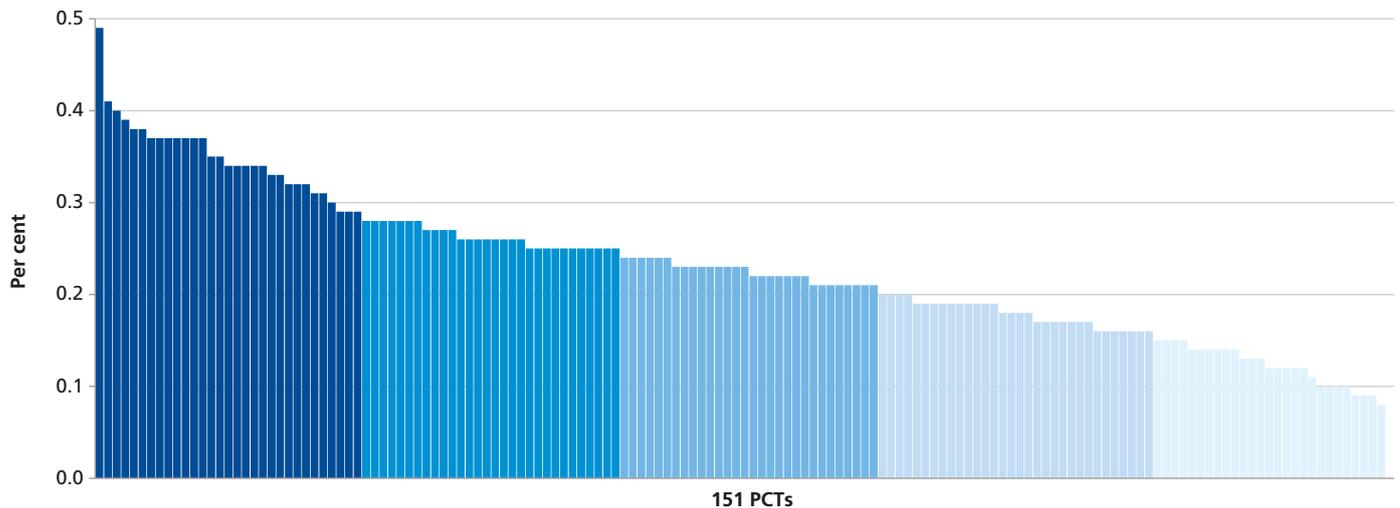
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

People with diabetes are predisposed to developing foot ulcers primarily if they develop peripheral arterial disease (PAD) and/or peripheral neuropathy. Once ulcers occur, healing may be delayed by several factors, including infection, PAD, and continued unnoticed trauma to the wound. Chronic ulceration is the commonest precursor to amputation of the lower limb (defined as above the ankle). Approximately half of the major lower limb amputations in England are in people who have diabetes. In the five years prior to March 2010, 0.24% of people with diabetes included in the National Diabetes Audit (NDA) had had a major lower limb amputation.

Magnitude of variation

For PCTs in England, the percentage of people in the NDA having major lower limb amputations five years prior to the end of the audit period ranged from 0.1% to 0.5% (6-fold variation).¹ When the five PCTs with the highest percentages and the five PCTs with the lowest percentages are excluded, the range is 0.1–0.4%, and the variation is 3.8-fold.

A similar indicator appeared in Atlas 1.0 (Map 3), but the geography was by strategic health authority (rather than PCT), and the patient group was people in the NDA with Type 2 diabetes (rather than all people with diabetes) having a major lower limb amputation in the five years prior to the end of the audit period in 2009 (a twofold variation at this higher geographical level).

Options for action

Good blood glucose control reduces the risk of developing PAD and peripheral neuropathy. Expert assessment and follow-up of people with PAD and/or neuropathy may reduce the onset of new foot disease. Urgent referral to expert services of all newly occurring, or deteriorating, foot disease will lead to improved outcomes.

The results of local studies have shown that the introduction of multidisciplinary teams to assess and treat diabetic foot disease has reduced major amputation rates (see Map 3, Atlas 1.0). Current guidelines (see “Resources”) recommend that:

- all people with diabetes have an annual examination to assess individual risk and that those at increased risk are referred to a member of a foot protection team (FPT) for long-term surveillance (an FPT has expertise in protecting the foot, and typically includes podiatrists, orthotists and footcare specialists);
- all people with diabetes who are admitted to hospital for any reason have their foot risk assessed;
- all people with diabetes who have newly occurring foot disease are referred for urgent assessment by a member of a specialist multidisciplinary team.

RESOURCES

- NICE Guidance Diabetic foot problems – inpatient management. Diabetic foot – inpatient management of people with diabetic foot ulcers and infection. <http://www.nice.org.uk/guidance/CG119>
- Diabetes UK. Putting Feet First (June 2009) Commissioning specialist services for the management and prevention of diabetic foot disease in hospitals. <http://www.diabetes.org.uk/Professionals/Publications-reports-and-resources/Reports-statistics-and-case-studies/Reports/Putting-feet-first/>
- NICE Care pathway for diabetes. <http://pathways.nice.org.uk/pathways/diabetes>

This indicator is included in the Diabetes Themed Atlas.

A different methodology to illustrate the variation among PCTs has been used in the Diabetes Themed Atlas, therefore, the shading used in the map and the column chart differs between the two publications. However, the conclusions in the commentaries are based on analyses of the same data and are the same for both publications.

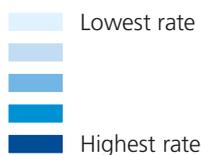
¹ Data from one PCT have been excluded.

ENDOCRINE, NUTRITIONAL AND METABOLIC PROBLEMS

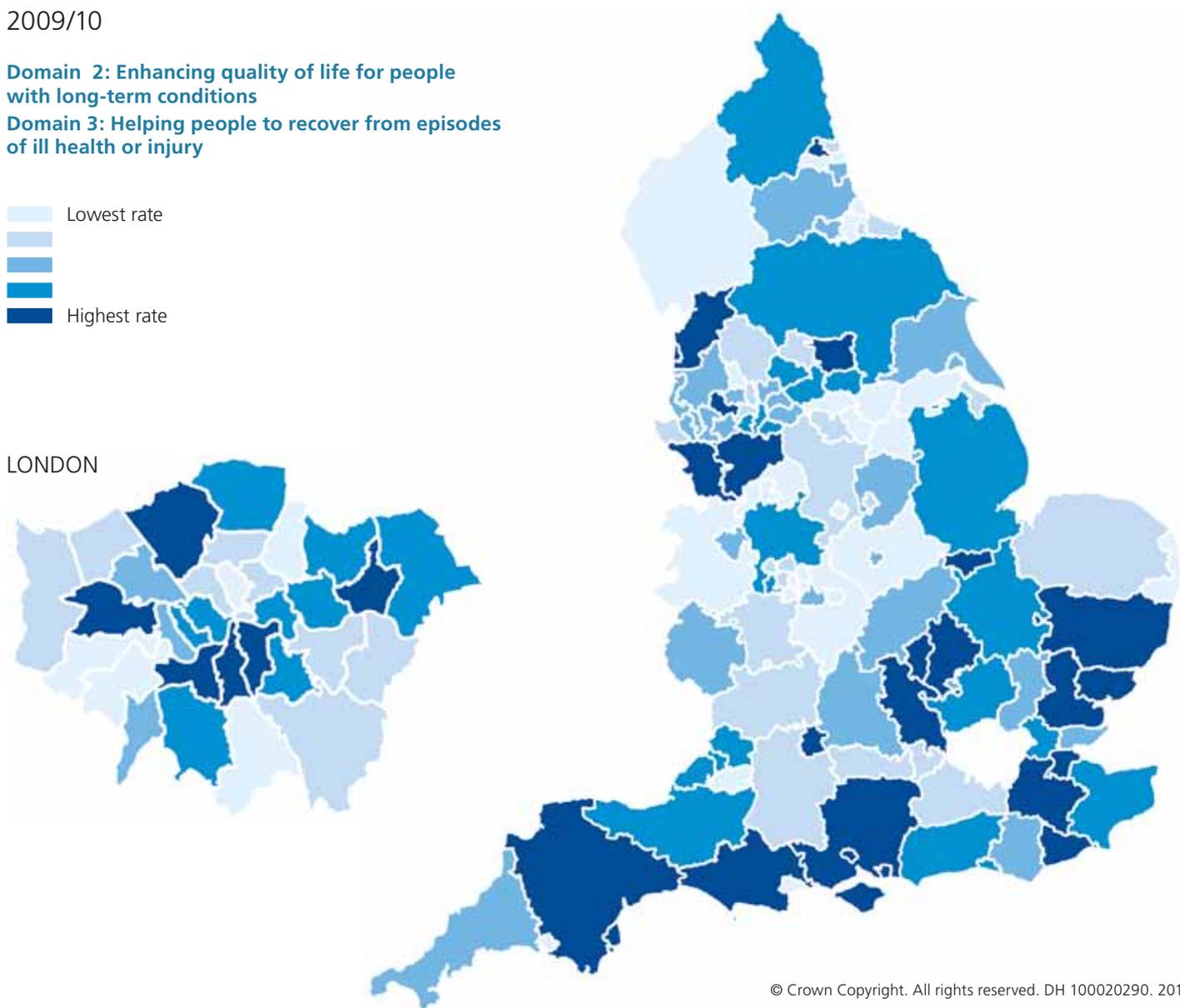
Map 9: Excess length of stay (%) in hospital among people with diabetes when compared with people without diabetes by PCT

2009/10

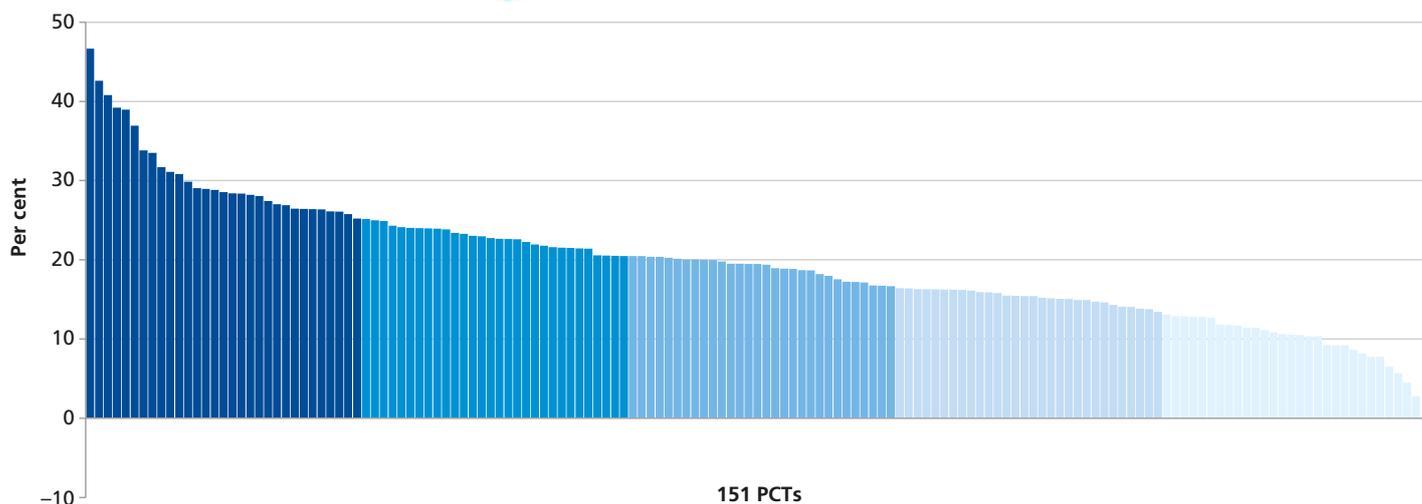
Domain 2: Enhancing quality of life for people with long-term conditions
 Domain 3: Helping people to recover from episodes of ill health or injury



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

People with diabetes are more likely than those without diabetes to be admitted to hospital. When in hospital, people with diabetes stay for longer when compared with people of a similar age who do not have diabetes but are admitted for similar conditions. In England, people with diabetes stayed in hospital 795,000 days or 19.4% longer than would have been expected if they had the same length of stay as people of a similar age who do not have diabetes.

Magnitude of variation

For PCTs in England, the excess length of stay among people with diabetes when compared with people without diabetes ranged from -0.4% to 46.7%. When the five PCTs with the highest percentages and the five PCTs with the lowest percentages are excluded, the range is 7.8–36.9%, and the variation is 4.8-fold.

There is a correlation between the percentage difference of excess lengths of stay among people with diabetes when compared with people who do not have the

condition in 2008/09 and that in 2009/10 ($r=0.657$, $p<0.0005$; see Figure 9.1). These results suggest that the variation in excess lengths of stay among people with diabetes when compared with people who do not have the condition is related to how services are organised.

Options for action

The results of local studies in Plymouth and Norwich (see “Resources”) have shown that the introduction of dedicated inpatient diabetes teams can reduce the length of stay for people with diabetes. In these local studies, diabetes specialist nurses provided:

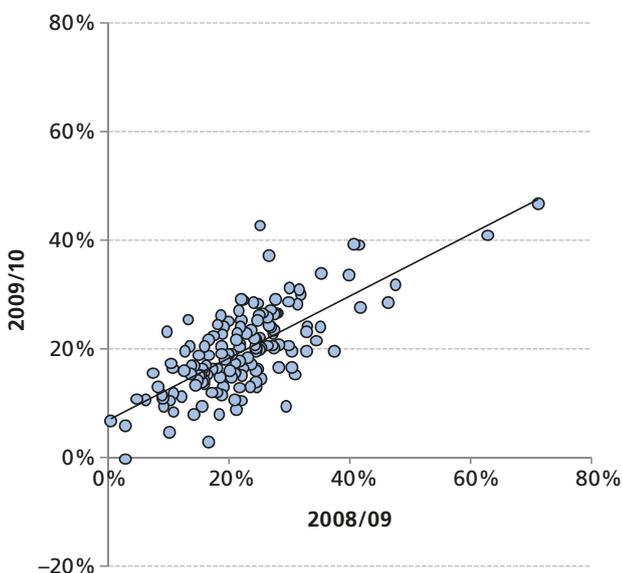
- diabetes training and awareness raising for non-diabetes clinical staff;
- protocols for the management of patients with diabetes;
- specific input into the management of patients experiencing problems with their diabetes management.

RESOURCES

- VIA: Diabetes tool (source of the indicator). <http://www.yhpho.org.uk/resource/view.aspx?RID=105866>
- Flanagan D, Moore E, Baker S Wright D, Lynch P (2008) Diabetes care in hospital – the impact of a dedicated inpatient care team. *Diabetic Medicine* 25, 147–151.
- Sampson MJ, Crowle T, Dhatariya K et al (2006) Trends in bed occupancy for inpatients with diabetes before and after the introduction of a diabetes inpatient specialist nurse service. *Diabetic Medicine* 23, 1008–1015.
- NICE Care pathway for diabetes. <http://pathways.nice.org.uk/pathways/diabetes>

This indicator is included in the Diabetes Themed Atlas. A different methodology to illustrate the variation among PCTs has been used in the Diabetes Themed Atlas, therefore, the shading used in the map and the column chart differs between the two publications. However, the conclusions in the commentaries are based on analyses of the same data and are the same for both publications.

Figure 9.1: Excess length of stay (%) in patients with diabetes over time

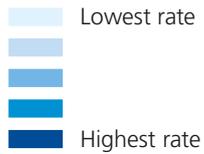


ENDOCRINE, NUTRITIONAL AND METABOLIC PROBLEMS

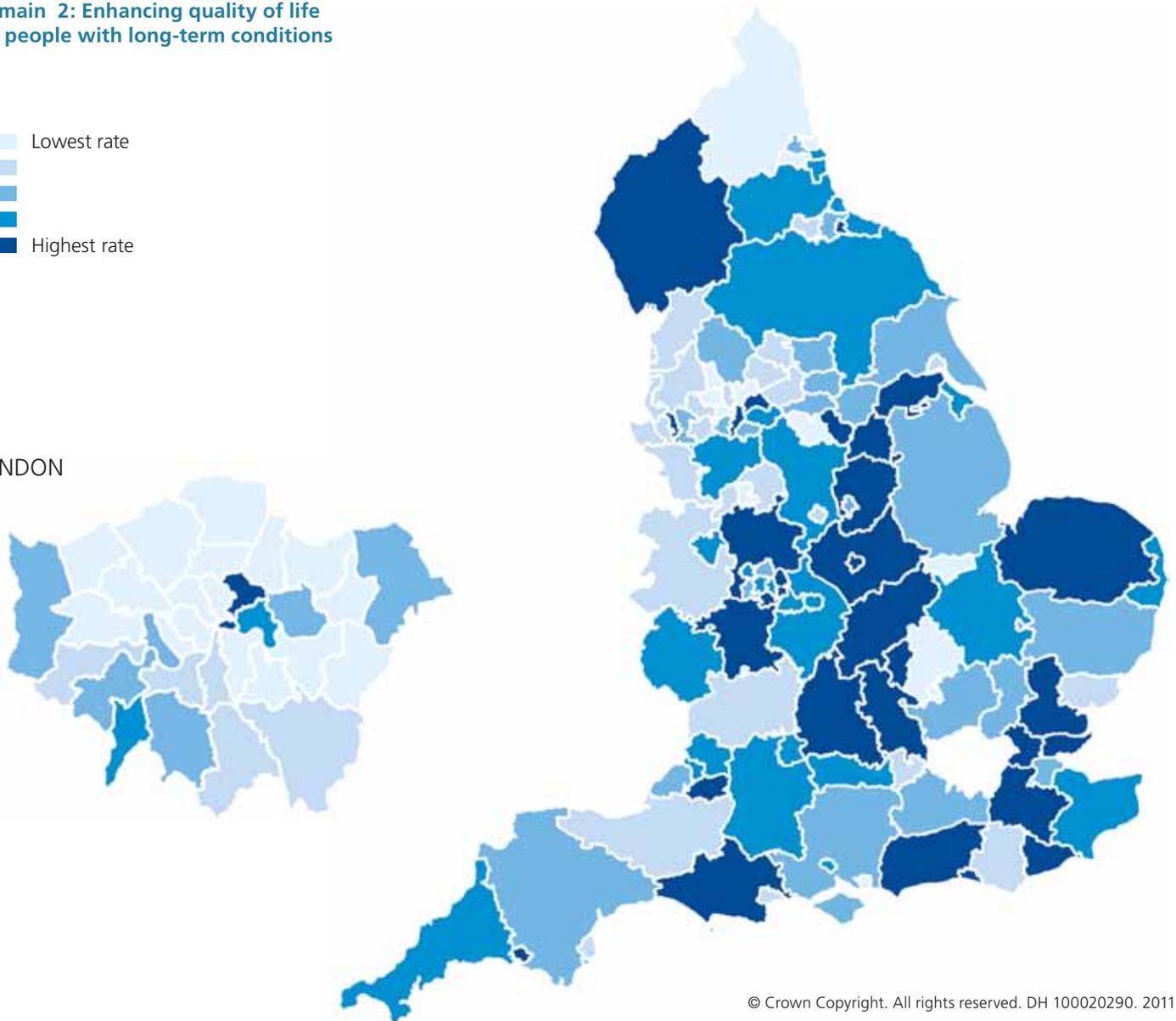
Map 10: Insulin total net ingredient cost per patient on GP diabetes registers by PCT

2010/11

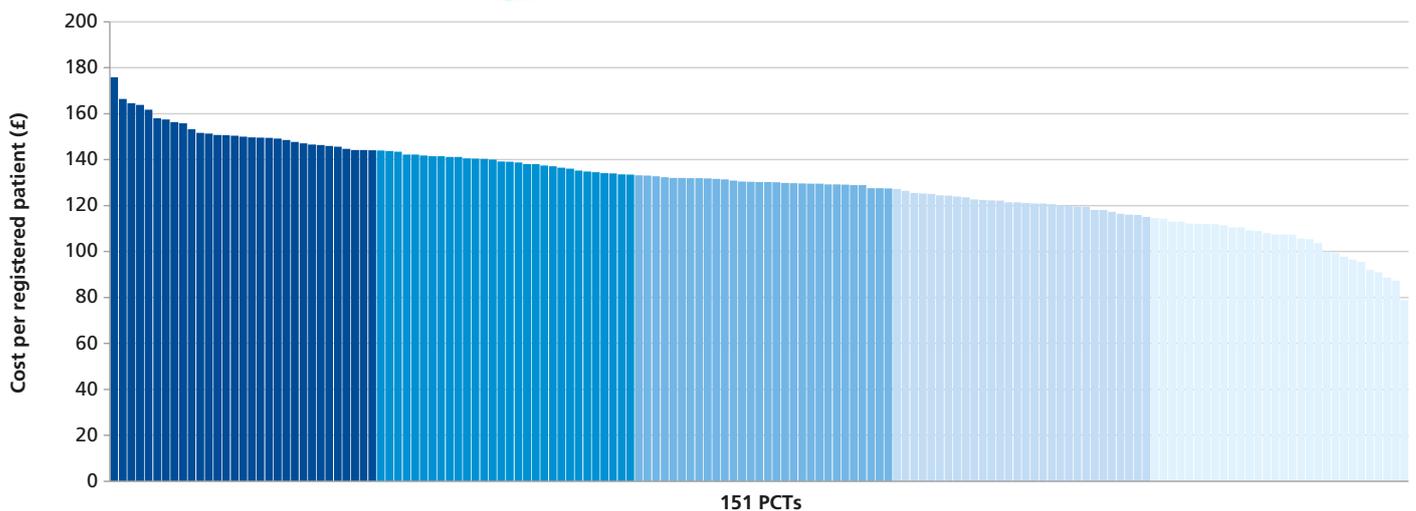
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Diabetes is costly. In 2009/10, prescribing for all anti-diabetic items including blood-testing items cost £725.1 million and accounted for 8.4% of the total spend on prescriptions in primary care, an increase of 41.2% since 2005/06. The costs of diabetes prescribing are increasing faster than those for any other category of drugs.¹

Insulin is used to lower blood glucose in people with Type 1 diabetes, and in people with Type 2 diabetes when non-insulin drugs are not providing adequate control. In 2010/11 in England, prescriptions for insulin cost £307 million, and the average spend per adult with diabetes was £131.46.

Magnitude of variation

For PCTs in England, the insulin total net ingredient cost per patient on GP diabetes registers ranged from £79 to £176 (2.2-fold variation). When the five PCTs with the highest costs and the five PCTs with the lowest costs are excluded, the range is £95–£158 per patient, and the variation is 1.7-fold.

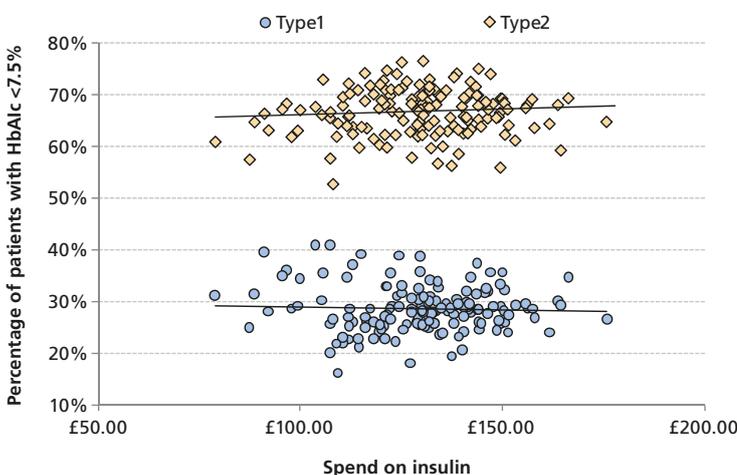
The degree of variation for this indicator is less than that for the indicator concerning the cost of non-insulin anti-diabetic items (see Map 11).

There was no correlation between spending on insulin items and the percentage of people with Type 1 diabetes or with Type 2 diabetes whose last HbA1c measurement was 7.5% (58mmol/mol) or less at PCT level (see Figure 10.1). This indicates that the PCTs spending the most on insulin do not necessarily have the greatest percentage of people with diabetes with optimal blood glucose control.

There is a strong correlation (correlation co-efficient=0.977; see Figure 10.2) between expenditure on insulin items in 2008/09 and that in 2009/10 suggesting that prescribing patterns at a PCT level are persistent over time.

Both these results suggest that the variation in expenditure on insulin is related to how services are organised.

Figure 10.1: Blood glucose control for Type 1 and Type 2 diabetes patients (%) compared with spend (£) on insulin



1 Prescribing for Diabetes in England 2005/06 to 2010/11. http://www.ic.nhs.uk/webfiles/publications/prescribing%20diabetes%20200506%20to%20201011/Prescribing_for_Diabetes_in_England_20056_to_201011.pdf

Options for action

NICE guidance (see “Resources”) contains recommended treatment regimens for people with Type 1 and Type 2 diabetes.

Commissioners and providers need to investigate variation in local expenditure on insulin and consider whether local prescribing practice is in line with NICE guidance. The investigation should include:

- local case-mix;
- patterns of insulin use among people with Type 2 diabetes.

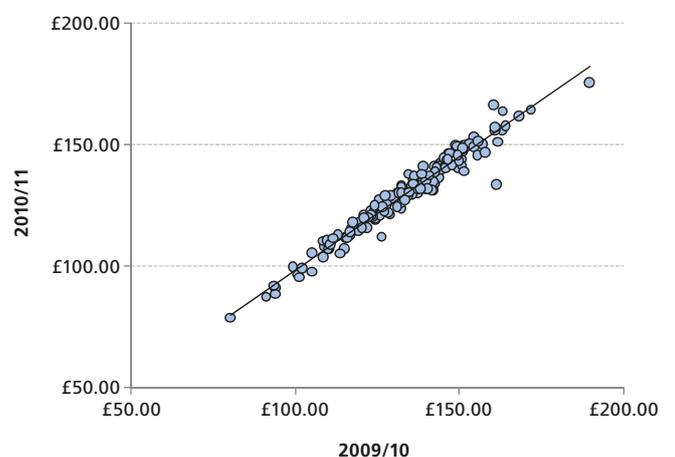
RESOURCES

- NICE Guidance Type 1 diabetes. Diagnosis and management of type 1 diabetes in children, young people and adults. <http://guidance.nice.org.uk/CG15>
- NICE Guidance Type 2 diabetes (partially updated by CG87). Type 2 diabetes: the management of type 2 diabetes (update). <http://www.nice.org.uk/CG66>
- NICE Care pathway for diabetes. <http://pathways.nice.org.uk/pathways/diabetes>

This indicator is included in the Diabetes Themed Atlas.

A different methodology to illustrate the variation among PCTs has been used in the Diabetes Themed Atlas, therefore, the shading used in the map and the column chart differs between the two publications. However, the conclusions in the commentaries are based on analyses of the same data and are the same for both publications.

Figure 10.2: Spend (£) on insulin items over time

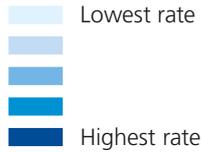


ENDOCRINE, NUTRITIONAL AND METABOLIC PROBLEMS

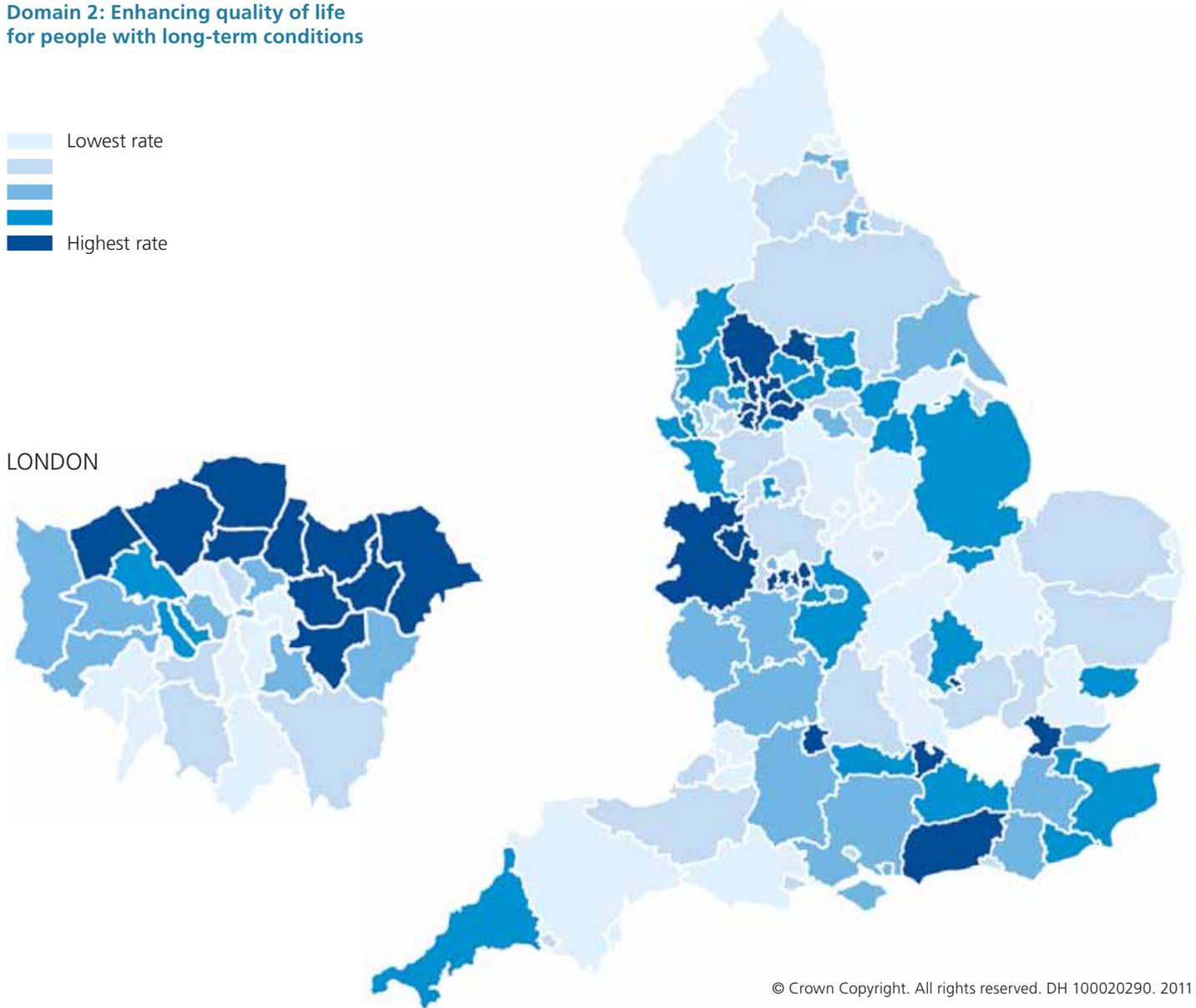
Map 11: Non-insulin anti-diabetic drugs total net ingredient cost per patient on GP diabetes registers by PCT

2010/11

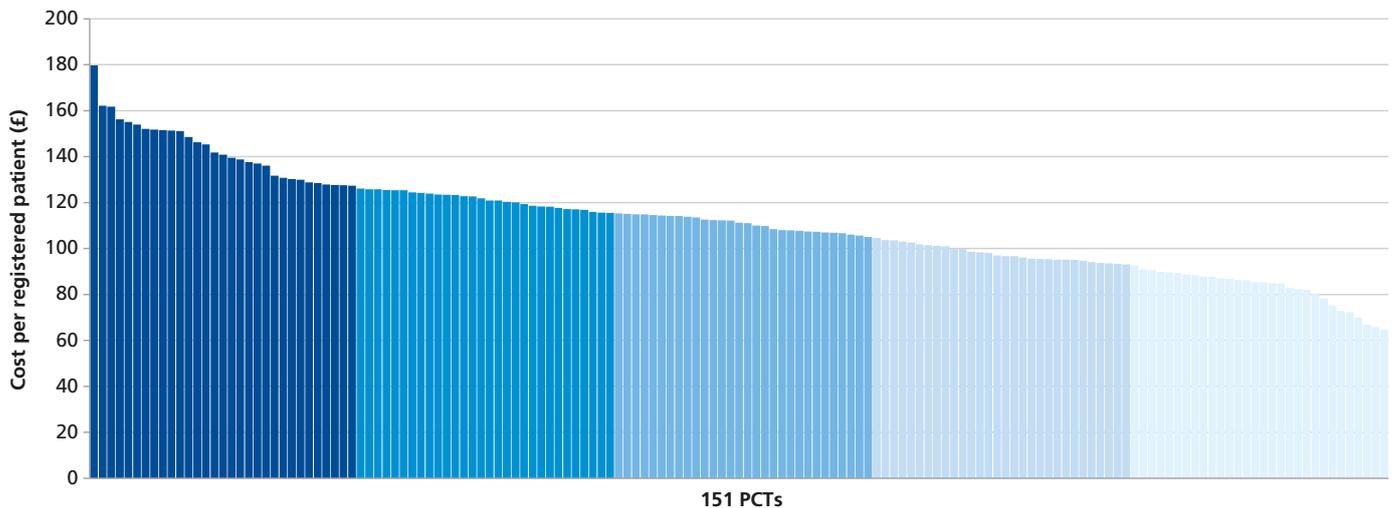
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Diabetes is costly. In 2009/10, prescribing for all anti-diabetic items including blood-testing items cost £725.1 million and accounted for 8.4% of the total spend on prescriptions in primary care, an increase of 41.2% since 2005/06. The costs of diabetes prescribing are increasing faster than those for any other category of drugs.¹

Non-insulin anti-diabetic drugs (mainly tablets) are used to control blood glucose levels in people with Type 2 diabetes. In 2010/11, prescriptions for non-insulin anti-diabetic drugs in England cost £259 million, and the average spend per adult with diabetes was £110.79.

Magnitude of variation

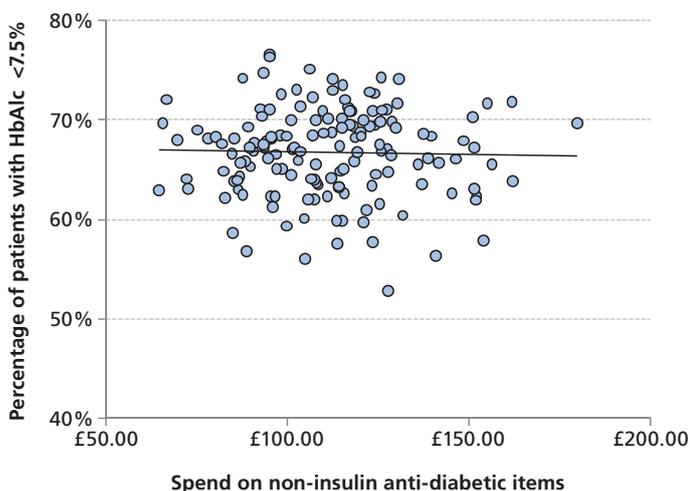
For PCTs in England, the non-insulin anti-diabetic drugs total net ingredient cost (NIC) per patient on GP diabetes registers ranged from £65 to £180 (2.8-fold). When the five PCTs with the highest costs and the five PCTs with the lowest costs are excluded, the range is £73–£154 per patient, and the variation is 2.1-fold.

The degree of variation is greater for this indicator than that for the cost of insulin drugs (see Map 10).

There was no correlation between spending on non-insulin anti-diabetic drugs and the percentage of people with Type 2 diabetes whose last HbA1c measurement was 7.5% (58mmol/mol) or less at PCT level (see Figure 11.1). This indicates that the PCTs spending the most on non-insulin anti-diabetic drugs do not necessarily have the greatest percentage of people with diabetes with optimal blood glucose control.

There is a strong correlation (correlation co-efficient=0.958; see Figure 11.2) between expenditure on non-insulin anti-diabetic drugs in 2008/09 and that in 2009/10 suggesting that prescribing patterns at a PCT level are persistent over time.

Figure 11.1: Blood glucose control for Type 2 diabetes patients (%) compared with spend (£) on non-insulin anti-diabetic items



1 Prescribing for Diabetes in England 2005/06 to 2010/11. http://www.ic.nhs.uk/webfiles/publications/prescribing%20diabetes%20200506%20to%20201011/Prescribing_for_Diabetes_in_England_20056_to_201011.pdf

Both these results suggest that the variation in expenditure on non-insulin anti-diabetic drugs is related to how services are organised.

Options for action

NICE guidance (see “Resources”) contains recommended treatment regimens for people with Type 2 diabetes.

Commissioners and providers need to investigate variation in local expenditure on non-insulin anti-diabetic drugs and consider whether local prescribing practice is in line with NICE guidance. Local investigation of prescribing patterns should include:

- Variation among practices in the mix of non-insulin anti-diabetic items prescribed;
- Practice-based NIC for diabetes drugs versus glucose control in people with Type 2 diabetes;
- The association between prescribing for non-insulin anti-diabetic items and HbA1c outcomes.

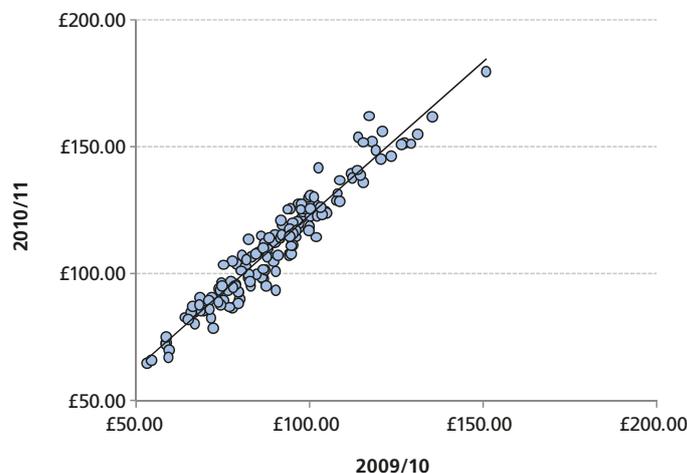
RESOURCES

- NICE Guidance Type 2 diabetes (partially updated by CG87). Type 2 diabetes: the management of type 2 diabetes (update). <http://www.nice.org.uk/CG66>
- NICE Care pathway for diabetes. <http://pathways.nice.org.uk/pathways/diabetes>

This indicator is included in the Diabetes Themed Atlas.

A different methodology to illustrate the variation among PCTs has been used in the Diabetes Themed Atlas, therefore, the shading used in the map and the column chart differs between the two publications. However, the conclusions in the commentaries are based on analyses of the same data and are the same for both publications.

Figure 11.2: Spend (£) on non-insulin anti-diabetic items over time

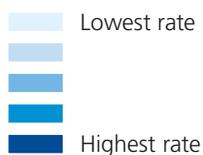


ENDOCRINE, NUTRITIONAL AND METABOLIC PROBLEMS

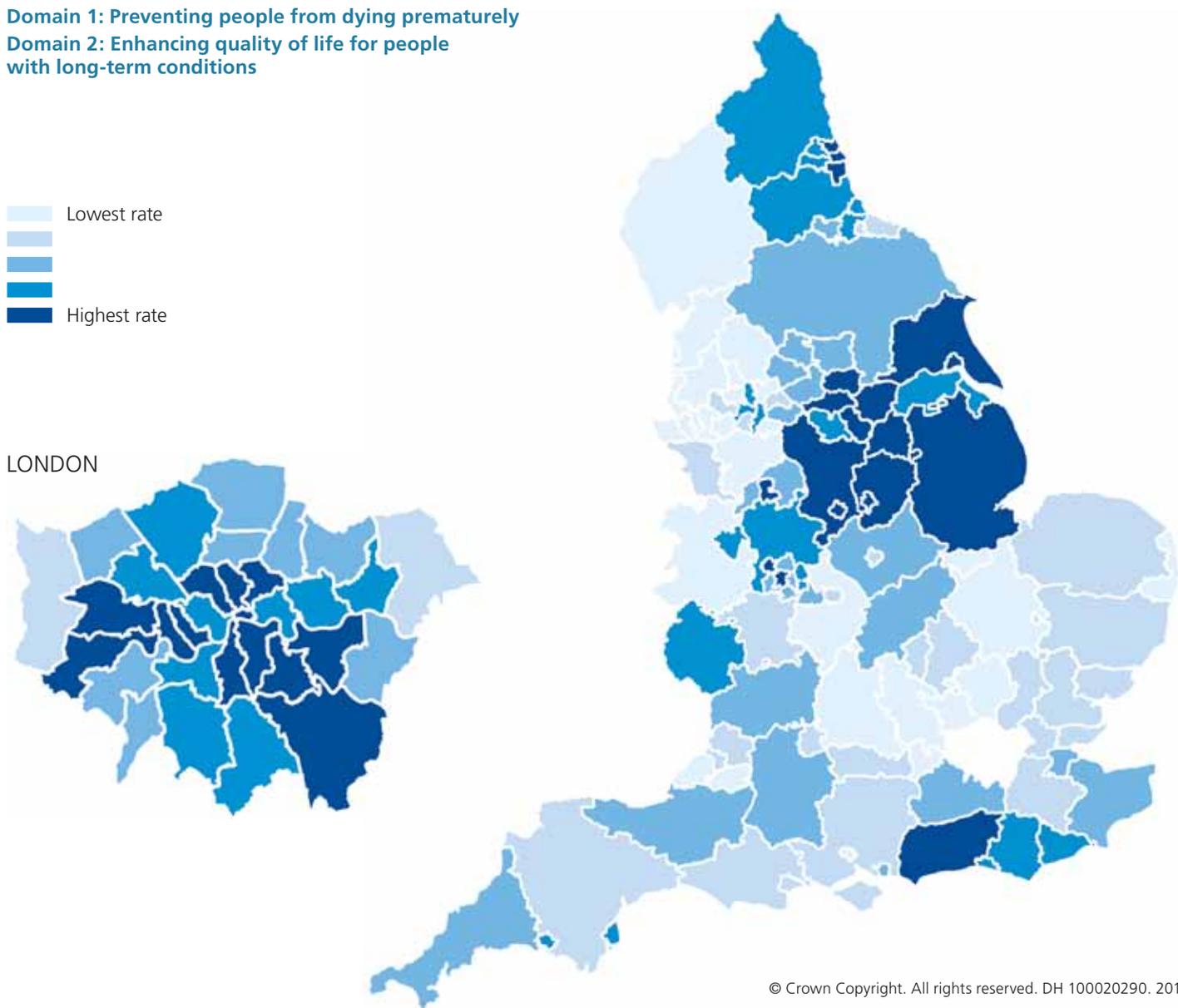
Map 12: Rate of bariatric procedures in hospital per population by PCT

Directly standardised rate 2007/08-2009/10

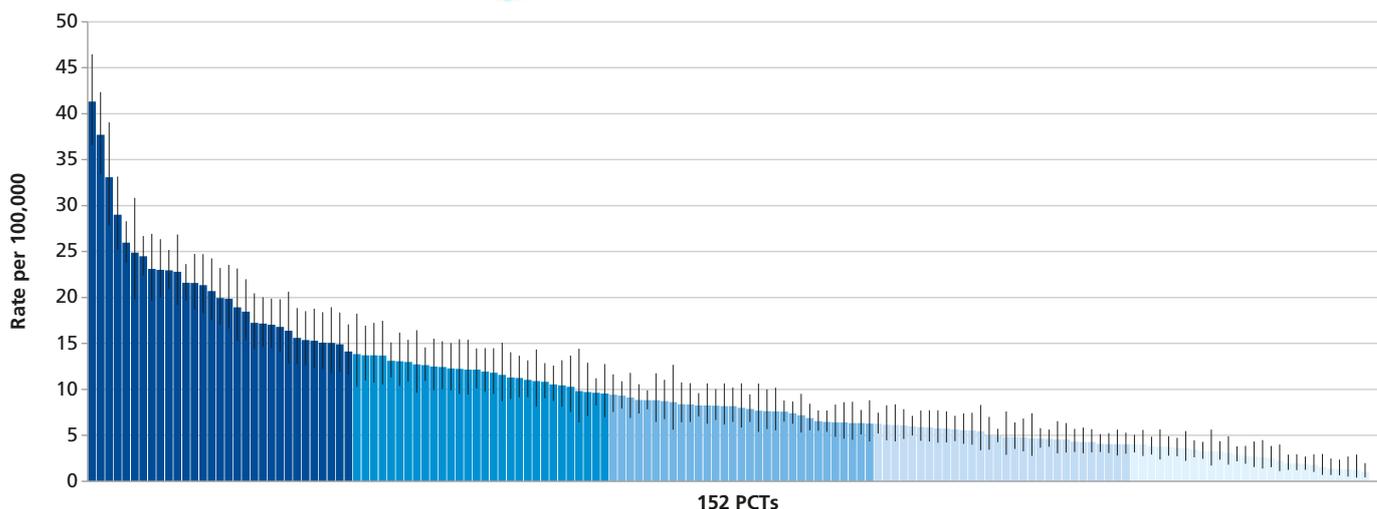
Domain 1: Preventing people from dying prematurely
 Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

This indicator has been repeated from Atlas 1.0 (Map 5, Atlas 1.0):

- › coding has been updated (details of codes are provided in the accompanying metadata available from the Right Care website);
- › the rate of bariatric procedures per population over time has been included.

“Bariatric surgery” is a generic term used to describe a group of procedures performed to facilitate weight loss. The most commonly performed procedures in the UK are:

- › adjustable gastric banding;
- › gastric bypass;
- › sleeve gastrectomy.

The number of NHS-commissioned bariatric surgery procedures in England has increased rapidly in recent years across all strategic health authorities (SHAs), although levels of activity vary widely across PCTs. In most SHAs, the rate of bariatric surgery has risen year on year over the period 2003/04–2009/10 (see Figure 12.1).

Magnitude of variation

For PCTs in England, the rate of bariatric procedures in hospital per 100,000 ranged from 0.4 to 41.3 (93-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 1.3–24.9 per 100,000, and the variation is 19-fold.

Potential reasons for variation include:

- › Access to/provision of bariatric surgery – in areas where rates are lowest, there may be limited access to surgery as a routine form of intervention;

- › Deprivation - the highest rates are found within or adjacent to the most deprived areas;
- › Obesity prevalence, which is related to deprivation – at present, it is not possible to compare rates of admission for bariatric surgery with obesity prevalence by PCT because these data are not available (modelled estimates are based on national rates and may not be representative).

Interpreting the variation in bariatric surgery is difficult due to lack of data on activity in the private sector.

Options for action

In NICE guidance (see “Resources”), bariatric surgery is recommended as a treatment option for people with morbid obesity, or who have a lower body mass index (BMI) coupled with other significant disease.

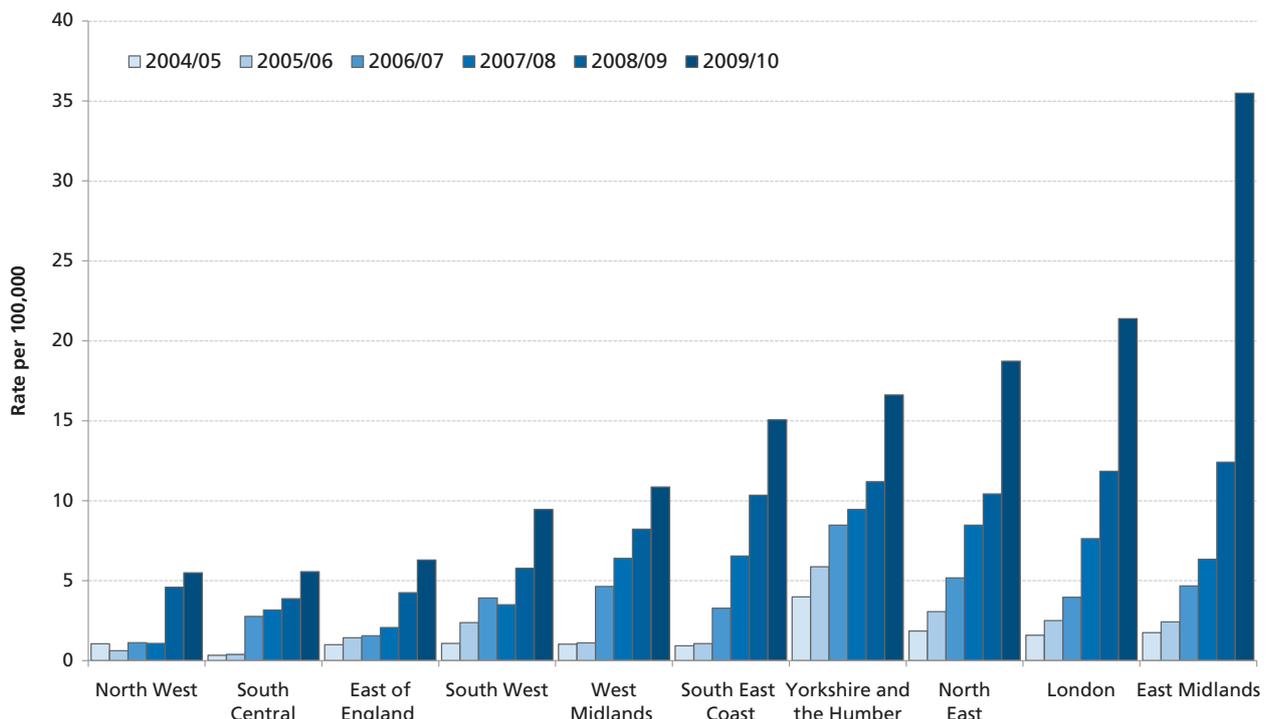
However, bariatric surgery should be offered only when all appropriate non-surgical measures have been unsuccessful, except in adults with a BMI of >50 kg/m², who may be offered surgery as a first-line treatment option, and which should be part of a comprehensive package of obesity services provided by a multidisciplinary team.

RESOURCES

- › NICE clinical guideline 43. Obesity: guidance on the prevention, identification, assessment and management of overweight and obesity in adults and children. <http://www.nice.org.uk/nicemedia/live/11000/30365/30365.pdf>
- › National Obesity Observatory (NOO) provides a single point of contact for wide-ranging authoritative information on data, evaluation and evidence related to weight status and its determinants. <http://www.noo.org.uk>

 See what Right Care is doing about obesity surgery on page 32

Figure 12.1: Rate of bariatric procedures per population over time by SHA. Directly standardised rate 2004/05 to 2009/10

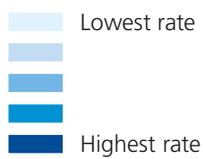


MENTAL DISORDERS

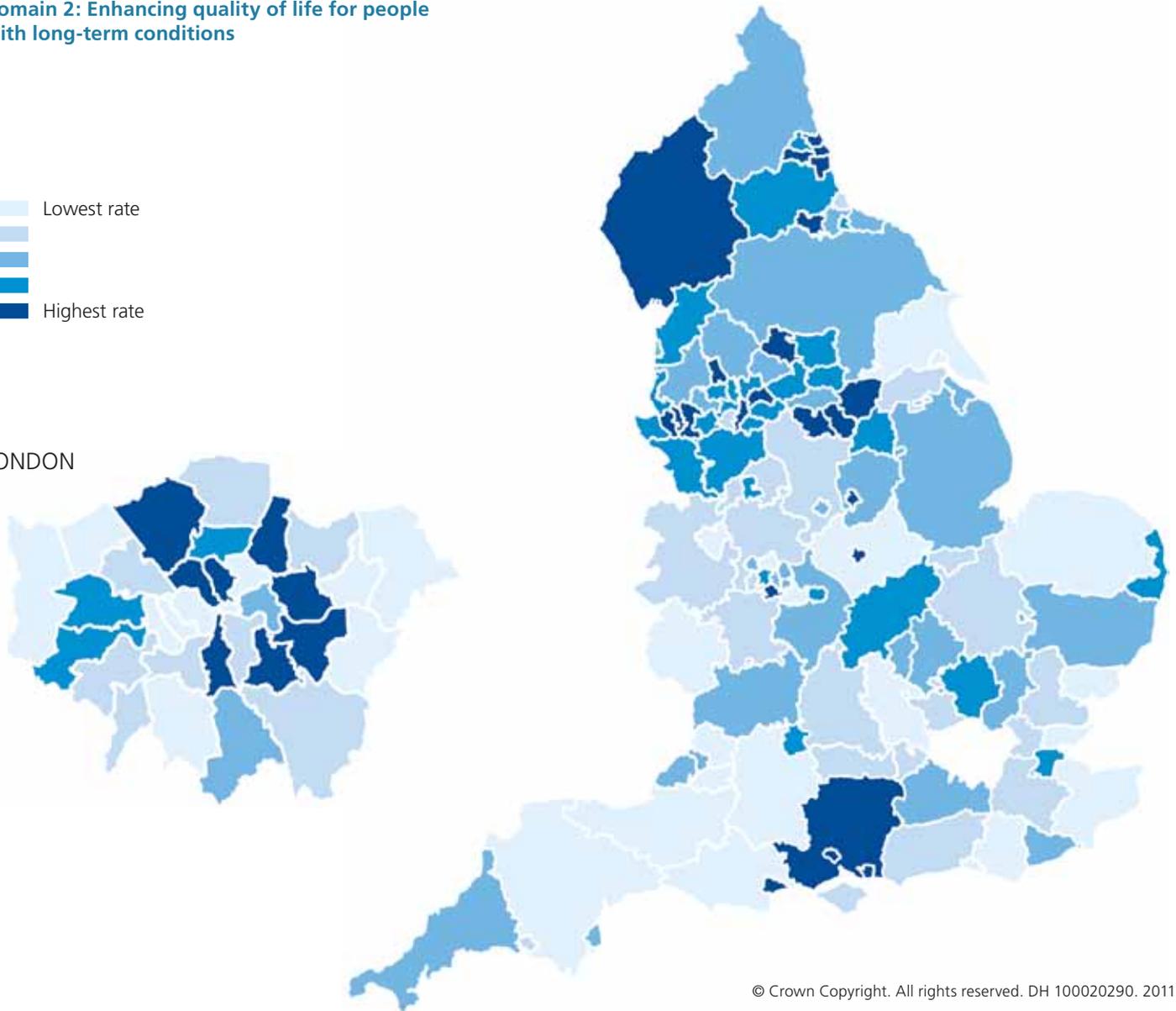
Map 13: Reported numbers of dementia on GP registers as a percentage of estimated prevalence by PCT

2009/10

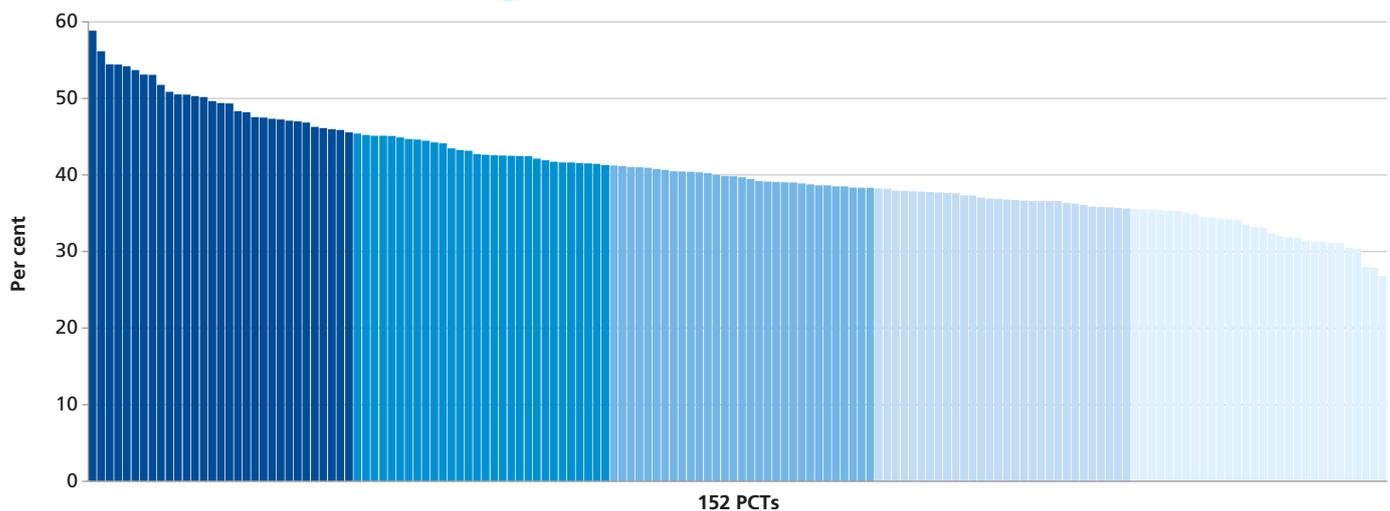
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Dementia currently affects about 750,000 people in the UK. It is a syndrome, i.e. a group of related symptoms, associated with increased age, in which there is a decline in brain function, especially memory. There are four main types:

- › Alzheimer's disease, the most common;
- › Vascular dementia, as a result of stroke or a series of transient ischaemic attacks;
- › Dementia with Lewy bodies;
- › Frontotemporal dementia, much rarer, usually occurring in people under 65 years.

Sometimes, a person may have more than one type. There is no cure, and symptoms deteriorate over time. However, there are treatments that can improve the quality of life for people with dementia and their carers.

Early diagnosis is vital to ensure that:

- › Patients are started on the correct care pathway (see "Resources");
- › Patients receive better care, especially early on in the course of dementia while they still have the capacity to discuss and decide upon treatment options;
- › The needs of carers can be taken into account, and carers supported if they so wish.

Identification of people with dementia depends on awareness not only of the types of dementia and the symptoms but also of mild cognitive impairment (MCI), in which a person's memory loss (cognitive decline) is greater than that expected for their age and level of education but does not interfere with daily living. People with MCI are 10–15 times more likely to develop dementia.

People with suspected dementia should be referred to a memory assessment service specialising in the diagnosis and initial management of dementia (NICE Dementia quality standards, see "Resources"). In a recent survey of PCTs, investment in memory assessment services had increased.¹

At least 40% of people thought to have dementia have not been diagnosed; in some areas, this proportion is much higher.

Magnitude of variation

For PCTs in England, the reported numbers of dementia on GP registers as a percentage of estimated prevalence ranged from 26.8% to 58.8% (2.2-fold variation). When the five PCTs with the highest percentages and the five PCTs with the lowest percentages are excluded, the range is 31.1–53.7%, and the variation is 1.7-fold.

Dementia has been stigmatised. Some people assume nothing can be done and may not seek help, and GPs may not refer them for specialist assessment.

Possible reasons for unwarranted variation include differences in:

- › Awareness in primary care;
- › Access to memory assessment services;
- › Systems in secondary care to identify and refer people with dementia;
- › Access to mental health, primary care or community geriatric input in residential and nursing homes.

Options for action

Commissioners should review:

- › level of access to memory assessment services, and whether it matches estimated prevalence of dementia locally;
- › local plans in response to the National Dementia Strategy and NICE guidance (see "Resources").

Commissioners and primary and secondary care providers should review the training available for healthcare professionals to improve early identification and diagnosis of dementia.

GPs need to consider:

- › referring people who complain of memory problems to memory assessment services;
- › the possibility of dementia, especially in people with vascular risk factors for the condition – high blood pressure, obesity, atrial fibrillation, raised cholesterol, diabetes, and excessive alcohol consumption.

RESOURCES

- › Department of Health (2009) Living well with dementia: A National Dementia Strategy. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_094058
- › NICE Guidance. CG42 Dementia: NICE guideline. <http://guidance.nice.org.uk/CG42/NiceGuidance/pdf/English>
- › NICE Dementia quality standard. <http://www.nice.org.uk/aboutnice/qualitystandards/dementia/dementiaqualitystandard.jsp>
- › NICE Pathway on dementia. <http://pathways.nice.org.uk/pathways/dementia>



See what Right Care is doing about dementia on page 32

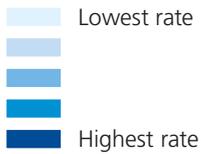
1 NHS Information Centre (2011) Establishment of Memory Services – Provisional results of a survey of Primary Care Trusts, 2011. http://www.ic.nhs.uk/webfiles/publications/005_Mental_Health/Establishment_memory_services/Establishment_of_Memory_Services__Provisional_results_of_a_survey_of_PCTs_2011v2.pdf

MENTAL DISORDERS

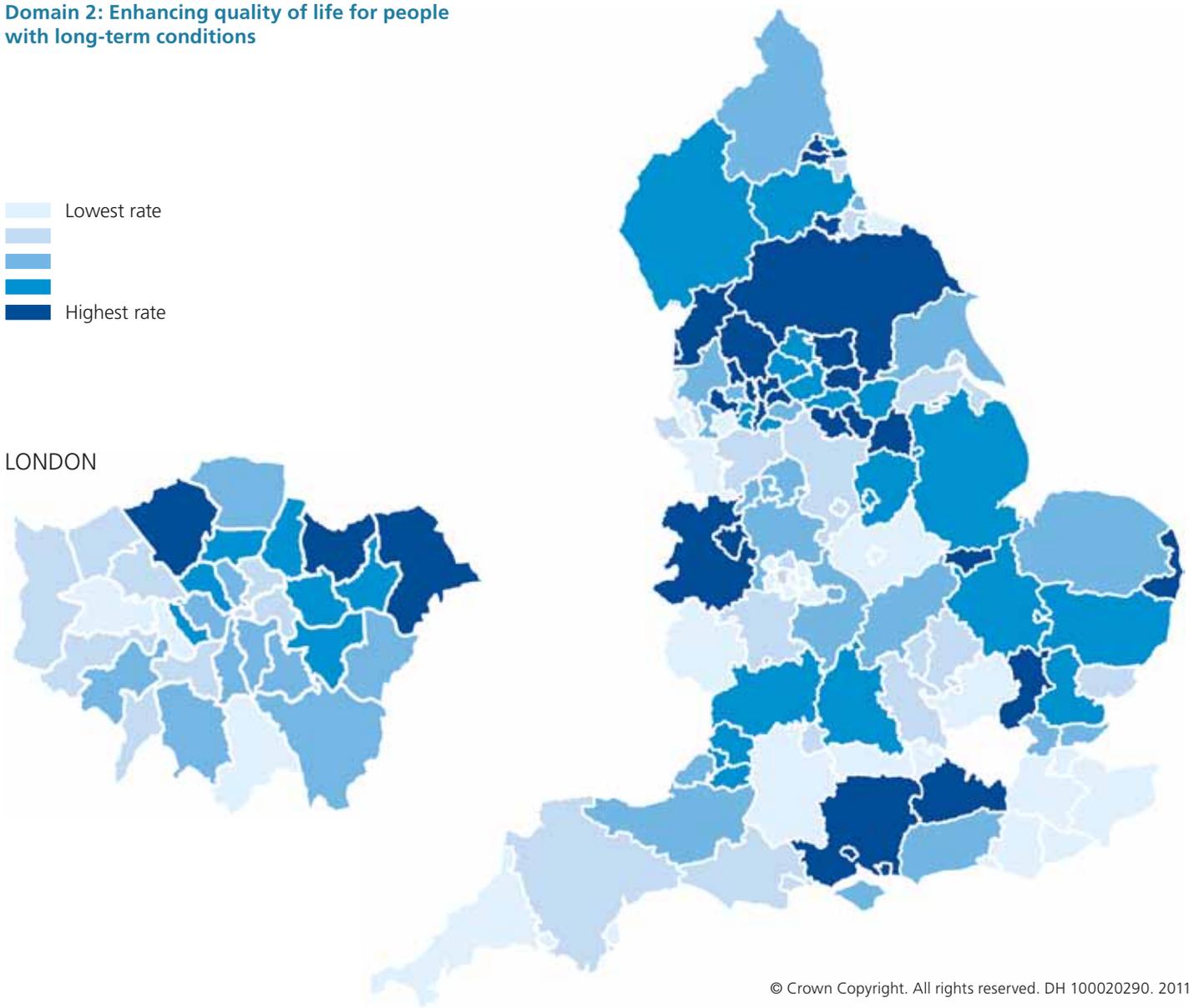
Map 14: Anti-dementia drug items prescribed per weighted population (STAR-PU) in primary care by PCT

Average daily quantity (ADQ) per STAR-PU 2009/10

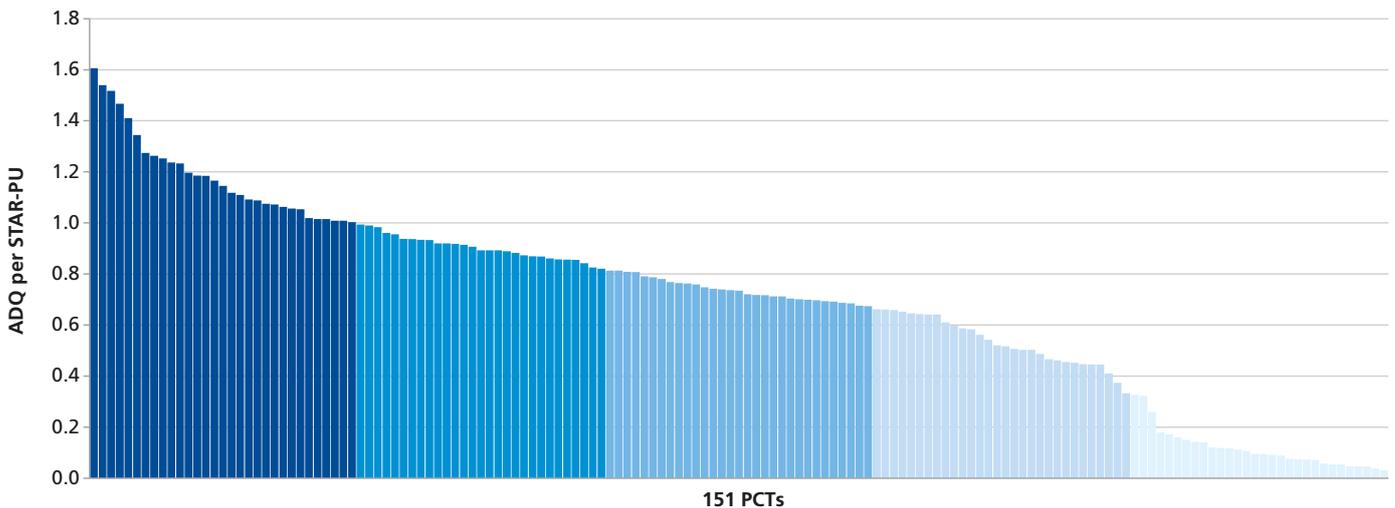
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

There are two main types of drug used to treat Alzheimer's disease, the commonest form of dementia: cholinesterase inhibitors, and NMDA receptor antagonists. Three cholinesterase inhibitors are used in the treatment of mild to moderate Alzheimer's disease:

- › Donepezil (Aricept);
- › Galantamine (Reminyl);
- › Rivastigmine (Exelon).

Cholinesterase inhibitors prevent the enzyme acetylcholinesterase from breaking down acetylcholine in the brain, which acts as a neurotransmitter. Higher levels of the chemical are then available to act as a messenger between brain cells, which may temporarily improve or stabilise symptoms for 6–12 months for between 40% and 70% of patients with Alzheimer's disease.

Only one NMDA receptor antagonist, memantine (Ebixa), is recommended in the treatment of severe Alzheimer's disease, and for patients with moderate disease who cannot take a cholinesterase inhibitor. It blocks the chemical glutamate, which is released in excessive amounts when brain cells are damaged in Alzheimer's disease, and causes further damage to the cells. Memantine temporarily slows down the progression of symptoms for people in the middle and later stages of the disease.

In NICE guidance, drug treatment should be started by a clinician who specialises in the care of people with dementia. Usually, patients are started on a low dose, which will be increased for greater effectiveness up to a level that the patient can tolerate. Drug treatment should be reviewed regularly, usually by a specialist team, and continued for as long as the benefits to the patient outweigh the side-effects. NICE also recommends that the views of the carer on the patient's condition are discussed at the start of drug treatment, and at any subsequent check-up.

Magnitude of variation

For PCTs in England, the anti-dementia drug items prescribed per weighted population (STAR-PU) in primary care ranged from 0.03 to 1.6 (52-fold variation). When the five PCTs with the highest number of items and the five PCTs with the lowest number of items are excluded, the range is 0.1–1.3, and the variation is 25-fold.

Although this indicator has been weighted for age, sex and temporary residents within a practice, it cannot account for other practice demographic issues, such as different morbidity patterns, or service differences, such as prescription duration.

However, as the degree of variation is large, it is likely there is unwarranted variation in this aspect of care for people with dementia. One possible reason for unwarranted variation in the number of anti-dementia drug items prescribed is variation in the diagnosis of dementia (see Map 13), which could reflect one or more of the following:

- › Levels of awareness in primary care;
- › Availability of training and skills development for primary care providers in the identification and diagnosis of dementia, including Alzheimer's disease;
- › Access to, and capacity of, memory assessment services;
- › Case-finding;
- › Local protocols.

Options for action

Clinicians should review the treatment regimens in place for all patients with Alzheimer's disease and ensure that they comply with the most recent guidance from NICE (23 March 2011; see "Resources").

RESOURCES

- › NICE Guidance. Donepezil, galantamine, rivastigmine and memantine for the treatment of Alzheimer's disease. <http://www.nice.org.uk/guidance/TA217>
- › Department of Health (2009) Living well with dementia: A National Dementia Strategy. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_094058
- › NICE Guidance. CG42 Dementia: NICE guideline. <http://guidance.nice.org.uk/CG42/NiceGuidance/pdf/English>
- › NICE Dementia quality standard. <http://www.nice.org.uk/aboutnice/qualitystandards/dementia/dementiaqualitystandard.jsp>
- › NICE Pathway on dementia. <http://pathways.nice.org.uk/pathways/dementia>

 **See what Right Care is doing about dementia on page 32**

MENTAL DISORDERS

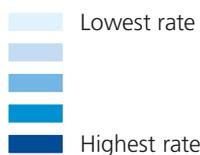
Map 15: Rate of admissions to hospital for patients >74 years with a secondary diagnosis of dementia by PCT

Age-specific rate 2009/10

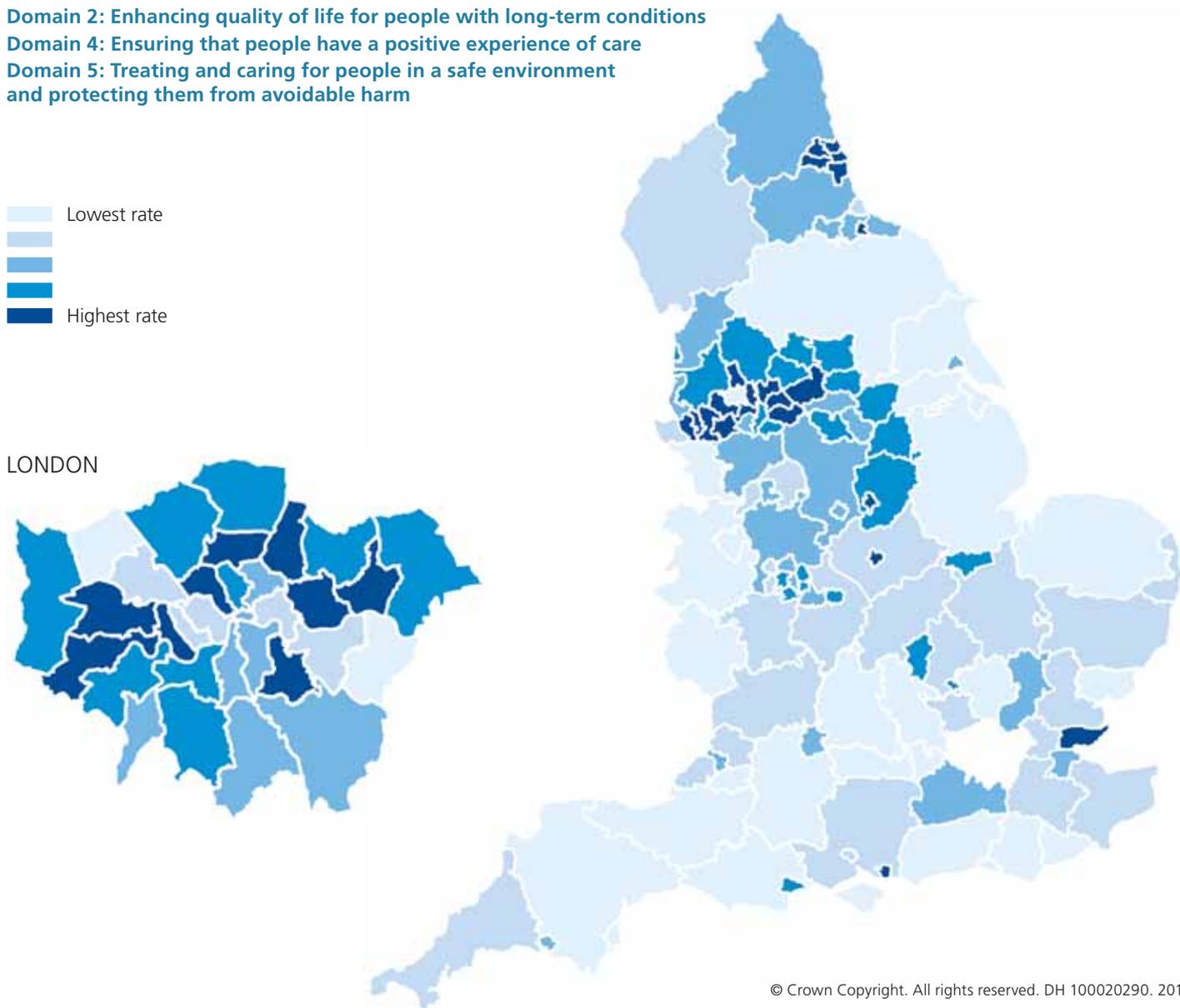
Domain 2: Enhancing quality of life for people with long-term conditions

Domain 4: Ensuring that people have a positive experience of care

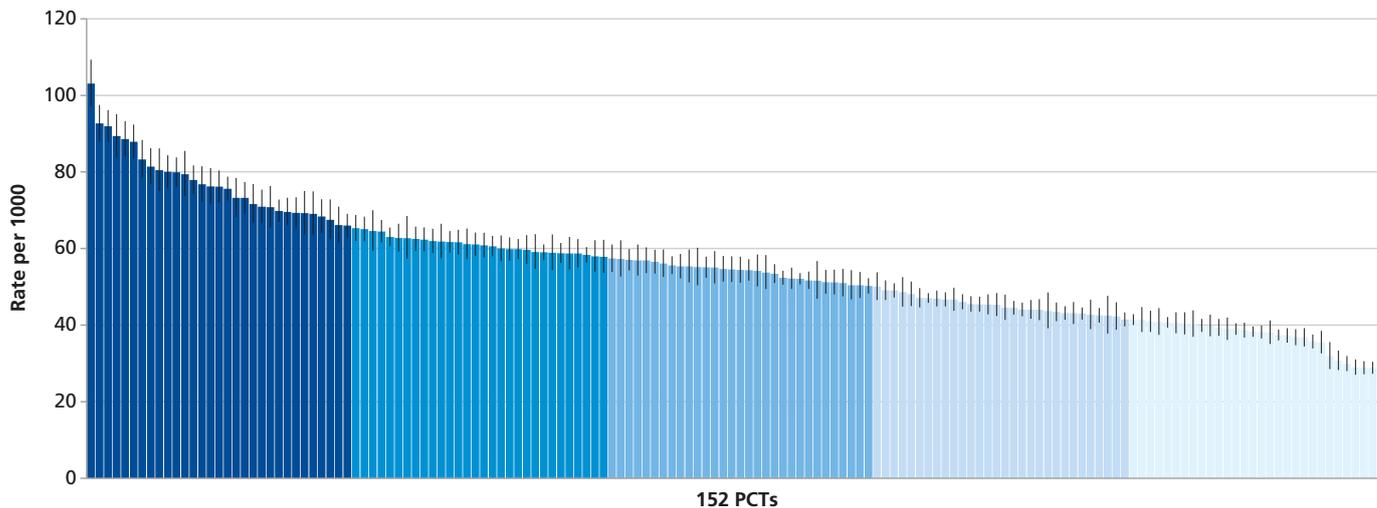
Domain 5: Treating and caring for people in a safe environment and protecting them from avoidable harm



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

People with dementia have complex needs, and in the later stages they can have high levels of dependency and morbidity.

With population ageing, patients admitted to hospital tend to be older, and dementia increases in prevalence with age. Results of observational studies suggest that one in four admissions to general hospital is a patient with co-morbid dementia, although dementia is rarely the primary reason for admission. However, co-morbid dementia can be poorly identified, or poorly coded on identification. Moreover, many people in hospital with co-morbid dementia have never received a diagnosis.

Admission to hospital can adversely affect patients with dementia. Strategies to improve the care of patients with dementia at risk of hospital admission include:

- Preventing unnecessary admission;
- Improving the quality of care for patients with dementia who are in hospital for any reason.

Sometimes, a person may have more than one type. NICE Dementia quality standard (number 8) states that people with suspected or known dementia admitted to an acute or general hospital setting should:

“... have access to a liaison service that specialises in the diagnosis and management of dementia and older people’s mental health.”¹

Magnitude of variation

For PCTs in England, the rate of admissions to hospital for patients >74 years with a secondary diagnosis of dementia ranged from 24.9 to 103.1 per 1000 population (4.1-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 30.7–87.9 per 1000 population, and the variation is 2.9-fold.

Variation could be due to:

- under-reporting of dementia as a co-morbidity;
- dementia not being coded as a secondary diagnosis;
- lower or higher rates of true dementia prevalence.

Reasons for unwarranted variation include:

- low rates of diagnosis (see Map 13);
- in the absence of diagnosis, poor identification of dementia as a co-morbidity.

Options for action

Commissioners and providers can prevent unnecessary admission to hospital by:

- Ensuring access to memory assessment services in relation to local population needs;
- Establishing mechanisms to increase the early diagnosis of dementia;
- Ensuring that, once diagnosed, patients and their carers are given written and verbal information about the condition, and treatment and support options in the local area (NICE Dementia standard number 3);¹
- Actively managing people with dementia, including early intervention that could enable patients to stay at home, such as housing telecare and support for carers.

The impact of incentivising hospitals to improve identification and diagnosis of dementia needs to be explored.

Commissioners and secondary care providers should be alert to undiagnosed dementia as a possible co-morbidity in older patients, and ensure there are protocols for case-finding and referral to appropriate services.

Commissioners and secondary care providers should provide good-quality care for patients in hospital with co-morbid dementia that:

- Is person-centred;
- Involves the patient’s carer(s);
- Is delivered by trained staff;
- Includes specific protocols for nutrition, hydration, end-of-life care, and discharge planning.

RESOURCES

- Royal College of Psychiatrists (2005) Who Cares Wins. Improving the outcome for older people admitted to the general hospital: Guidelines for the development of Liaison Mental Health Services for older people. <http://www.rcpsych.ac.uk/PDF/WhoCaresWins.pdf>
- Royal College of Psychiatrists’ Centre for Quality Improvement (2010) National Audit of Dementia (Care in General Hospitals). Preliminary Findings of the Core Audit. <http://www.rcpsych.ac.uk/pdf/The%20Interim%20Report2.pdf>
- National Audit Office (2007) Improving services and support for people with dementia. http://www.nao.org.uk/publications/0607/support_for_people_with_dement.aspx
- NHS Confederation (2010) Acute awareness: improving hospital care for people with dementia. <http://www.nhsconfed.org/Publications/reports/Pages/Dementia-report-Acute-awareness.aspx>

 **See what Right Care is doing about dementia on page 32**

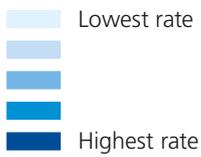
1 NICE Dementia quality standard. <http://www.nice.org.uk/aboutnice/qualitystandards/dementia/dementiaqualitystandard.jsp>

MENTAL DISORDERS

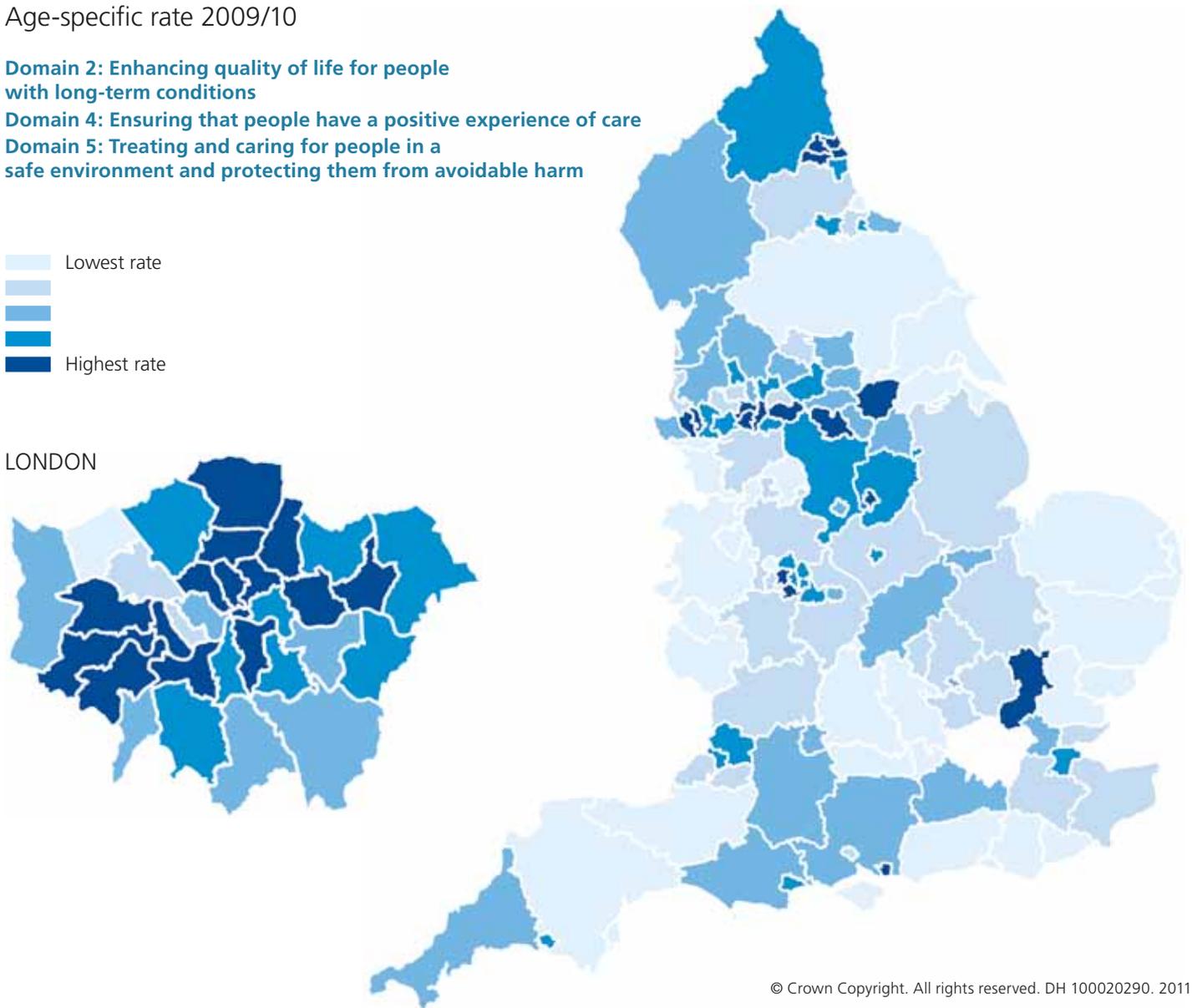
Map 16: Total bed-days in hospital per population for patients >74 years with a secondary diagnosis of dementia by PCT

Age-specific rate 2009/10

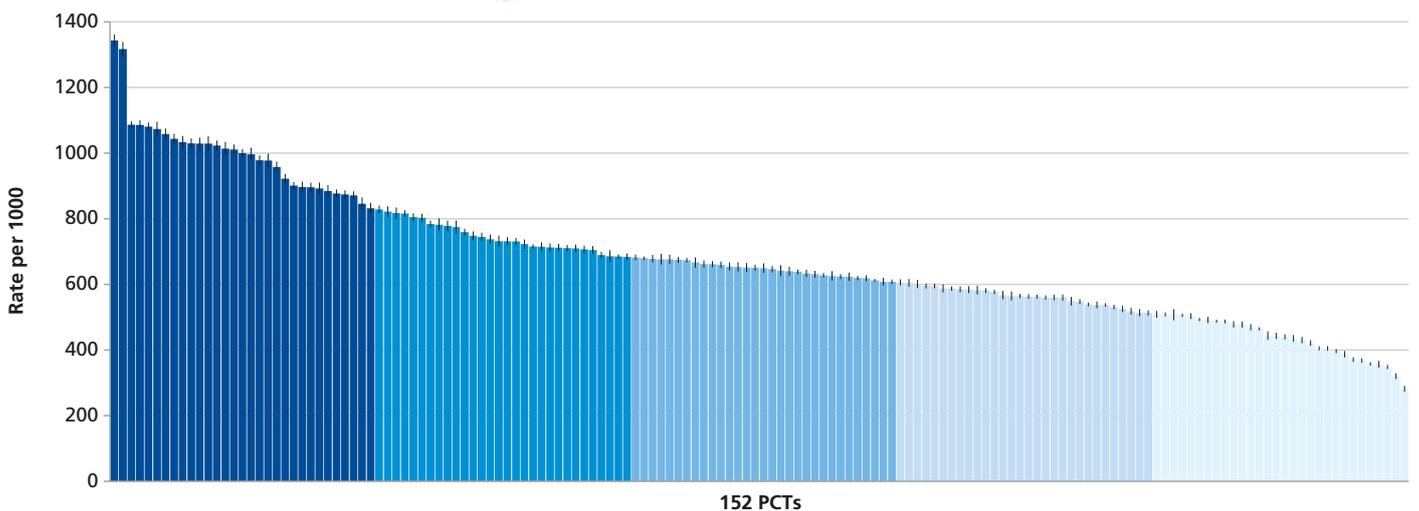
Domain 2: Enhancing quality of life for people with long-term conditions
 Domain 4: Ensuring that people have a positive experience of care
 Domain 5: Treating and caring for people in a safe environment and protecting them from avoidable harm



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

People with dementia have complex needs, and in later stages they can have high levels of dependency and morbidity.

With population ageing, patients admitted to hospital tend to be older, and dementia increases in prevalence with age. Results of observational studies suggest that one in four admissions to general hospital is a patient with co-morbid dementia, although dementia is rarely the primary reason for admission. However, co-morbid dementia can be poorly identified, or poorly coded on identification.

Hospital admission can adversely affect the health of patients with dementia. The National Audit Office estimated that co-morbid dementia can add an average of seven days to a patient's length of stay.¹ It is important:

- To identify inpatients with co-morbid dementia which is as yet undiagnosed;
- To improve quality of care for all patients with dementia in hospital for whatever reason.

NICE Dementia quality standard (number 8) states that once people with dementia are inpatients in an acute or general hospital setting they should:

"... have access to a liaison service that specialises in the diagnosis and management of dementia and older people's mental health."²

Magnitude of variation

For PCTs in England, the total bed-days in hospital per population for patients >74 years with a secondary diagnosis of dementia ranged from 281.5–1343.0 per 1000 population (4.8-fold variation). When the five PCTs with the highest number of bed-days and the five PCTs with the lowest number of bed-days are excluded, the range is 367.9–1073.4 per 1000 population, and the variation is 2.9-fold.

Variation may be due to different service models for the management of care of the elderly, such as local care units or early rehabilitation services for patients, where bed-days may not be recorded in hospital statistics

Possible reasons for unwarranted variation are differences in:

- the diagnosis of dementia (see Map 13);
- identification of co-morbid dementia when patients with undiagnosed dementia are admitted to hospital for another reason;

- access to services specialising in dementia diagnosis and management;
- use of comprehensive geriatric assessment, management of co-morbidities and discharge planning;
- integration of community health, social care and long-term care services, and the priority in the local health economy for reducing delayed transfers of care.

Options for action

To prevent unnecessary hospital admission, commissioners and providers should:

- Ensure access to memory assessment services in relation to local population needs;
- Establish mechanisms to improve early diagnosis of dementia;
- Ensure that, once diagnosed, patients and their carers are given written and verbal information about the condition, and treatment and support options in the local area (NICE Dementia standard number 3);²
- Actively manage people with dementia, including early intervention to enable patients to stay at home, e.g. housing telecare and support for carers.

Commissioners and secondary care providers should be alert to undiagnosed dementia as a possible co-morbidity in older patients, and ensure there are protocols for case-finding and referral to appropriate services.

Commissioners and secondary care providers should provide good-quality person-centred care for hospital patients with co-morbid dementia which:

- Involves the patient's carer(s);
- Is delivered by trained staff;
- Includes protocols for nutrition, hydration, end-of-life care, and discharge planning.

RESOURCES

- Royal College of Psychiatrists' Centre for Quality Improvement (2010) National Audit of Dementia (Care in General Hospitals). Preliminary Findings of the Core Audit. <http://www.rcpsych.ac.uk/pdf/The%20Interim%20Report2.pdf>
- NHS Confederation (2010) Acute awareness: improving hospital care for people with dementia. <http://www.nhsconfed.org/Publications/reports/Pages/Dementia-report-Acute-awareness.aspx>
- Department of Health (2009) Use of resources in adult social care: A guide for local authorities. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_107596

1 National Audit Office (2007) Improving services and support for people with dementia. http://www.nao.org.uk/publications/0607/support_for_people_with_dement.aspx

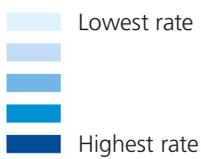
2 NICE Dementia quality standard. <http://www.nice.org.uk/aboutnice/qualitystandards/dementia/dementiaqualitystandard.jsp>

MENTAL DISORDERS

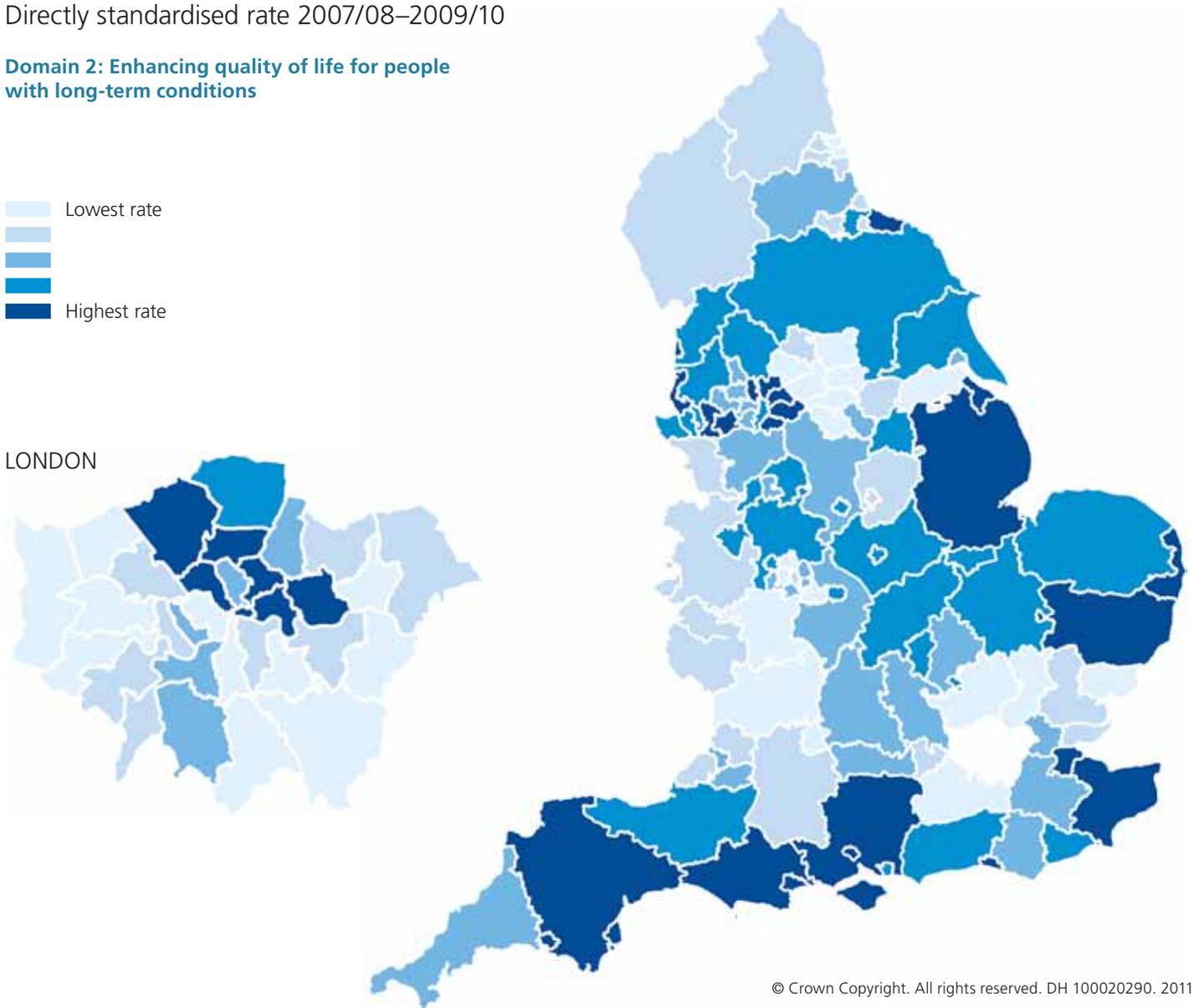
Map 17: Rate of inpatient admissions >3 days' duration in children per population aged 0–17 years for mental health disorders by PCT

Directly standardised rate 2007/08–2009/10

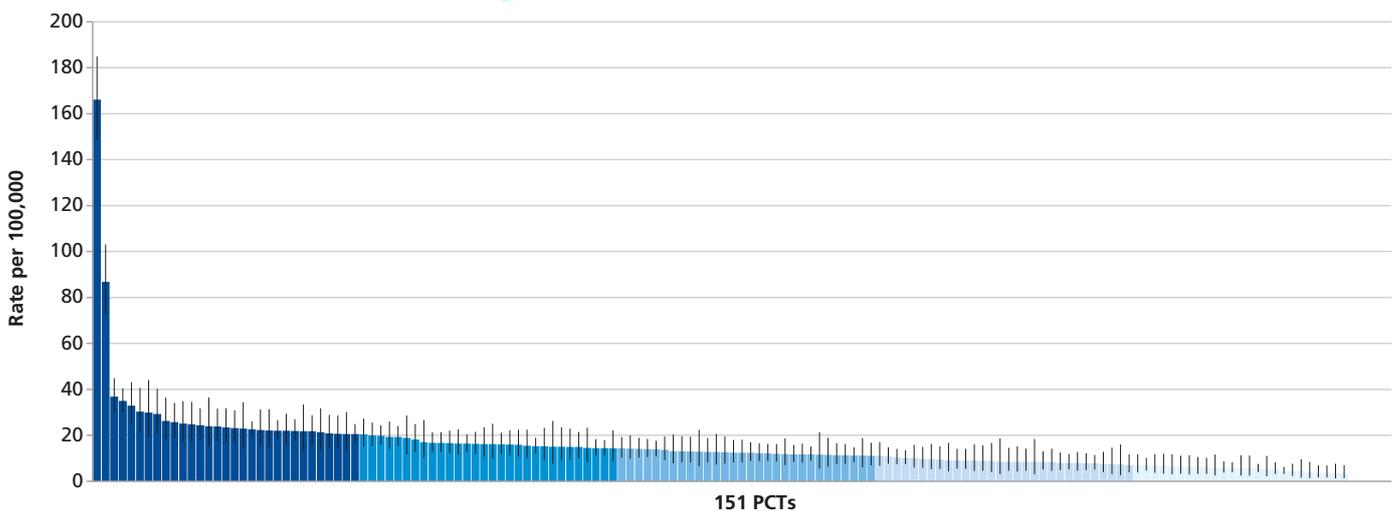
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Approximately 10% of 5- to 16-year-olds have a mental health disorder diagnosed at some point during childhood (ONS, 2004). This figure rises steeply in adulthood, to 23% suffering mental ill-health at some point in their lives (ONS 2009). Half of the adults diagnosed with mental illness will have shown symptoms by 14 years of age, and three-quarters by 20 years of age.¹

The societal cost of mental ill health is estimated at £105 billion,² and predicted to increase. Much of this cost is the consequence of early onset disorders which are recurrent or persistent. There are clinical and financial reasons to provide this patient group with the most effective intervention in as timely a way as possible.

Hospital admissions for inpatient psychiatric care represent a small but important subset of healthcare services for children and young people. They incur considerable expenditure compared with the cost of ambulatory out-of-hospital care. In selected patients, such admissions can be crucial, conferring benefit on children most in need. Evidence-based management of this limited resource is critical.

This indicator focuses on children and young people who require more than three days' admission to hospital for psychiatric treatment. The three-day threshold excludes the large proportion of children and young people admitted overnight in general hospital settings following deliberate self-harm (a different patient population with regard to care), of whom only a minority will be admitted to dedicated psychiatric units.

Magnitude of variation

For PCTs in England, the rate of inpatient admissions >3 days' duration in children per 100,000 population aged 0–17 years for mental health disorders ranged from 3.4 to 166.1 (49-fold variation).³ When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 4.4–30.3 per 100,000 population aged 0–17 years, and the variation is sevenfold.

Many mental health disorders are strongly associated with deprivation.⁴ However, when the 2007/08–2009/10 admission rates are plotted against deprivation indices, there is no statistical correlation (see Figure 17.1).

Although the reasons for this variation have not been investigated in research studies, a magnitude of sevenfold variation in a disorder for which the diagnostic criteria can be subjective probably represents unwarranted variation due to differences in the level of provision of important facilities for different populations, what Wennberg termed a "supply side" cause of unwarranted variation.

Options for action

Specialist ambulatory care services perform a gate-keeping role for inpatient care. The organisation, level of provision and

extent of local services will affect admission rates. Intensive ambulatory or outreach services for vulnerable groups may be clinically and cost effective. However, appropriate admission can play a key role.

Partnership working with social care can influence admission rates and lengths of stay.

From 2012, the child and adolescent mental health (CAMHS) national dataset (see "Resources") will enable commissioners to investigate a range of indicators measuring the performance of local services. Commissioners and clinicians should review local data for case-mix, duration of treatment, and outcomes, and plan inpatient and ambulatory services accordingly.

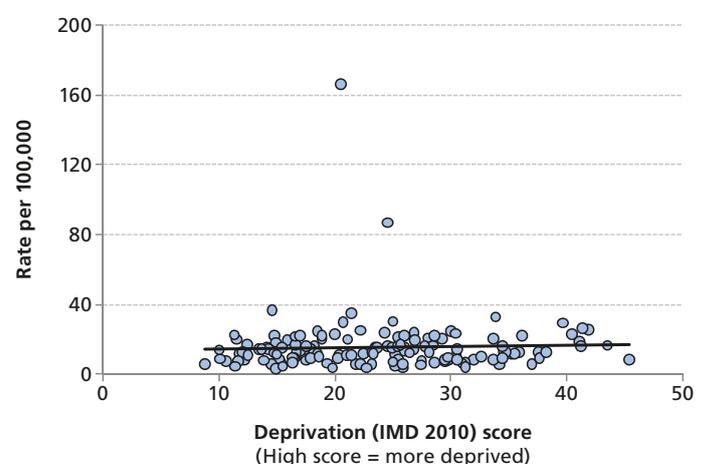
RESOURCES

- ▶ Department of Health (2011) No health without mental health: a cross-Government mental health outcomes strategy for people of all ages. <http://www.dh.gov.uk/en/Healthcare/Mentalhealth/MentalHealthStrategy/index.htm>
- ▶ The Children and Young Persons Improving Access to Psychological Therapies (CYP IAPT) programme, tracking the care and outcomes of patients in CYP IAPT services in England. <http://www.iapt.nhs.uk/children-and-young-peoples-iapt/>
- ▶ CAMHS dataset. <http://www.ic.nhs.uk/services/maternity-and-childrens-data-set/child-and-adolescent-mental-health-services-camhs-secondary-uses-data-set>

This indicator is from the Child Health Themed Atlas

Figure 17.1: Relationship between rate of inpatient admissions >3 days' duration in children per population aged 0–17 years for mental health disorders and Index of Multiple Deprivation (IMD) 2010 by PCT

Directly standardised rate 2007/08–2009/10



1 Department of Health (2011) No health without mental health: a cross-Government mental health outcomes strategy for people of all ages.

2 Centre for Mental Health (2010) The economic and social costs of mental health problems in 2009/10.

http://www.centreformentalhealth.org.uk/pdfs/Economic_and_social_costs_2010.pdf

3 Data from five PCTs have been removed.

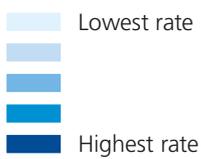
4 Meltzer H, Gatward R, Goodman R, Ford T (2000) The Mental Health of Children and Adolescents in Great Britain.

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsStatistics/DH_4019358

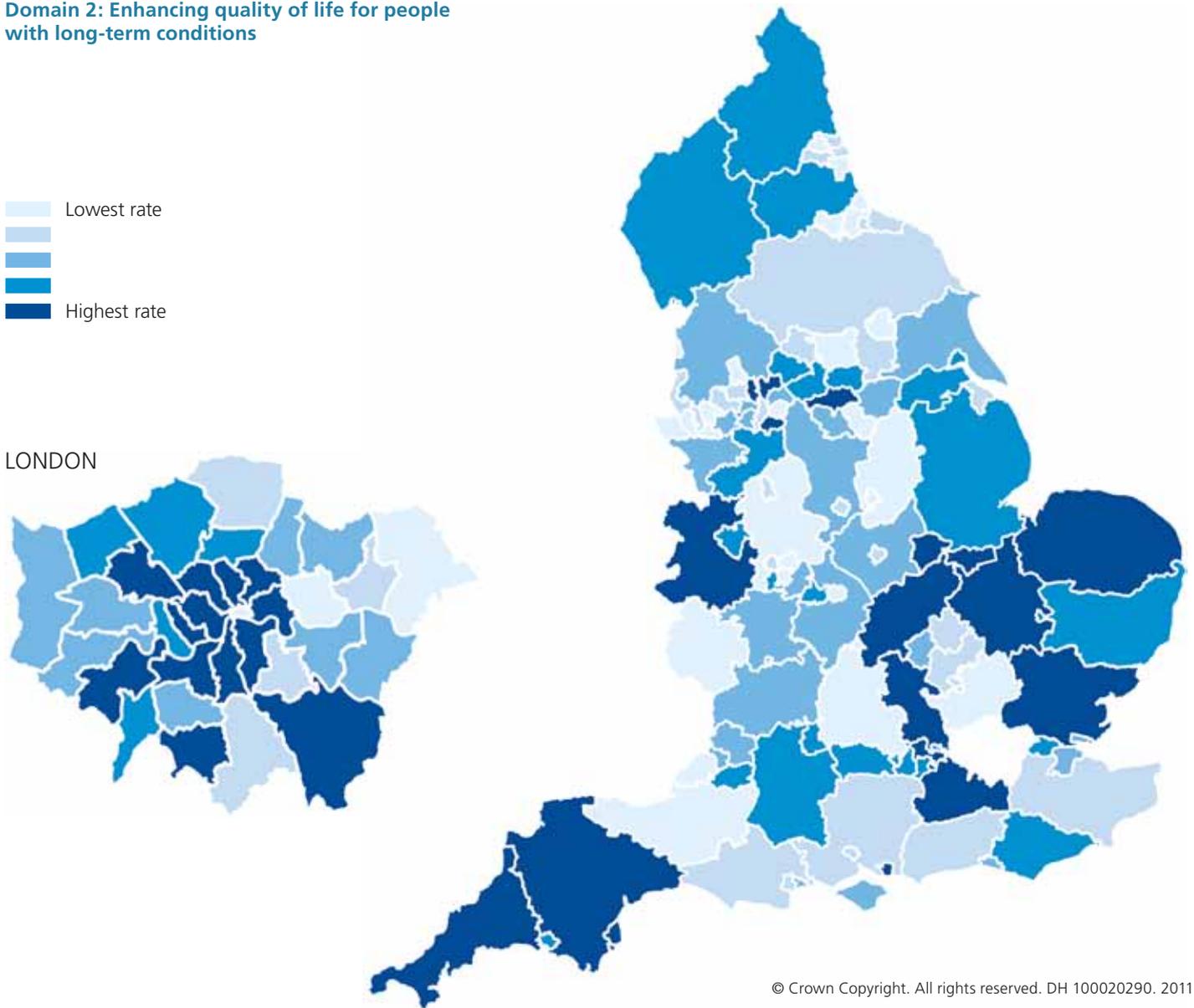
PROBLEMS OF LEARNING DISABILITY

Map 18: Percentage of primary school children in state-funded schools with a statement of special educational needs (SEN) by local authority at January 2011

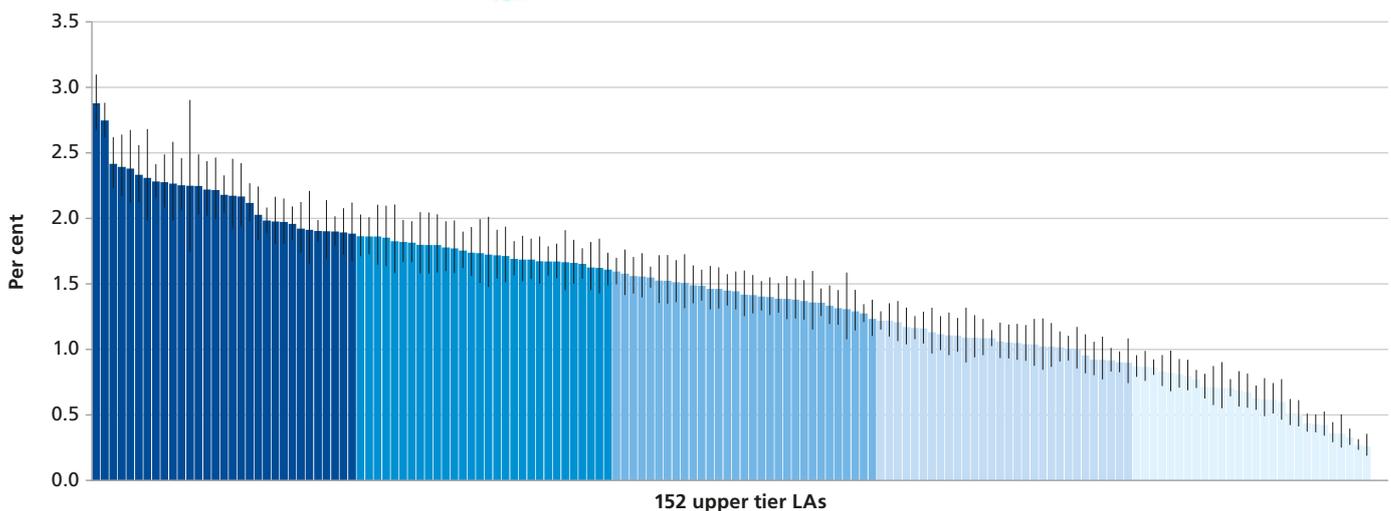
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Children with special educational needs (SEN) have a learning difficulty that requires special educational provision. A learning difficulty means the child has:

- Significantly greater difficulty learning than the majority of children in the same age-group;
- A disability preventing or hindering them from using general educational facilities provided in the local authority (LA) for children of the same age-group.

There are four levels of special educational provision: usual support, School Action, School Action Plus, and a statement of SEN. Children with a statement of SEN are either not making progress under School Action or School Action Plus or they require considerable additional support due to severe and complex needs. Children in special schools have a statement of SEN.

The statement has six parts:

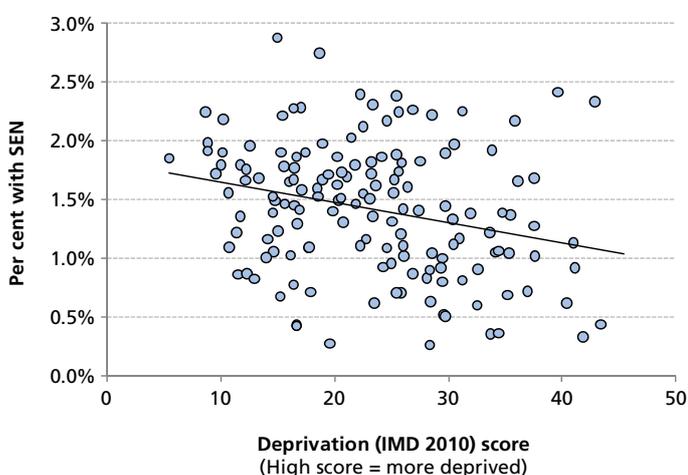
- General information about the child;
- Description of the child's needs following assessment;
- Help to be given to meet the child's needs;
- Type of school the child should attend, and arrangements for out of school hours or off school premises;
- The child's non-educational needs;
- Help the child will get to meet non-educational needs.¹

The local authority reviews the statement at least once a year.

Magnitude of variation

For upper-tier local authorities in England, the percentage of primary school children in state-funded schools with a statement of SEN ranges from 0.3% to 2.9% (11-fold variation). When the five upper-tier LAs with the highest percentages and the five upper-tier LAs with the lowest percentages are excluded, the range is 0.4–2.3%, and the variation is approaching sixfold.

Figure 18.1: Pupils (%) with a statement of SEN in relation to deprivation



¹ http://www.direct.gov.uk/en/Parents/Schoolslearninganddevelopment/SpecialEducationalNeeds/DG_4000870

Possible reasons for variation are differences in:

- the prevalence of complex medical conditions, although it is unlikely to account for the degree observed;
- deprivation levels in different areas (see Figure 18.1);
- child health service spending (SEN data, collected by local authority, and community health spend, collected by PCT, cannot be correlated).

The most plausible explanation is the lack of set criteria governing different levels of support in school, leading to variation in interpretation among, and within, localities during decision-making about writing a statement of SEN. However, this factor is most amenable to intervention by commissioners.

Options for action

All levels of identified need for support in school and the proposed measures of early development in the Tickell Report (see "Resources") together with measures in the Early Years Foundation Stage Profile (statutory assessment requirement for children reaching the end of the Foundation Stage) could be analysed in relation to:

- child health service spending;
- availability of nursery places;
- availability of staff, such as speech therapists.

Such timely identification of potential future needs, emphasising early years identification and risk assessment, would enable commissioners and health and education professionals to create bespoke funding and resource allocation plans for supporting children with additional needs in each local population. This will deliver higher-quality services through:

- Greater flexibility and responsiveness to local needs;
- Evidence-based modelling of future workload to inform workforce planning;
- Allowing redeployment of resources to prevention/early intervention through better and earlier identification of at-risk children;
- More efficient use of educational and community health resources.

Commissioners in agencies caring for children with additional needs should:

- share information on performance;
- collaborate to standardise the assessment process.

RESOURCES

- Tickell C (2011) The Early Years: Foundations for life, health and learning. An Independent Report on the Early Years Foundation Stage to Her Majesty's Government. <http://media.education.gov.uk/MediaFiles/B/1/5/7BB15EFF0D-A4DF-4294-93A1-1E1B88C13F68%7DTickell%20review.pdf>
- Early Years Foundation Stage Profile Data. <http://data.gov.uk/dataset/early-years-foundation-stage-profile-results-england-2010>
- Early Years Foundation Stage Profile – assessment scales reference sheet. http://www.qcda.gov.uk/resources/assets/poster_v8_aw.pdf

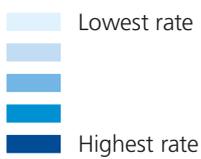
This indicator is from the Child Health Themed Atlas

NEUROLOGICAL PROBLEMS

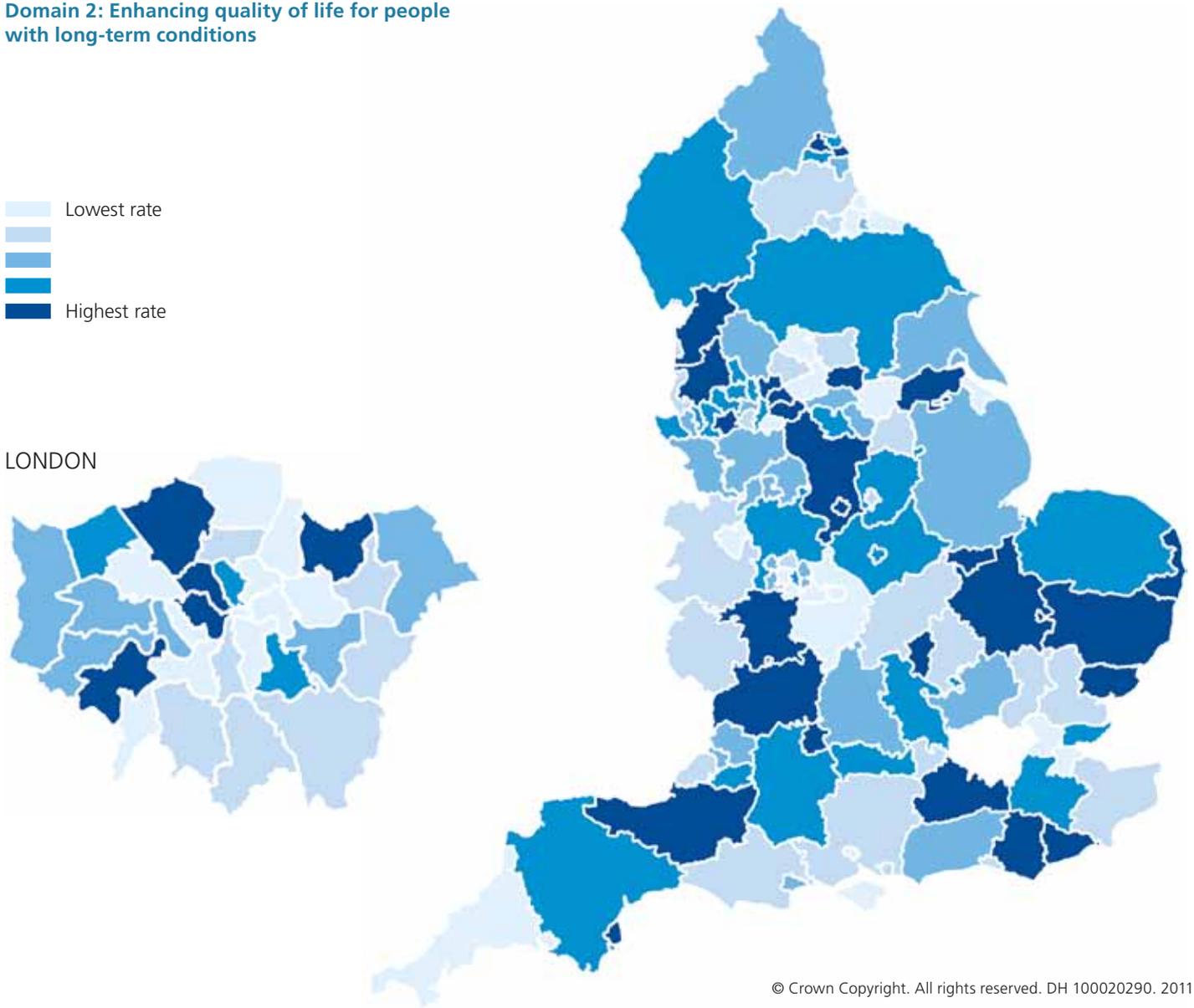
Map 19: Parkinson's disease drug items prescribed per weighted population (STAR-PU) in primary care by PCT

Average daily quantity (ADQ) per STAR-PU 2009/10

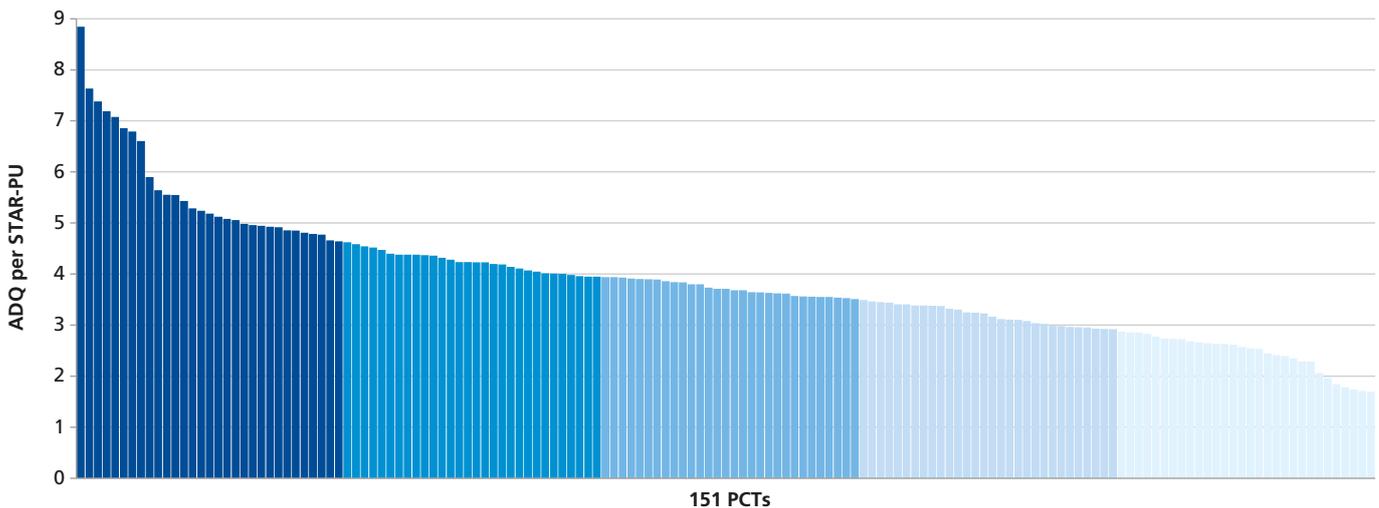
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Parkinson's disease is a long-term neurological condition affecting around 120,000 people in the UK. The risk of Parkinson's disease increases with age, and symptoms usually start to appear in people aged >50 years, although younger people can have the condition.

Although it is a neurological condition, not everyone with Parkinson's disease is referred to neurology departments. Geriatric medicine services are also skilled in the management of Parkinson's disease because most of the people with the condition are older. The model of care differs across the country.

There is no cure for Parkinson's disease, but there are treatments available, including medication, to control symptoms and improve people's quality of life.

Data for the numerator of this indicator are expressed as average daily quantities (ADQ), a measure of prescribing volume based on prescribing behaviour in England, representing the assumed average maintenance dose per day for a drug used for its main indication in adults (it is an analytical unit, not a recommended dose).¹ The patient denominator is expressed as Specific Therapeutic group Age-sex weightings Related Prescribing Units (STAR-PU).²

The variation in Parkinson's disease drug costs per weighted population in primary care by PCT 2009/10 is shown in the column chart below [numerator is net ingredient cost (NIC); denominator is STAR-PU].

Magnitude of variation

For PCTs in England, Parkinson's disease drug items prescribed per weighted population in primary care ranged from 1.7 to 8.8 ADQ per STAR-PU (5-fold variation). When the five PCTs with the highest ADQ per STAR-PU and the five PCTs with the lowest ADQ per STAR-PU are excluded, the range is 2.0–6.9 ADQ per STAR-PU, and the variation is 3.5-fold.

One reason for variation in prescribing volume is differences in the prevalence of the condition. However, differences in prevalence alone cannot explain the degree of variation

observed; the data have been standardised for age, therefore some degree of variation is unwarranted.

For PCTs in England, Parkinson's disease drug costs per weighted population in primary care ranged from 1.0 to 2.1 NIC per STAR-PU (2.1-fold variation); see column chart below. When the five PCTs with the highest NIC per STAR-PU and the five PCTs with the lowest NIC per STAR-PU are excluded, the range is 1.1–1.9 NIC per STAR-PU, and the variation is 1.7-fold.

Options for action

Research is needed to identify reasons for unwarranted variation: whether there is over-diagnosis and over-treatment in areas with higher prescribing volumes, under-diagnosis and under-treatment in areas with lower prescribing volumes, or a mixture of both occurring in the same area.

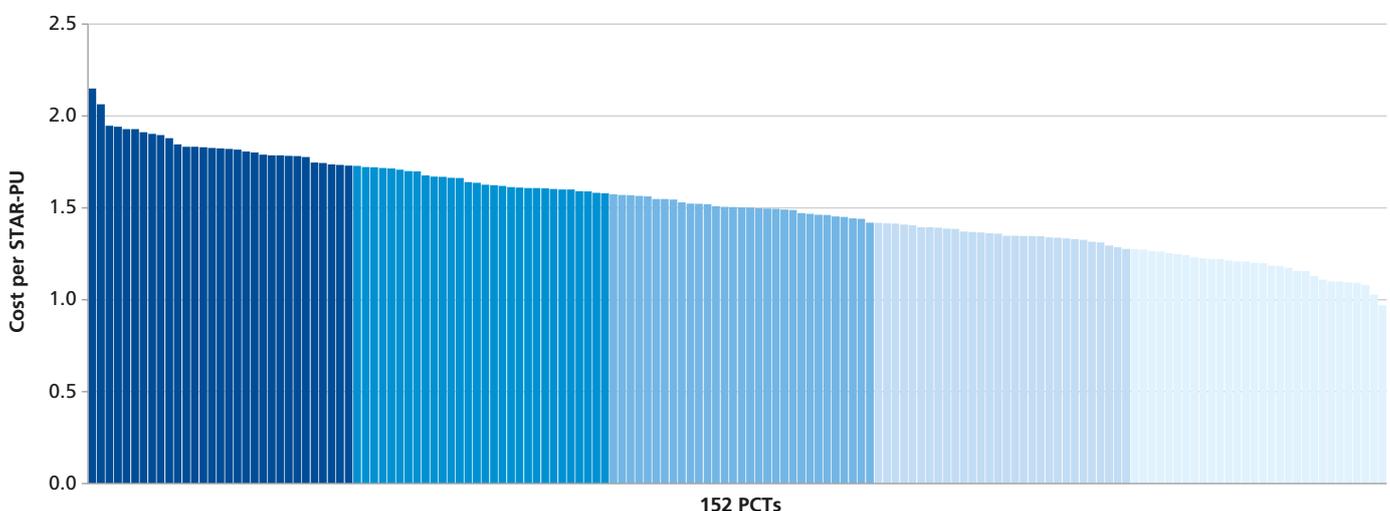
In the mean time, commissioners and providers need to review prescribing volumes and costs for drugs for Parkinson's disease to ensure that they meet the needs of the local population. Given the degree of variation, if medication could be provided at lower cost without reducing its effectiveness, this would release resources for the development of high-value specialist services, such as Parkinson's nurses. Parkinson's nurses help people come to terms with a diagnosis and to manage their medication, and make appropriate referrals to other health and social care professionals (see "Resources").

Parkinson's UK (formerly The Parkinson's Disease Society) is promoting equitable access to Parkinson's nurses, and standardised care for people with the condition.

RESOURCES

- ▶ NICE Guidance CG35. Parkinson's disease (2006; update currently being scheduled into NICE work programme). <http://guidance.nice.org.uk/CG35>
- ▶ NHS Choices. Map of Medicine® Parkinson's disease – suspected. http://healthguides.mapofmedicine.com/choices/map/parkinson_s_disease1.html
- ▶ Parkinson's UK (formerly The Parkinson's Disease Society) for information on Parkinson's nurses. <http://www.parkinsons.org.uk/>

Parkinson's disease drug costs per weighted population (STAR-PU) in primary care by PCT 2009/10



1 <http://www.ic.nhs.uk/services/prescribing-support-unit-psu/using-the-service/reference/measures/volume-measures/average-daily-quantities-adq>

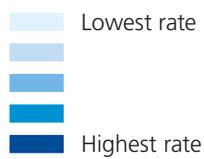
2 <http://www.ic.nhs.uk/services/prescribing-support-unit-psu/using-the-service/reference/measures/patient-denominators/star-pus>

NEUROLOGICAL PROBLEMS

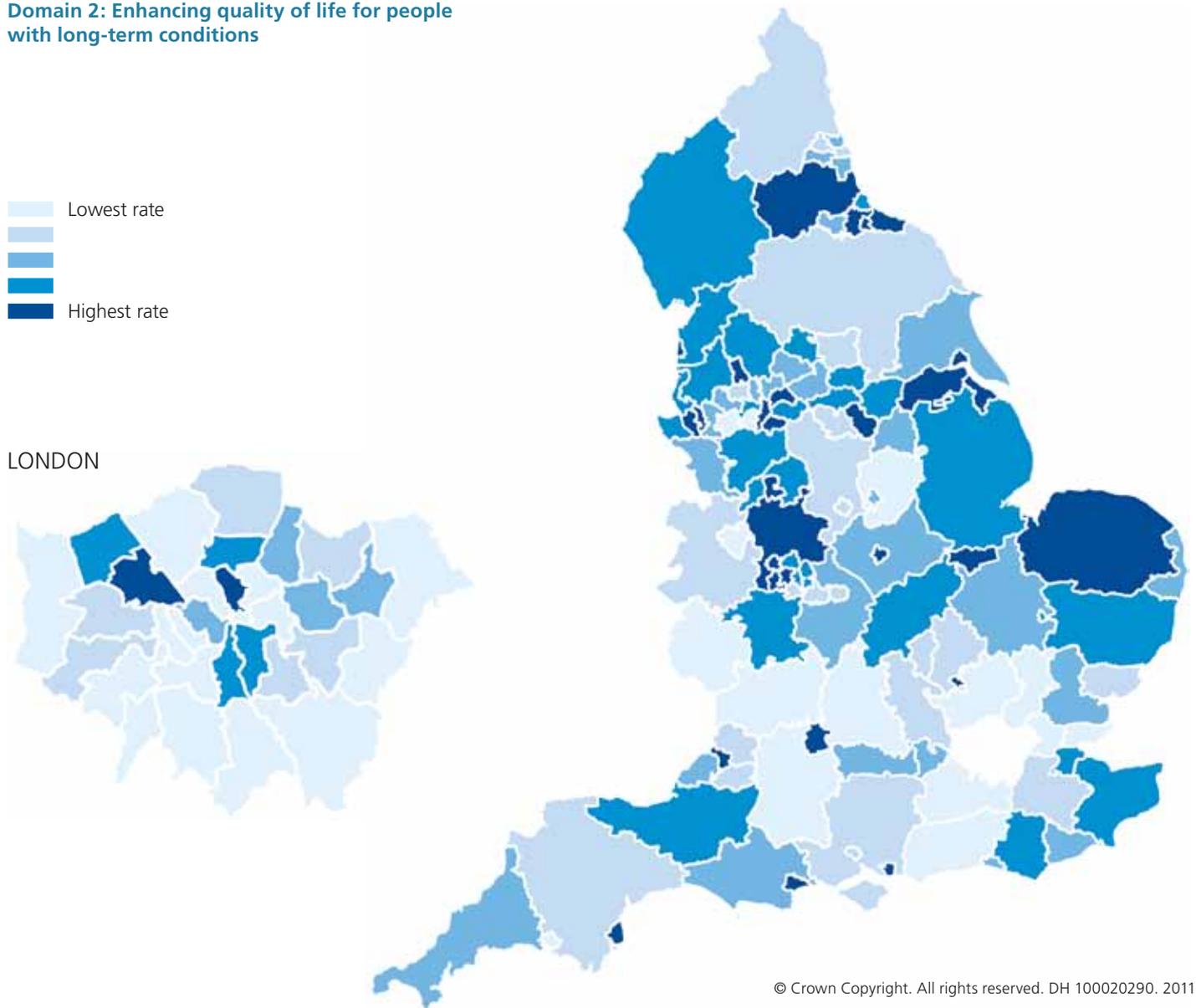
Map 20: Emergency admission rate for children with epilepsy per population aged 0–17 years by PCT

Directly standardised rate 2007/08–2009/10

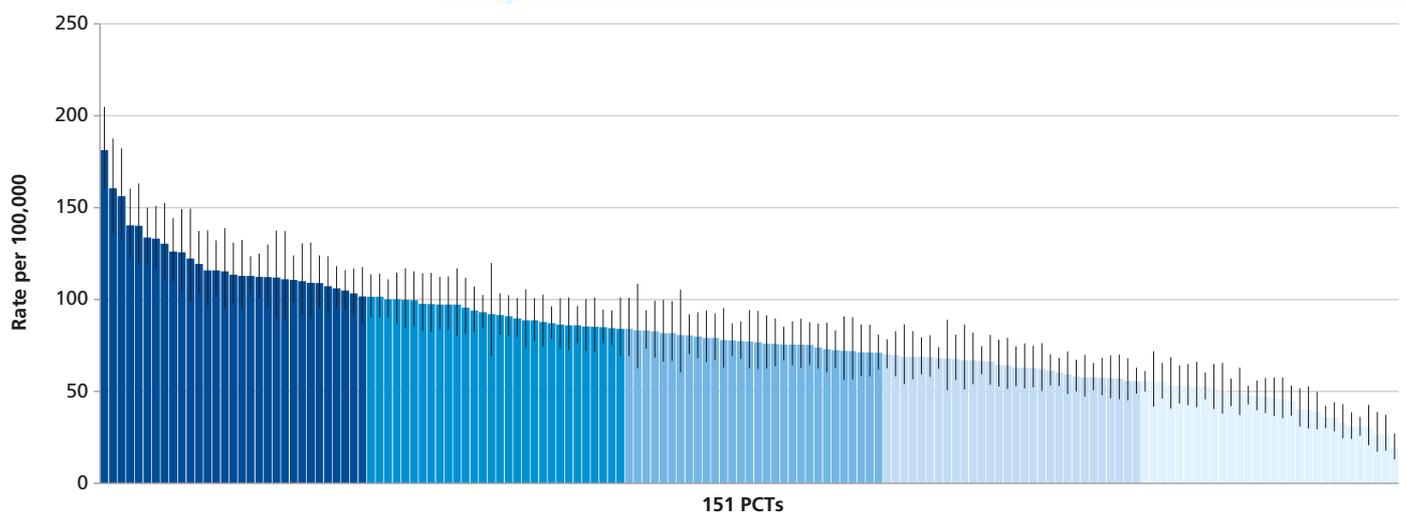
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Epilepsy is common in children, affecting approximately 48,000. Childhood epilepsy encompasses a range of disorders of varying complexity and diagnostic difficulty. Complex co-morbidities are more common in childhood than in adult epilepsy.

Unplanned hospitalisation for asthma, diabetes and epilepsy in children and young people under 19 years is a national quality indicator in the NHS Outcomes Framework 2011/12.

Magnitude of variation

For PCTs in England, the emergency admission rate for children with epilepsy per 100,000 population aged 0–17 years ranged from 19.1 to 181.2 (9-fold variation). When the five PCTs with the highest emergency admission rates and the five PCTs with the lowest emergency admission rates are excluded, the range is 30.8–133.7 per 100,000 population aged 0–17 years, and the variation is 4.3-fold.

Epilepsy is more common in deprived populations. However, as the higher prevalence rate in socio-economically deprived populations is only about one-quarter greater than the mean rate, deprivation alone cannot explain this degree of variation.

Variations in emergency admission rates for children with epilepsy can reflect:

- the management of seizure control;
- emergency management of acute seizures;
- differences in the admission criteria of local departments.

The occurrence of seizures in childhood epilepsy can be unpredictable. For a few children long-term seizure control can be very difficult. These children could influence the number of emergency admissions in certain PCTs. However, as the numbers are so small, it is unlikely to account for the degree of variation observed in this indicator, particularly as the data are aggregated over a three-year period.

Variation is also seen in the prevalence of epilepsy, and the proportion of children diagnosed with epilepsy who do not have the disease. Epilepsy can be difficult to diagnose in children. In the absence of referral guidance and specialist expertise within a managed network setting, children with equivocal clinical presentations can often be wrongly diagnosed.¹

Options for action

Commissioners should consider the benefits of commissioning the following interventions for children with epilepsy.

- First seizure services to streamline investigation and diagnosis where possible.
- Integrated care pathways, including the development of personal management plans for children and their families.
- Specialist nurses in the epilepsy service, whose roles could include coordination of care pathway, family support, population education, and liaison with primary care and education services.
- Enhanced links with social care and education, including medication policies in schools.
- Specific services to aid the transition of children with epilepsy from paediatric to adult epilepsy services.

A managed network model of delivering epilepsy care will help to improve seizure control in many children with epilepsy and rationalise clinical decision-making about the need for admission.

RESOURCES

- NICE Guidance. The epilepsies. The diagnosis and management of the epilepsies in adults and children in primary and secondary care. Clinical guideline 20. October 2004. <http://www.nice.org.uk/nicemedia/live/10954/29532/29532.pdf>
- British Paediatric Neurology Association runs courses in the UK for health professionals involved in the management of children with epilepsy. These courses help to ensure a consistent clinical approach to the diagnosis and management of epilepsy in children. <http://www.bpna.org.uk/pet/>
- Epilepsy 12 is a national audit of childhood epilepsy, monitoring performance of units against 12 key quality standards: 99% of eligible units have signed up. Outputs will be valuable for commissioners when assessing the performance of local providers. <http://www.rcpch.ac.uk/epilepsy12>
- Patient education and support is available from both national and local services. <http://www.epilepsy.org.uk/info>

This indicator is from the Child Health Themed Atlas

 **See what Right Care is doing about epilepsy on page 32**

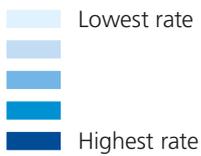
¹ Uldall P, Alving J, Hansen LK, Kibæk, Buchholt J (2006) The misdiagnosis of epilepsy in children admitted to a tertiary epilepsy centre with paroxysmal events. *Archives of Disease in Childhood* 91: 219-221.

PROBLEMS OF VISION

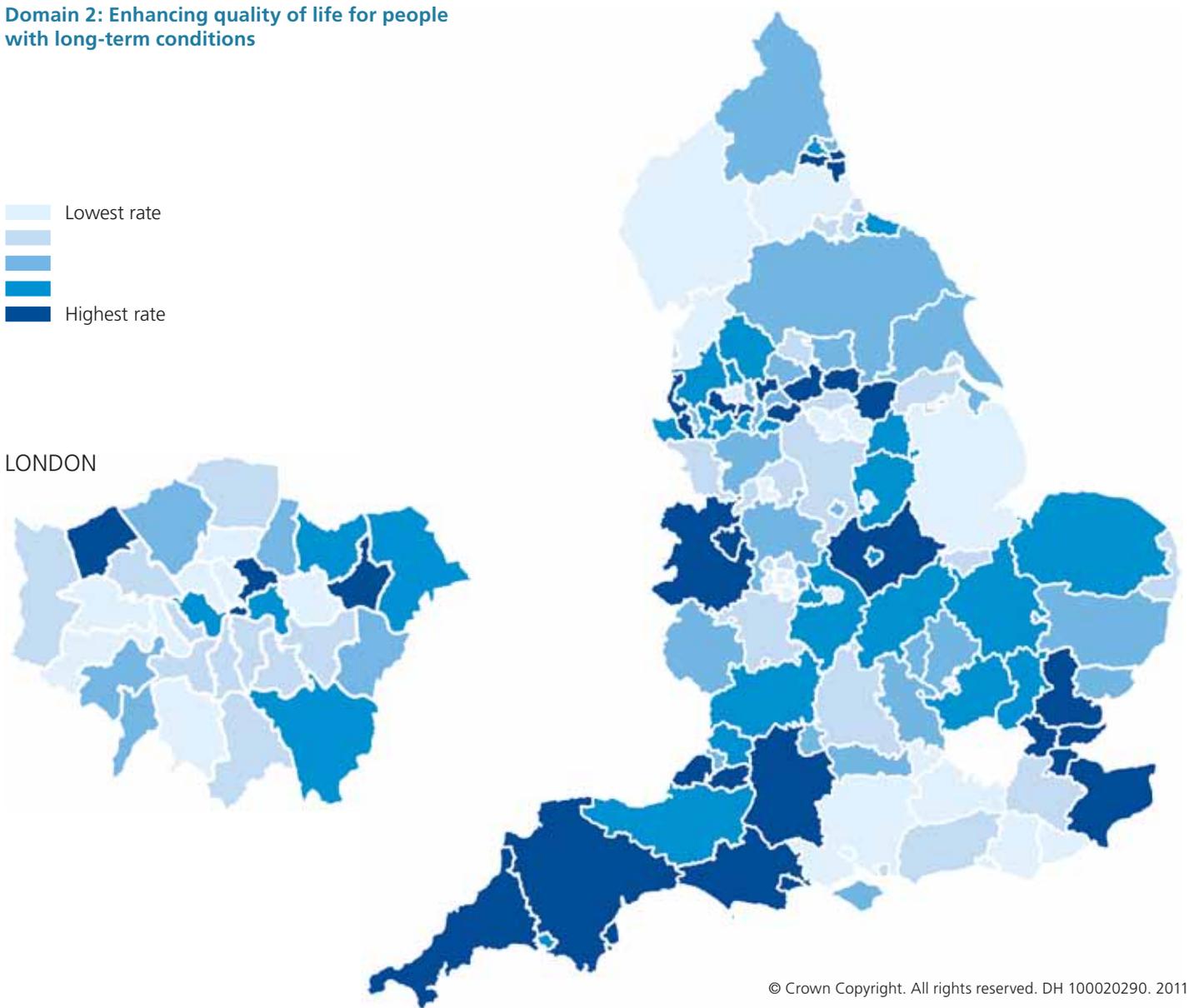
Map 21: Percentage of the diabetic population receiving screening for diabetic retinopathy by PCT

January–March 2011

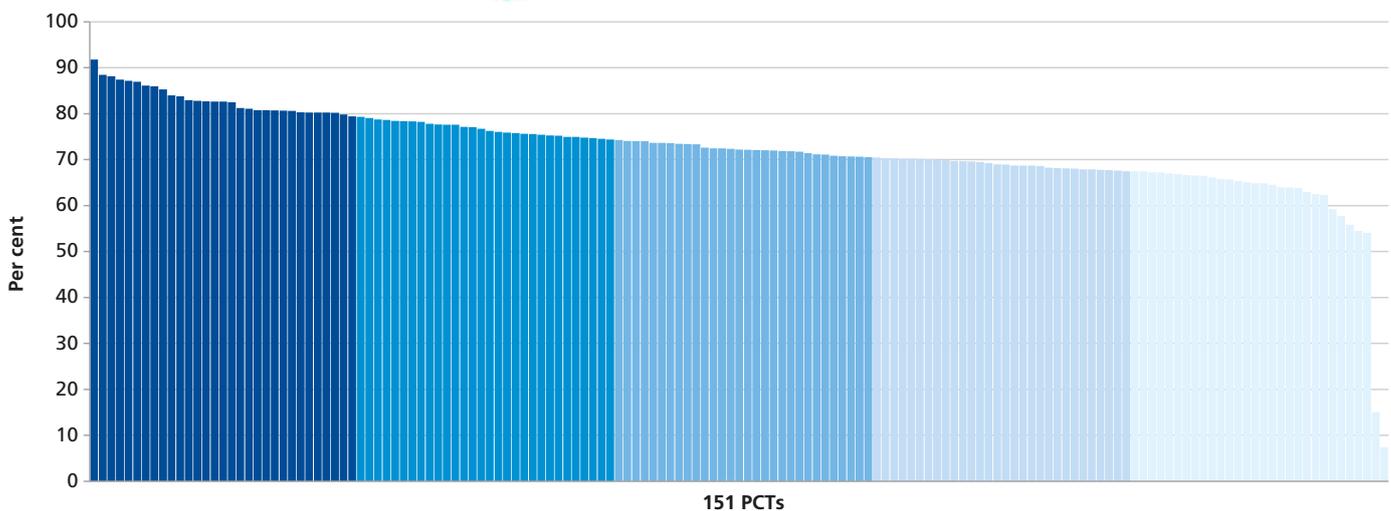
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

As people with diabetes are 25 times more likely than the general population to become blind¹ and the early stages of diabetic eye disease often do not present with any symptoms, the English National Screening Programme for Diabetic Retinopathy (ENSPDR) is important for the early detection of people with diabetes who should be referred to an ophthalmologist at the point when treatment is most effective and preventable sight loss can be avoided. Early diagnosis and treatment prevents up to 98% of severe vision loss: the earlier treatment is received, the more likely it is to be effective.²

The ENSPDR was rolled out across the country in 2006, and there are national quality standards in the National Screening Committee (NSC) Workbook, *Essential Elements in Developing a Diabetic Retinopathy Screening Programme*.³

For an initial screening test:

- The minimum standard is 70% for the eligible population taking up the offer.
- The achievable standard is 90% for the eligible population taking up the offer.

For a repeat screening test:

- The minimum standard is 80% for the eligible population taking up the offer.
- The achievable standard is 95% for the eligible population taking up the offer.

The data for this indicator are collected quarterly as part of the Department of Health Integrated Performance Measures Monitoring.⁴ The indicator is a “snapshot” of patients during the quarter: it records the latest update on any instance of a screen (via digital photography) on a patient’s notes in the past 12 months during the recording period (January to March 2011), divided by all those patients with diabetes (in the quarter) who were eligible for screening.

Magnitude of variation

For PCTs in England, the percentage of the diabetic population receiving screening for diabetic retinopathy ranged from 7.4% to 91.8% (12-fold). When the five PCTs with the highest percentages and the five PCTs

with the lowest percentages are excluded, the range is 57.7–87.0%, and the variation is 1.5-fold.

This degree of variation in the uptake of screening is of great concern, particularly as the indicator is associated with national quality standards (see “Context”).

It is possible that different factors influence both uptake and delivery of the service for initial and repeat screening.

For this indicator, the aim should be not only to reduce variation but also to improve performance such that all PCTs meet the minimum standard and work towards meeting the achievable standard.

Options for action

Commissioners and providers should ensure that the minimum standard for both the initial and repeat screening tests is met universally.

Each local screening service should analyse their data annually and benchmark them against the national quality standards.

Screening services meeting the achievable standard should publish details of their service operation to enable those whose performance is not as good to identify learning points and thereby improve performance.

In areas where standards are not being met, local factors leading to low uptake should be identified, and solutions that have proved effective in other areas should be investigated, such as offering patients viable choices when booking appointments, texting appointment reminders, and translating patient information.

In all areas, data quality should be assessed to ensure that records are accurate.

RESOURCES

- English National Screening Programme for Diabetic Retinopathy (ENSPDR). <http://www.retinalscreening.nhs.uk/pages/>
- ENSPDR Commissioning Toolkit. <http://www.retinalscreening.nhs.uk/pages/default.asp?id=7&slD=90>



See what Right Care is doing in ophthalmology on page 32

1 National Society to Prevent Blindness (1980) *Visual Problems in the US: data analysis definitions*. Data 74 sources, Detailed Data Tables, Analysis, Interpretation. New York.

2 Access Economics (2009) *Future Sight Loss UK 1: Economic Impact of Partial Sight and Blindness in the UK adult population*. RNIB. http://www.rnib.org.uk/aboutus/Research/reports/2010/FSUK_Report.doc

3 <http://www.nscscreening.org.uk>

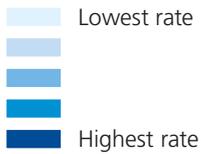
4 Department of Health. *Integrated Performance Measures Monitoring. Report on Primary Care Trust and NHS Trust performance against plans to address selected health priorities relating to the NHS Operating Framework*. <http://www.dh.gov.uk/en/Publicationsandstatistics/Statistics/Perfomancedataandstatistics/Integratedperformancemeasuresmonitoring/index.htm>

PROBLEMS OF VISION

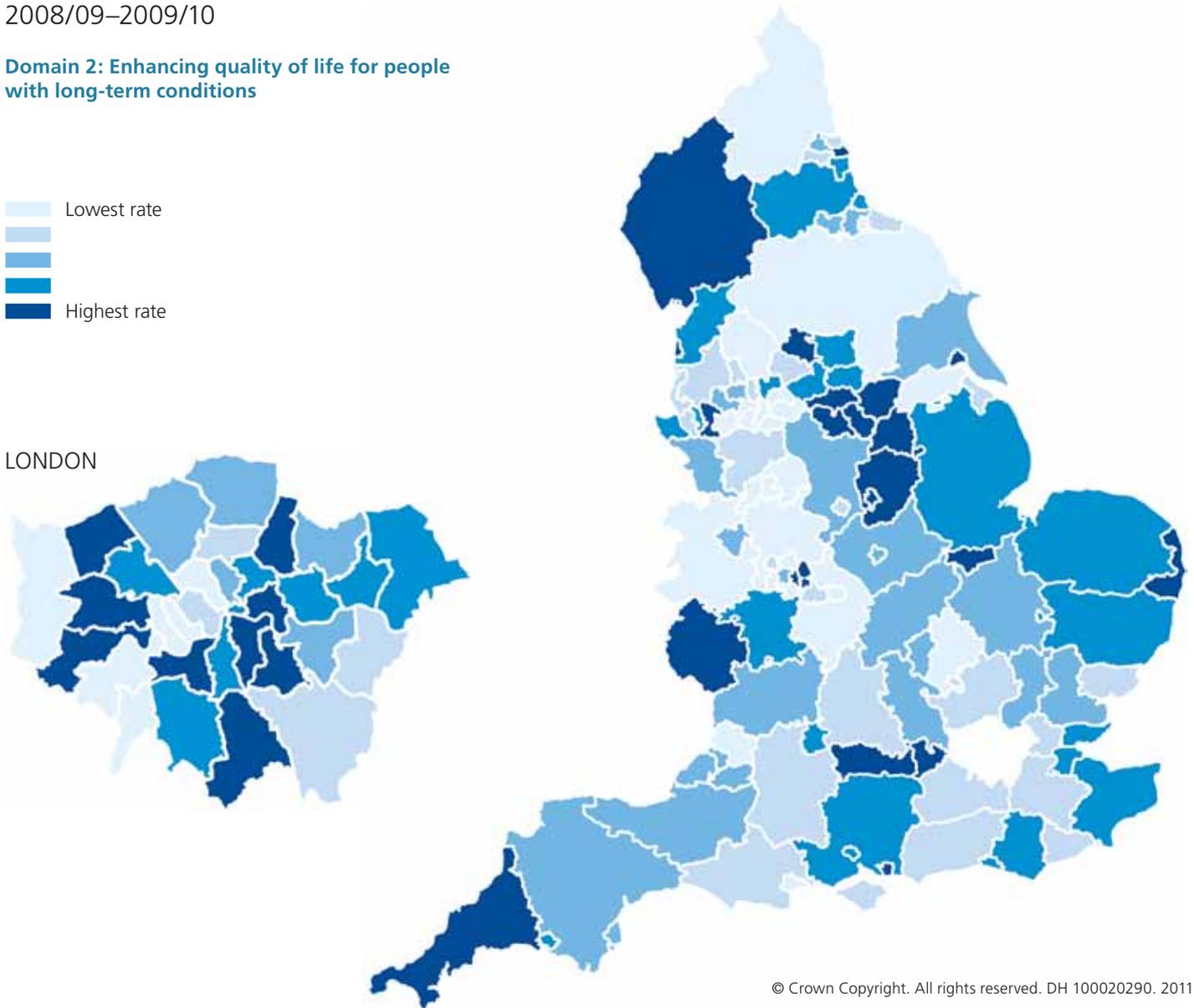
Map 22: Rate per population of certificates of vision impairment (CsVI) issued with a main cause of diabetic eye disease by PCT

2008/09–2009/10

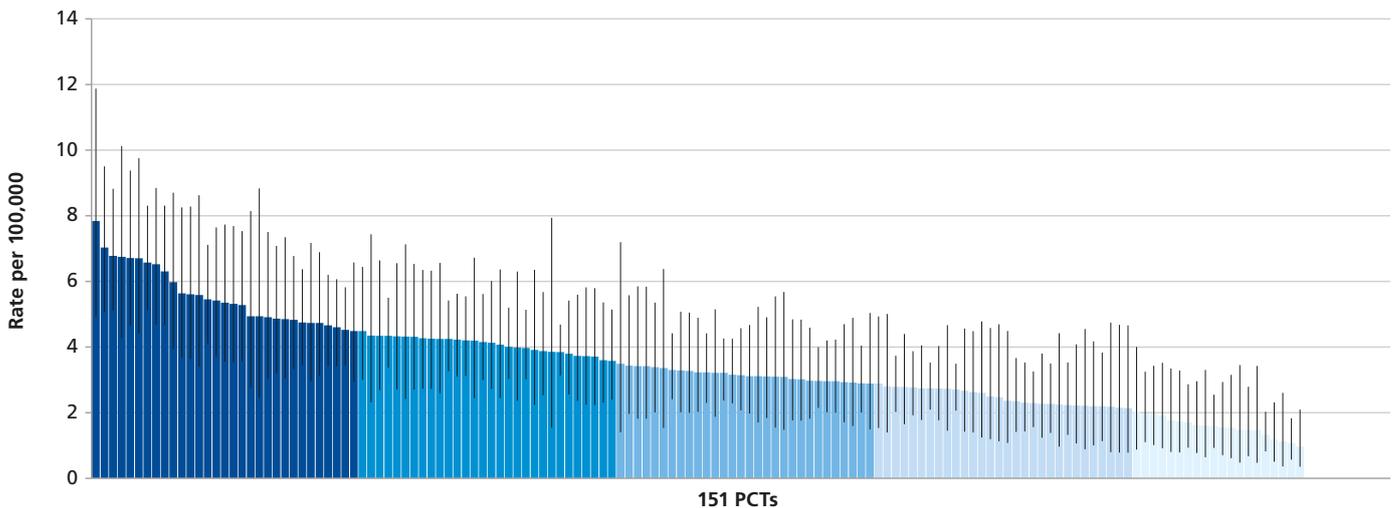
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

People with diabetes are 25 times more likely than the general population to become blind.¹ In England and Wales, diabetic eye disease is the leading cause of blindness in adults under 65 years.² Early stages of diabetic eye disease often do not present with any symptoms. However, early diagnosis and treatment can prevent up to 98% of severe vision loss: the earlier treatment is received, the more likely it is to be effective.³ Improved control of the diabetes and its risk factors can prevent the onset and the development of diabetic eye disease and sight loss.

The National Screening Committee (NSC) Workbook, *Essential Elements in Developing a Diabetic Retinopathy Screening Programme*, includes quality standards for diabetic retinopathy screening services:

To reduce new blindness due to diabetic retinopathy within five years: the minimum standard is 10%; the achievable standard is 40%.⁴

The Certificate of Vision Impairment (CVI) is discussed in clinic with patients who meet the criteria for sight impairment, completed with patient consent by a consultant ophthalmologist, and sent to local authority social services. This return is mandatory. Local authority social services update their vision impairment register and offer the patient additional services.

A copy of the CVI goes to the Certifications Office, Moorfields Eye Hospital NHS Foundation Trust, for epidemiological analysis. This return is voluntary, but compliance is good. Data held by the Certifications Office provide more details on the incident causes of registration.⁵ Data from the 2008/09 and 2009/10 CsVI held by the Certifications Office have been used for this indicator.

Magnitude of variation

For PCTs in England, the rate per 100,000 population of CsVI issued with a main cause of diabetic eye disease ranged from 1.0 to 7.8 (8-fold variation).⁶ When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 1.5–6.7 per 100,000, and the variation is 4.6-fold.

This high degree of variation is of concern in an indicator measuring a preventable cause of sight loss, which is supported by a national screening programme. However, caution is necessary when interpreting this variation due to the small numbers in each PCT.

Data from the CsVI could be used together with the data on screening uptake (see Map 21) to provide important information on the care of people with diabetes and eye diseases in a local area.

Options for action

Commissioners and providers should analyse local data annually and benchmark them against those from other areas. Where there are high numbers of people who are sight-impaired from diabetes but low screening uptake, this should trigger action to improve services.

For this indicator, the aim should be not only to reduce variation but also to improve the quality and consistency of data collection. Performance against the NSC's quality standards for reducing blindness due to diabetic retinopathy cannot be assessed adequately until there is reliable data collection. Commissioners and providers should investigate how to improve the overall quality and consistency of CVI data collection.

RESOURCES

- ▶ The identification, referral and registration of sight loss: action for social services departments and optometrists, and explanatory notes. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4083553
- ▶ Form CVI: explanatory notes for consultants ophthalmologists and hospital eye clinic staff. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4083552
- ▶ Identification and notification of sight loss. http://www.dh.gov.uk/en/Healthcare/Primarycare/Optical/DH_4074843

 **See what Right Care is doing in ophthalmology on page 32**

1 National Society to Prevent Blindness (1980) *Visual Problems in the US: data analysis definitions*. Data 74 sources, Detailed Data Tables, Analysis, Interpretation. New York.

2 Bunce C (2006) *BMC Public Health* 6:58. doi:10.1186/1471-2458-6-58. <http://www.biomedcentral.com/1471-2458/6/58>

3 Access Economics (2009) *Future Sight Loss UK 1: Economic Impact of Partial Sight and Blindness in the UK adult population*. RNIB. http://www.rnib.org.uk/aboutus/Research/reports/2010/FSUK_Report.doc

4 <http://www.nscretinopathy.org.uk>

5 <http://ecvi.moorfields.nhs.uk/Default.aspx>

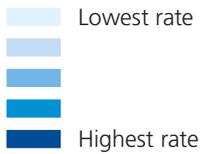
6 Data from 10 PCTs have been removed.

PROBLEMS OF HEARING

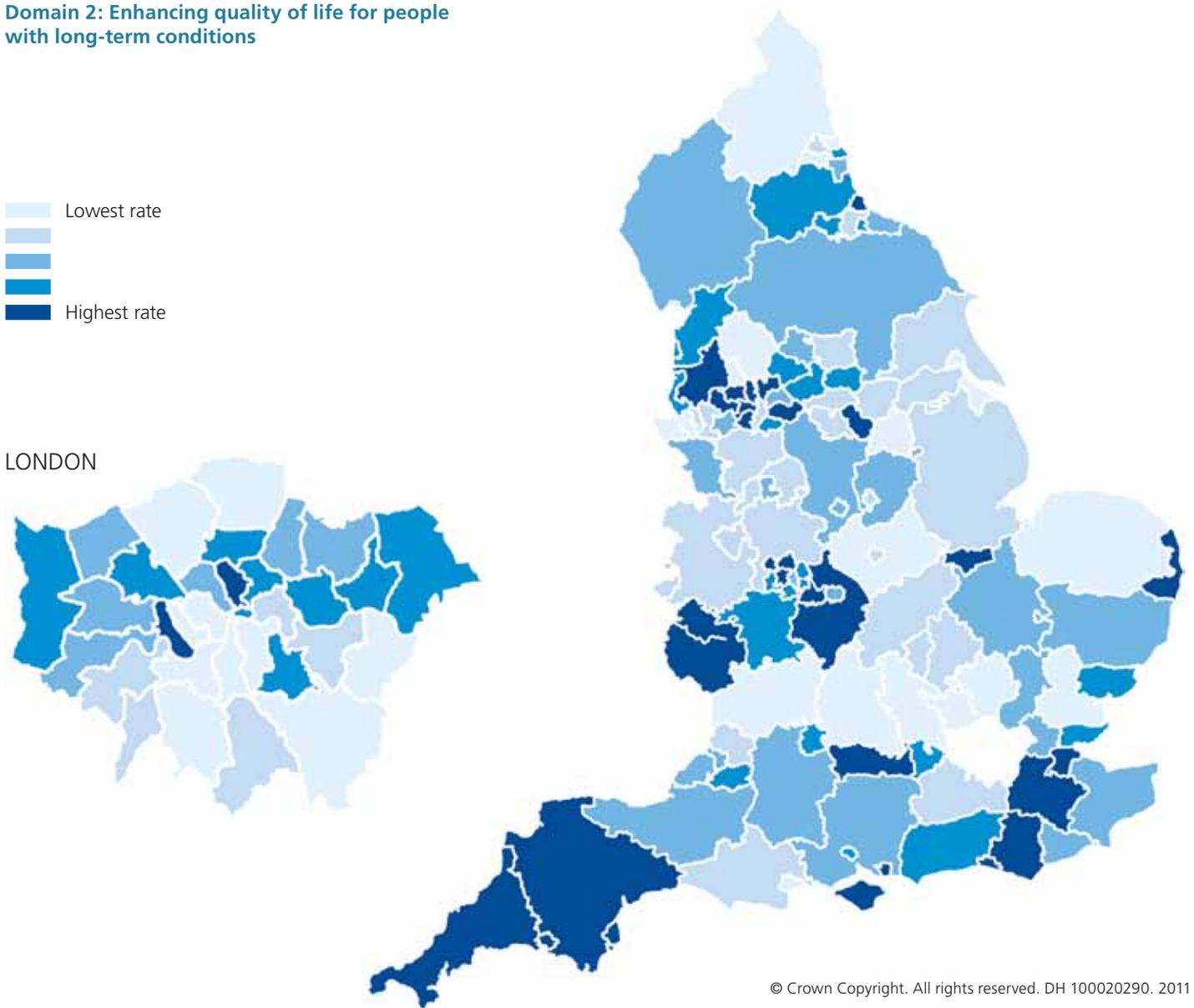
Map 23: Rate of audiology assessments undertaken per population by PCT

2010

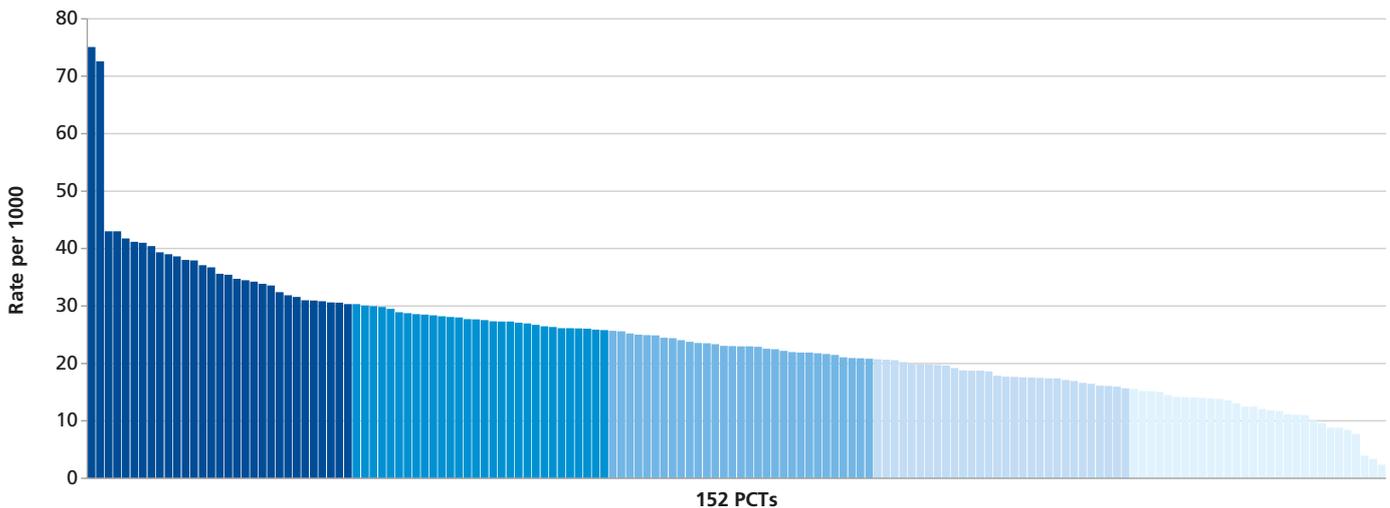
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Hearing loss affects 10.7 million adults in England, mainly people older than 60 years: 4.9 million adults have a hearing loss for which clinical management with hearing aids and appropriate environmental aids would benefit patients and their families.

The rate of audiology assessments in this indicator is for all diagnostic investigations in adults and children undertaken for the assessment of hearing loss, hearing aid provision and reviews, tinnitus and vestibular disorders. The largest proportion of assessments are referrals for age-related hearing loss. The rate of audiology assessments is a good proxy measure for the rate of hearing aid provision. Although this has risen by 2.3% per annum over the last 4 years, the gap appears to be considerable between audiology assessments and the subsequent provision of hearing aids and other restorative intervention.

Delay in identifying, diagnosing and managing hearing loss has been linked to depression, social isolation and loss of independence. More recently, it has been shown to be associated with an increased risk of developing dementia.¹ In addition, there is evidence that people with hearing loss:

- manage other long-term conditions less well;
- have higher levels of unemployment;
- earn less when in employment.

Demand for services is set to rise substantially over the coming years as a result of an ageing population, lifestyle choices, such as use of MP3 players, and the support needs of returning military personnel.

Highlighting variation in the provision of audiology assessments and the rate of intervention, for example, with hearing aids should enable the commissioning of services to be more appropriately matched with improving outcomes for hearing loss in local populations in this often neglected area of sensory deprivation.

Magnitude of variation

For PCTs in England, the rate of audiology assessments undertaken per 1000 population ranged from 2.3 to 75.1 (32-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are

excluded, the range is 8.8–41.2 per 1000 population, and the variation is 4.7-fold variation.

As variation in the rate of performing audiology assessments is highly related to population demographics, correcting the rate for age is likely to show less variation. However, in a small number of geographical areas, there is a low rate of provision unexplained by demographics.

Options for action

Commissioners need to discuss with providers the impact of population ageing:

- to start to close the gap between met and unmet need;
- to meet the rising need due to demographic factors, and the impact of publicity campaigns designed to increase awareness. There is considerable variation in investment in hearing services, and evidence that many people do not use the aids provided, therefore, commissioners would expect to see steps taken to increase value and productivity within the allocated resources.

This will ensure that hearing loss in local populations is appropriately diagnosed and treated in a timely manner to minimise the broader social and physical impacts of hearing loss.

To do this, commissioners need:

- To understand the current rate of assessments and local demography and estimate the gap between current provision and unmet need;
- To understand the current annual increase in assessments is 2.3% per annum and expected to rise;
- To ensure triage and referral arrangements to support earlier management are in place;
- To understand the key quality and productivity issues for local services through the participation of those services in the planned national accreditation scheme (IQIPS).²

RESOURCES

- NHS Improvement, Audiology Improvement homepage. <http://www.improvement.nhs.uk/audiology/index.html>

1 Lin FR, Metter EJ, O'Brien RJ, Resnick SM, Zonderman AB, Ferrucci L (2011) Hearing Loss and Incident Dementia. *Arch Neurol* 68: 214-220. doi: 10.1001/archneurol.2010.362

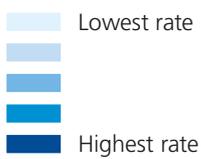
2 Improving Quality in Physiological Diagnostic Services (IQIPS). <http://www.rcplondon.ac.uk/sites/default/files/iqips-fact-sheet.pdf>

PROBLEMS OF HEARING

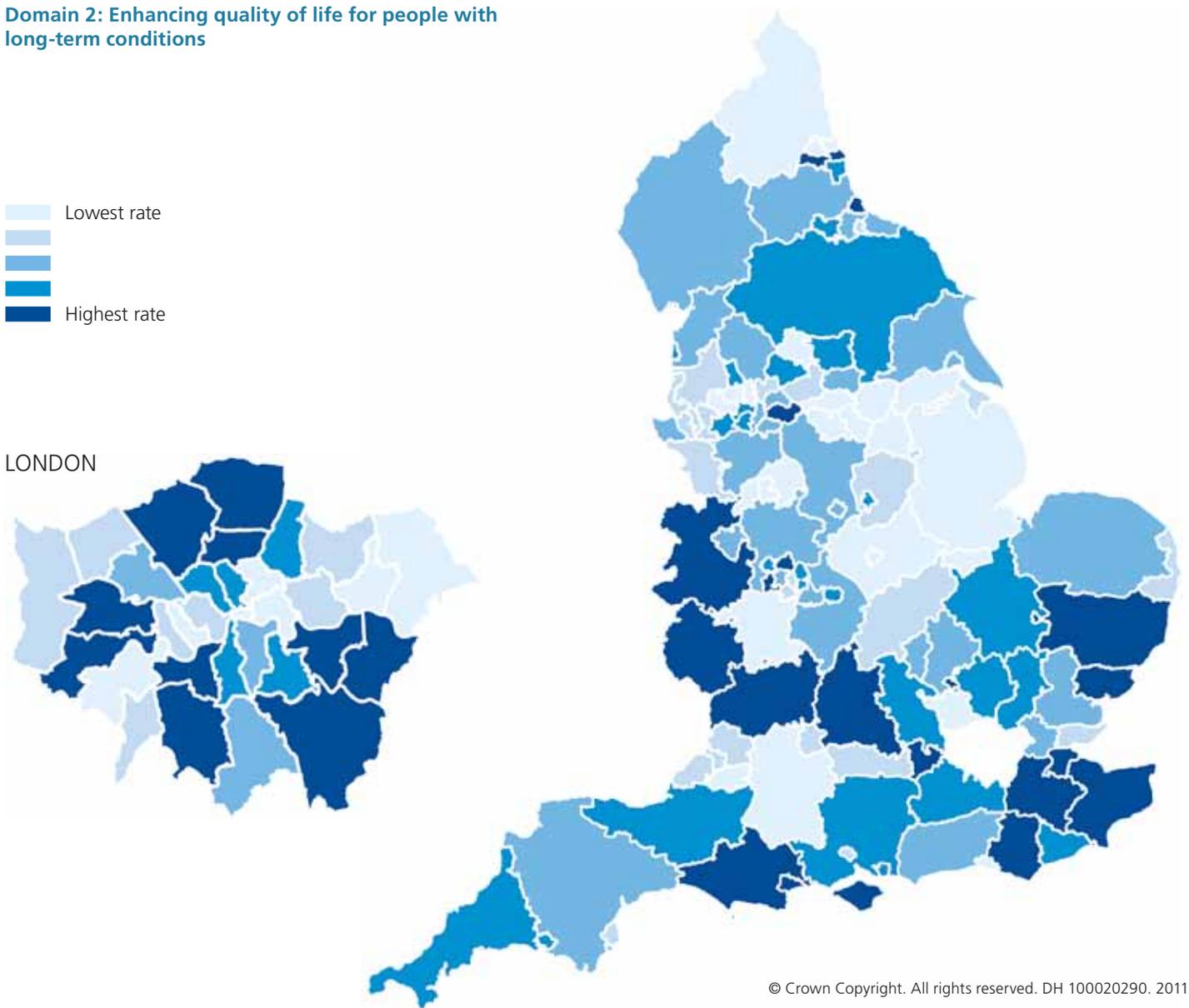
Map 24: Mean time from referral to assessment for hearing tests in newborns by PCT

2010

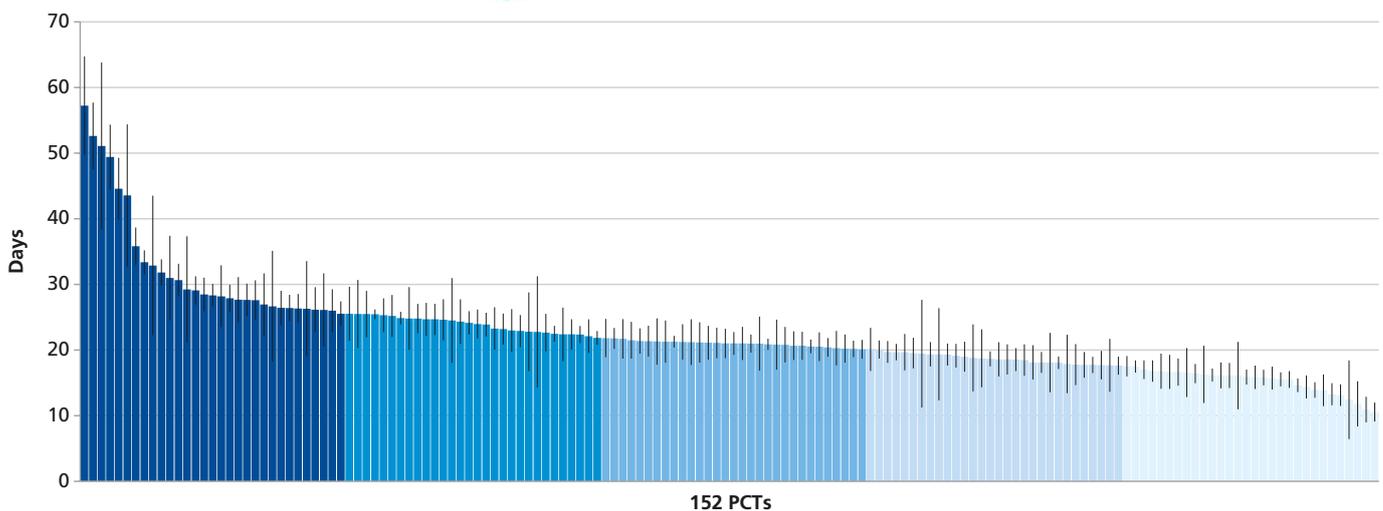
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Congenital deafness has a major impact on child development. There are 20,000 permanently deaf children in England, who receive services from the NHS, including genetic services, because deafness has major genetic aetiologies, social services, and education services. About £250 million is spent on paediatric audiology and related services for families and their children in a year. Early identification by the NHS Newborn Hearing Screening Programme (NHSP) greatly reduces this impact.

Through NHSP, children are referred to paediatric diagnostic audiology services if they have a poor response in either one ear or both ears at screening. The average referral rate to paediatric diagnostic audiology services is 2%: for about 0.5% of these referrals, this is because babies do not have a clear response in both ears, and for 1.5% of referrals it is because there is not a clear response in one ear.

Between 13,000 and 14,000 children are referred each year in England. As a result of audiological assessment, children are diagnosed as permanently deaf, in need of further diagnostics, or “normal” hearing. Of the 1000 children identified as deaf by the NHS NHSP in a year, 660 will have bilateral deafness, and, of those, 170 will be profoundly deaf.

The NHSP has a set of quality standards and service specifications (see “Resources”). The key performance indicator relating to referral for audiological assessment is:

“All parents of babies that refer from the screen and wish to continue should be offered an appointment that is within 4 weeks of screen completion.”

This indicator focuses on the interface between the NHSP and paediatric audiology services. The data show mean time to confirmatory assessment after referral from the NHSP.

Reducing the degree of variation in the mean time from referral to assessment for hearing tests across England will reduce the level of inequity for newborns and their parents offered hearing screening.

Magnitude of variation

For PCTs in England, the mean time from referral to assessment for hearing tests in newborns ranged from

10.5 to 57.2 days (5-fold variation). When the five PCTs with the highest mean times and the five PCTs with the lowest mean times are excluded, the range is 13.3–43.6 days, and the variation is 3.3-fold.

Reasons for warranted variation include differences in the levels of risk and genetic aetiologies in different areas.

Possible reasons for unwarranted variation include differences in:

- › Capacity;
- › Prioritisation of services;
- › Arrangements for cover;
- › Availability of education services staff with whom to work;
- › Quality of management of audiology assessment services.

Options for action

Commissioners and providers in areas where the mean time from referral to assessment for hearing tests is 25 days or greater need to explore why the times are longer than those in the middle part of the distribution (see column chart), including looking at the interface between local screening services, paediatric audiology services and education services.

The UK National Screening Committee (NSC) has been working with the Map of Medicine® to produce pathways for all the English non-cancer screening programmes for which it has responsibility. The Map of Medicine care pathways for newborn hearing screening (including diagnostic assessment and habilitation) have now been completed, and can be localised by commissioners and providers in order to help promote standards in newborn hearing screening, including improving the time from referral to assessment (see “Resources”).

RESOURCES

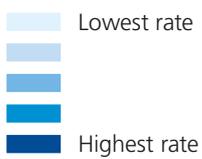
- › NHS Newborn Hearing Screening Programme (NHSP). Standards and Protocols. <http://hearing.screening.nhs.uk/standardsandprotocols>
- › NHS Newborn Hearing Screening Programme (NHSP). NHSP Map of Medicine care pathways. <http://hearing.screening.nhs.uk/cms.php?folder=3788>

PROBLEMS OF CIRCULATION

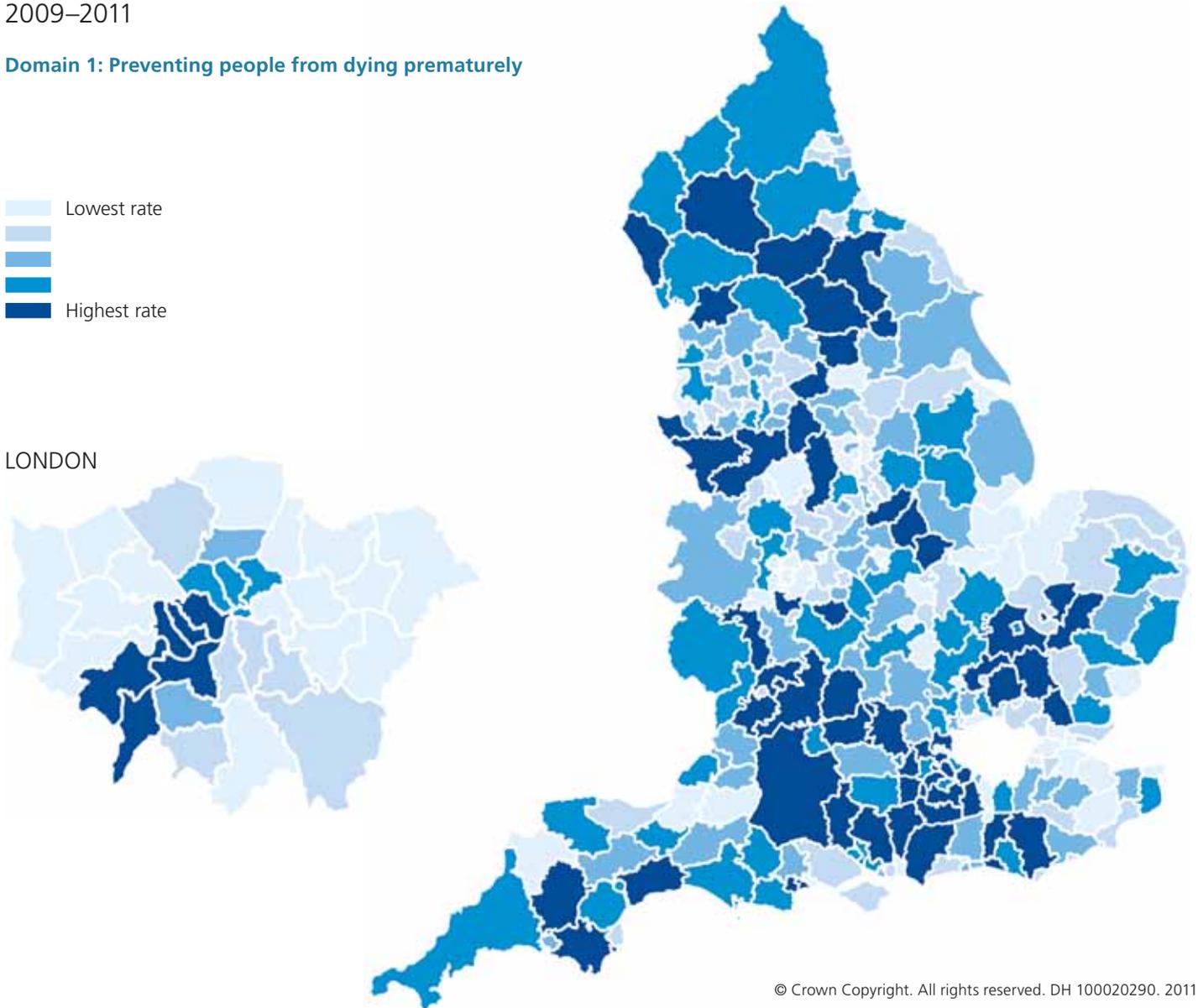
Map 25: Percentage of adults who participate in sport and active recreation at moderate intensity (equivalent to 30 minutes on 3 days or more a week) by local authority 2009–2011

2009–2011

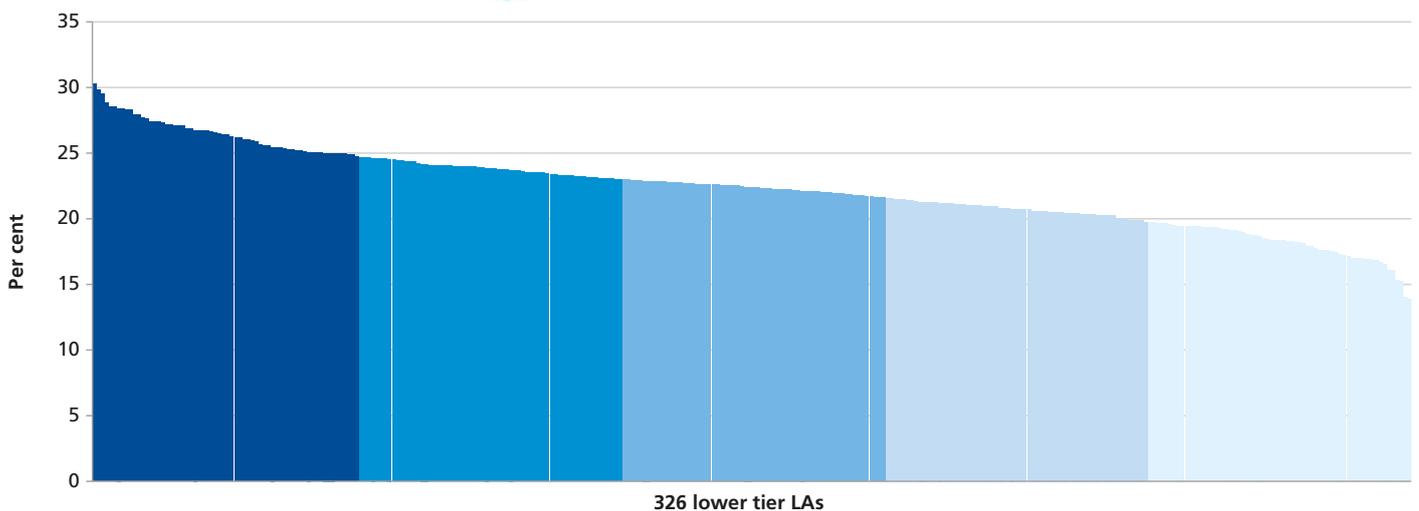
Domain 1: Preventing people from dying prematurely



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Physical activity improves health and well-being, helping to prevent coronary heart disease, stroke and some forms of cancer, all of which are leading causes of death. It can reduce the risk of developing hypertension, diabetes, overweight and obesity, and improve mental well-being. The benefits of regular physical activity are shown in Figure 25.1.¹

Some of the diseases prevented by exercise have high treatment and care costs. Increasing physical activity has been a feature of NHS prevention strategies for many years, because the potential health and economic benefits are substantial and the costs minimal.

Magnitude of variation

For local authorities in England, the percentage of adults who participate in sport and active recreation at moderate intensity ranged from 13.9% to 30.3% (2.2-fold variation).

When the ten local authorities with the highest percentages and the ten local authorities with the lowest percentages are excluded, the range is 16.9–27.9%, and the variation is 1.65-fold.

In the latest Health Survey for England, people overestimated the duration of self-reported exercise when compared with electronic monitoring. Thus, the levels of activity reported may overstate those being achieved.

The low level of physical activity is concerning.

- In the local authority with the highest percentage, less than one-third of adults achieved moderate intensity physical activity.
- In the local authority with the lowest percentage, only 1 in 7 adults achieved moderate intensity physical activity.

Options for action

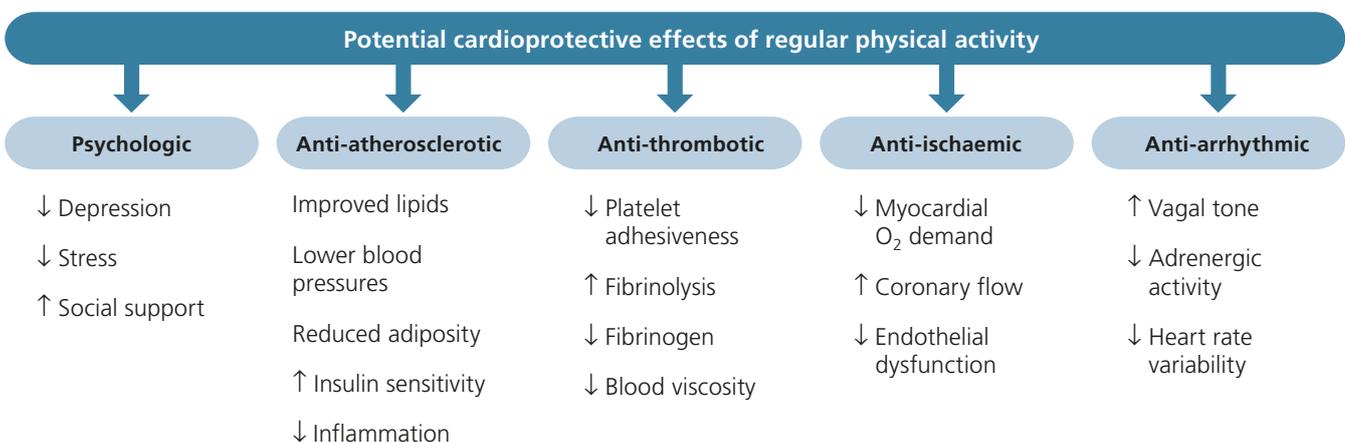
Physical activity is a priority given the effect of exercise on cardiovascular disease risk and obesity, and the benefits for mental well-being. Main options for action are:

- joint strategies developed through the Health and Well-being Boards codified in the Health and Social Care Bill 2011;
- renewed use of exercise referral systems (see “Resources”);
- work in schools to build habits that make exercise part of a normal healthy life.

RESOURCES

- Sport England. Active People Survey. http://www.sportengland.org/research/active_people_survey.aspx
- Department of Health (2009) Putting Prevention First. NHS Health Check: Vascular Risk Assessment and Management. Best Practice Guidance. http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_098410.pdf
- Department of Health (2005) Choosing Activity. A physical activity action plan. http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4105710.pdf
- Department of Health (2001) Exercise Referral Systems: A National Quality Assurance Framework. http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4079009.pdf
- Mental Health Foundation. Exercise and Mental Health. <http://www.mentalhealth.org.uk/help-information/mental-health-a-z/E/exercise-mental-health/>
- NHS Choices. Physical Activity Guidelines for Adults. <http://www.nhs.uk/Livewell/fitness/Pages/physical-activity-guidelines-for-adults.aspx>
- NHS Choices. Walking with Sir Muir Gray. Practical tips on how to fit more daily walking into your daily life. <http://www.nhs.uk/Video/Pages/WalkingwithMuir.aspx>
- NHS Information Centre. Statistics on Physical Activity. <http://www.ic.nhs.uk/statistics-and-data-collections/health-and-lifestyles/physical-activity>
- Department of Health (2009) A Systematic Review of the Evidence Base for Developing a Physical Activity and Health Legacy from the London 2012 Olympic and Paralympic Games. <http://www.london.nhs.uk/webfiles/Independent%20inquiries/Developing%20physical%20activity%20and%20health%20legacy%20-%20full%20report.pdf>
- NICE Pathway on physical activity. <http://pathways.nice.org.uk/pathways/physical-activity>

Figure 25.1: The health benefits of regular physical activity¹

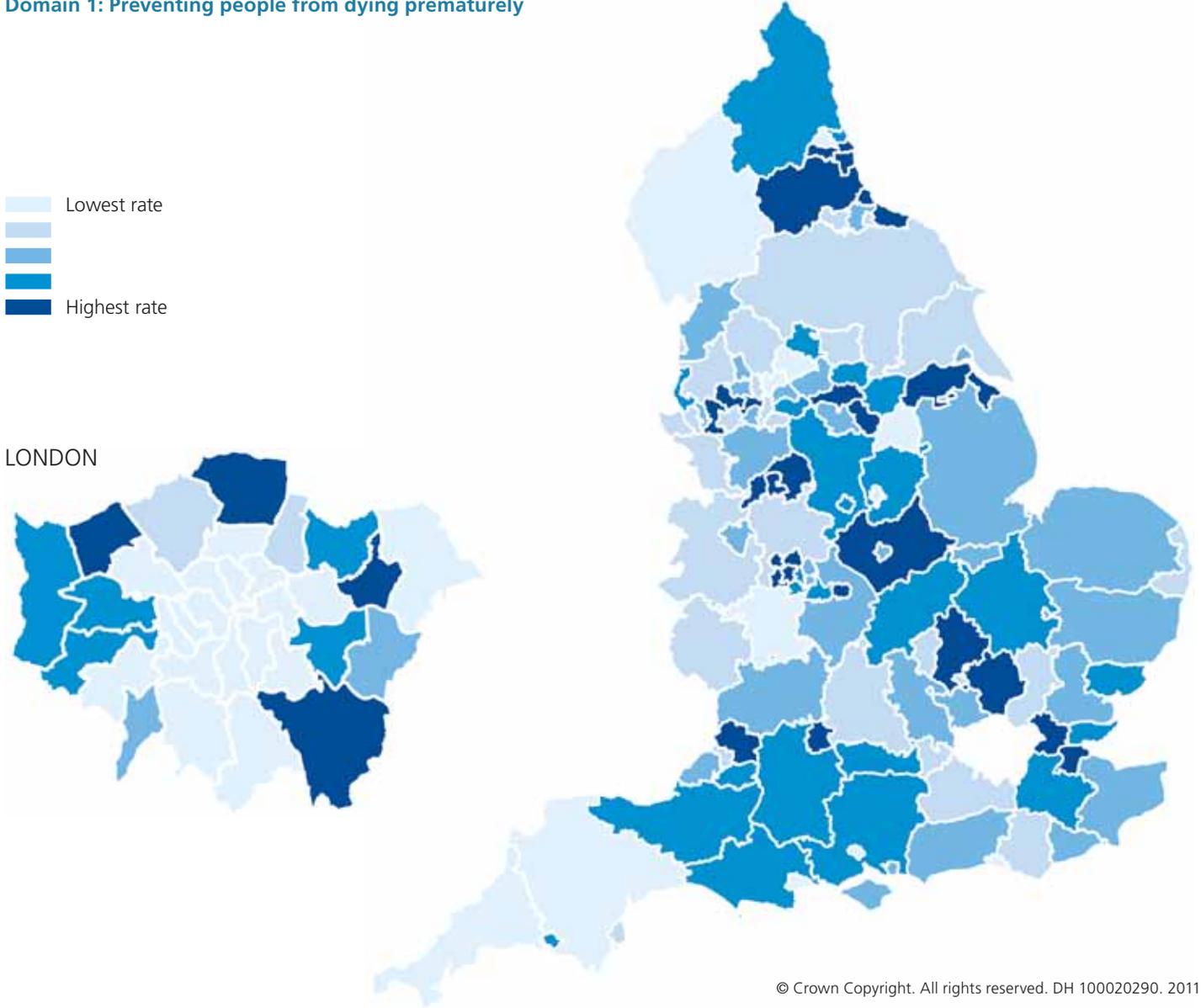


1 Franklin BA, de Jong A, Kahn MD et al (2004) Fitness and Mortality in the Primary and Secondary Prevention of Coronary Artery Disease: Does the Effort Justify the Outcome? *Am J Med Sports* 6: 23-27.

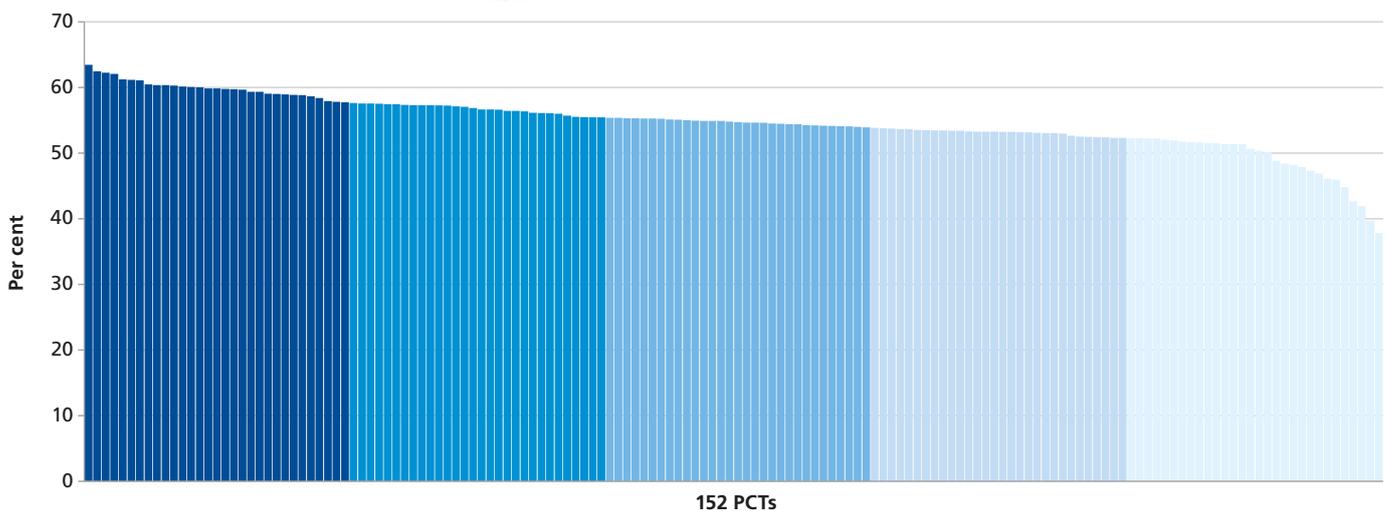
PROBLEMS OF CIRCULATION

Map 26: Reported numbers of people with hypertension on GP registers as a percentage of estimated prevalence by PCT 2009/10

Domain 1: Preventing people from dying prematurely



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Hypertension is a major risk factor for stroke (ischaemic and haemorrhagic), myocardial infarction, heart failure, chronic kidney disease, peripheral vascular disease, cognitive decline and premature death. Untreated hypertension is associated with a progressive rise in blood pressure, often culminating in a treatment-resistant state due to associated vascular and renal damage.¹

Primary hypertension is common in the UK. Prevalence is strongly influenced by age and lifestyle factors: at least one-quarter of adults and more than half of those over 60 years have hypertension (blood pressure $\geq 140/90$ mmHg). As the population becomes older, more sedentary and obese, the prevalence of hypertension and the requirement for treatment will rise.¹

Since 2004/05, Quality and Outcomes Framework (QOF) reports on hypertension prevalence for all ages have been produced. QOF-reported registers of hypertension show prevalence rising from 11.3% in 2004/05 to 13.4% in 2009/10, an increase of 18%.

Eastern Region Public Health Observatory has published public-health estimates of hypertension prevalence for age 16 years and over.² Assuming that practically all QOF-reported hypertension-prevalent cases are aged 16 years and over, the age 16-years-plus prevalence can be calculated using the QOF 16-years-plus population denominator, to enable comparison with public-health estimates.

Such a comparison reveals that although national QOF-reported prevalence in 2009/10 was 16.6% for those aged 16 years and over, estimated prevalence was 30.4%. This suggests under-diagnosis of 45% of expected cases.

Magnitude of variation

For PCTs in England, the reported numbers of people with hypertension on GP registers as a percentage of estimated prevalence ranged from 37.8% to 63.4% (1.7-fold variation). When the five PCTs with the highest percentages and the five PCTs with the lowest percentages are excluded, the range is 45.9–61.2%, and the variation is 1.3-fold.

The relatively low level of hypertension being identified, diagnosed and treated is concerning. After exclusions, out of 100 people with hypertension, at best 61 are identified, and at worst less than half. Improved

identification of people with hypertension is a priority given the impact of hypertension on cardiovascular disease risk.

QOF data for 2010/11 are expected at the time of writing, which could show improvements over the 2009/10 data, but previously the annual rate of change has been relatively low.

Options for action

All commissioners need to address the identification and treatment of hypertension. NHS Comparators publishes practice-level variation in identification, which may indicate which practices need greater support in identification.

In many cases, hypertension has no symptoms that would lead people to consult their GP. For people who do not present, the implementation of NHS Health Checks has the potential to identify people with hypertension. Successful implementation and high uptake of Health Checks will be vital in reducing population risk.

Drug treatment is not necessarily first choice for preventing hypertension. When reducing population risk, dietary change and exercise are preferable because they decrease drug expenditure and confer additional benefits, e.g. improved mental well-being.

RESOURCES

- ▶ NICE Guidance. Hypertension. Management of hypertension in primary care (CG127). <http://guidance.nice.org.uk/CG127>
- ▶ NICE Pathway on hypertension. <http://pathways.nice.org.uk/pathways/hypertension>
- ▶ Association of Public Health Observatories. Modelled estimates and projections of hypertension. <http://www.apho.org.uk/resource/item.aspx?RID=48309>
- ▶ NHS Information Centre. Quality and Outcomes Framework. <http://www.ic.nhs.uk/qof>
- ▶ Department of Health (2009) Putting Prevention First. NHS Health Check: Vascular Risk Assessment and Management. Best Practice Guidance. http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_098410.pdf
- ▶ South East Public Health Observatory. National Cardiovascular Disease Profiles. For Cardiac Networks and PCTs. <http://www.sepho.org.uk/NationalCVD/NationalCVDProfiles.aspx>
- ▶ NHS Information Centre. NHS Comparators. <http://www.ic.nhs.uk/nhscomparators>

1 NICE (2011) Hypertension. Management of hypertension in primary care (CG127) <http://guidance.nice.org.uk/CG127>

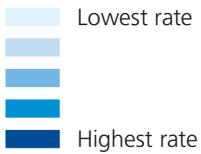
2 Association of Public Health Observatories. Modelled estimates and projections of hypertension <http://www.apho.org.uk/resource/item.aspx?RID=48309>

PROBLEMS OF CIRCULATION

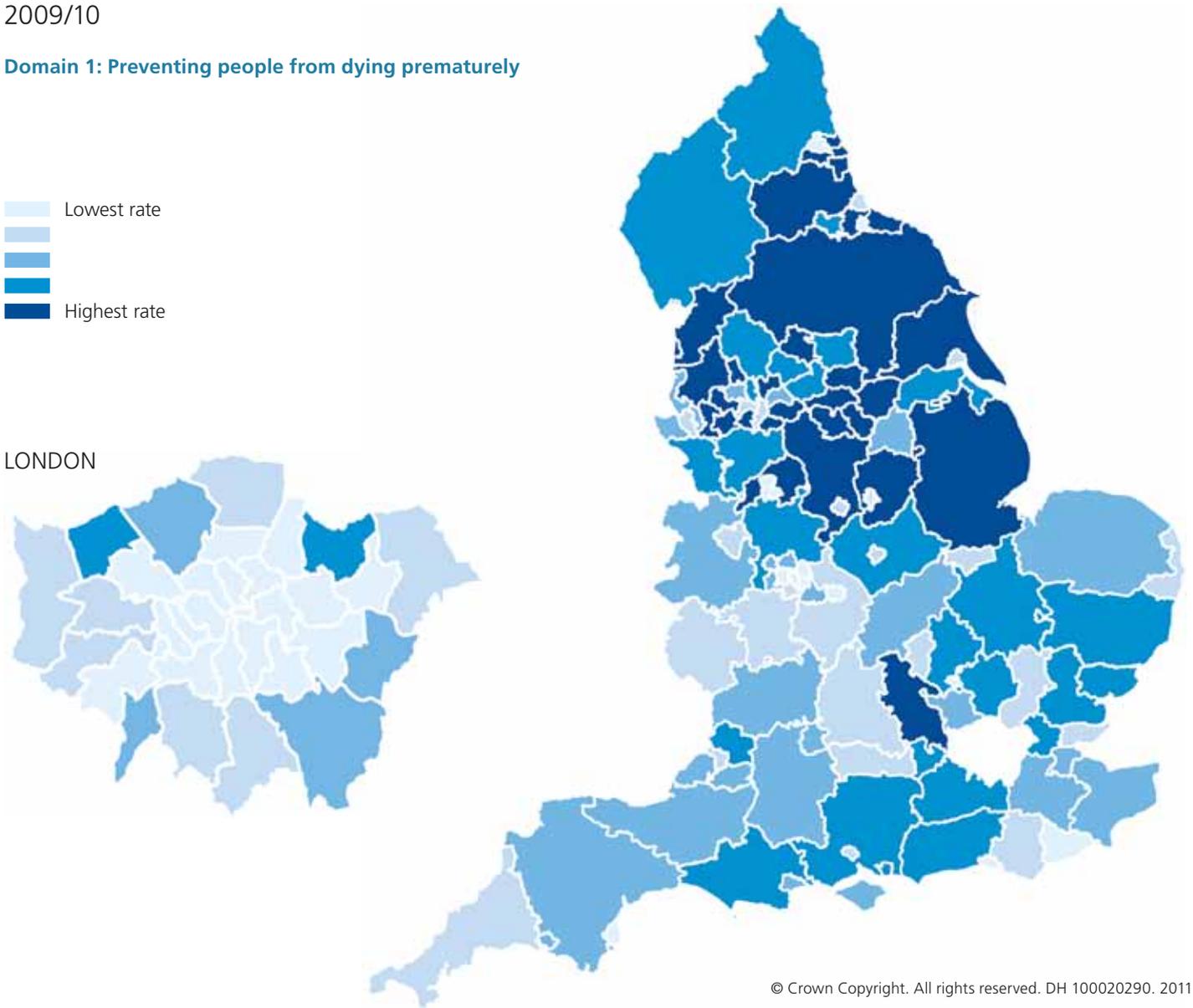
Map 27: Reported numbers of people with coronary heart disease (CHD) on GP registers as a percentage of estimated prevalence by PCT

2009/10

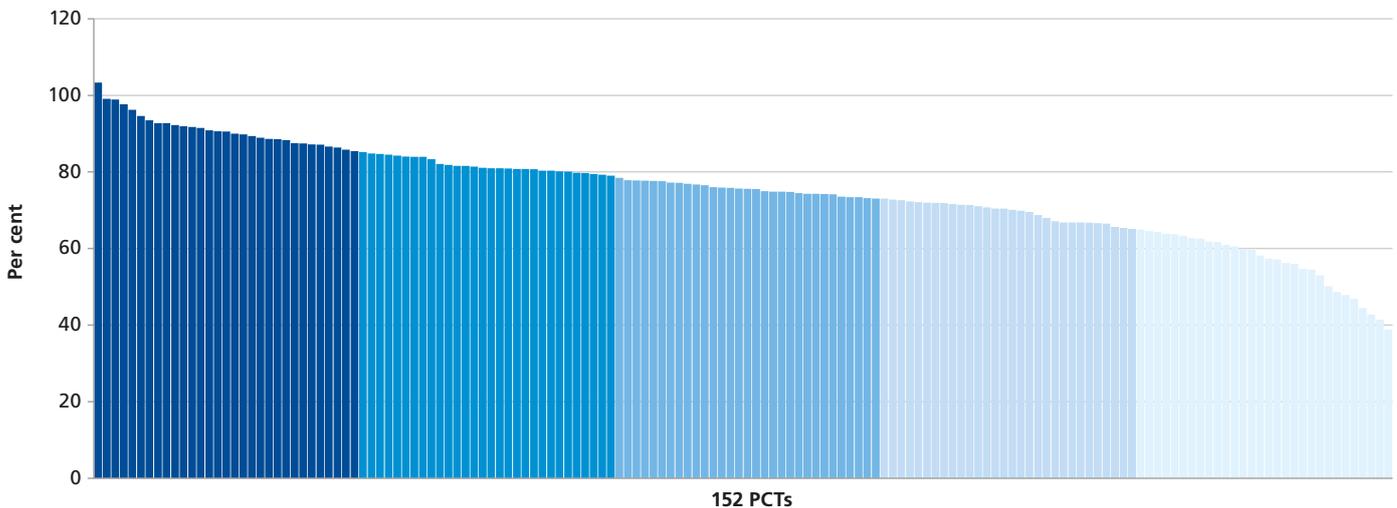
Domain 1: Preventing people from dying prematurely



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Despite reductions in mortality from coronary heart disease (CHD) over the last decade, CHD continues to be a major cause of death in England.

Standard 3 of the National Service Framework (NSF) for CHD states:

“General practitioners and primary care teams should identify all people with established cardiovascular disease and offer them comprehensive advice and appropriate treatment to reduce their risks.”¹

The NSF requires that practices establish a model of care with a systematic approach to:

- identifying people at high risk of CHD;
- identifying and recording modifiable risk factors of people at high risk of CHD;
- providing and documenting appropriate advice and treatment, and offering regular reviews to people at high risk of CHD.

Identification and active management reduce the risk of disease progression, hospital admission or premature death.

Since 2004/05, Quality and Outcomes Framework (QOF) reports on CHD prevalence have been produced for all ages. Eastern Region Public Health Observatory has published public-health estimates of CHD prevalence for age 16 years and over.² Assuming that practically all QOF-reported CHD-prevalent cases are aged 16 years and over, the 16-years-plus prevalence can be calculated using the QOF 16-years-plus population denominator. From these two data sources, QOF-reported prevalence can be calculated as a percentage of public health-estimated prevalence.

Magnitude of variation

For PCTs in England, the reported numbers of people with CHD on GP registers as a percentage of estimated prevalence ranged from 38.8% to 103.4% (2.7-fold variation). When the five PCTs with the highest percentages and the five PCTs with the lowest percentages are excluded, the range is 47.9–94.6%, and the variation is twofold.

In 2009/10:

- 18 PCTs identified 60% or less of the expected cases of CHD;

- 18 PCTs identified 90% or more of the expected cases of CHD, which suggests that improved identification is achievable with the right local strategies.

At the time of writing, QOF data for 2010/11 are expected, which could show improvements over the 2009/10 data, but previously the annual rate of change has been relatively low.

Options for action

Improved identification is a priority given the impact lack of treatment has on the risks of mortality and hospitalisation for people with undiagnosed and untreated CHD. Commissioners responsible for populations where there are lower levels of identification compared with those that are expected should obtain NHS Comparators practice-level data on variation in identification (see “Resources”). It may indicate which practices need greater support in identification.

In some cases, CHD has few symptoms that would lead people to consult their GP and some heart attacks occur without prior symptoms. For people with CHD who do not present, GPs need to take the opportunity of consultations for other reasons to assess CHD.

One aim for NHS Health Checks is to identify people with CHD; successful implementation and high uptake of Health Checks will be vital in reducing population risk.

RESOURCES

- Coronary Heart Disease: National Service Framework - Modern standards and service models. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4094275
- NHS Information Centre. Quality and Outcomes Framework. <http://www.ic.nhs.uk/qof>
- Association of Public Health Observatories. Modelled estimates and projections of CHD. <http://www.apho.org.uk/resource/item.aspx?RID=48310>
- Putting Prevention First. NHS Health Check: Vascular Risk Assessment and Management. Best Practice Guidance (DoH, 2009). http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_098410.pdf
- South East Public Health Observatory. National Cardiovascular Disease Profiles. For Cardiac Networks and PCTs. <http://www.sepho.org.uk/NationalCVD/NationalCVDProfiles.aspx>
- NHS Information Centre. NHS Comparators. <http://www.ic.nhs.uk/nhscomparators>

1 Coronary Heart Disease: National Service Framework - Modern standards and service models

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4094275

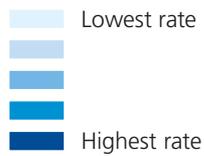
2 Association of Public Health Observatories. Modelled estimates and projections of CHD <http://www.apho.org.uk/resource/item.aspx?RID=48310>

PROBLEMS OF CIRCULATION

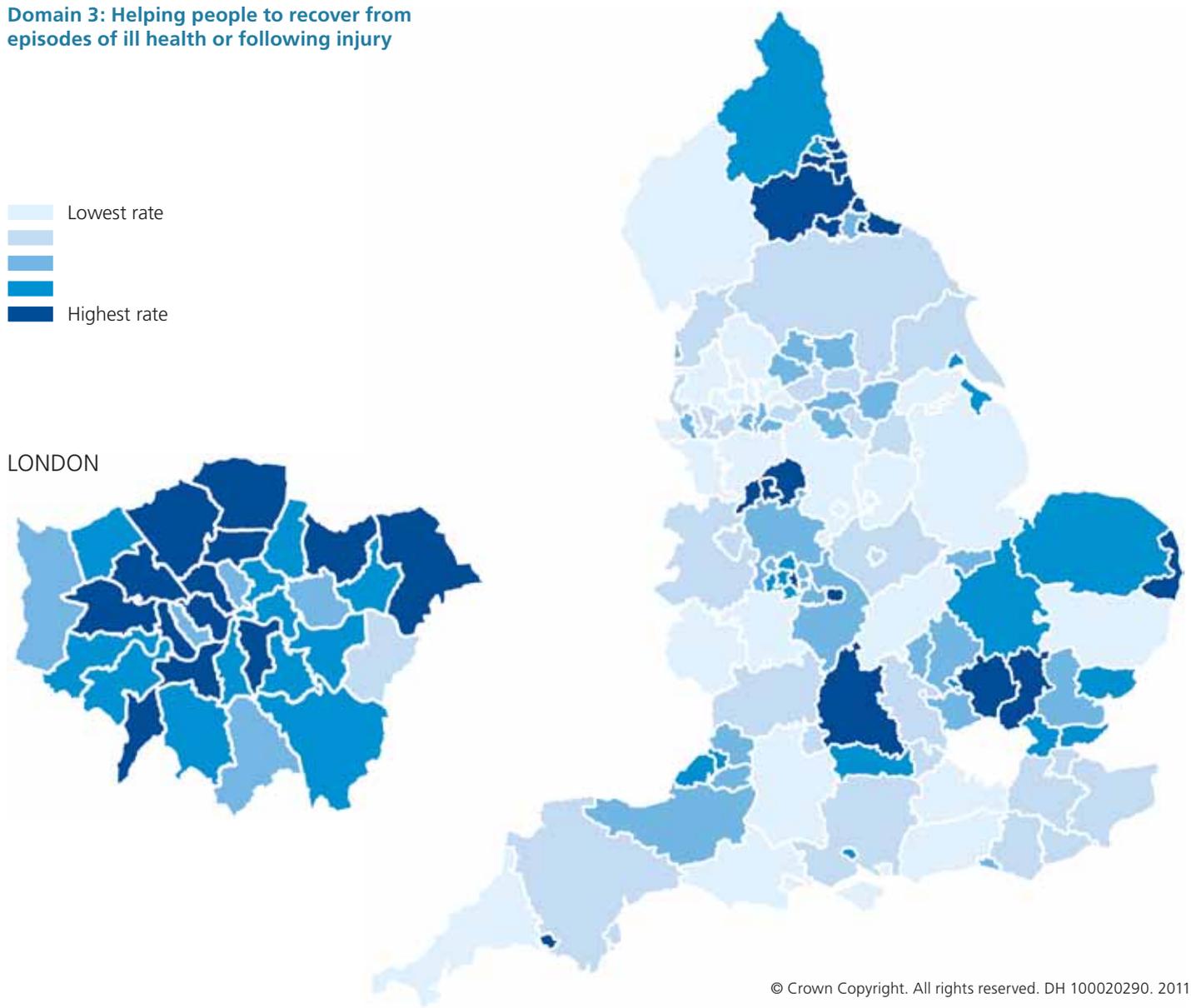
Map 28: Percentage of STEMI patients receiving primary angioplasty by PCT

2010

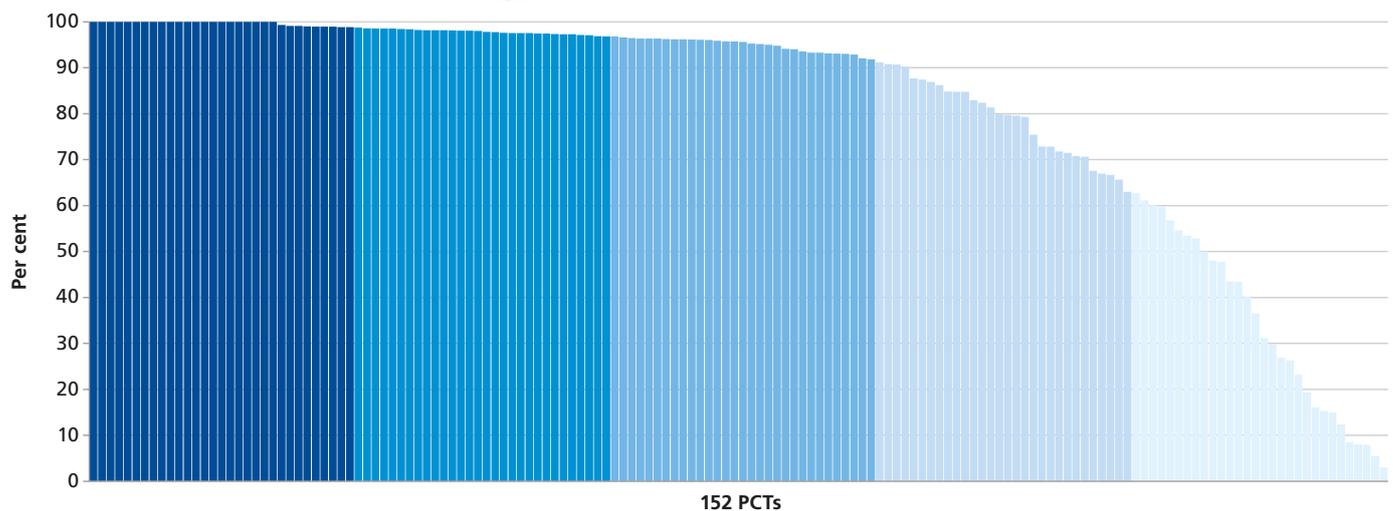
Domain 3: Helping people to recover from episodes of ill health or following injury



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Heart attack (myocardial infarction) is common, and a major cause of death and ill health. In 2009, there were 25,264 deaths from acute myocardial infarction in England.¹ Prompt and appropriate treatment reduces the likelihood of death and recurrent heart attack. Good-quality treatment coupled with cardiac rehabilitation promotes optimal recovery.

Heart attack is on the spectrum of conditions known as acute coronary syndromes (ACS), which includes:

- ST-elevation myocardial infarction (STEMI), where emergency reperfusion with primary angioplasty or thrombolytic drugs is beneficial;
- Non-ST-elevation myocardial infarction (nSTEMI), which requires a different approach.²

High-quality care for STEMI includes early diagnosis and rapid treatment to re-open the blocked coronary artery responsible for the heart attack. There are two treatment options:

- primary angioplasty, where the blocked artery is re-opened mechanically using a balloon catheter;
- thrombolytic treatment, where the clot is dissolved by a drug.

Delay to providing either treatment is associated with poorer outcomes.¹

If it can be provided promptly, primary angioplasty is the preferred treatment. Once heart attack has been recognised, ambulance staff take patients directly to the catheter laboratory of the nearest heart attack centre, often bypassing smaller hospitals and the Accident and Emergency department.¹

Magnitude of variation

For PCTs in England, the percentage of STEMI patients receiving primary angioplasty ranges from 3% to 100% (34-fold variation). When the five PCTs with the highest percentages and the five PCTs with the lowest percentages are excluded, the range is 12.3–100%, and the variation eightfold.

Of 152 PCTs, 22 achieved 100% primary angioplasty, and 73 achieved 90–99%. However, 21 PCTs achieved >50%.

Caution is necessary when interpreting variation.

- Some networks have taken longer to reach agreement on the pattern of service provision. Data from 2011 may show the results of later implementation.

- Some networks cover a wide geography: high levels of primary angioplasty for all or some of the population are not achievable due to long travel times to centres.

Options for action

Many cardiac networks have well-established arrangements for primary angioplasty after acute myocardial infarction. In some areas, agreement has yet to be reached about the provision of 24/7 services. In a small number of cases, travel times militate against primary angioplasty, and thrombolysis is recommended as the best strategy.

In areas where reperfusion therapy is not by primary angioplasty for 100% of patients, commissioners should:

- review the reasons for lower levels of achievement;
- take action to agree local providers for the service 24/7;
- ensure that the only people not receiving primary angioplasty are those where distance prevents the intervention being delivered.

RESOURCES

- Myocardial Ischaemia National Audit Project (MINAP) (2011) How the NHS cares for patients with heart attack. 10th Public report. National Institute for Clinical Outcomes Research, UCL. <http://www.hqip.org.uk/assets/NCAPOP-Library/MINAP-public-report-2011.pdf>
- Department of Health (2008) Treatment of Heart Attack National Guidance. Final Report of the National Infarct Angioplasty Project (NIAP). http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_089454.pdf
- Department of Health (2008) Impact Assessment of Treatment of Heart Attacks - National Guidance. http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_089452.pdf
- Department of Health (2008) Equality Impact Assessment of Treatment of Heart Attacks - National Guidance. http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_089453.pdf
- Heart Improvement. Primary PCI - Emergency Treatment for Heart Attack. <http://www.improvement.nhs.uk/heart/?TabId=66>
- South East Public Health Observatory National Cardiovascular Disease Profiles. For Cardiac Networks and PCTs. <http://www.sepho.org.uk/NationalCVD/NationalCVDProfiles.aspx>

1 NHS Information Centre. Clinical & Health Outcomes Knowledge Base.

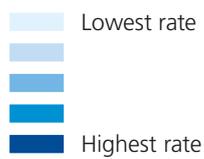
2 Myocardial Ischaemia National Audit Project (MINAP) (2011) How the NHS care for patients with heart attack. 10th Public report 2011. National Institute for Clinical Outcomes Research, UCL. <http://www.hqip.org.uk/assets/NCAPOP-Library/MINAP-public-report-2011.pdf>

PROBLEMS OF CIRCULATION

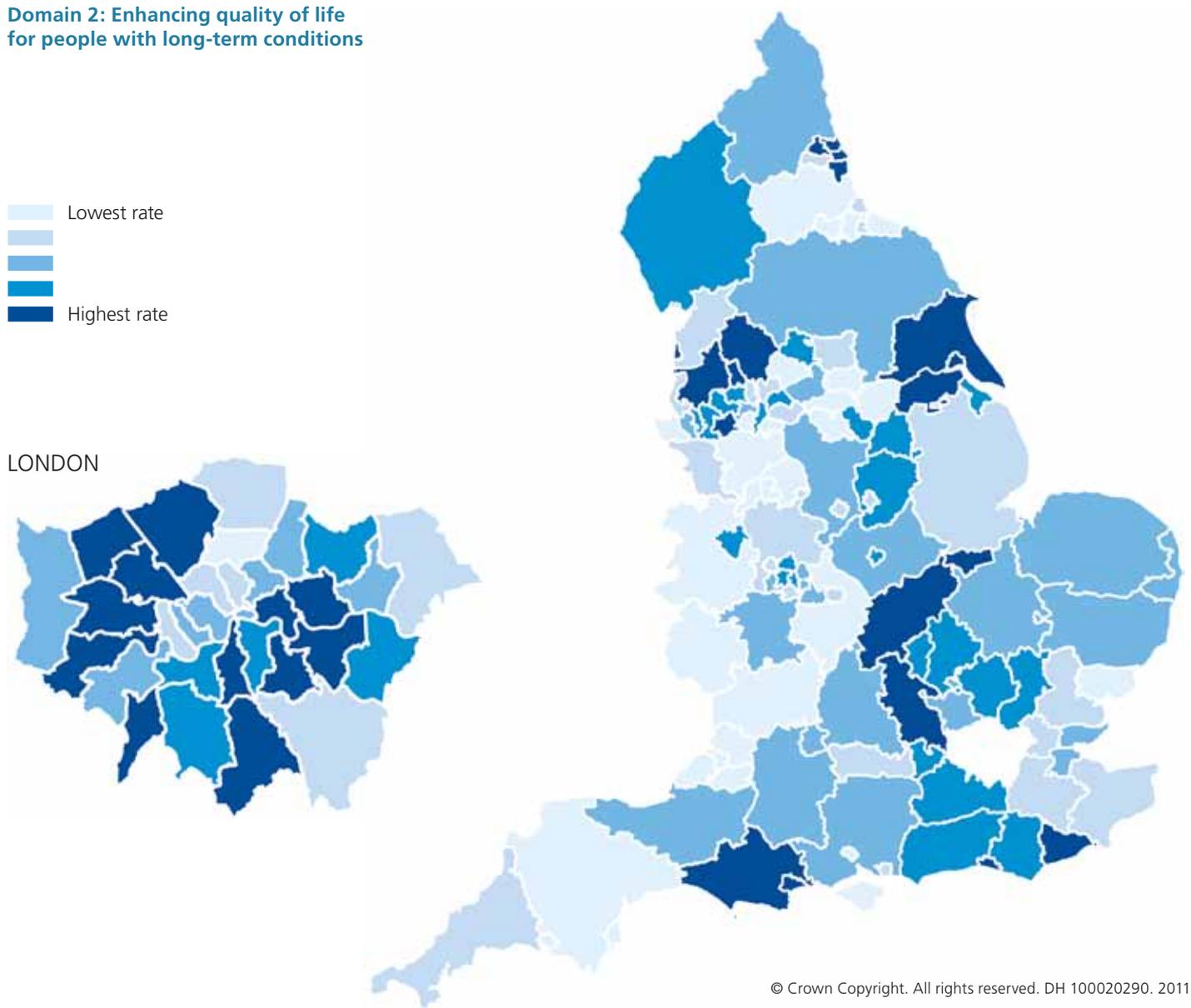
Map 29: Rate of elective admissions to hospital for angioplasty per population by PCT

Directly standardised rate 2009/10

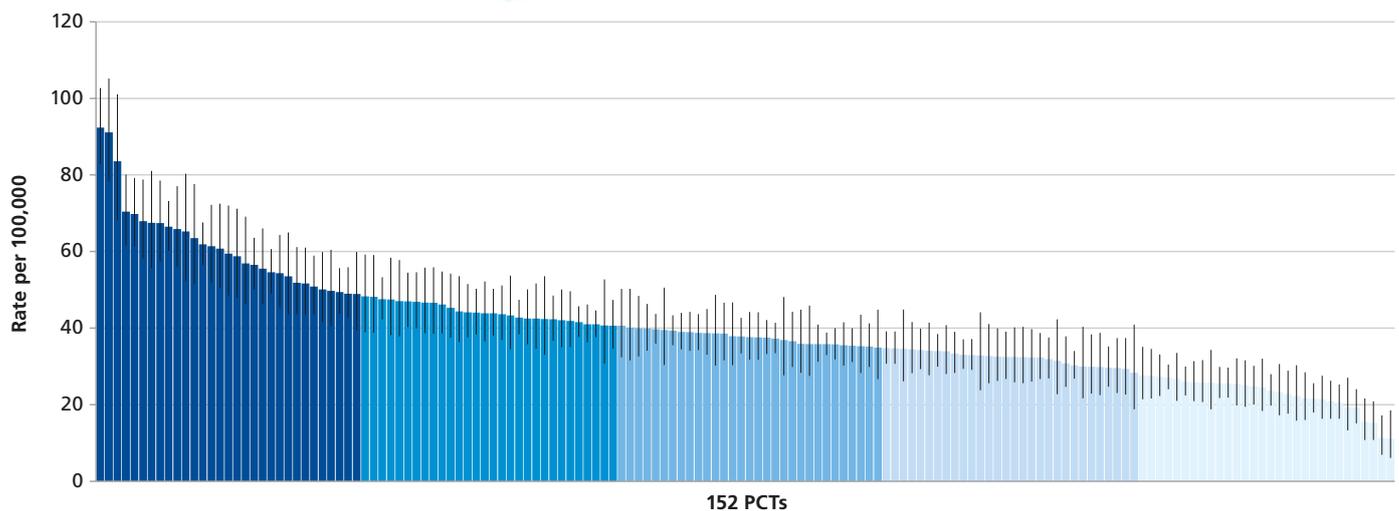
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Myocardial revascularisation has been a mainstay in the treatment of coronary artery disease (CAD) for almost 50 years:

- in clinical practice since the 1960s, coronary artery bypass grafting (CABG) is one of the most intensively studied surgical procedures;
- for over 30 years, angioplasty or percutaneous coronary intervention (PCI) has been subjected to more randomised controlled trials (RCTs) than any other interventional procedure.¹

Despite technological advances, such as drug-eluting stents in PCI and arterial grafts in CABG, developments in optimal medical therapy (OMT) – intensive lifestyle and pharmacological management – are challenging the role of revascularisation in the treatment of stable CAD.

The COURAGE² RCT randomised 2287 patients with “significant” CAD and evidence of myocardial ischaemia to OMT alone or OMT+PCI. An initial strategy of PCI in stable CAD did not reduce the risk of death, myocardial infarction, or major adverse cardiac events when added to OMT. The severity of CAD in COURAGE was moderate: the relative proportions of one-, two- and three-vessel disease was 31%, 39% and 30%, respectively; only 31% of patients had proximal LAD disease; patients with left main stem disease were excluded. Most patients had normal left ventricular function.

It has been suggested that in places with high rates of elective angioplasty some patients who would do well on OMT are given angioplasty.

Magnitude of variation

For PCTs in England, the rate of elective admissions to hospital for angioplasty per 100,000 ranged from 11.1 to 92.4 per 100,000 (8.3-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 19.2–69.8 per 100,000, and the variation is 3.6-fold.

Caution is necessary when interpreting variation:

- The rate does not account for levels of CAD in different populations, only age;
- Relatively low levels of access to primary angioplasty following acute myocardial infarction might mean greater access to elective follow-on angioplasty;

- Early identification of patients requiring revascularisation could lead to higher rates of elective angioplasty and lower rates of emergency intervention;
- Angioplasty may be undertaken in two stages not one in a higher proportion of patients in some populations;
- Relatively low levels of provider referral for elective CABG may become manifest as higher rates of elective angioplasty.

England’s revascularisation rate is low when compared with that in many developed countries.

Options for action

Working with providers, commissioners should review:

- the relative rates and ratios between primary and elective angioplasty, and between angioplasty and CABG (see Cardiovascular Disease Profiles in “Resources”) to assess whether variations in service provision can be justified;
- providers’ plans to strengthen any service weaknesses.

The British Cardiovascular Intervention Society audit provides comprehensive clinical details of patients receiving angioplasty (see “Resources”). Working with cardiac networks, commissioners should review:

- characteristics of patients receiving elective angioplasty to identify potential eligibility for OMT;
- protocols on appropriate use of OMT and elective angioplasty.

RESOURCES

- British Cardiovascular Intervention Society. BCIS Audit Returns. Adult Interventional Procedures - January 2009-December 2009 http://www.bcis.org.uk/resources/BCIS_Audit_2009_data_version_08-10-2010_for_web.pdf Results for 2010 Audit available in Autumn 2011: http://www.bcis.org.uk/pages/page_box_contents.asp?pageid=738&navcatid=11
- South East Public Health Observatory. National Cardiovascular Disease Profiles. For Cardiac Networks and PCTs. <http://www.sepho.org.uk/NationalCVD/NationalCVDProfiles.aspx>

1 Task Force on Myocardial Revascularization of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS) (2010) Guidelines on Myocardial Revascularization. *European Heart Journal* 31: 2501–2555. <http://www.escardio.org/guidelines-surveys/esc-guidelines/GuidelinesDocuments/guidelines-revasc-FT.pdf>

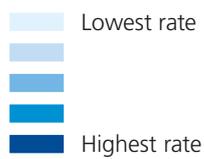
2 Boden WE et al (2007) Optimal Medical Therapy with or without PCI for Stable Coronary Disease. *New England Journal of Medicine* 356:1503-1516. <http://www.nejm.org/doi/full/10.1056/NEJMoa070829>

PROBLEMS OF CIRCULATION

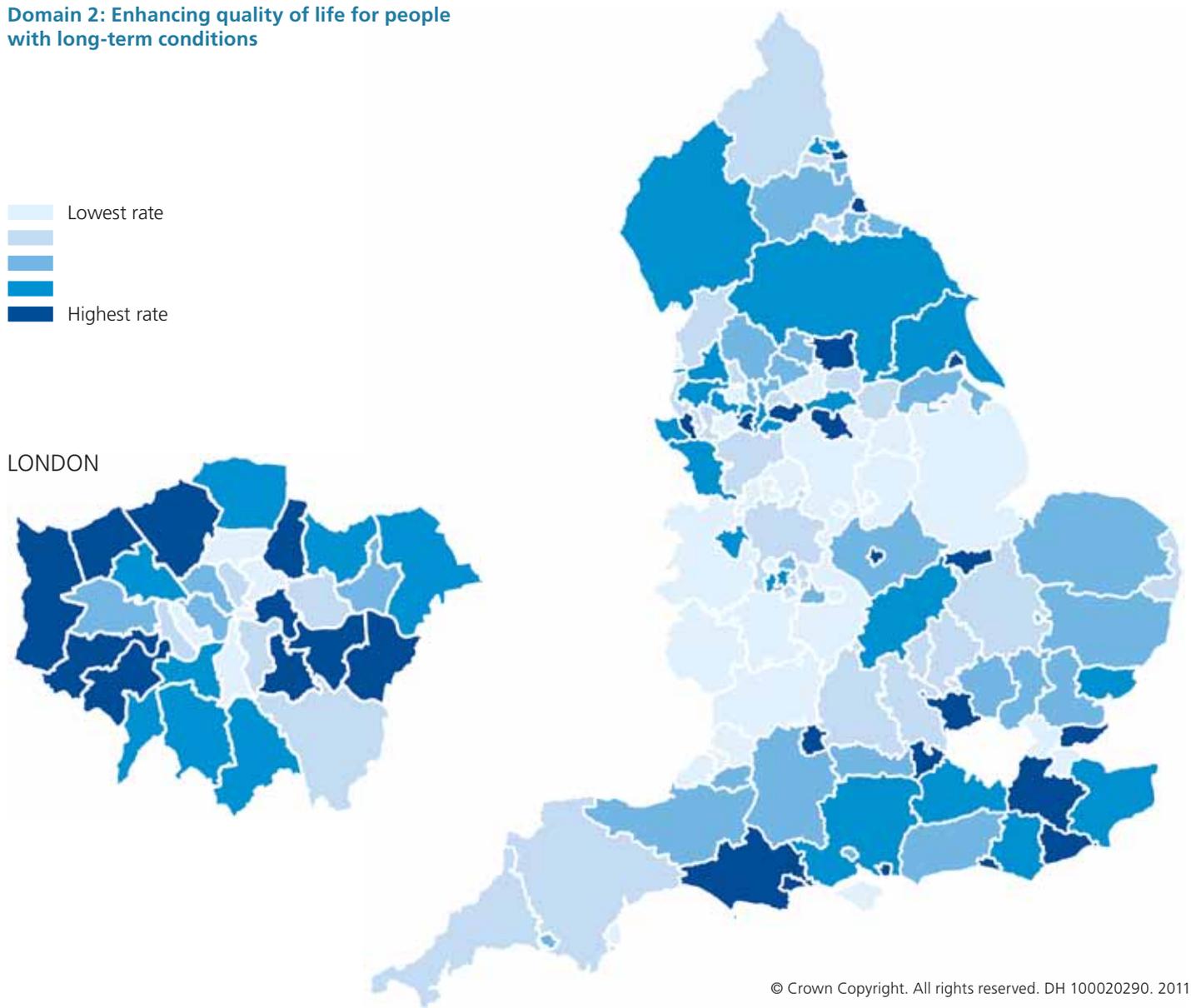
Map 30: Rate of pacing devices implanted for the first time per population by PCT

Indirectly age-standardised rate 2010

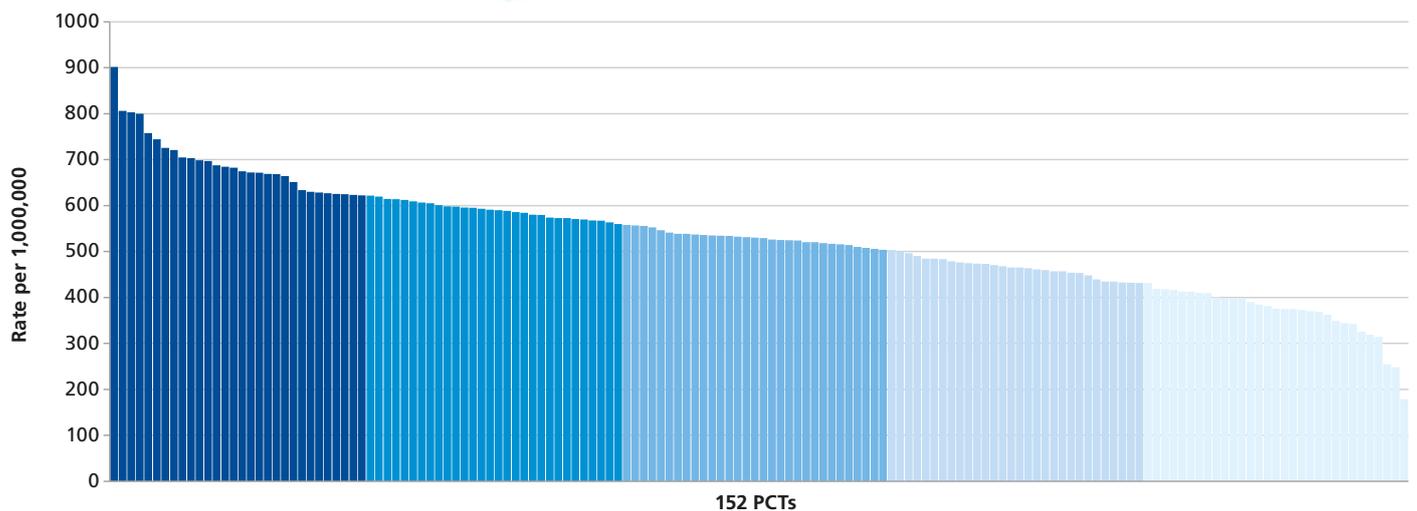
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

New pacemakers (PMs) are used to treat patients with symptomatic bradycardia (slow heart rate). Bradycardia may be asymptomatic, but can present with syncope, fatigue or dizziness. Pacemaker implant for heart block is one of the most cost-effective treatments in medicine.

The first time a patient receives a device, the procedure is classed as a "new implant". If the device is replaced (usually due to normal battery depletion), it is classed as a "replacement implant". The raw implant rate for new PMs for a PCT is adjusted by the National Clinical Audit to take account of demographic structure, giving a corrected implant rate per million population (pmp). PCTs with populations relatively older than the national average will have higher relative need at any given implant rate because the conditions for which device implants are indicated increase with age.

The main problems for device services in the UK are:

- the total volume of patients identified and treated with an appropriate device;
- equity of access to devices.¹

Despite increases in overall national rates over the years, there has not been substantial progress in improving access. The causes of inequity are multiple:

*"... the faults lie in the processes of screening and the stages of the patient journey from presenting symptom to device implant. There seems no simple solution to inequity and under provision, nor perhaps are the causes the same in every Network area. ... there are many patients in the community unnecessarily suffering symptoms or dying from cardiac arrhythmias for want of an appropriate device ..."*¹

Magnitude of variation

For PCTs in England, the adjusted rate of pacing devices implanted for the first time ranged from 178.4 to 901.8 pmp (5-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 325.8–744.5 pmp, and the variation is 2.3-fold.

England's rate is relatively low when compared with those in many European countries. Professional estimates

of the average rate at which need would be met for new PMs is 700 pmp.

- 10 PCTs (7%) have reached or exceeded this average rate;
- 13 PCTs (9%) are within 10% of this average rate.

Caution is necessary when interpreting variation.

- Some cardiac networks have reviewed the rate of device implantation and developed strategies to improve access, the effect of which may have commenced in 2011.
- In areas where rates are >700 pmp, the match between service provision and need may be better than that in areas with lower rates.

Options for action

Commissioners, cardiac networks and providers should collaborate to review equity of access locally. The HRUK Audit Group (formerly Network Devices Survey Group) annual reports provide historical accounts of variation and improvements in access. Cardiac networks can help in:

- understanding local variation;
- reviewing the patient pathway for identifying patients with symptomatic bradycardia;
- identifying referral patterns and differences that could explain lower levels of access;
- reviewing guidelines for referral to increase appropriate access;
- learning from other cardiac networks that have undertaken strategic reviews of services.

RESOURCES

- Network Devices Survey Group annual reports. <http://www.devicesurvey.com/>
- Department of Health (2005) Coronary Heart Disease. National Service Framework. Chapter 8. Arrhythmias and Sudden Cardiac Death. <http://www.cardiomyopathy.org/assets/files/NSF%20Chapter%208.pdf>
- Heart Improvement. Arrhythmias and Sudden Cardiac Death. <http://www.improvement.nhs.uk/heart/?TabId=57>

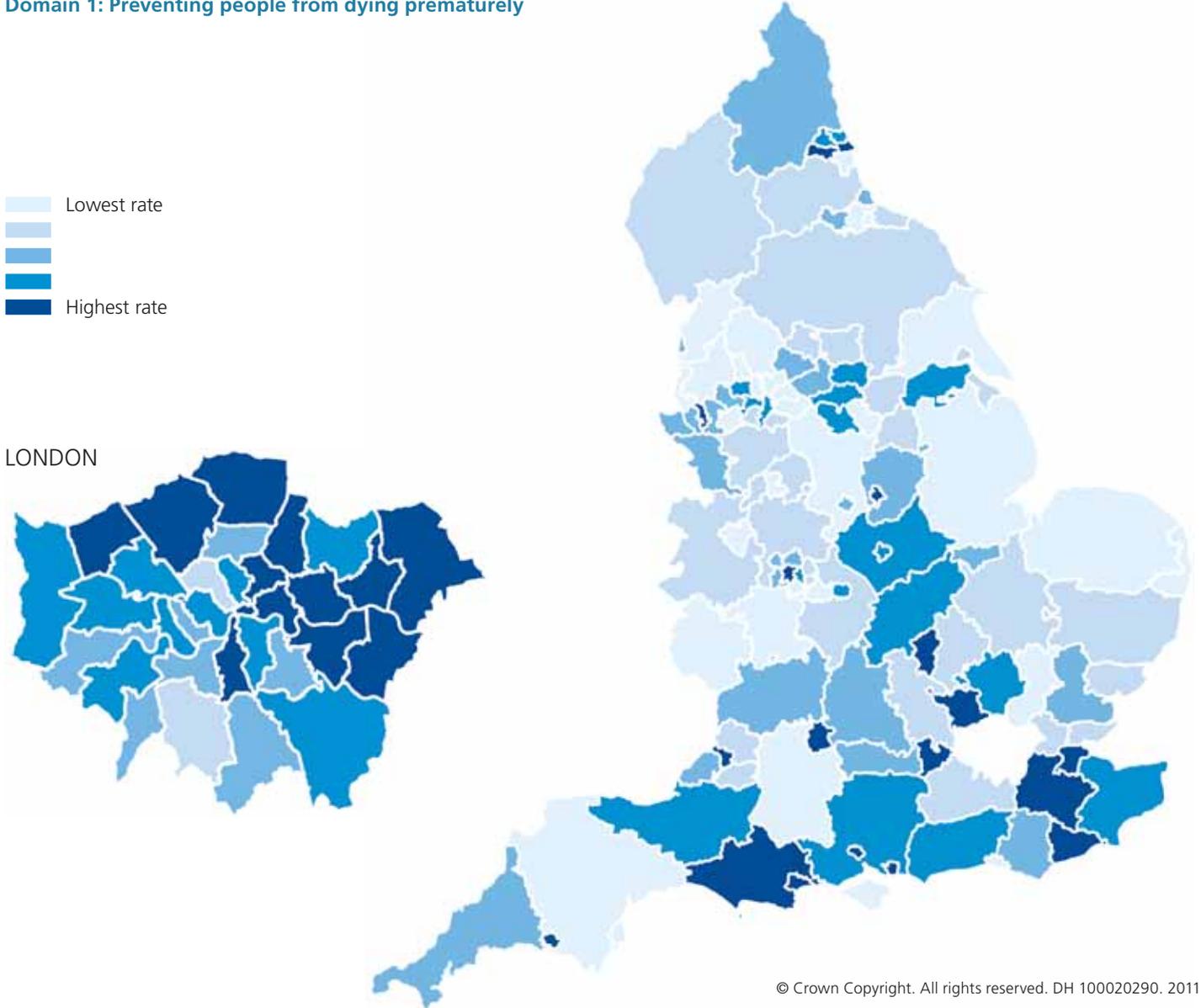
¹ Cunningham D, Charles R, Cunningham M, de Lange A (2011) Cardiac Rhythm Management: UK National Clinical Audit 2010. <http://www.devicesurvey.com/>

PROBLEMS OF CIRCULATION

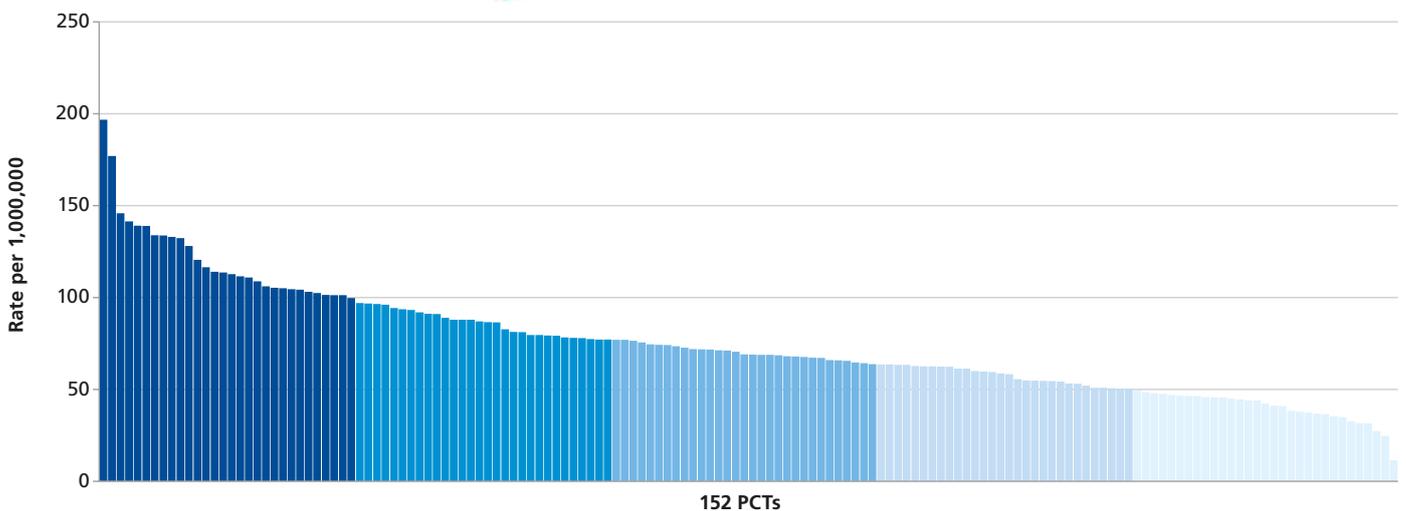
Map 31: Rate of implantable cardioverter-defibrillator (ICD) devices implanted for the first time per population by PCT

Indirectly age-standardised rate 2010

Domain 1: Preventing people from dying prematurely



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Implantable cardioverter-defibrillator (ICD) devices are used to treat patients having had a cardiac arrest or ventricular tachyarrhythmia (secondary prevention) and patients at significant risk of developing these arrhythmias (primary prevention). The current NICE Technology Appraisal for ICD treatment is under review, likely to be completed in 2013.

The first time a patient receives a device, the procedure is classed as a "new implant". If the device is replaced (usually due to normal battery depletion), it is classed as a "replacement implant". The raw implant rate for new ICD for a PCT is adjusted by the National Clinical Audit to take account of demographic structure, giving a corrected implant rate per million population (pmp). PCTs with populations relatively older than the national average will have higher relative need at any given implant rate because the conditions for which devices are indicated generally increase with age.

The main problems for device services in the UK are:

- the total volume of patients identified and treated with an appropriate device;
- equity of access to devices.¹

Despite increases in overall national rates over the years, there has been no substantial progress in improving access. The causes of inequity are multiple:

*"... the faults lie in the processes of screening and the stages of the patient journey from presenting symptom to device implant. There seems no simple solution to inequity and under provision, nor perhaps are the causes the same in every Network area. ... there are many patients in the community unnecessarily suffering symptoms or dying from cardiac arrhythmias for want of an appropriate device ..."*¹

Magnitude of variation

For PCTs in England, the adjusted rate of ICD devices implanted for the first time ranged from 11.4 to 196.8 pmp (17-fold). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 32.7–138.9 pmp, and the variation is 4.2-fold.

England's rate is lower when compared with those in many European countries. Professional estimates of the average rate at which need would be met for new ICDs is 100 pmp.

- 30 PCTs (20%) have reached or exceeded this average rate;
- 10 PCTs (6%) are within 10% of this average rate.

Caution is necessary when interpreting variation.

- Some cardiac networks have reviewed the rate of device implantation and developed strategies to improve access, the effect of which may have commenced in 2011.
- In areas where rates are >100 pmp, the match between service provision and need is probably better than that in areas with lower rates.

Options for action

Commissioners, cardiac networks and providers should collaborate to review equity of access locally. The HRUK Audit Group (formerly Network Devices Survey Group) annual reports provide historical accounts of variation and improvements in access. Cardiac networks can help in:

- understanding local variation;
- reviewing the patient pathway for new ICDs (primary and secondary prevention);
- identifying referral patterns and differences that could explain lower levels of access;
- reviewing guidelines for referral to increase appropriate access;
- learning from other cardiac networks that have undertaken strategic reviews of services.

RESOURCES

- Network Devices Survey Group annual reports. <http://www.devicesurvey.com/>
- Department of Health (2005) Coronary Heart Disease. National Service Framework. Chapter 8. Arrhythmias and Sudden Cardiac Death. <http://www.cardiomyopathy.org/assets/files/NSF%20Chapter%208.pdf>
- Heart Improvement. Arrhythmias and Sudden Cardiac Death. <http://www.improvement.nhs.uk/heart/?TabId=57>

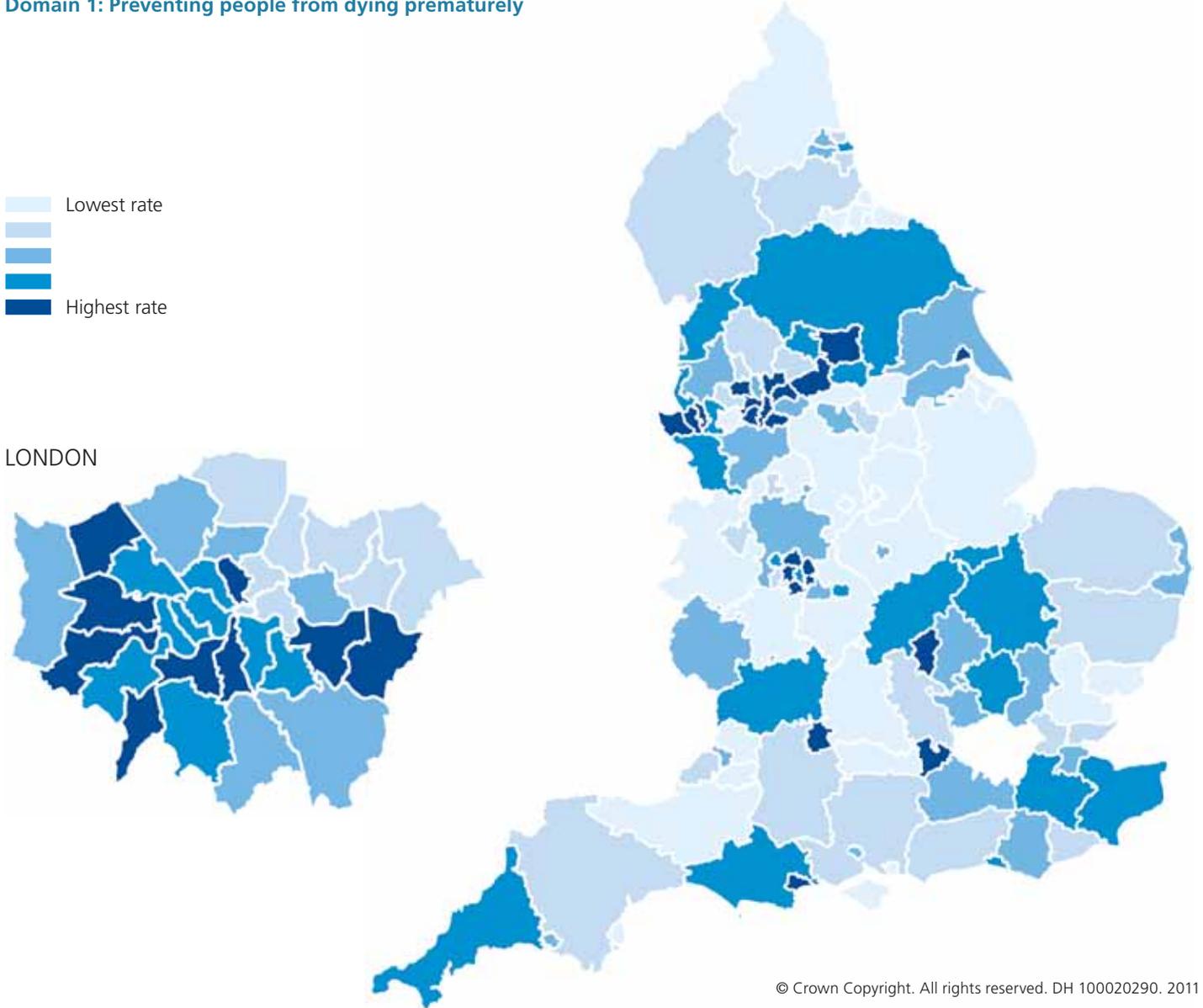
¹ Cunningham D, Charles R, Cunningham M, de Lange A (2011) Cardiac Rhythm Management: UK National Clinical Audit 2010. <http://www.devicesurvey.com/>

PROBLEMS OF CIRCULATION

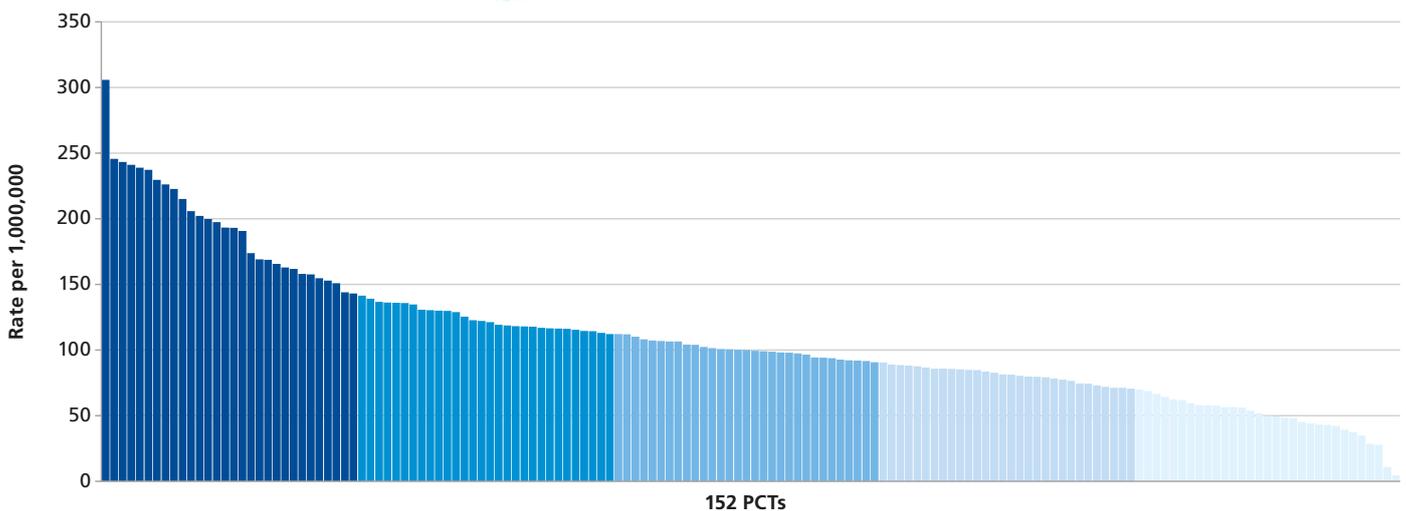
Map 32: Rate of cardiac resynchronisation therapy (CRT) devices implanted per population by PCT

Indirectly age-standardised rate 2010

Domain 1: Preventing people from dying prematurely



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Cardiac resynchronisation therapy (CRT) devices are used to treat patients with heart failure. CRT devices use low-energy pacing-type pulses only (CRT-P) or have the additional capability to deliver defibrillating shocks (CRT-D); both types are included in this indicator.

A PCT's raw implant rate for total (implanted for the first time and replacement) CRT devices is adjusted by the National Clinical Audit to account for demographic structure, giving a corrected implant rate per million population (pmp). PCTs with populations older than the national average will have higher relative need at any given implant rate because the conditions for which device implants are indicated generally increase with age.

The main problems for device services in the UK are:

- the total volume of patients identified and treated with an appropriate device;
- equity of access to devices.¹

Despite increases in overall national rates over the years, there has not been substantial progress in improving access. The causes of inequity are multiple:

*"... the faults lie in the processes of screening and the stages of the patient journey from presenting symptom to device implant. There seems no simple solution to inequity and under provision, nor perhaps are the causes the same in every Network area. ... there are many patients in the community unnecessarily suffering symptoms or dying from cardiac arrhythmias for want of an appropriate device ..."*¹

Magnitude of variation

For PCTs in England, the adjusted rate of CRT devices implanted ranged from 4.5 to 305.8 pmp (68-fold). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 37.3–237.1 pmp, and the variation is sixfold.

There is marked regional disparity between the rates of CRT-P and those of CRT-D.¹

England's total CRT rate is closer to the European average when compared with rates for pacemakers or implantable cardioverter-defibrillators, which are lower.

Professional estimates of the average rate at which need would be met for total CRT is 130 pmp.

- 39 PCTs (26%) have reached or exceeded this average rate;
- 12 PCTs (8%) are within 10% of this average rate.

Caution is necessary when interpreting variation.

- Some cardiac networks have reviewed device implantation rates and developed strategies to improve access, the effect of which may have commenced in 2011.
- In areas where the rates are >130 pmp, the match between service provision and need is probably better than that in areas with lower rates.

Options for action

Commissioners, cardiac networks and providers should collaborate to review equity of access locally. The HRUK Audit Group (formerly Network Devices Survey Group) annual reports provide historical accounts of variation and improvements in access. Cardiac networks can help in:

- understanding local variation in total CRT implants and the distribution between CRT-P and CRT-D;
- reviewing the patient pathway for total CRT;
- identifying referral patterns and differences that could explain lower levels of access;
- reviewing guidelines for referral to increase appropriate access;
- learning from other cardiac networks that have undertaken strategic reviews of services.

RESOURCES

- NICE Guidance. Chronic heart failure (CG108) Management of chronic heart failure in adults in primary and secondary care. <http://www.nice.org.uk/CG108>
- Network Devices Survey Group annual reports. <http://www.devicesurvey.com/>
- Department of Health (2005) Coronary Heart Disease. National Service Framework. Chapter 8. Arrhythmias and Sudden Cardiac Death. <http://www.cardiomyopathy.org/assets/files/NSF%20Chapter%208.pdf>
- Heart Improvement. Arrhythmias and Sudden Cardiac Death. <http://www.improvement.nhs.uk/heart/?TabId=57>

¹ Cunningham D, Charles R, Cunningham M, de Lange A (2011) Cardiac Rhythm Management: UK National Clinical Audit 2010. <http://www.devicesurvey.com/>

PROBLEMS OF CIRCULATION

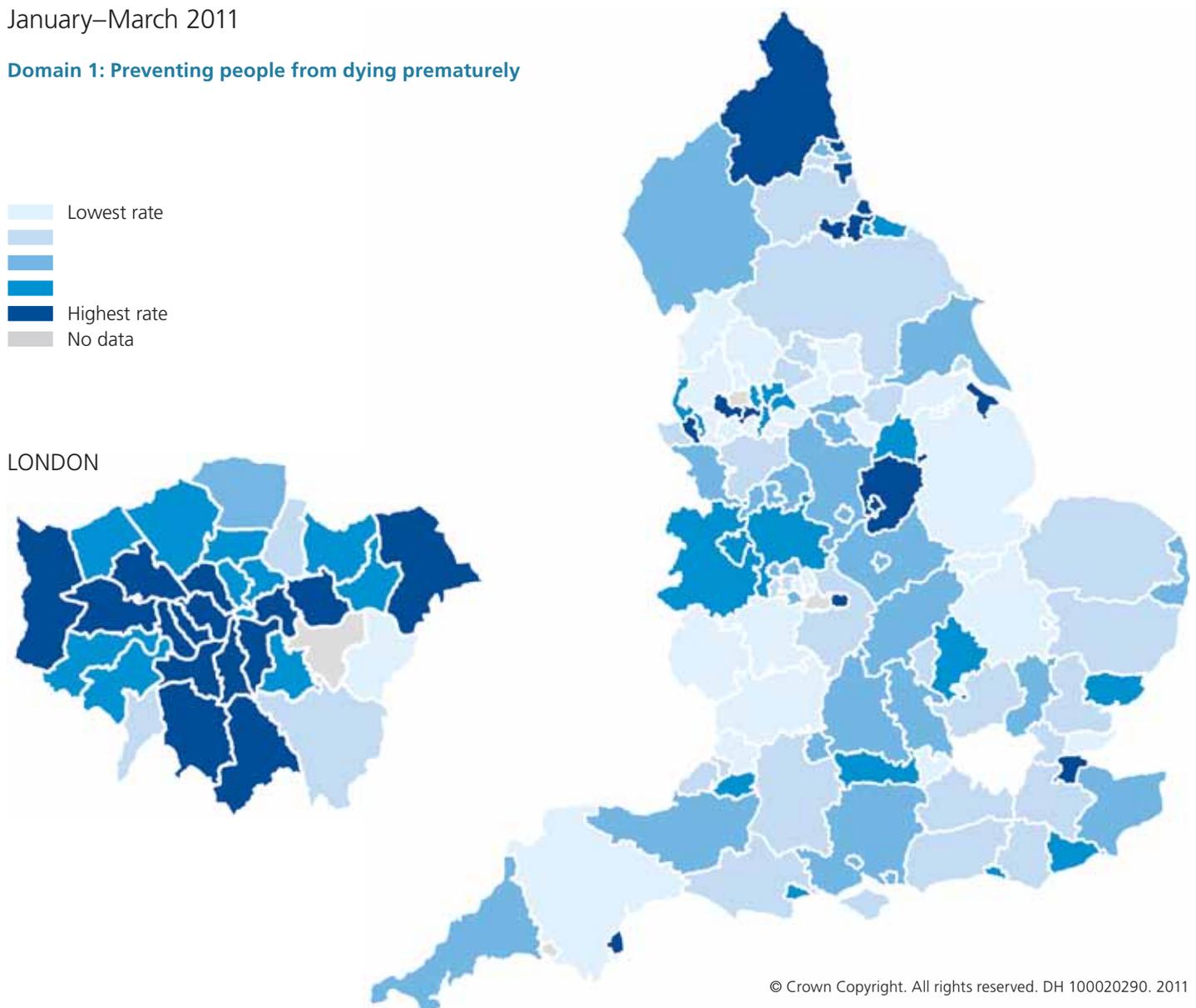
Map 33: Percentage of transient ischaemic attack (TIA) cases with a higher risk who are treated within 24 hours by PCT

January–March 2011

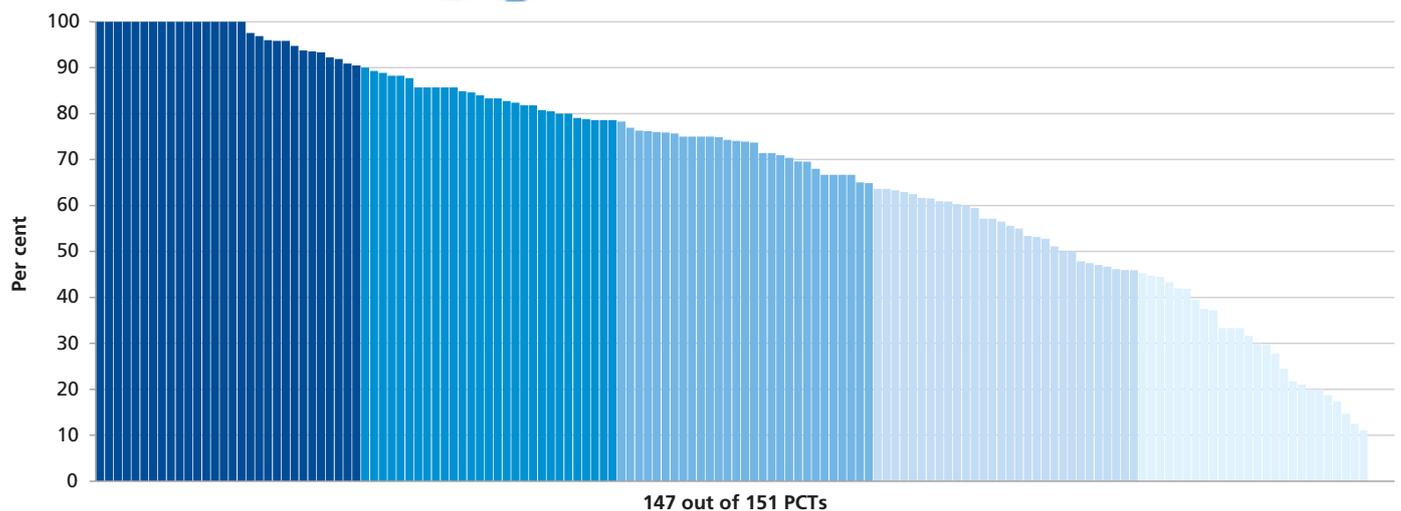
Domain 1: Preventing people from dying prematurely



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

The National Stroke Strategy contains the changes required to improve outcomes for stroke (see “Resources”). Although people with a suspected TIA may have no neurological symptoms at assessment (within 24 hours), the risk of stroke in the first four weeks after a TIA can be as high as 20%.

High-risk TIA patients should be seen, investigated, and treated within 24 hours of referral. For low-risk TIA patients, the time-frame is one week. Presentation with TIA is an opportunity for:

- stroke prevention;
- reduction in mortality from stroke;
- avoidance of expenditure on longer-term treatment, rehabilitation, and care.

NICE Guidance (see “Resources”) recommends that people with suspected TIA should be assessed as soon as possible for their risk of subsequent stroke using a validated scoring system, such as ABCD2. Those at high risk of stroke (ABCD2 score of 4 or above) should have aspirin (300 mg daily) started immediately, specialist investigation within 24 hours of the onset of symptoms, and measures for prevention and risk reduction introduced as diagnosis is confirmed.

This indicator is part of the Department of Health’s Integrated Performance Measures Monitoring.¹

Magnitude of variation

For PCTs in England, the percentage of TIA cases with a higher risk who are treated within 24 hours ranged from none to 100%.² When the five PCTs with the highest percentages and the five PCTs with the lowest percentages are excluded, the range is 14.7–100%, and the variation is sevenfold.

In 2009/10, the variation was 50-fold (see Map 14, Atlas 1.0), and after exclusions it was greater than tenfold. Q4 2010/11 figures show an improvement in the timely care of TIA patients.

Of 147 PCTs, 17 (12%) treated 100% of TIA cases with a higher risk of stroke within 24 hours, but 33 (22%) treated less than 50% of TIA cases within 24 hours.

Caution is necessary when interpreting variation. Diagnostic coding for outpatients does not routinely

occur in most Trusts, with variation in data collection for the TIA performance measures. Some Trusts have:

- A 9-to-5 service, but no out-of-hours and weekend services.
- Relatively small numbers of TIA cases, which may have deterred them from establishing 24/7 arrangements.

Options for action

In Stroke Improvement Programme case-studies (see “Resources”), effective solutions to improving timely access for people with TIA include:

- Defining a clear pathway for high- and low-risk patients across primary and secondary care;
- Streamlining the referral route with a single point of contact for all TIA cases;
- Tailoring weekend services to local need;
- For providers, working in a clinical network to ensure out-of-hours service provision;
- Formalising relationships between 5-day services and the nearest 7-day service so the out-of-hours patient pathway is clear;
- Using limited-sequence MRI brain imaging in TIA (NHS Improvement Diagnostics Improvement, see “Resources”).

RESOURCES

- Department of Health (2007) National Stroke Strategy. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_081062
- NICE Guidance, CG68 – National Collaborating Centre for Chronic Conditions. Stroke: National Clinical Guideline for diagnosis and initial management of acute stroke and transient ischaemic attack (TIA). Royal College of Physicians, 2008.
- NICE Pathway on stroke. <http://pathways.nice.org.uk/pathways/stroke>
- NHS Improvement Stroke Improvement Programme. Going up a Gear: practical steps to improving stroke care. <http://www.improvement.nhs.uk/stroke/NationalProjects/Goingupagear/tabid/133/Default.aspx>
- NHS Improvement Diagnostics Improvement. Imaging to Support Stroke. <http://www.improvement.nhs.uk/diagnostics/ImagingtoSupportStroke/tabid/97/Default.aspx>

1 Report on Primary Care Trust and NHS Trust performance against plans to address selected health priorities relating to the NHS Operating Framework. <http://www.dh.gov.uk/en/Publicationsandstatistics/Statistics/Perfomancedataandstatistics/Integratedperfomancemeasuresmonitoring/index.htm>

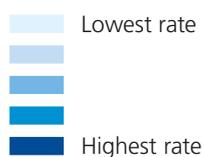
2 Four PCTs access an inpatient model of care and were not counted in this indicator, therefore, the number of PCTs for which variation is assessed is 147.

PROBLEMS OF CIRCULATION

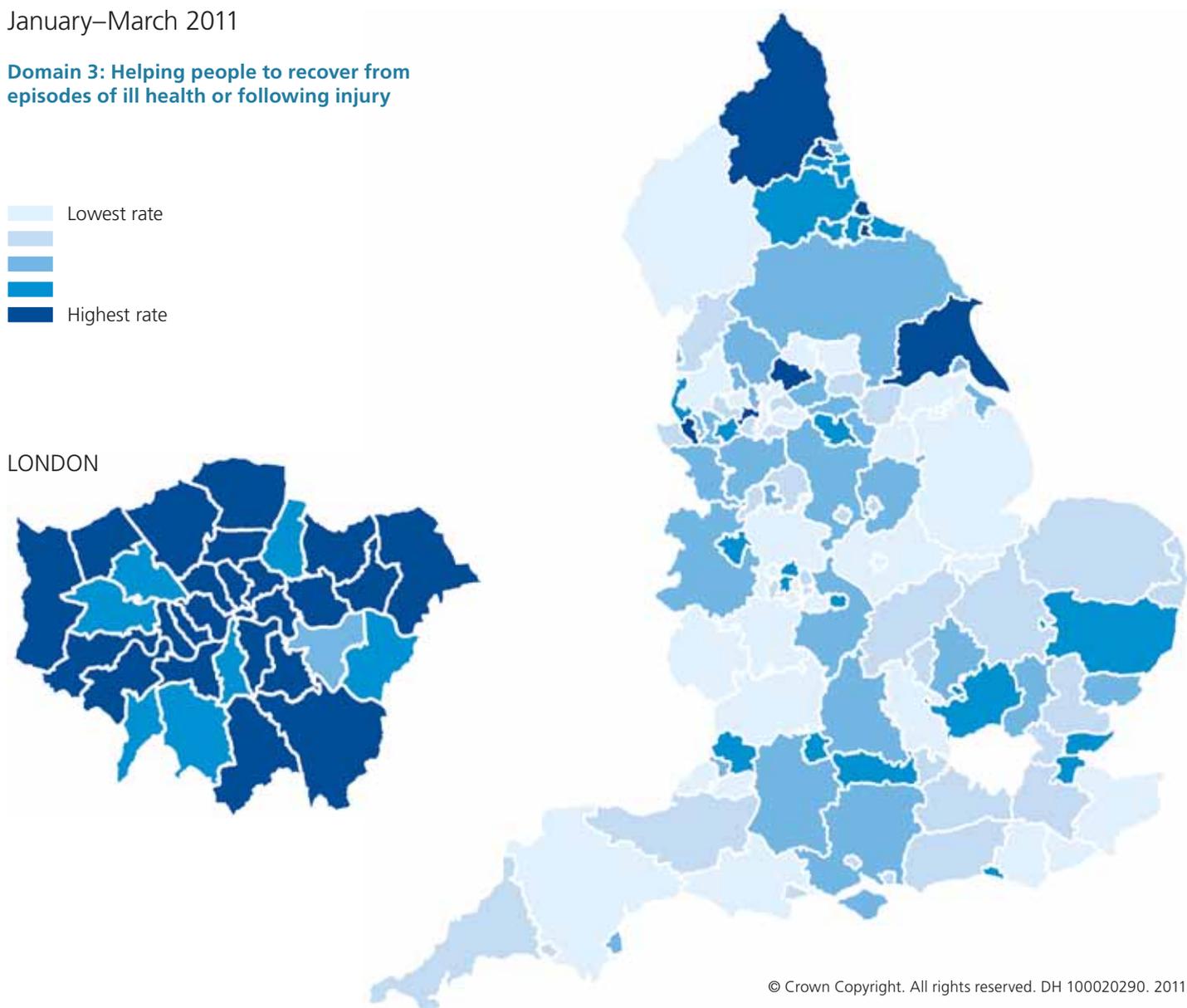
Map 34: Percentage of patients admitted to hospital following a stroke who spend 90% of their time on a stroke unit by PCT

January–March 2011

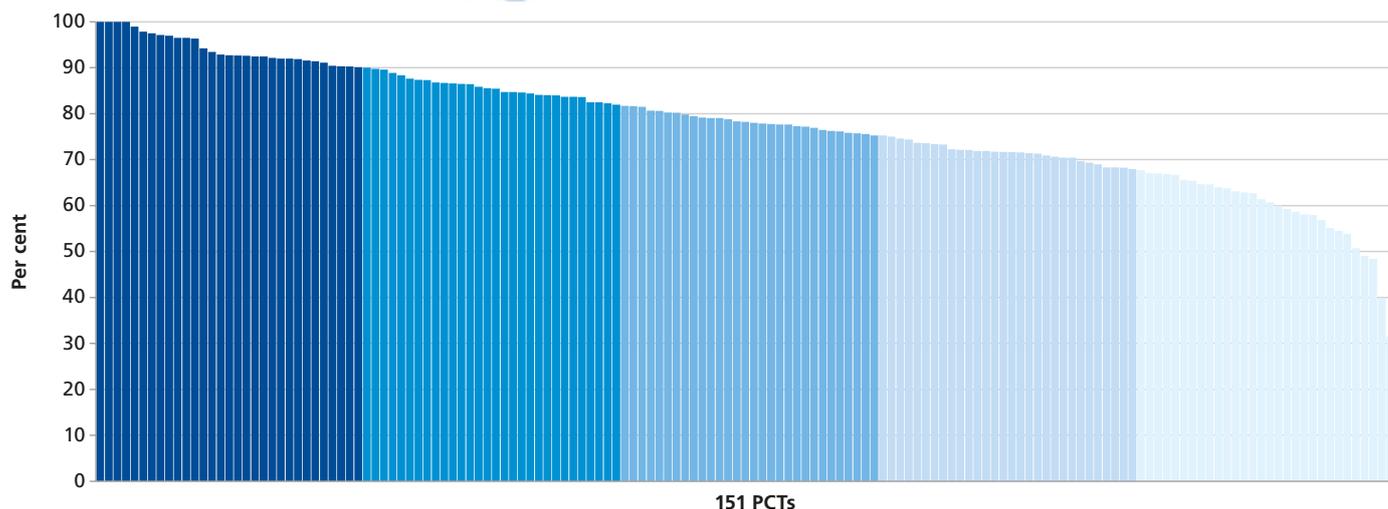
Domain 3: Helping people to recover from episodes of ill health or following injury



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

The National Stroke Strategy (see “Resources”) contains the changes necessary to improve outcomes for people with stroke. NICE Guidance (see “Resources”) includes the standard that all people with suspected stroke should be admitted directly to a specialist acute stroke unit following initial community or emergency department assessment. It requires that:

- People seen by ambulance staff, with sudden onset of neurological symptoms, are screened to diagnose stroke or transient ischaemic attack. People with persisting neurological symptoms who screen positive are transferred to a stroke unit within one hour;
- Patients with suspected stroke are admitted directly to a specialist acute stroke unit, and assessed for thrombolysis, receiving it if clinically indicated;
- Patients with acute stroke receive brain imaging within one hour of hospital arrival if they meet indications for immediate imaging.

Stroke patients admitted to stroke units are less likely to die, and more likely to leave hospital independent, and go home rather than go into institutional care, than those who are not.

This indicator is part of the Department of Health’s Integrated Performance Measures Monitoring.¹

Magnitude of variation

For PCTs in England, the percentage of patients admitted to hospital following a stroke who spent 90% of their time on a stroke unit ranged from 31.5% to 100% (3.2-fold variation). When the five PCTs with the highest percentages and the five PCTs with the lowest percentages are excluded, the range is 53.8–97.9%, and the variation is 1.8-fold.

For 2009/10, the variation in this indicator was greater than fourfold (see Map 13, Atlas 1.0); after exclusions, it was greater than threefold. Q4 2010/11 data show reduced variation, and improved care for stroke patients at both ends of the distribution.

The Royal College of Physicians Stroke Audit in 2010² reported:

“The majority of patients (57%) are still initially admitted to general assessment units where stroke specialist care is often not delivered as effectively

as on stroke units. It is very disappointing that only 36% of patients are admitted directly to an acute or combined stroke unit and only 38% within 4 hours of arrival in hospital ...”

However, in Q1 2011/12, 55% of stroke patients were admitted directly to stroke units.³

Options for action

Improving access to specialist stroke units involves redesigning systems. Many changes can be accomplished within existing resources, but all stroke units need:

- Continuous (24-hour) physiological monitoring;
- Immediate access to scanning;
- Direct admission from emergency department or ambulance service;
- Daily specialist ward rounds;
- Nurses trained in swallow screening, and stroke assessment and management.²

Effective interventions from the Stroke Improvement Programme (see “Resources”) include:

- Ring-fencing stroke-unit beds for stroke patients;
- Working with ambulance services to achieve direct admission of stroke patients to stroke units;
- Therapy services six days a week.

RESOURCES

- Department of Health (2007) National Stroke Strategy. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_081062
- Association of Public Health Observatories disease prevalence model for stroke. <http://www.apho.org.uk/resource/view.aspx?RID=48308>
- NICE Guidance. Stroke. Diagnosis and initial management of acute stroke and transient ischaemic attack (TIA). <http://guidance.nice.org.uk/CG68>
- NICE Pathway on stroke. <http://pathways.nice.org.uk/pathways/stroke>
- NHS Improvement, Stroke Improvement Programme. Accelerating Stroke Improvement. <http://www.improvement.nhs.uk/stroke/AcceleratingStrokeImprovement/tabid/134/Default.aspx>
- NHS Improvement, Diagnostics Improvement. Imaging to Support Stroke. <http://www.improvement.nhs.uk/diagnostics/ImagingtoSupportStroke/tabid/97/Default.aspx>
- Asset Toolkit: to help health care organisations improve and transform stroke services for patients (April 2010). http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4134498

1 Report on Primary Care Trust and NHS Trust performance against plans to address selected health priorities relating to the NHS Operating Framework. <http://www.dh.gov.uk/en/Publicationsandstatistics/Statistics/Perfomancedataandstatistics/Integratedperfomancemeasuresmonitoring/index.htm>

2 Royal College of Physicians (RCP) (2011) National Sentinel Stroke Clinical Audit 2010, Round 7. RCP.

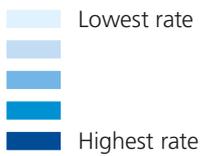
3 <http://www.rcplondon.ac.uk/press-releases/stroke-care-audit-results>

PROBLEMS OF THE RESPIRATORY SYSTEM

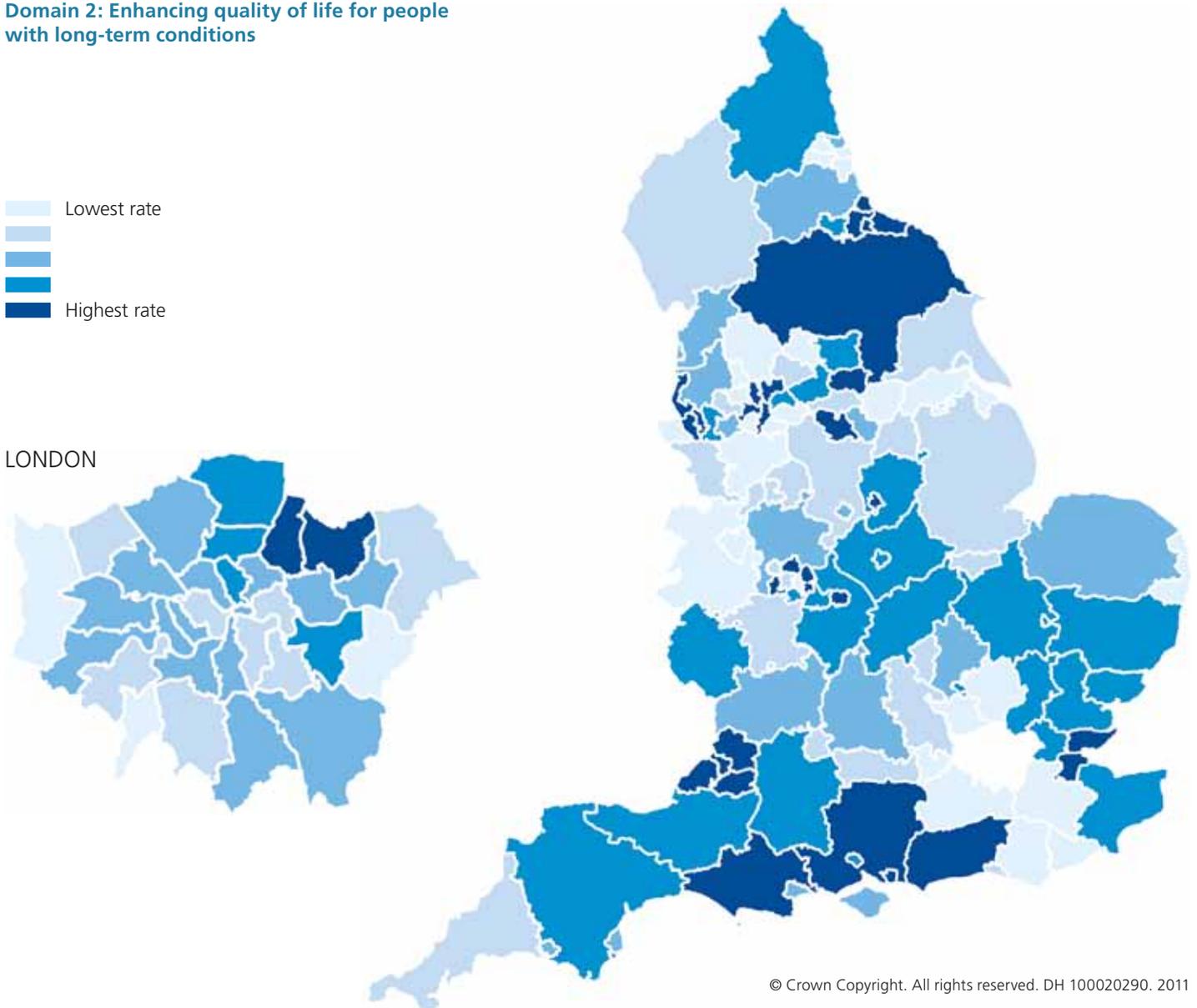
Map 35: Rate of sleep studies undertaken per population by PCT

2010

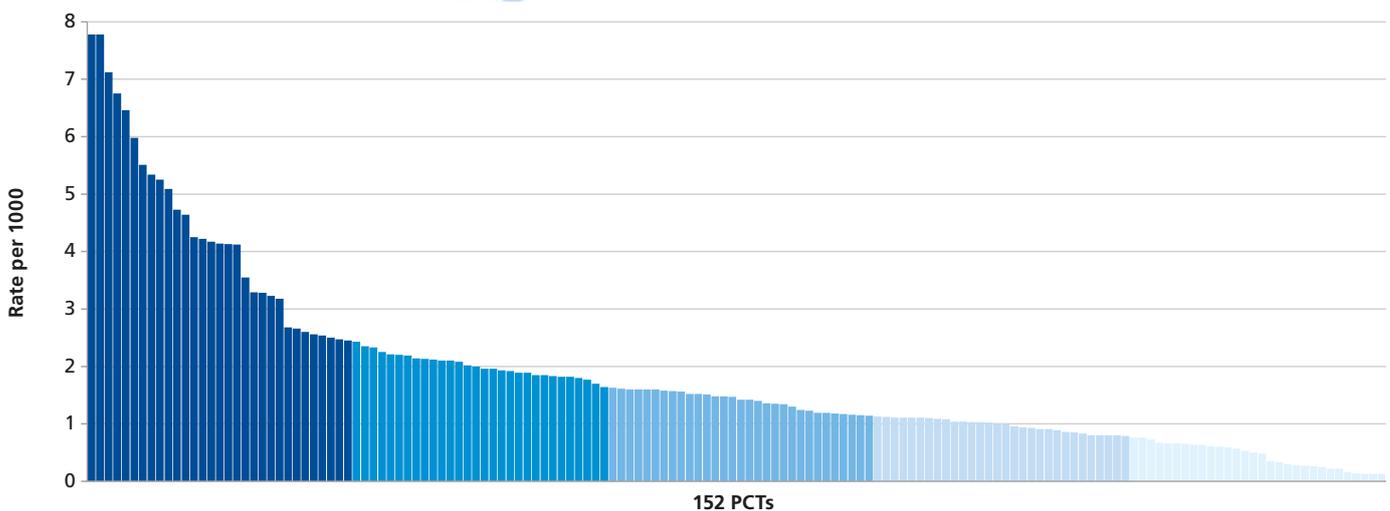
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Sleep physiology investigations are conducted to identify abnormal sleep patterns, and to assess and provide therapeutic intervention. Sleep disorders are common and can vary from mild to life-threatening. There are more than 80 recognised sleep disorders, which may affect the timing, quality and quantity of sleep. The most common are insomnia, sleep apnoea, restless leg syndrome, narcolepsy and sleep problems associated with Parkinson’s disease and autism. Obstructive sleep apnoea (OSA) is the most common affecting up to 5% of the population. During sleep, muscles in the upper airway relax to a greater degree than normal or parts of the airway become blocked for one of several reasons, resulting in apnoeas or pauses in breathing lasting 10 seconds to two minutes. Apnoeas can cause sleep disruption and poor-quality sleep, resulting in daytime sleepiness. If left untreated, OSA can be a risk factor for stroke, cardiovascular problems or diabetes.

There has been a 51.2% increase in the commissioning of sleep studies tests over the last four years (see Figure 35.1). One reason for this increase may be the clearance of backlogs in accordance with the maximum waiting time constitutional right.

In a study in which the rates of polysomnography (PSG) sleep tests were compared in five countries, rate of provision in the UK was significantly lower than that in other countries.¹

There are two referral routes for sleep studies:

- Respiratory;
- Neurological – undertaken by clinical neurophysiology departments (with a higher mean cost but lower activity rate compared with those undertaken via the respiratory referral route).

Magnitude of variation

For PCTs in England, the rate of sleep studies undertaken per 1000 population ranged from 0.1 to 7.8 (60-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 0.2–6.0 per 1000 population, and the variation is 27-fold.

Variation in the rate of sleep studies can be explained by two main factors:

- Prevalence of related conditions such as obesity;

1 Flemons WW, Douglas NJ, Kuna ST, Rodenstein DO, Wheatley J (2004) Access to Diagnosis and Treatment of Patients with Suspected Sleep Apnea. *American Journal of Respiratory and Critical Care Medicine* 169: 668-672. doi: 10.1164/rccm.200308-1124PP

- Availability of service for commissioners – in areas where there are large sleep centres, rates of testing for sleep-related conditions tend to be higher. This is probably because large sleep centres work closely with local commissioners to raise awareness of symptoms, and they are also likely to have a clear funding model for subsequent therapeutic intervention.

Options for action

Commissioners need to review referral and delivery models for sleep services to help reduce unwarranted variation.

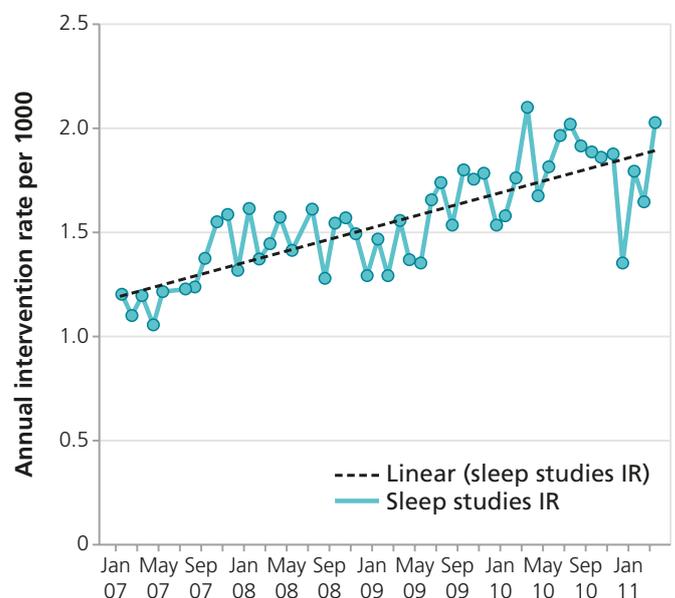
In addition, commissioners need:

- To improve their understanding of expected and observed prevalence of related conditions;
- To review funding models (e.g. block contract versus payment by results) to ensure there are no perverse financial incentives to commission inappropriately;
- To assess carefully demand and available capacity for local sleep services.
- To review models for initial diagnostic testing and triage approaches to referral management.

RESOURCES

- NHS Improvement Physiology Diagnostics homepage: sleep studies are under “Respiratory Physiology”, which provides a link to the overarching “What is Physiological Measurement” document, and DH good practice guide for respiratory and sleep services. <http://www.improvement.nhs.uk/physiologydiagnostics/>

Figure 35.1: Annual intervention rate (IR) for sleep studies by month from January 2007 to March 2011

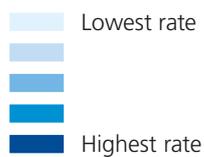


PROBLEMS OF THE RESPIRATORY SYSTEM

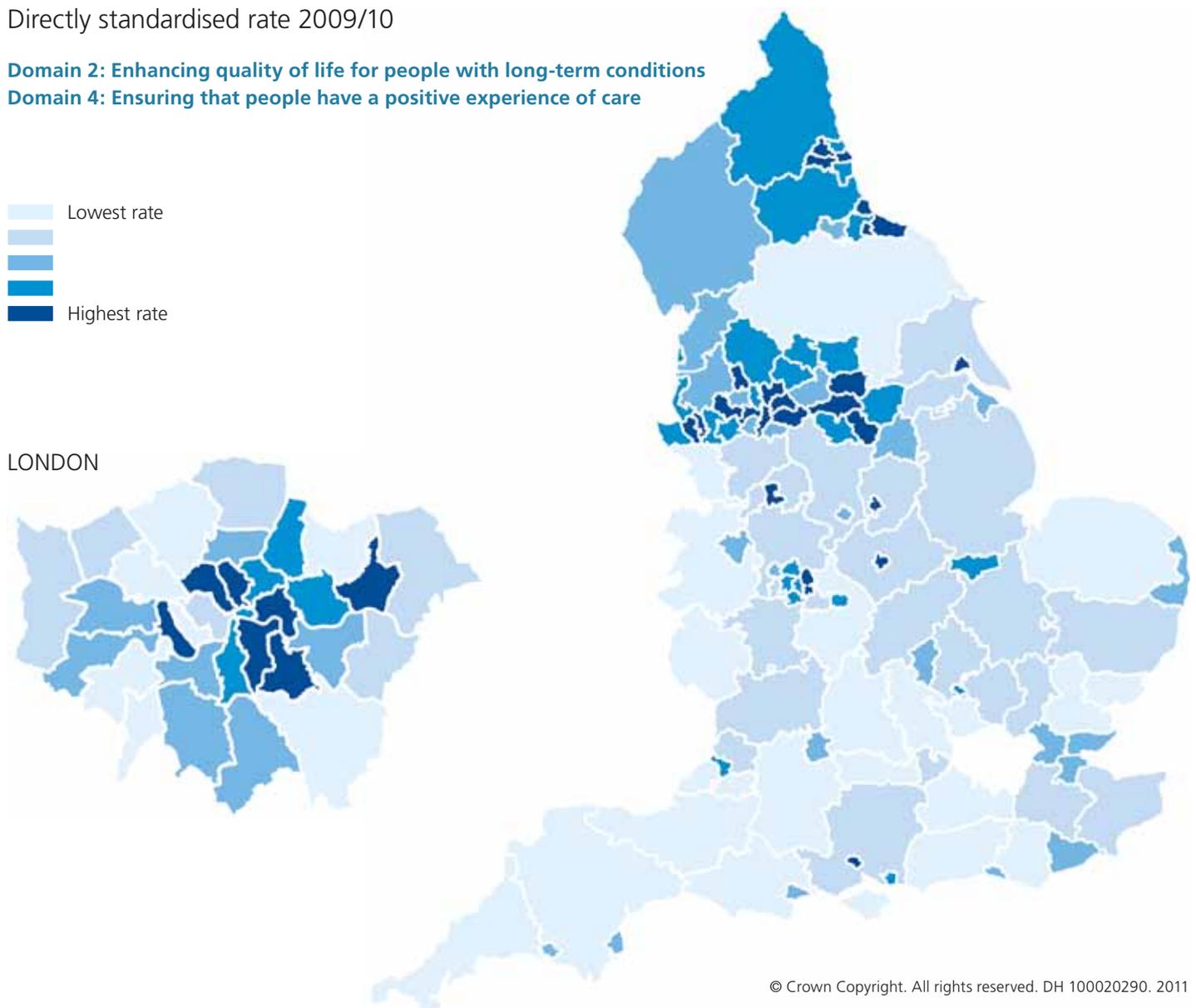
Map 36: Rate of all admissions to hospital with a primary diagnosis of chronic obstructive pulmonary disease (COPD) per population by PCT

Directly standardised rate 2009/10

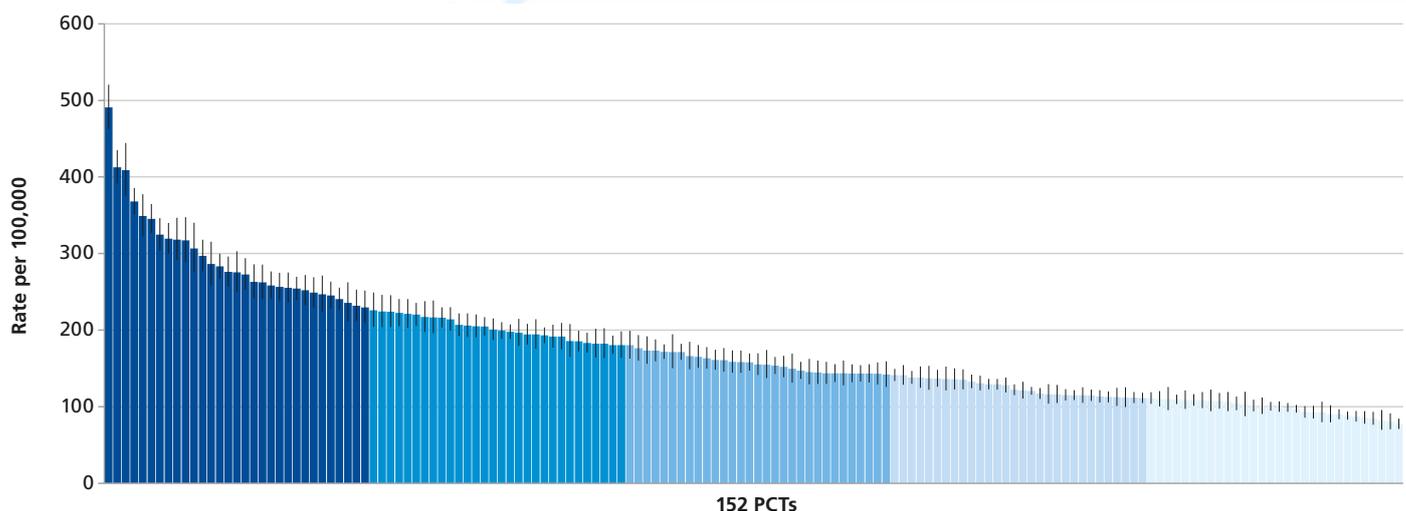
Domain 2: Enhancing quality of life for people with long-term conditions
 Domain 4: Ensuring that people have a positive experience of care



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Chronic obstructive pulmonary disease (COPD) is one of the main causes of preventable death and disability. In England, over 3 million people are known to suffer from COPD, but only about 835,000 have been diagnosed. People with COPD experience recurrent flare-ups or exacerbations which need more intensive treatment. Some exacerbations can be so severe that they require hospital admission. COPD is the second most common reason for emergency admission to hospital, accounting for one in eight non-elective admissions. It is therefore costly for the NHS. In England, COPD kills about 23,000 people a year. Mortality is particularly high in those who are hospitalised: one in six will die during an emergency admission, and one in twelve will die within 3 months.

Magnitude of variation

For PCTs in England, the rate of all admissions to hospital with a primary diagnosis of COPD per 100,000 population ranged from 77.5 to 490.9 (6-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 87.3–345.4 per 100,000, and the variation is fourfold.

Even when adjustment is made for deprivation, a similar pattern is seen. For a person with COPD, the risk of being admitted with an acute exacerbation can be four times greater depending on where they live.

Admission to hospital is a major adverse outcome for patients. The degree of variation shows that in many areas there is considerable scope for reducing admissions. As spend on COPD admissions is high in every PCT, action to prevent admissions could save money as well as improve patient outcomes.

Options for action

PCTs that achieve lower emergency admission rates are likely to do so by ensuring proactive clinical care and by commissioning alternatives to admission, as follows.

- Review of admissions to identify people who are admitted frequently and who need more proactive management.

- Early discharge schemes and hospital-at-home services commissioned to support evidence-based admission avoidance.
- Proactive chronic disease management in primary and community care: this should include clear action plans, optimisation of therapy, support for patient self-management, home provision of standby medication, and referral for pulmonary rehabilitation when indicated.
- Prompt support for patients when they develop new or worsening symptoms, with early access to specialist-led multidisciplinary team care in the community when appropriate.
- A structured approach to admissions with timely assessment and treatment, comprehensive management of COPD and co-morbid conditions, regular review by specialist respiratory team and early discharge planning.

RESOURCES

- Lung Improvement Programme – improvement projects, good practice examples and other resources. <http://www.improvement.nhs.uk/lung/>
- Department of Health Outcomes Strategy for COPD and Asthma in England 2011. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_127974
- NICE Quality Standard for COPD 2011. <http://www.nice.org.uk/guidance/qualitystandards/chronicobstructivepulmonarydisease/copdqualitystandard.jsp>
- NICE Clinical Guideline COPD (updated) 2010. <http://www.nice.org.uk/CG101>
- NICE Pathway for chronic obstructive pulmonary disease. <http://pathways.nice.org.uk/pathways/chronic-obstructive-pulmonary-disease>
- Department of Health Commissioning Pack for COPD: to be published in 2011.
- IMPRESS (Improving and Integrating Respiratory Services in the NHS): resources for improving outcomes in people with respiratory disease. <http://www.impressresp.com/>
- British Lung Foundation: resources for patients and health professionals. <http://www.lunguk.org/>

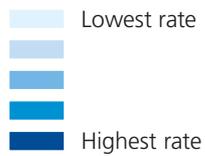
 **See what Right Care is doing about COPD on page 32**

PROBLEMS OF THE RESPIRATORY SYSTEM

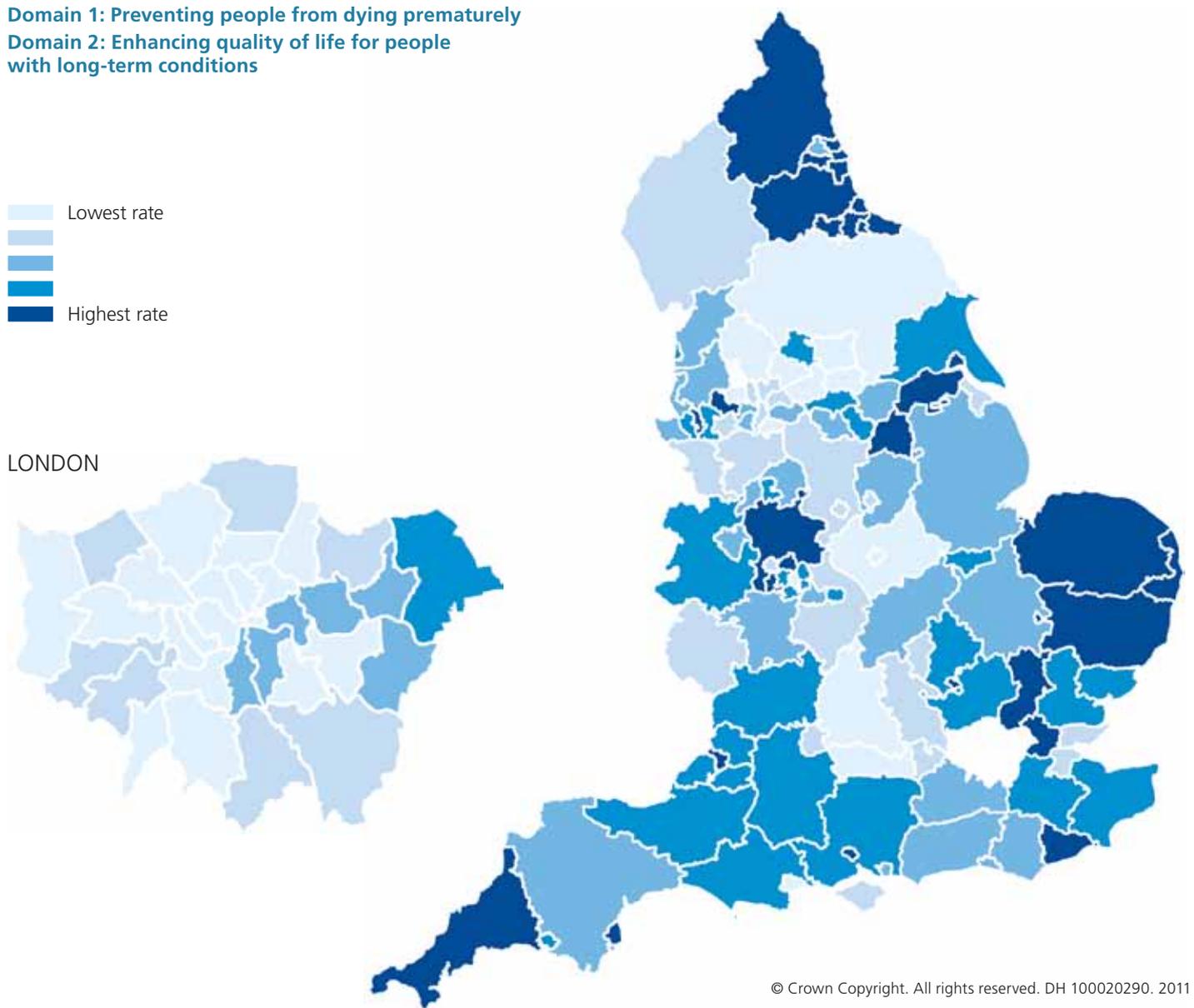
Map 37: Rate of expenditure on home oxygen therapy per population by PCT

2010/11

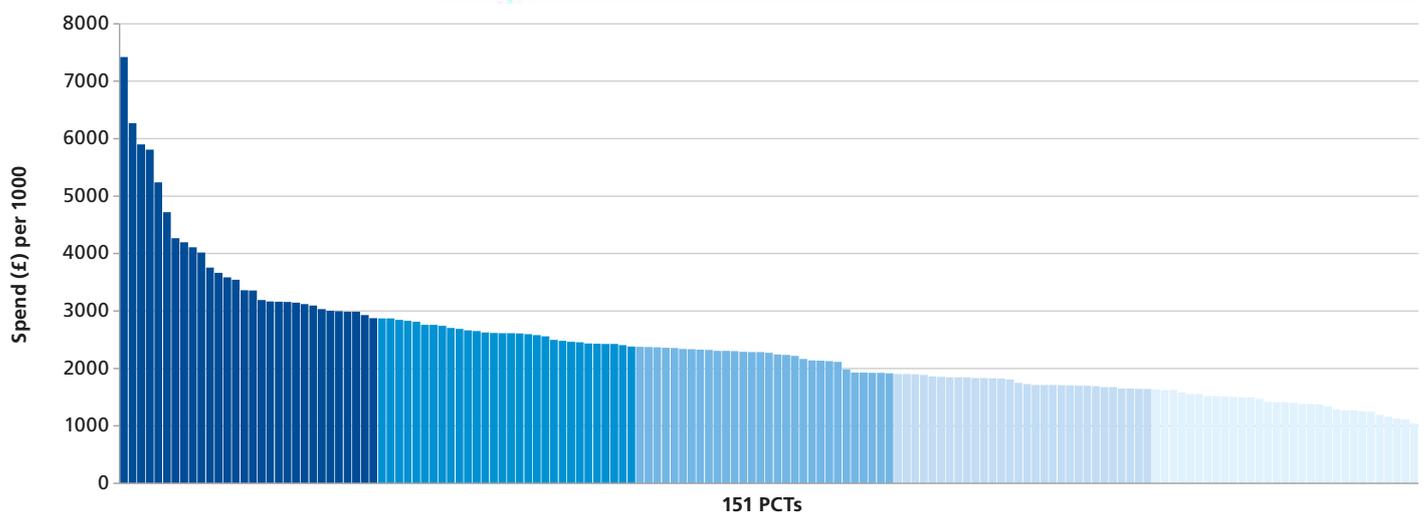
Domain 1: Preventing people from dying prematurely
 Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Home oxygen therapy is provided to 85,000 people in England, which costs approximately £110 million a year. The most common reason for prescribing long-term home oxygen therapy is chronic obstructive pulmonary disease (COPD). It is also provided to people with other lung conditions, with heart disease, and with neurological disease, and those receiving palliative care.

Where indicated, oxygen therapy can improve survival in COPD. However, it is often prescribed without a clear clinical indication, from which the patient will derive no clinical benefit. Oxygen therapy is indicated only when the oxygen level in the blood is low. It is not an effective treatment for breathlessness in the absence of low blood oxygen levels. The Department of Health estimates that about one-third of people prescribed oxygen derive no clinical benefit from it or do not use it. As payment is based on provision not usage, costs are incurred even when oxygen therapy is not used.

Although oxygen therapy is a major source of expenditure, many PCTs do not undertake quality-assured clinical assessment and review of their patients' oxygen requirement. This may reduce the value of the intervention considerably.

Magnitude of variation

For PCTs in England, the rate of expenditure on home oxygen therapy per head of population ranged from £1039 to £7422 (7-fold variation). When the five PCTs with the highest spend and the five PCTs with the lowest spend are excluded, the range is from £1245 to £4721 per head, and the variation is 3.8-fold.

Some variation is due to differences in population composition and disease prevalence. However, when the rate of expenditure in each PCT is adjusted for COPD prevalence and the five PCTs with the highest spend and the five PCTs with the lowest spend are excluded, the range is £76 to £223 per registered patient, the variation 2.9-fold (see column chart below).

Some unwarranted variation will be due to:

- › expenditure on oxygen for people who do not need it or are not using it;

- › failure to identify all patients who would benefit from home oxygen.

The degree of variation shows there is considerable scope for increasing the value of spend on oxygen, both through improving quality of care and reducing waste.

Options for action

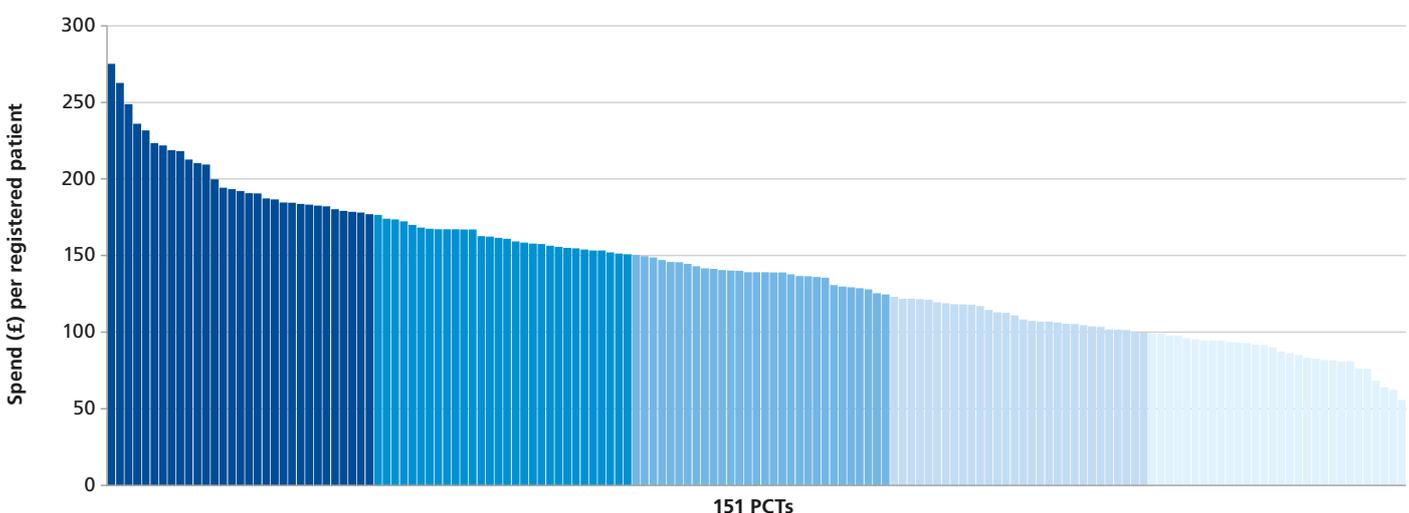
Department of Health analysis suggests that savings of up to 40% (equivalent to £45 million a year nationally or £300,000 per PCT) could be achieved through the establishment of a home oxygen service with structured clinical assessment and regular review of oxygen requirement. This ensures that patients receive home oxygen only after appropriate assessment and follow-up using criteria such as those listed below.

- › Patients with COPD managed in primary care or specialist care should have regular pulse oximetry to determine their oxygen saturation.
- › Oxygen therapy should be considered only in patients with an oxygen saturation of 92% or below.
- › Patients with an oxygen saturation of 92% or below should be referred to a home oxygen assessment and review service for structured assessment.
- › Oxygen therapy should be prescribed only after structured assessment by a home oxygen assessment and review service.
- › Patients treated with home oxygen should have a review of their oxygen requirement by the home oxygen assessment and review service every 6 months.

RESOURCES

- › Home Oxygen Service Good Practice Guide for Assessment and Review. <http://www.pcc.nhs.uk/home-oxygen-service-good-practice-guide-for-assessment-and-review>
- › Improving Home Oxygen Services: Emerging Learning from the National Improvement Projects. <http://www.improvement.nhs.uk/lung/>

Rate of expenditure on home oxygen therapy in 2010/11 per people on GP chronic obstructive pulmonary disease (COPD) register 2009/10



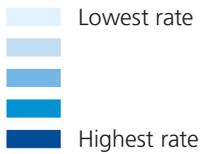
PROBLEMS OF THE RESPIRATORY SYSTEM

Map 38: Rate of emergency admissions to hospital in people aged 18 years and over with asthma per population by PCT

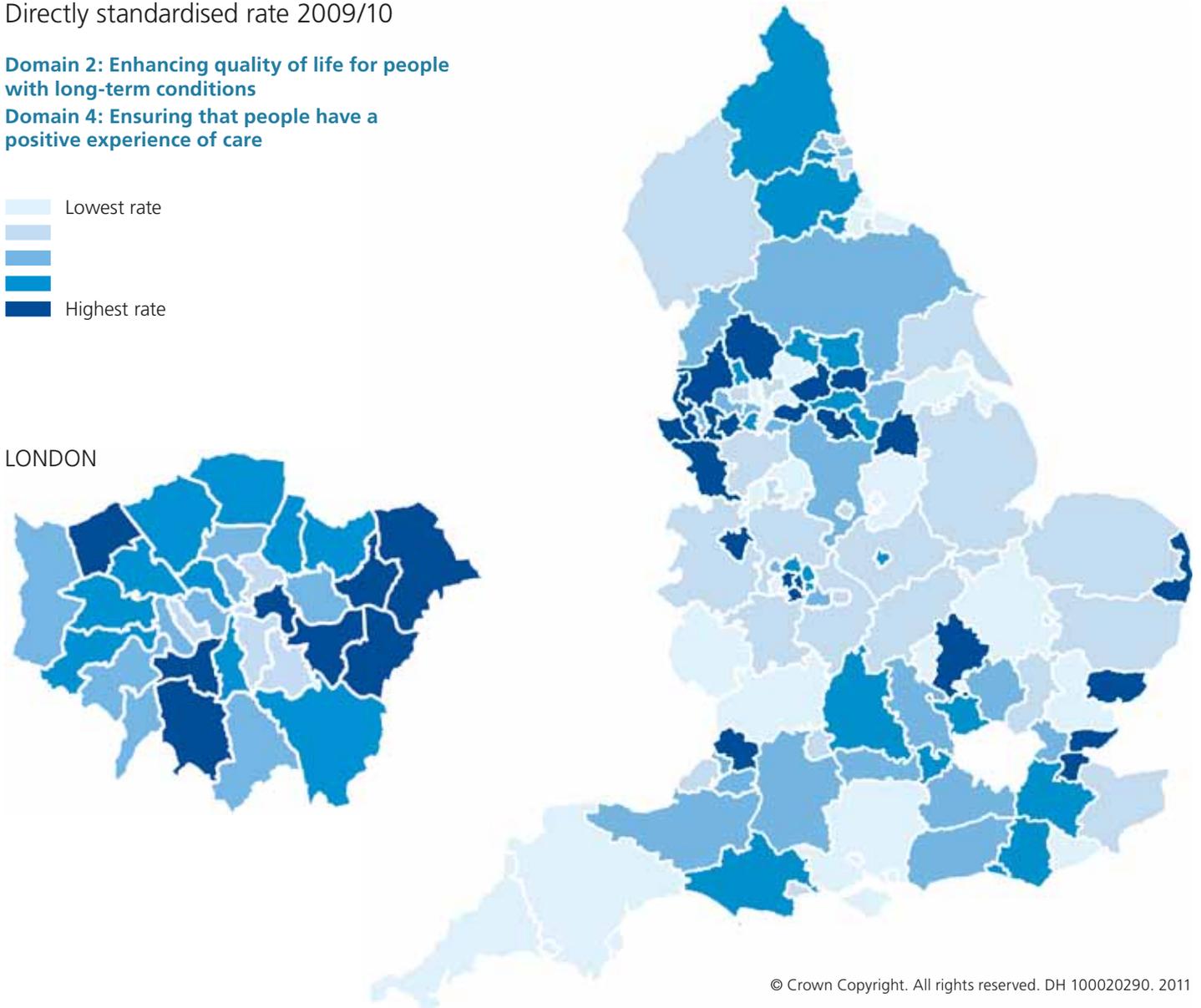
Directly standardised rate 2009/10

Domain 2: Enhancing quality of life for people with long-term conditions

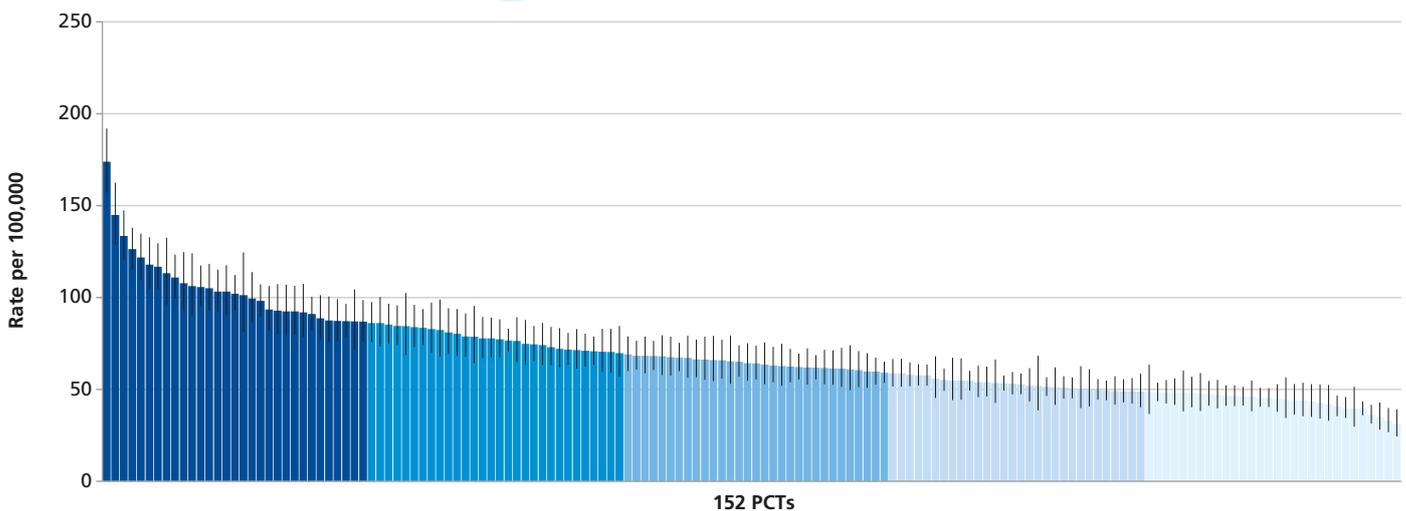
Domain 4: Ensuring that people have a positive experience of care



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

The goal of asthma care is to control symptoms such that people with asthma can lead as normal a life as possible. This should be achievable for the majority.

Emergency admission represents a serious loss of control of a person's asthma. Admissions are sometimes necessary for specialist management of severe exacerbations, but about three-quarters are preventable. Before admission, most patients have symptoms for several days, indicating there is time for intervention to prevent admission.

Structured self-management support including an individual action plan is key to chronic disease management in asthma. People with an asthma action plan have fewer hospitalisations, emergency department visits and unscheduled visits to the doctor.¹

Magnitude of variation

For PCTs in England, the rate of emergency admissions to hospital in people aged 18 years and over with asthma ranged from 31.2 to 173.9 per 100,000 (6-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 39.5–117.9 per 100,000, and the variation is threefold.

For people with asthma, the risk of being admitted with an acute exacerbation can be up to three times greater depending on where they live.

Although the degree of variation is similar to that in 2008/09 (see Map 16, Atlas 1.0), the rate of emergency admissions has decreased at both ends of the range, indicating an improvement in care but little difference in equity of access to good care.

Some variation is due to local population characteristics. However, much is unwarranted due to differences in:

- the quality of asthma care;
- the support people receive to manage their condition.

What is achievable in one area should be possible everywhere if best practice is adopted.

Hospital admission is a major adverse outcome for patients. The degree of variation reveals considerable scope for reducing admissions in many areas. Preventing admissions will save money and improve patient outcomes.

Options for action

Emergency admissions can be avoided by ensuring optimal chronic disease management and structured support for patients in managing their condition.

Patients should have an asthma action plan, developed with them, as part of structured asthma education, helping them to identify deterioration and know what actions to take. Plans should be reviewed regularly and always at the time of emergency department attendance or admission.

Healthcare professionals should deliver care according to the SIGN/BTS guideline (see "Resources").

Healthcare professionals managing patients with asthma should have training in asthma management, and how to provide structured self-management support.

Patients with asthma should have a structured primary care review at least once a year according to the SIGN/BTS guideline.

People attending hospital with acute exacerbations of asthma should be reviewed by a clinician with expertise in asthma management, ideally within 30 days.

General practices could develop a register of patients at risk of admission to identify people who need more active monitoring and management, including patients admitted in the previous 12 months, and those identified at audit as using excessive quantities of short-acting bronchodilators.

RESOURCES

- Scottish Intercollegiate Guidelines Network/British Thoracic Society (SIGN/BTS) British Guideline on the management of asthma (revised 2011). <http://www.sign.ac.uk/pdf/sign101.pdf>
- Department of Health Outcomes Strategy for COPD and Asthma in England 2011. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_127974
- Lung Improvement Programme: improvement projects, good practice examples and other resources. <http://www.improvement.nhs.uk/lung/>
- British Thoracic Society Adult asthma audit 2010. <http://www.brit-thoracic.org.uk/Portals/0/Audit%20Tools/2010%20Asthma%20AuditReport.pdf>
- Asthma UK: resources for clinicians and patients. <http://www.asthma.org.uk>
- Primary Care Respiratory Society: Resources for primary care professionals. <http://www.pcrs-uk.org/>



See what Right Care is doing about asthma on page 32

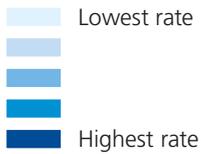
1 Gibson PG, Powell H, Wilson A, Abramson MJ, Haywood P, Bauman A, Hensley MJ, Walters EH, Roberts JLL. Selfmanagement education and regular practitioner review for adults with asthma. Cochrane Database of Systematic Reviews 2002, Issue 3. Art. No.: CD001117. doi: 10.1002/14651858.CD001117.

PROBLEMS OF THE RESPIRATORY SYSTEM

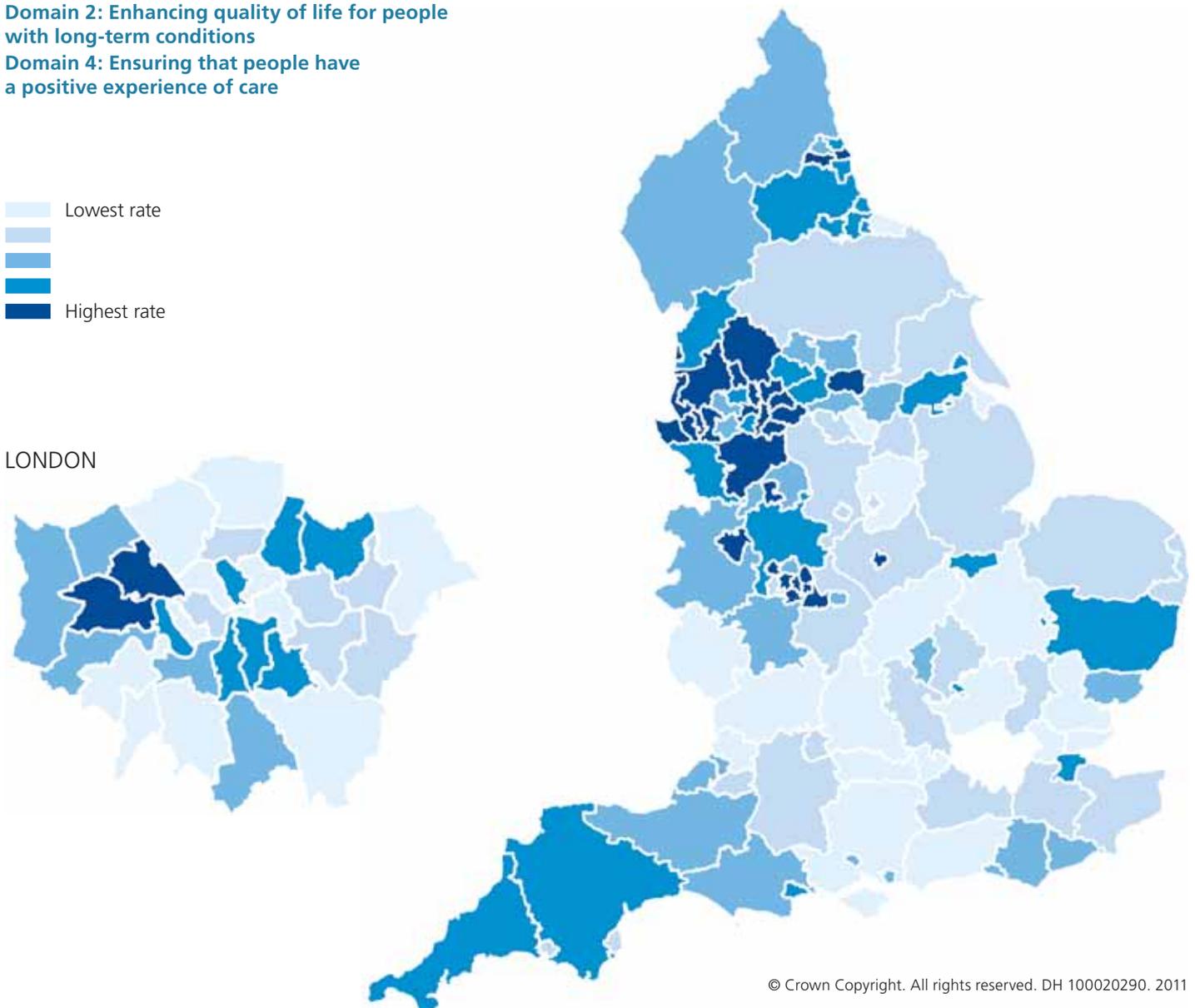
Map 39: Emergency admission rate for children with asthma per population aged 0–17 years by PCT

Directly standardised rate 2007/08–2009/10

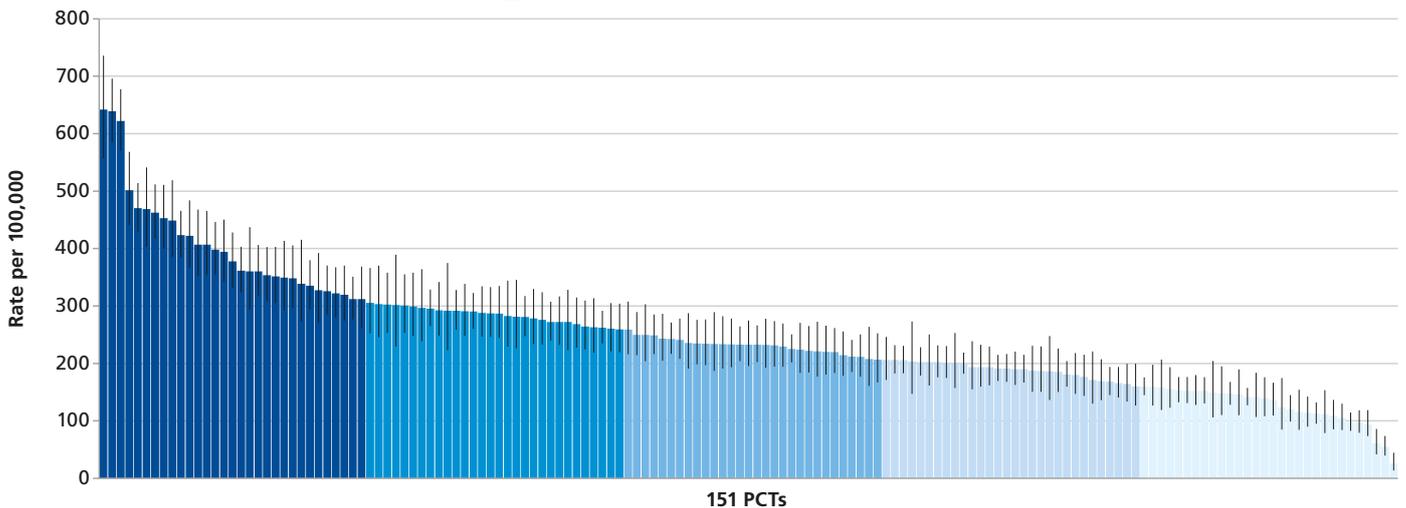
Domain 2: Enhancing quality of life for people with long-term conditions
 Domain 4: Ensuring that people have a positive experience of care



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Asthma is the commonest long-term medical condition in childhood. Emergency admissions should be avoided whenever possible.

Unplanned hospitalisation for asthma, diabetes and epilepsy in children and young people under 19 years is a national quality indicator in the NHS Outcomes Framework 2011/12.

Magnitude of variation

For PCTs in England, the emergency admission rate for children with asthma per 100,000 population aged 0–17 years ranged from 25.9 to 641.9 (25-fold variation). When the five PCTs with the highest emergency admission rates and the five PCTs with the lowest emergency admission rates are excluded, the range is 97.6–468.5 per 100,000 population aged 0–17 years, and the variation is 4.8-fold.

In 2008/09, the variation was sixfold, and after exclusions it was almost fourfold (see Map 17, Atlas 1.0). This increase in the magnitude of variation may not necessarily represent an overall deterioration in care. The greater magnitude of variation may reflect improvements in care in the best-performing PCTs, rather than deterioration in the worst.

However, it does highlight an increasing inequity in the management of asthma services, which requires urgent redress.

Variation in the rate of emergency admission may be due to a variety of reasons:

- suboptimal symptom management and secondary prevention in the community;
- suboptimal emergency care in the Accident and Emergency (A&E) department;
- differences in admission criteria for paediatric clinicians.

Options for action

Commissioners can use the ChiMat DMIT tool to identify unwarranted variation in the local management of long-term conditions such as asthma (see “Resources”).

A management pathway for asthma would help to reduce unwarranted variation.

Every child with asthma should have an Asthma Care Plan according to the British Thoracic Society/Scottish Intercollegiate Guidelines Network (BTS/SIGN) guideline on management of asthma (see “Resources”).

Commissioners should ensure that the BTS/SIGN guidelines form the basis of local clinical asthma pathways for which they are responsible.

As the causes of asthma are multifactorial, action to reduce emergency admission requires a whole pathway approach, including public health, and primary and secondary care. Parental education and school medication management are also vital aspects of the overall care of the child with asthma.

RESOURCES

- ChiMat DMIT tool. <http://atlas.chimat.org.uk/IAS/dmit>
- British Thoracic Society/Scottish Intercollegiate Guidelines Network (BTS/SIGN). British Guideline on the Management of Asthma. May 2008; revised May 2011. <http://www.brit-thoracic.org.uk/guidelines/asthma-guidelines.aspx>

This indicator is from the Child Health Themed Atlas

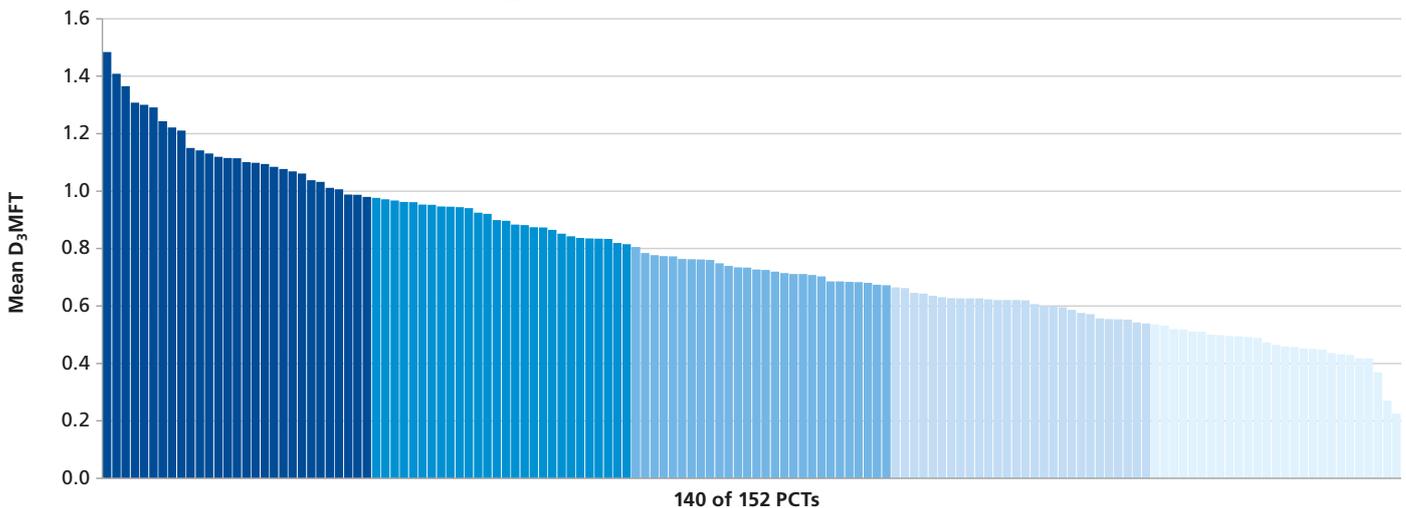
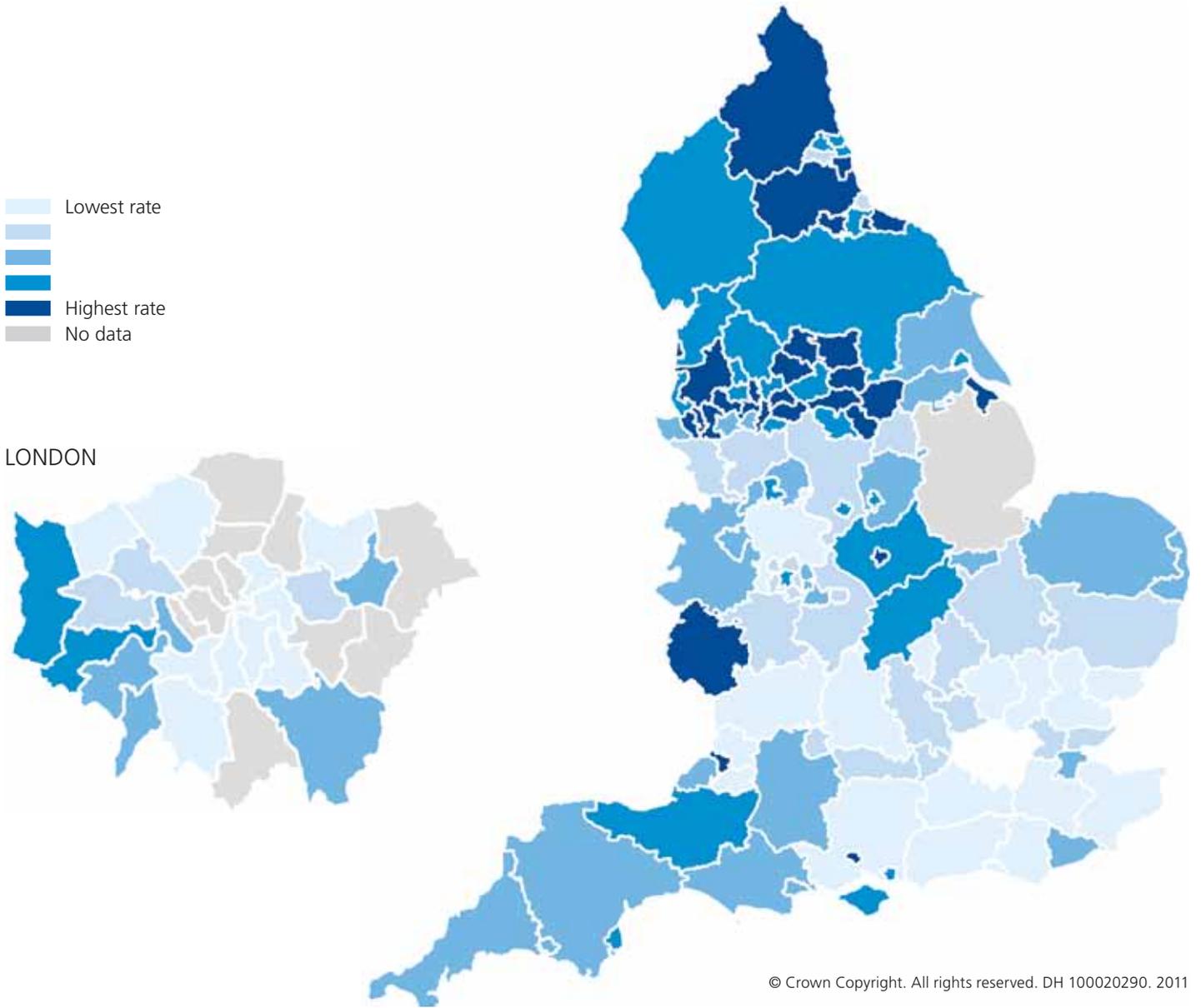


See what Right Care is doing about asthma on page 32

DENTAL PROBLEMS

Map 40: Mean number of decayed, missing and filled teeth in 12 year-olds by PCT

2008/09



Context

Dental decay can prevent children from eating a full range of foods and from communicating effectively, with a loss of confidence and self-esteem that can be damaging for life. More time is lost from school due to dental disease than any other single cause.

However, children's oral health has been improving over the past 26 years, mainly as a result of the introduction of fluoride toothpaste in the 1970s.

In the Oral Health Survey of 12-year-old Children 2008/09,¹ 33.4% of pupils were found to have experience of caries, with one or more teeth that were decayed, extracted or filled because of dental caries. The remaining 66.6% of pupils were free from visually obvious signs of dental decay.

There is a proposal to include the prevalence of dental decay in children as an indicator in the Public Health Outcomes Framework.²

Data for this indicator are from the Oral Health Survey of 12-year-old Children 2008/09.

Magnitude of variation

For PCTs in England, the mean number of decayed, missing and filled teeth in 12-year-olds ranged from 0.2 to 1.5 (7-fold variation). When the five PCTs in which the mean number is highest and the five PCTs in which the mean number is lowest are excluded, the range is 0.4–1.3, and the variation is threefold.

Despite the decline in levels of disease, major inequalities persist at the level of a PCT and at that of an SHA. SHAs in the south and east of England have the lowest levels of disease. Levels are relatively low in the West Midlands where most of the population drink fluoridated water.

Options for action

Fluoridation of water is the most effective means of reducing tooth decay.

Where fluoridation is not practicable, 'toothbrushing' schemes, such as Brushing for Life (see "Resources")

developed by the Department of Health, offer potential for improvement. Under the scheme, health visitors and other appropriately trained health or social care staff demonstrate good practice in toothbrushing to families with young children at locations such as child health clinics and children's centres. They also issue free packs containing a toothbrush, a tube of fluoridated toothpaste and a leaflet with advice on oral hygiene. Packs are available from the NHS Supply Chain (see "Resources").

In accordance with the coalition government's commitment³ to improve children's oral health, the Department of Health is concerned to address the need for continuity of care. Pilot projects are underway in Manchester, Lancashire and Cumbria, and Durham and Darlington to develop closer links between general dental practitioners (high-street dentists) and primary schools. By registering the children, the dental practice team will be able to undertake preventive interventions such as the application of fluoride varnish to the teeth and provide any dental treatment that the children need. This initiative is supported by the NHS Operating Framework 2011/12, paragraph 4.43, requiring PCTs:

*"... to work with dentists and other agencies to promote improvements in the oral health of children."*⁴

The preventive advice that dental practices should give their patients is defined in *Delivering Better Oral Health. An evidence-based toolkit on prevention* (see "Resources").

RESOURCES

- An Appraisal of Brushing for Life. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_085672
- NHS Supply Chain (free dental packs). <https://my.supplychain.nhs.uk/catalogue/browse/1883/brushing-for-life-scheme-pack>
- Delivering Better Oral Health. An evidence-based toolkit for prevention. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_102331

1 Results of 12 year old children survey, 2008/09. <http://www.nwph.net/dentalhealth/survey-results-12.aspx>

2 Public Health Outcomes Framework – Healthy Lives, Healthy People: transparency in outcomes, proposals for a public health outcomes framework. http://www.dh.gov.uk/en/Consultations/Closedconsultations/DH_122962

3 Coalition programme for government. http://delphi.dh.gov.uk/delphi/AboutDH/Newdirectionforhealthandcare/Manifestos2010/DELPHI_019173

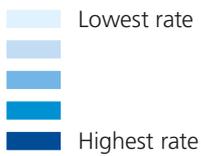
4 The Operating Framework for the NHS in England 2011/12. <http://www.dh.gov.uk/en/Managingyourorganisation/Financeandplanning/Planningframework/index.htm>

DENTAL PROBLEMS

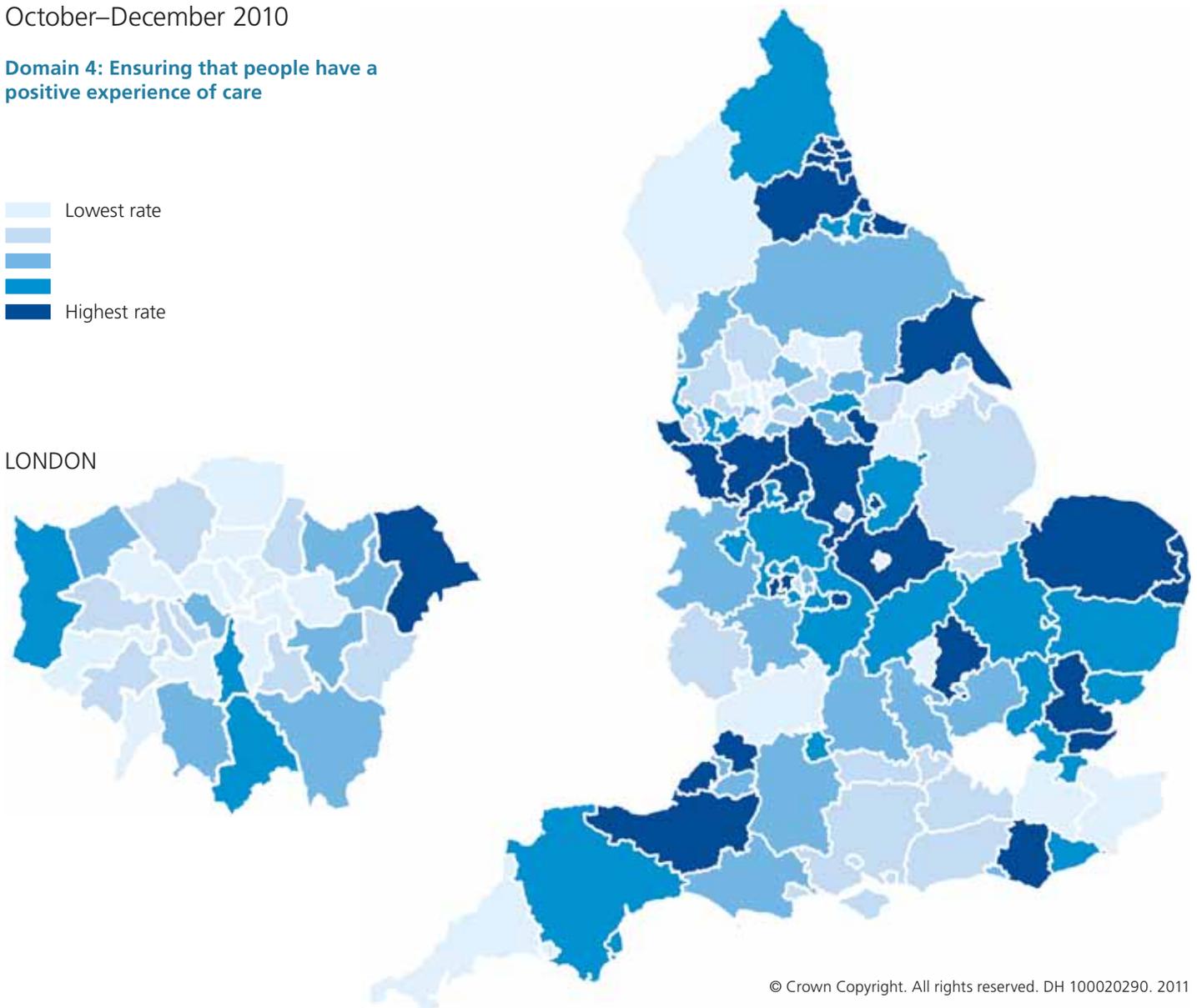
Map 41: Percentage of people who succeeded in gaining access to NHS dentistry services after requesting an appointment in the last two years by PCT

October–December 2010

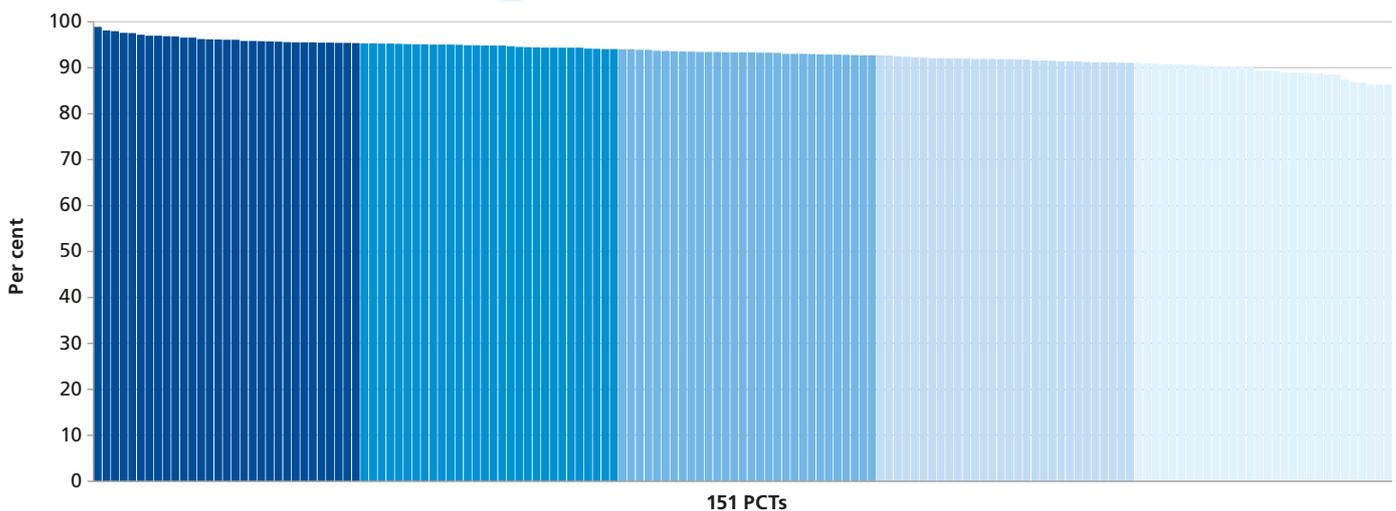
Domain 4: Ensuring that people have a positive experience of care



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

The National Dental Access Programme operated from January 2009 to March 2011. During that time, the NHS achieved a two-million increase in dental access for patients. Although this formal programme has ended, the Government remains committed to improving access, as stated in the Coalition Agreement and Operating Framework for 2011/12:

“PCTs should continue to commission improvements in access to NHS dentistry, and seek to improve efficiency through effective management of dental contracts.”

Domain 4 of the NHS Outcomes Framework includes “Improving access to NHS dental services”, and good access to NHS dentistry is also part of the NHS’ commitments to patients in the NHS Constitution Handbook.

Lack of access to an NHS dental practice can mean that people do not receive clinically necessary dental treatment. In the event of a dental emergency due to lack of regular examinations and treatment, a patient may have to present at A&E in considerable pain and thereby incur unnecessary cost for the secondary care sector.

Data for this indicator are taken from the GP survey of 1.4 million adults who were asked if they had tried to obtain an appointment with an NHS dentist and, if so, whether had they been successful.

Overall, 93% of respondents who had tried to obtain an appointment within the past two years were successful; 7% were unsuccessful. North East SHA had the largest percentage of the adult population:

- › seeking an NHS dental appointment in the last two years (67%);
- › being successful in making an NHS dental appointment over the last two years (96%);
- › being successful in making an NHS dental appointment in the last two years at a practice to which they had not been before (84%).

Magnitude of variation

For PCTs in England, the percentage of people who succeeded in gaining access to NHS dentistry services after requesting an appointment in the last two years ranged from 86.4% to 98.9% (1.1-fold variation). When the five PCTs with the highest percentages and the five PCTs with the lowest percentages are excluded, the range is 87.5–97.2%, and the variation is 1.1-fold.

Although the degree of variation is very low, in some areas, 12–13 people in every 100 who tried to obtain an NHS dental appointment failed.

Options for action

Strategic health authority (SHA) dental leads will provide support to PCTs during 2011/12, with a focus on efficiencies, reviewing progress and monitoring access.

PCTs can consult the Dental Access Programme resources (see “Resources”) relating to managing contracts and recall intervals, and obtain support from NHS Primary Care Commissioning advisors.

The Department of Health is supporting PCTs to achieve improvements in access with an 11% uplift in central funding from April 2008, and a further 8.5% uplift in total funds from April 2009. Dental allocations were further increased by 2.05% in 2011/12.

In the longer term, a new dental contract will be introduced to meet the NHS White Paper commitment to improve the quality of patient care and increase access to NHS dental services.

RESOURCES

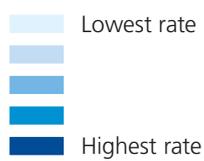
- › About Dental Access.
<http://www.pcc.nhs.uk/About-dental-access>

PROBLEMS OF THE GASTRO-INTESTINAL SYSTEM

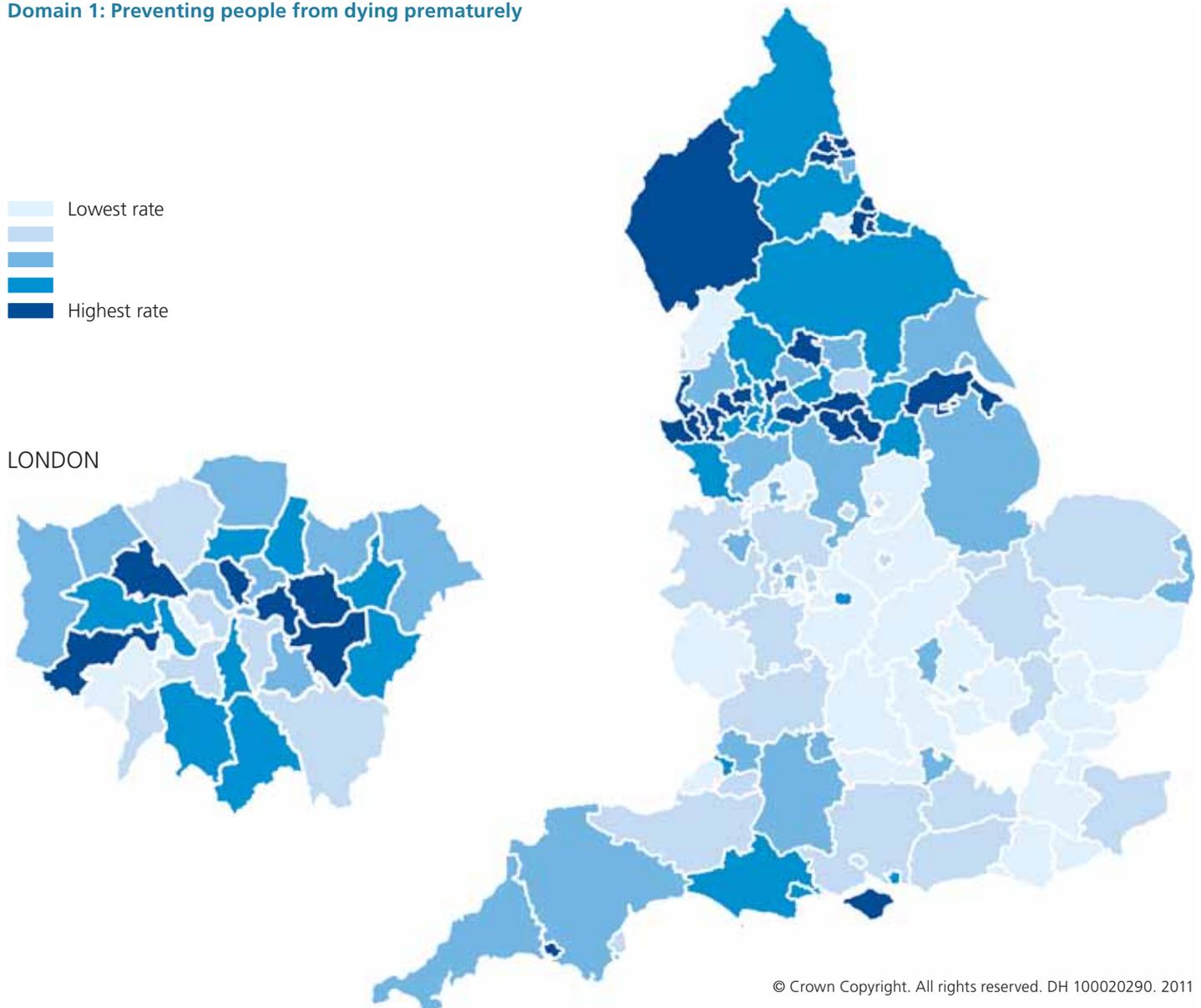
Map 42: Rate of activity for gastroscopy (upper gastro-intestinal endoscopy) per population by PCT

Indirectly standardised rate, adjusted for age, sex and deprivation 2009/10

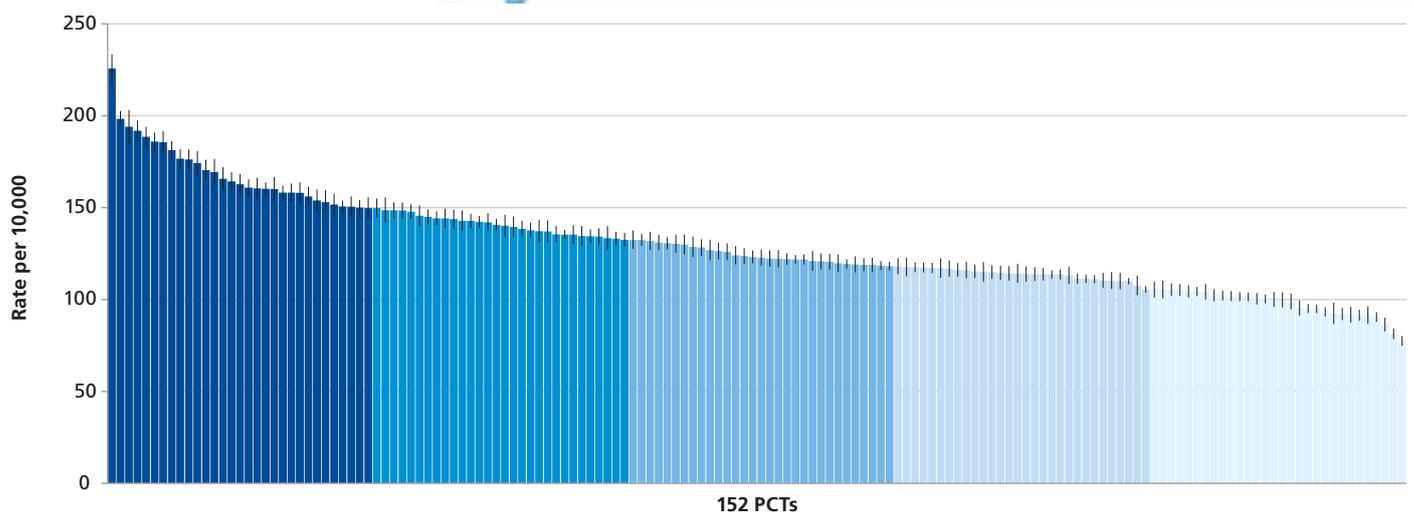
Domain 1: Preventing people from dying prematurely



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Gastroscopy is an investigation of the upper gastro-intestinal tract – mouth, oesophagus, stomach and duodenum (first part of the small intestine) – using a flexible endoscope. Diagnostic gastroscopy is used:

- To investigate dyspepsia in older people;
- To investigate difficulties and/or pain on swallowing (dysphagia);
- To investigate abdominal swelling;
- To identify cancer of the oesophagus or stomach, although it is difficult to identify pre-cancerous lesions using this technique;
- To investigate patients presenting with upper gastro-intestinal bleeding or anaemia;
- To detect complications of non-steroidal anti-inflammatory drugs (NSAIDs).

The value from the surveillance of chronic oesophageal disease to prevent cancer from a condition called Barrett's oesophagus is currently being evaluated in research studies.

Much of the demand for gastroscopy comes through referrals made by primary care.

Magnitude of variation

For PCTs in England, the rate of activity for gastroscopy ranged from 77.4 to 225.7 per 10,000 population (2.9-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 91.4–185.9 per 10,000 population, and the variation is twofold.

One reason for variation in the rate of gastroscopy procedures is differences in regional cancer rates, which in turn is affected by smoking habit and prevalence of obesity. However, the degree of variation observed is greater than can be explained by variations in the incidence and prevalence of disease.

Possible reasons for unwarranted variation include differences in:

- Thresholds for referral by GPs;
- The amount of resources available for both diagnosis and surveillance.

Options for action

Commissioners and GPs need to work together to ensure that the referral rate for gastroscopy relates to the needs of the local population, including:

- Developing local guidelines for chronic or recurrent upper abdominal pain;
- Auditing local referral rates for gastroscopy to identify both under- and over-referral;
- Communication from endoscopy services by visiting all local GPs to update them on ways to maximise value from the endoscopy service for patients.

The NICE commissioning guide can help commissioners and providers develop referral criteria and determine local service levels (see "Resources").

However, commissioners and providers may need to assess the relative value of gastroscopy and of colonoscopy/flexisigmoidoscopy for local populations because there may be a case for shifting resources from gastroscopy and increasing the rate of colonoscopy/flexisigmoidoscopy (see Map 1).

Commissioners and providers can use the results of the Global Rating Scale (GRS: see "Resources"), a tool that enables units to assess their provision of patient-centred care, including dimensions for quality and safety, and customer care. Applying the "Appropriateness" item is important; it reassures commissioners that referrals are vetted against best practice. A planning and productivity assessment tool is now available: high scores indicate services are planning for future demand and resource use is efficient.

RESOURCES

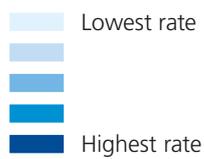
- Joint Advisory Group (JAG) for GI endoscopy. JAG defines and maintains the standards by which endoscopy is practised in the UK. There is a section on "Commissioning" on the website. <http://www.thejag.org.uk/>
- Endoscopy Global Rating Scale (GRS). <http://www.grs.nhs.uk/WhatIsGRS.aspx>
- NICE. Upper GI endoscopy service commissioning guide (2007). <http://www.nice.org.uk/usingguidance/commissioningguides/uppergiendoscopyservices/uppergiendoscopyservices.jsp>
- Barrett's Oesophagus Campaign. <http://www.barrettscampaign.org.uk/>

PROBLEMS OF THE GASTRO-INTESTINAL SYSTEM

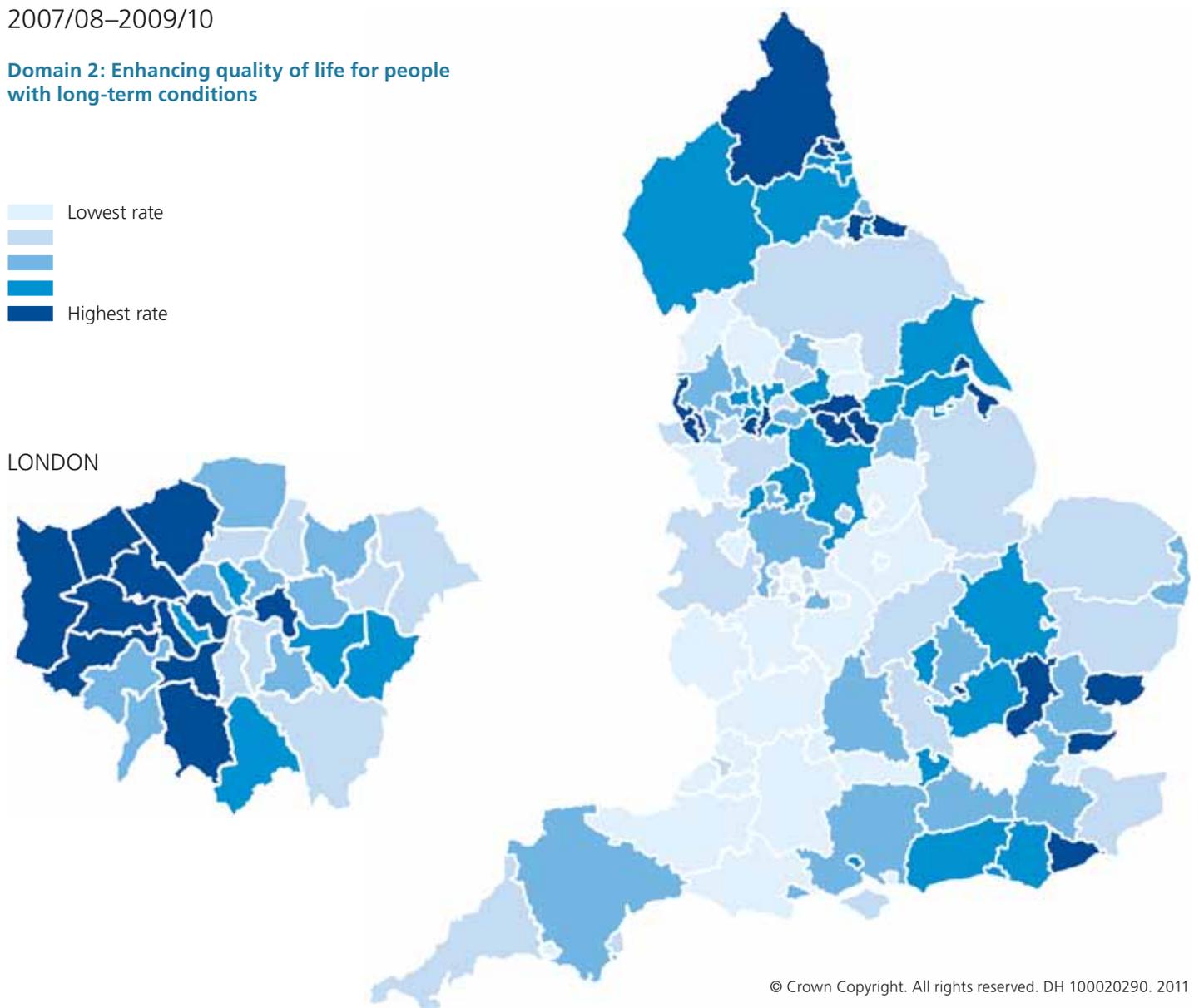
Map 43: Admission rate for children for upper and/or lower gastro-intestinal endoscopy per population aged 0–17 years by PCT

2007/08–2009/10

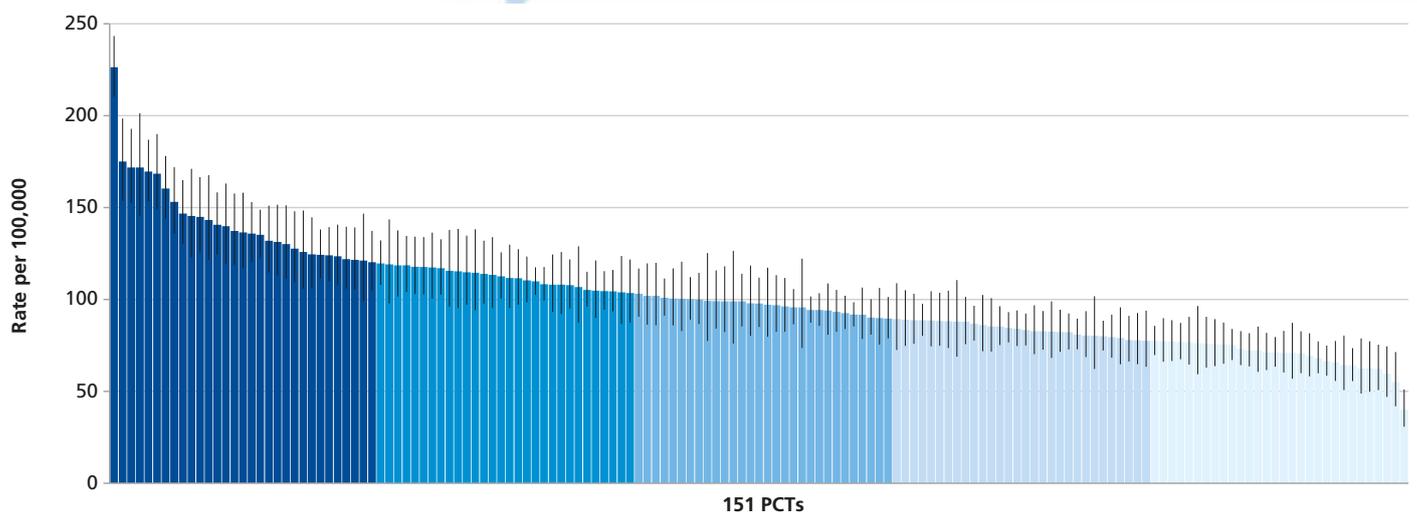
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Diagnostic gastro-intestinal (GI) endoscopy enables the GI tract to be visualised directly, and for biopsies to be carried out to aid diagnosis. Endoscopy is undertaken in children to diagnose or exclude serious GI disease, such as inflammatory bowel disease, coeliac disease, enteropathy and gastro-oesophageal reflux.

The symptoms that most commonly result in referral for diagnostic GI endoscopy are abdominal pain, failure to thrive, recurrent vomiting and diarrhoea and/or blood per rectum. Where medical investigations (including GI endoscopy) fail to find an organic cause for these symptoms, a diagnosis of functional GI disorder (GI symptoms without structural or physical abnormalities) is considered.

Most research suggests that functional GI disorders are still the commonest outcome following a diagnostic GI endoscopy, i.e. no physical abnormality is found, which suggests that the existing selection criteria for GI endoscopy are not appropriate. The large numbers of children who undergo the procedure without receiving a diagnosis may affect child and family well-being. It also has resource implications.

However, the value of diagnostic GI endoscopy to exclude serious underlying illness is vital. Unwarranted delay or poor availability of paediatric endoscopy may compromise the diagnostic work-up and care of children with chronic GI symptoms.

Magnitude of variation

For PCTs in England, the admission rate for children for upper and/or lower GI endoscopy ranged from 39.9 to 226.3 per 100,000 population aged 0–17 years (6-fold variation). When the five PCTs with the highest admission rates and the five PCTs with the lowest admission rates are excluded, the range is 62.5–168.4 per 100,000 population aged 0–17 years, the variation 2.7-fold.

It is unlikely that this degree of variation can be explained by differences in the number of children with symptoms or the incidence of serious organic GI disease. The most likely reasons for this variation are:

- differences in selection criteria and threshold for diagnostic GI endoscopy;
- poor access to endoscopy in some areas of the country.

Unexpectedly low rates of GI endoscopy may reflect inadequate provision or poor access, leading to delayed or missed diagnosis in the local population of children.

Over the past decade, the rates of diagnostic GI endoscopy have greatly increased in the UK, as in most developed countries, resulting in earlier and more accurate diagnosis of severe GI disease. However, to maximise yield and reduce unnecessary risks to patients, evidence-based guidance is needed on the selection of children who are most likely to benefit from undergoing diagnostic GI endoscopy.

Options for action

At present, there is no national guidance.

Commissioners and clinicians should collaborate to agree local criteria for diagnostic GI endoscopies in children based on best available evidence. Criteria need to be outcome- as well as process-based, and should be benchmarked against the agreements made in other local areas to ensure equity of access and high-quality outcomes.

A networked system of delivering paediatric endoscopy will have considerable impact on rationalising the criteria for endoscopy:

- ensuring that levels of activity relate to local population needs;
- enabling the comparison of outcomes;
- providing support for quality assurance.

RESOURCES

- British Society for Paediatric Gastroenterology, Hepatology and Nutrition (BSPGHAN). Report of the BSPGHAN Working Group to Develop Criteria for DGH Gastroenterology, Hepatology and Nutrition Services. http://www.bspghan.org.uk/document/DGH_SERVICES_BSPGHAN.DOC
- British Society for Paediatric Gastroenterology, Hepatology and Nutrition (BSPGHAN). Guide for Purchasers of PGHN Services. <http://www.bspghan.org.uk/information/guides.shtml>
- Royal College of Paediatrics and Child Health (2004) Commissioning Tertiary and Specialised Services for Children and Young People. http://www.rcpch.ac.uk/sites/default/files/asset_library/Publications/C/Tert.pdf

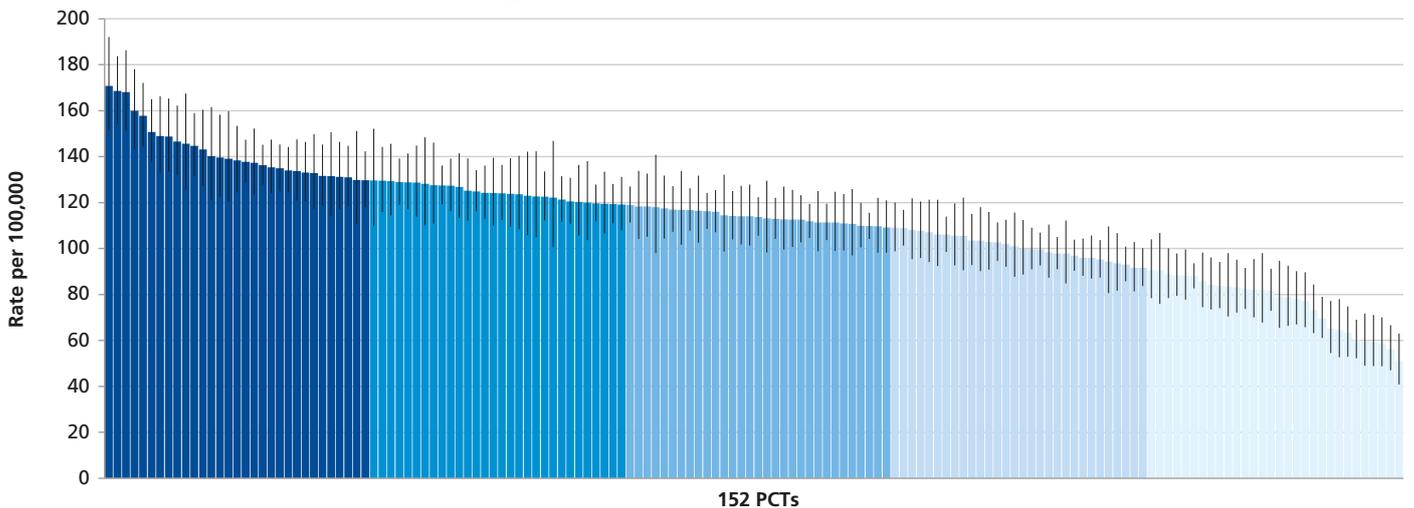
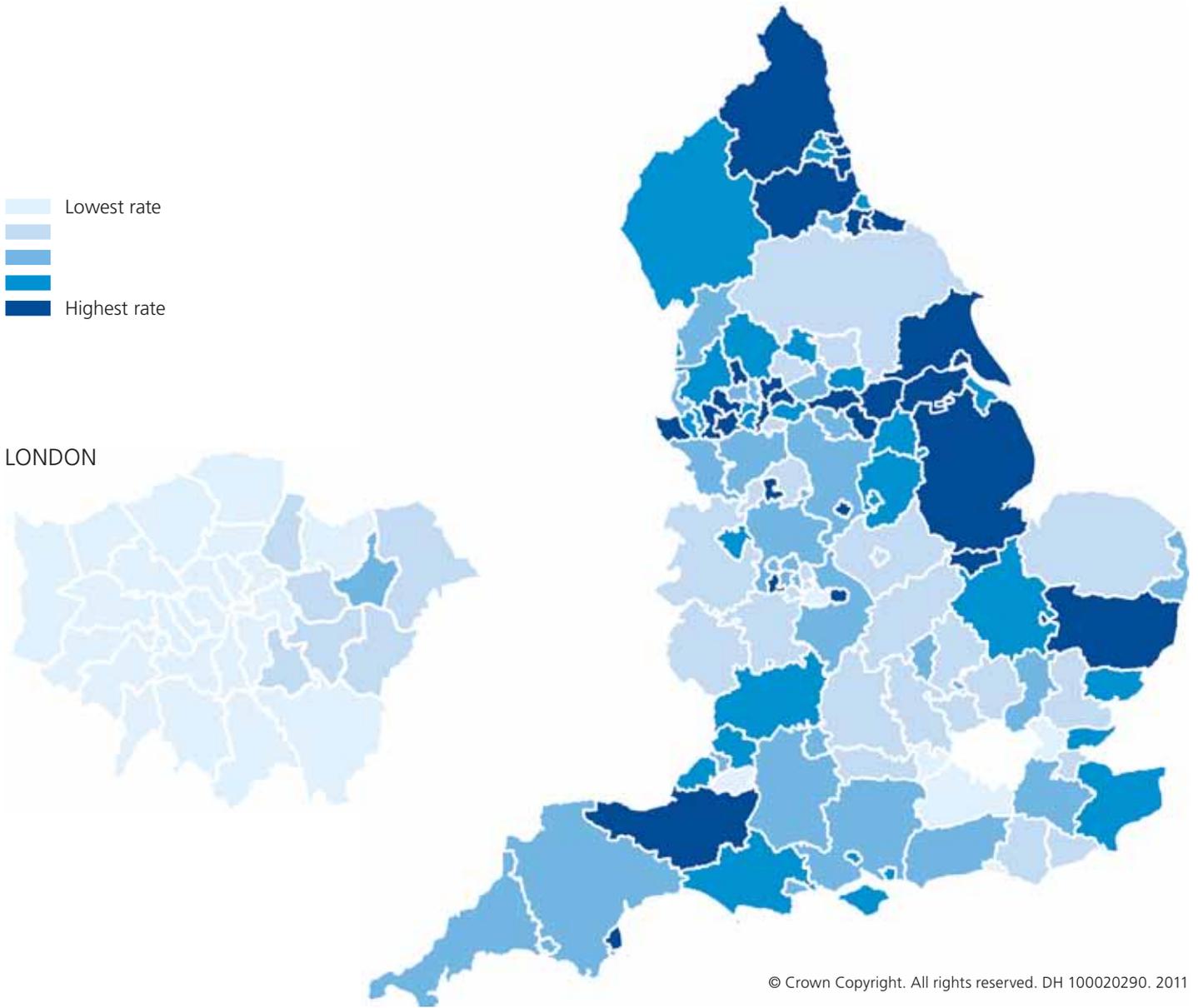
This indicator is from the Child Health Themed Atlas

PROBLEMS OF THE GASTRO-INTESTINAL SYSTEM

Map 44: Rate of cholecystectomies per population by PCT

Directly standardised rate 2009/10

Domain 2: Enhancing quality of life for people with long-term conditions



Context

Cholecystectomy is an operation performed to relieve the symptoms of cholelithiasis which may commonly present with the pain of biliary colic or the inflammation and infection of acute cholecystitis. If gallstones exit the gallbladder into the bile ducts, obstructive jaundice or pancreatitis may result.

The cholecystectomy procedure has changed dramatically with the advent of laparoscopic surgery in the early 1990s, offering minimally invasive surgery rather than the traditional open technique. As a result, cholecystectomy can now be offered to patients with serious co-morbidities who formerly would have been rejected as unfit for open surgery. However, the application of a new minimally invasive technology to an existing surgical problem that allows the less fit patient an opportunity for a surgical solution to their problem raises new and different issues.

This was first studied in Maryland by Steiner et al¹ who showed that laparoscopic cholecystectomy led to:

- an increase in the total number of people having operations;
- a reduction in the operative mortality rate.

However, the number of people dying as a result of the procedure did not change because the number of people overall receiving an operation had increased. This is an example of the way in which a change in technology results in a change to the clinical criteria for operation which then changes the nature of the operation and the management of the condition.

The data for this indicator comprise the combined total of open and laparoscopic cholecystectomies, that is, all cholecystectomies. The indications for both types of operation are the same, with the exception of the patient's fitness for operation, which has been altered by the development of the laparoscopic procedure.

Magnitude of variation

For PCTs in England, the rate of cholecystectomies per 100,000 population ranged from 51.1 to 170.8 (3.3-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 60.2–150.7, and the variation is 2.5-fold.

The reasons for variation are not clear. It is unlikely that the degree of variation observed is due to differences in capacity or a lack of laparoscopic training. Trainee surgeons are trained in minimally invasive techniques, and laparoscopic surgery is now regarded as mainstream surgery.

There is little consensus on the appropriate rate of cholecystectomy. Data collected by the British Association of Day Surgery suggest that at least 60% could be performed on a day-case basis (see Map 45).

Options for action

Commissioners and providers need to review the ratio of laparoscopic to open cholecystectomy performed, and assess the potential to increase the rate of laparoscopic cholecystectomy (see Map 45). It is a safe and effective procedure^{2,3} with good outcomes which can be performed as a day case, thereby minimising patients' exposure to the risks of hospitalisation.

- Although laparoscopic surgery has a smaller morbidity and mortality risk when compared with the open procedure, the risk is not zero, and a patient with serious co-morbidities will require appropriate counselling taking into account the severity of their symptoms, and their general health and personal values.
- Accurate and reproducible measurement of gallbladder symptoms would allow an assessment of the threshold for intervention to see if the procedure is now being offered to people with less severe disease, given that the laparoscopic approach is the treatment of choice for most patients.
- Specialists and GPs should consider developing guidelines for the management of upper abdominal pain, which may be a symptom of gallbladder disease.

1 Steiner CA, Bass EB, Talamini MA et al (1994) Surgical rates and operative mortality for open and laparoscopic cholecystectomy in Maryland. *New England Journal of Medicine* 330: 403-408.

2 Dolan JP, Diggs BS, Sheppard BC, Hunter JG (2009) The national mortality burden and significant factors associated with open and laparoscopic cholecystectomy: 1997-2006. *J Gastrointest Surg* 13: 2292-2301.

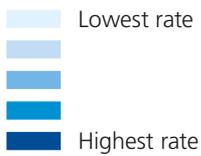
3 Hannan EL, Imperato PJ, Nenner RP, Starr H (1999) Laparoscopic and open cholecystectomy in New York State: mortality, complications, and choice of procedure. *Surgery* 125: 223-231.

PROBLEMS OF THE GASTRO-INTESTINAL SYSTEM

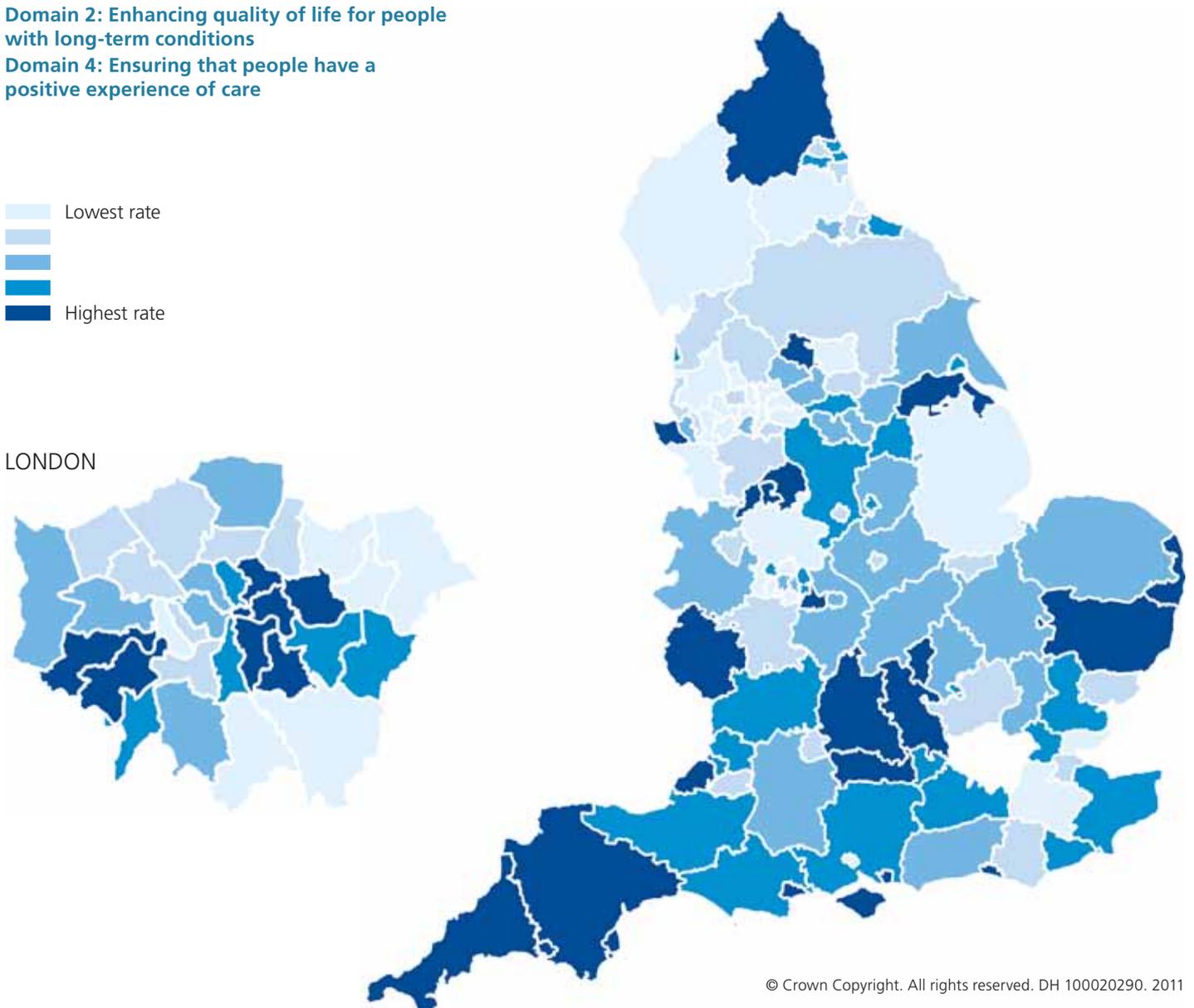
Map 45: Percentage of elective adult day-case laparoscopic cholecystectomy per all elective cholecystectomies by PCT

2010/11

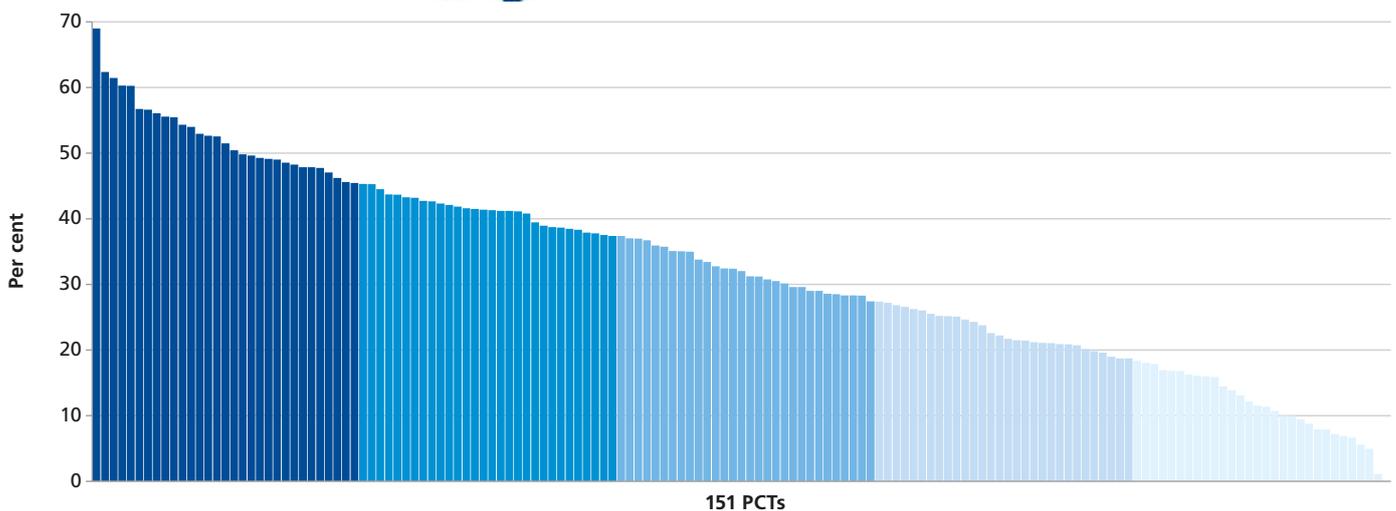
Domain 2: Enhancing quality of life for people with long-term conditions
 Domain 4: Ensuring that people have a positive experience of care



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Day surgery is the management of a surgical procedure in which patient admission, operation and home discharge are completed on the same calendar day according to a planned pathway. Advances in surgical and anaesthetic techniques have resulted in a wider spectrum of procedures that are now feasible as day surgery.

The planned pathway commences in the GP's surgery based on good knowledge of the procedures that can be undertaken as ambulatory care. Patients are referred to a provider with the intention of day-surgery management. There is an expectation that the provider will deliver a quality-assured care process including booking, the period of admission, and follow-up support immediately after home discharge.

Day-surgery rates for many procedures in the British Association of Day Surgery (BADs) *Directory of Procedures*¹ are published on the 'Better Care, Better Values' website.² If all providers in England were to match the performance of those in the upper quartile of day-case surgery rates for this set of procedures, the estimated annual saving could release more than £68 million.²

Originally included in the Audit Commission's "Basket of 25 Procedures",³ elective laparoscopic cholecystectomy has been promoted as suitable for day-case management for over 10 years. In the BADs *Directory of Procedures*, it is estimated that, with an optimised care pathway, up to 60% of patients could be managed on a day-stay basis.¹

Magnitude of variation

For PCTs in England, the percentage of elective adult day-case laparoscopic cholecystectomy per all elective cholecystectomies ranged from 1.1% to 69.0% (62-fold variation).⁴ When the five PCTs with the highest percentages and the five PCTs with the lowest percentages are excluded, the range is 6.9–56.7%, and the variation is eightfold.

Reasons for variation include differences in:

- patient co-morbidities;
- the availability of home carer support.

However, much of the variation is unwarranted due to:

- suboptimal planning of the day-surgery pathway;
- conservative inclusion criteria;
- conservative clinical practices and/or culture.

Options for action

Providers need to evaluate their care pathways for day surgery, and ascertain what level of transformational work might be needed.

Providers of day-surgery services could consider a "Default to Day Surgery" ethos as promoted by the NHS Institute for Innovation and Improvement (see "Resources", "Ten High Impact Changes for Service Improvement and Delivery").

Commissioners need to review their specifications for day-surgery services against the BADs guidelines for day-surgery service commissioning (see "Resources"), and could consider reinforcing a "Default to Day Surgery" ethos using CQUIN payment frameworks (see "Resources").

Commissioners and providers need to collaborate to optimise the care pathway for patients undergoing laparoscopic cholecystectomy using the NHS Institute for Innovation and Improvement guidelines (see "Resources").

RESOURCES

- British Association of Day Surgery. Commissioning Day Surgery. A Guide for Commissioning Consortia. May 2011. <http://www.daysurgeryuk.org/bads/joomla/images/stories/downloads/CommissioningDaySurgery.pdf>
- NHS Institute for Innovation and Improvement. Focus On: Cholecystectomy. 2006. http://www.institute.nhs.uk/option_com_joomcart/Itemid,194/main_page_document_product_info/cPath,71/products_id,186.html
- NHS Institute for Innovation and Improvement. Ten High Impact Changes for Service Improvement and Delivery. http://www.institute.nhs.uk/quality_and_service_improvement_tools/quality_and_service_improvement_tools/day_surgery_-_treat_day_surgery_as_the_norm.html
- PCT guide: http://www.natpact.info/uploads/2004_Oct/HIC_PCTguidefinal.pdf
- CQUIN payment frameworks. http://www.institute.nhs.uk/world_class_commissioning/pct_portal/cquin.html

1 British Association of Day Surgery (2009) *Directory of Procedures*, 3rd edition.

2 <http://www.productivity.nhs.uk/>

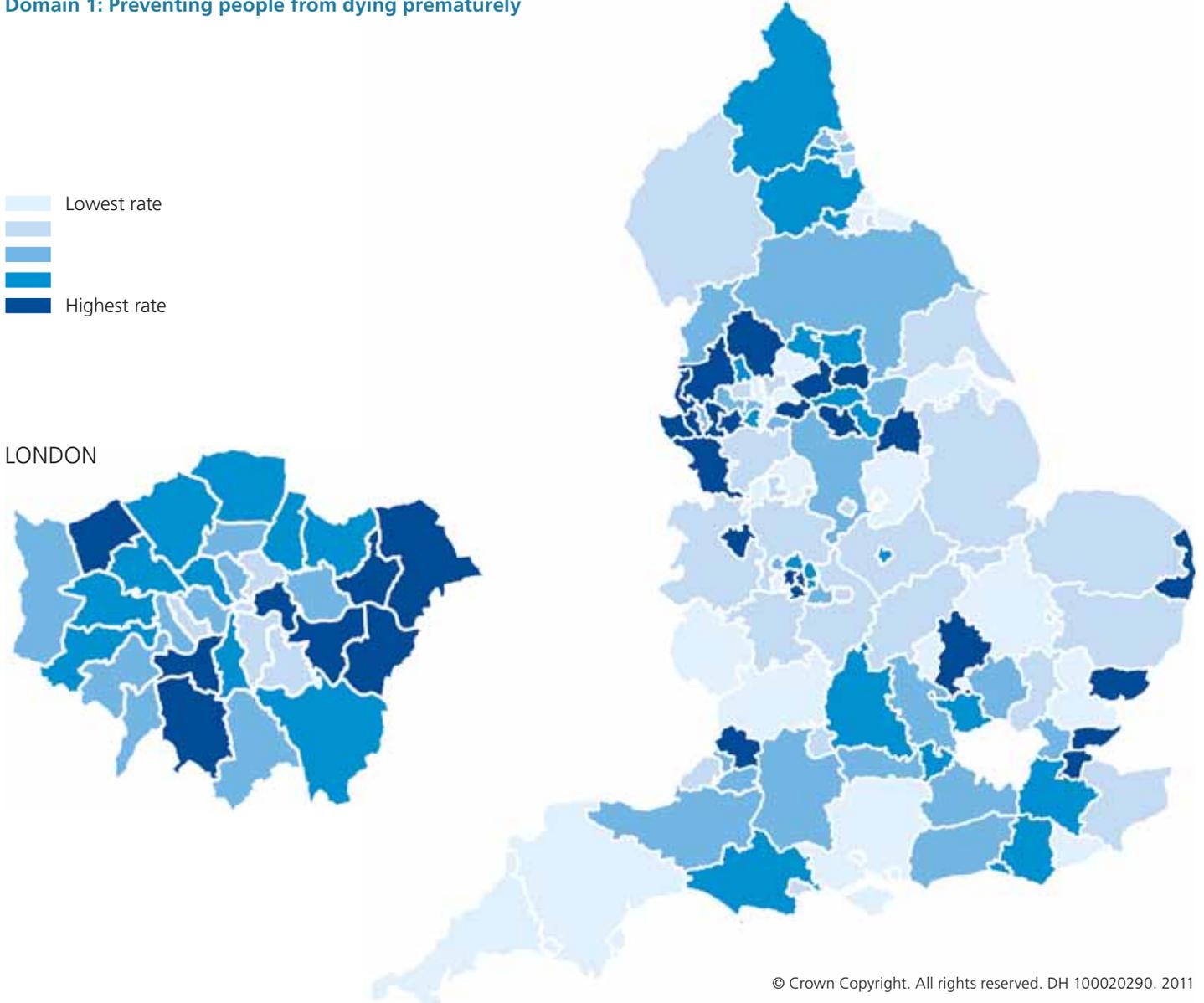
3 <http://www.audit-commission.gov.uk/nationalstudies/health/other/Pages/daysurgery.aspx>

4 Data from one PCT have been removed.

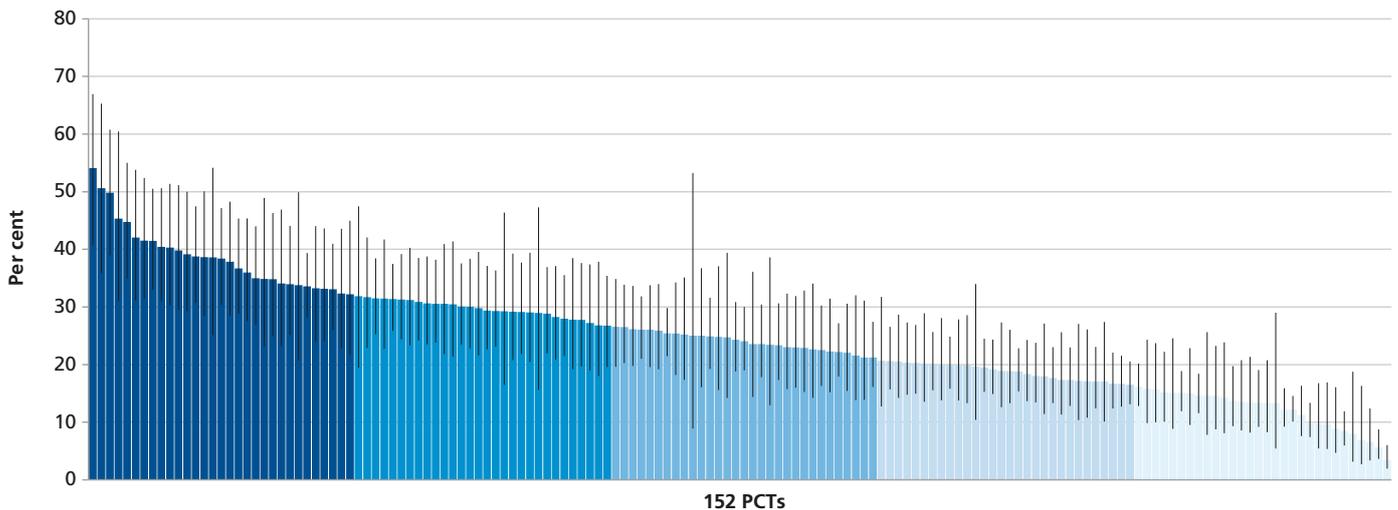
PROBLEMS OF THE GASTRO-INTESTINAL SYSTEM

Map 46: Proportion (%) of admissions attributed to liver disease that are emergency admissions to hospital by PCT 2009/10

Domain 1: Preventing people from dying prematurely



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Over the last 10 years, liver disease has become more evident as a problem. Although there are myriad causes, the rapid rise in presentation and death is related to:

- › Alcohol (see also Map 61);
- › Obesity;
- › Hepatitis B;
- › Hepatitis C.

These are all preventable causes, but if prevention strategies are not implemented or are ineffective, patients will continue to present to secondary care in increasing numbers, which would appear to be the case when considering the data presented for this indicator.

Magnitude of variation

For PCTs in England, the percentage of admissions attributed to liver disease that are emergency admissions ranged from 3.4% to 54.1% (16-fold variation). When the five PCTs with the highest percentages and the five PCTs with the lowest percentages are excluded, the range is 8.5–42.0%, and the variation is fivefold.

Some of the reasons for variation include differences in:

- › Distribution of risk factors for liver disease;
- › Prevalence of liver disease in different populations;
- › The coding of cases.

However, this degree of variation probably includes unwarranted variation due to differences in the organisation and management of care for people with liver disease in local health services.

It is important to note that not everywhere in the country is seeing the same types or volumes of liver disease, nor is there a uniform way of tackling this problem.

Options for action

Although the reasons for variation are not always clear, the purpose of presenting these data is to encourage local civil authorities and NHS organisations to identify whether there is a problem with liver disease and/or its identification and management in the local population when compared with populations in other areas, and if so how it might be addressed.

Preventative strategies for these conditions are important, but will require coordination for effective

implementation. Furthermore, there will be a long lead-in time before any positive health outcomes can be identified.

In the meantime, services need to be organised to address the rising burden of disease.

Action should be focussed on:

1. Conveying information to people about the health of their liver and the causes of damage;
2. Early identification of liver disease and early intervention in primary care;
3. Supporting outreach services – secondary care, where this problem has become concentrated, needs to play its role in the community to help reduce the burden of admission;
4. Effective collaboration among secondary care providers to ensure patients gain access to appropriate expertise and services that can manage their disease;
5. Raising awareness of the scale of the problem of liver disease among professional groups;
6. Skills development in the identification and management of liver disease for healthcare professionals.

Clinical networks are an effective way to coordinate responses to points 3–6.

RESOURCES

- › NICE Guidance CG100. Alcohol-use disorders – physical complications. <http://guidance.nice.org.uk/CG100>
- › NICE Pathway on alcohol-use disorders. <http://pathways.nice.org.uk/pathways/alcohol-use-disorders>
- › NICE Guidance. Obesity. <http://guidance.nice.org.uk/CG43>
- › NICE Guidance in progress. Hepatitis B and C – ways to promote and offer testing. <http://guidance.nice.org.uk/PHG/Wave22/3>
- › NHS Liver Networks. NHS Networks is a free resource dedicated to promote the development of networking in the health service, helping people to share ideas and improve the health service for those who use it and work in it. NHS Liver Networks is a resource providing useful information about liver disease, including the latest Government policy developments on curbing the rising trends in liver disease. To become a member, contact Mushi Rahman: mushi.rahman@dh.gsi.gov.uk



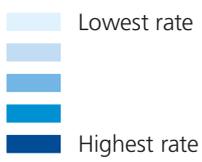
See what Right Care is doing about liver disease on page 32

PROBLEMS OF THE GASTRO-INTESTINAL SYSTEM

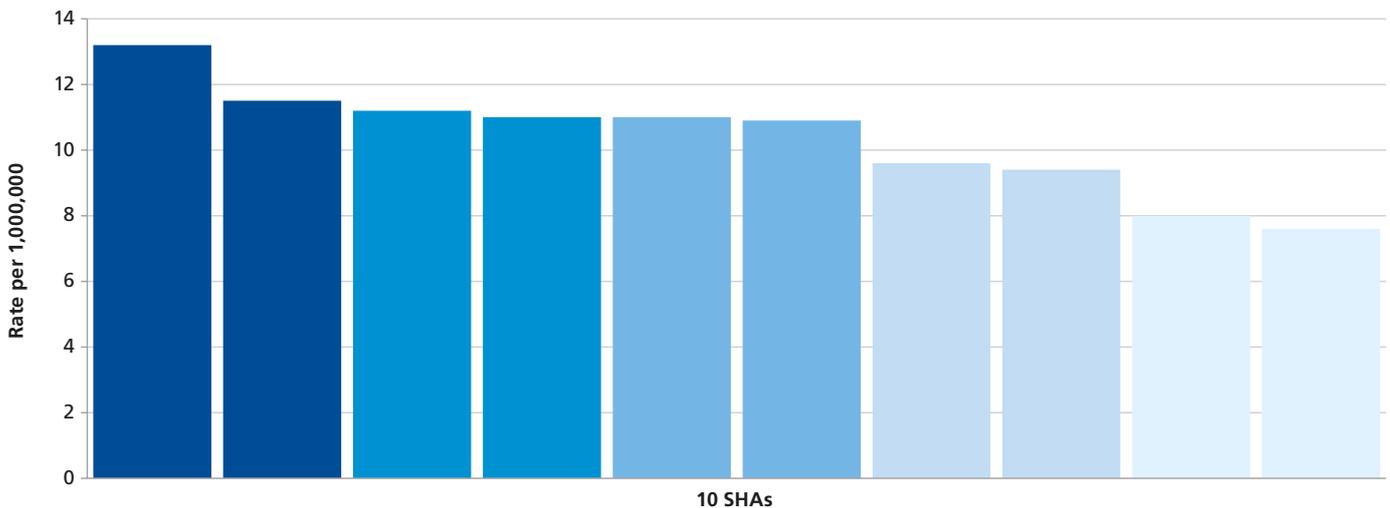
Map 47: Rate of liver transplants from deceased donors per population by SHA

2010/11

Domain 1: Preventing people from dying prematurely



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Liver transplantation is a recognised therapy for patients with end-stage chronic liver disease and for specific patients with sudden acute liver failure and coma. The criteria for selection on to a transplant list have been defined, and are reviewed every year by the Liver Advisory Group at the Organ Donation and Transplantation Directorate at NHS Blood and Transplant (NHSBT).

Approximately 650 liver transplants are performed each year in the UK, in six centres in England and one in Scotland. Of all liver transplants, 14% are undertaken as a “super-urgent” procedure for acute liver failure and other causes; the remainder are elective procedures. Survival following liver transplantation is good, and continues to improve: in recent cohorts, survival at one year was 93.2%.

More patients are being registered for a liver transplant than there are organs available for transplantation. In four years, there has been a 55% increase in registrations with only a 5% increase in liver transplants. Mortality of people on the transplant list while waiting for a transplant is 15%.

Magnitude of variation

For strategic health authorities (SHAs) in England, the rate of liver transplants from deceased donors per million population (pmp) ranged from just under 8 to 13, a variation of 1.6-fold. The highest rate is in the North East SHA.

Variation in the liver transplant rates among SHAs may indicate:

- differences in the prevalence of liver disease;
- variations in the rate of referral to transplant centres;
- differences among centres in the way organs are allocated to recipients on a transplant list.

Options for action

Selection for a transplant list once referred is carefully monitored.

To ensure that individuals in all SHAs have equal access to a transplant centre for prompt assessment of their liver disease, guidelines for referral to a transplant centre are currently being updated by the British Association for the Study of the Liver and the British Society of Gastroenterology, in conjunction with the NHSBT.

NHSBT are also coordinating an attempt to develop a universal allocation process, identical in all transplant centres.

RESOURCES

- Information concerning transplant activity by centre and nationally. <http://www.uktransplant.org.uk/ukt/statistics/statistics.jsp>
- Information concerning the process for allocation of liver donor organs. http://www.uktransplant.org.uk/ukt/about_transplants/organ_allocation/liver/liver.jsp

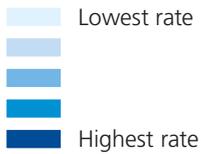
 **See what Right Care is doing about liver disease on page 32**

PROBLEMS OF THE MUSCULO-SKELETAL SYSTEM

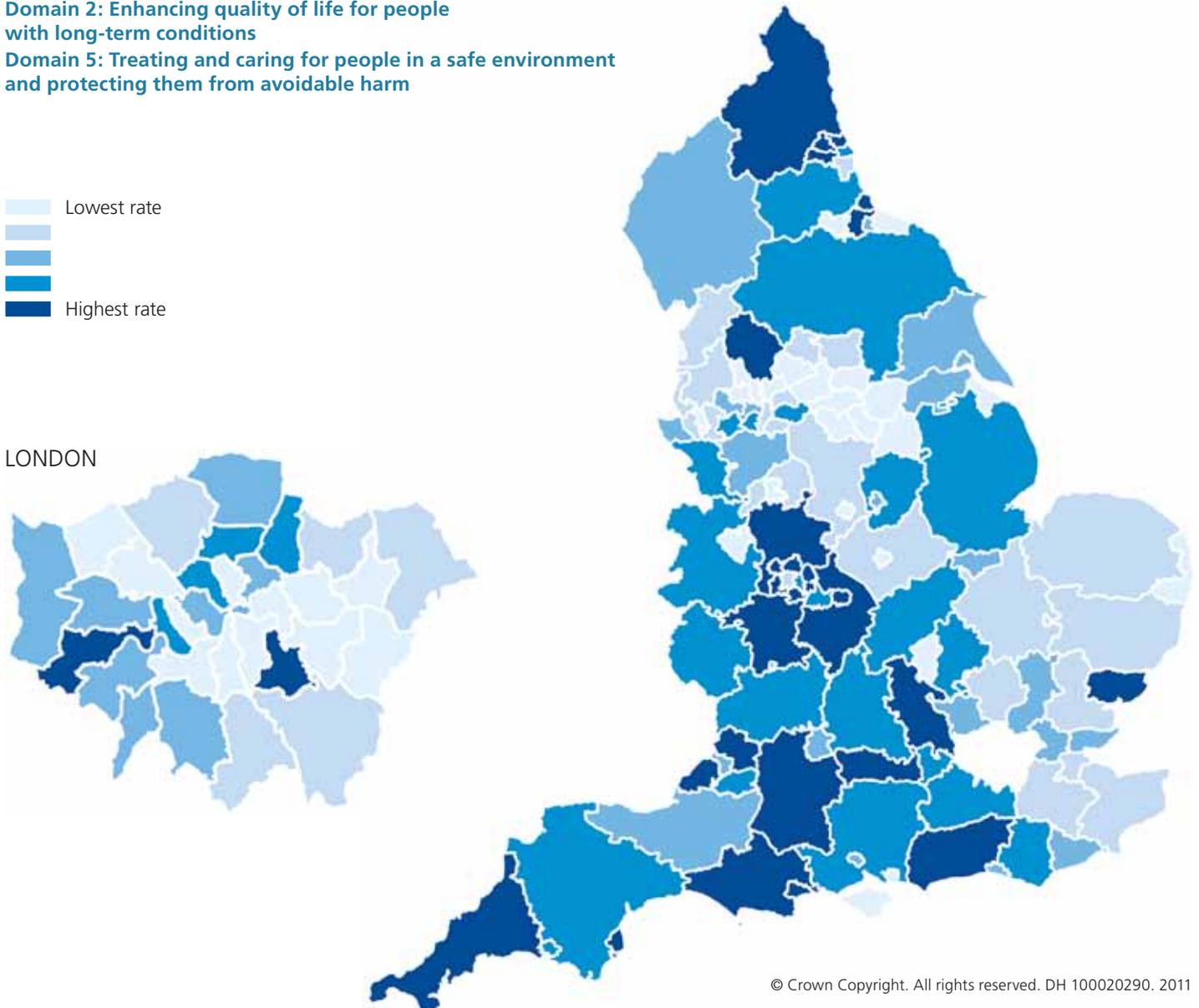
Map 48: Rate of metal-on-metal hip resurfacing procedures undertaken per population by PCT

Directly standardised rate 2009/10

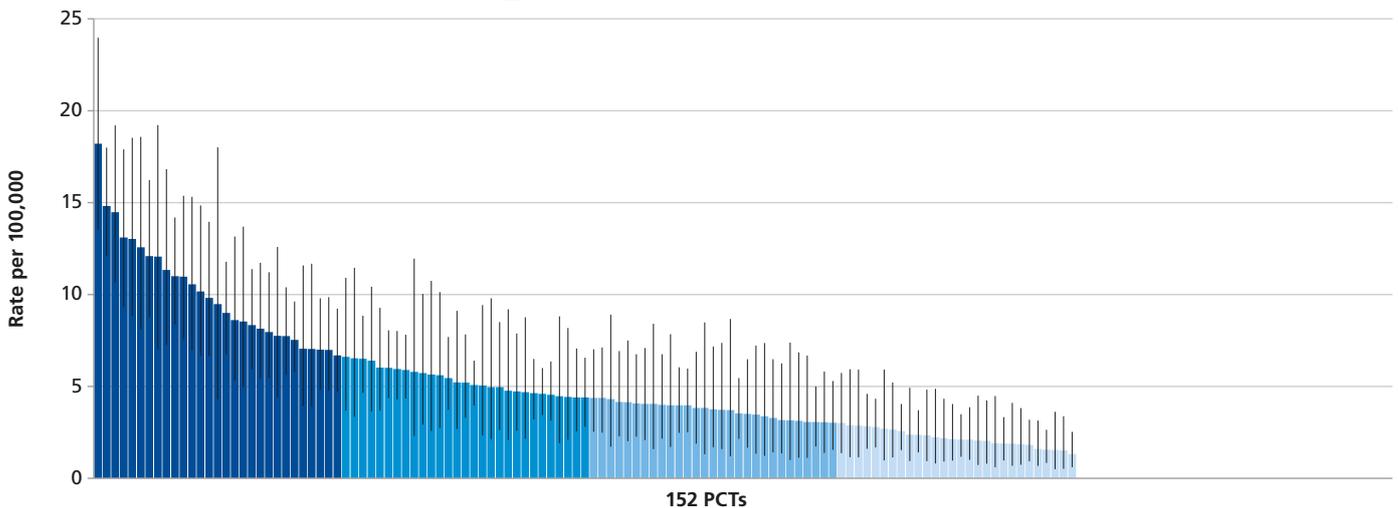
Domain 2: Enhancing quality of life for people with long-term conditions
 Domain 5: Treating and caring for people in a safe environment and protecting them from avoidable harm



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Total hip replacement is the main surgical procedure used to treat degenerative disease of the hip, where cemented or uncemented stemmed femoral prostheses are used in conjunction with a polythene acetabular cap. Although outcomes are good for total hip replacement, there can be problems following the initial procedure, including device dislocation and loosening, and relatively poor outcomes from revision surgery.

Metal-on-metal hip resurfacing was developed 20 years ago. Diseased surfaces of the head of the femur and the acetabulum are removed. A metal cap is placed over the head of the femur, and the acetabulum is lined with a metal cup, forming a pair of bearings.

Hip resurfacing conserves more bone when compared with total hip replacement, and the prostheses were thought to be harder wearing due to the elimination of the polythene cap. Hip resurfacing was considered by some services to be more suitable for younger patients (<65 years of age) with advanced hip disease. Moreover, if the device failed some services thought revision was easier to perform, but there is no strong evidence to support this.

The skills required to undertake this procedure mean it is usually performed in specialist centres where sufficient volumes of patients are treated.

Despite early success with metal-on-metal hip resurfacing, concern exists about:

- long-term survivorship of the implants;
- potential prosthetic degradation and absorption of degradation products.

In the NARA database, the Joint Registry for Denmark, Norway and Sweden, there was a threefold risk of revision for metal-on-metal hip resurfacing implants when compared with total hip arthroplasty, although the risk for men was lower than that for women.¹

In the Australian registry, there was an overall increased failure rate for metal-on-metal hip resurfacing implants when compared with total hip arthroplasty, for all people >65 years, and for women <65 years (men <65 years with primary osteoarthritis had equivalent results).²

In the 8th Annual Report from the National Joint Registry for England and Wales, women were found to be most at risk from poorly performing metal-on-metal hip replacement devices.³

Magnitude of variation

For PCTs in England, the rate of metal-on-metal hip resurfacing ranged from 1.3 to 18.2 per 100,000 population (14-fold variation).⁴ When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 1.8–12.6 per 100,000 population, and the variation is sevenfold.

Despite the decline in the use of metal-on-metal devices from 15% of procedures in 2006 and 2007 to 5% in 2010,³ there is a large degree of variation in the rate across England.

Possible reasons for variation include differences in:

- Local surgical expertise and training;
- Patient preferences.

Options for action

NICE guidance (see “Resources”) states that metal-on-metal hip resurfacing should be performed only by surgeons who have received training in this technique.

Surgeons need to ensure that patients considering treatment options are made aware of the relative lack of information on the medium- to long-term safety and reliability of these prostheses when compared with total hip replacement.

Commissioners and providers need to work together to examine local pathways to ensure that activity reflects local capacity, needs and preferences.

RESOURCES

- NICE. TA44 Hip disease – metal on metal hip resurfacing: guidance. <http://guidance.nice.org.uk/TA44/Guidance/pdf/English>

 **See what Right Care is doing about hip replacement on page 32**

1 Johanson PE, Fenstad AM, Furnes O et al (2010) Inferior outcome after hip resurfacing arthroplasty than after conventional arthroplasty. Evidence from the Nordic Arthroplasty Register Association (NARA) database, 1995 to 2007. *Acta Orthopaedica* 81: 535-541.

2 Corten K, MacDonald SJ (2010) Hip resurfacing data from national joint registries: what do they tell us? What do they not tell us? *Clin Orthop Relat Res* 468: 351-357.

3 <http://www.njrcentre.org.uk/njrcentre/AbouttheNJR/Publicationsandreports/Annualreports/tabid/86/Default.aspx>

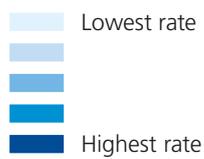
4 Data from 37 PCTs have been removed.

PROBLEMS OF THE MUSCULO-SKELETAL SYSTEM

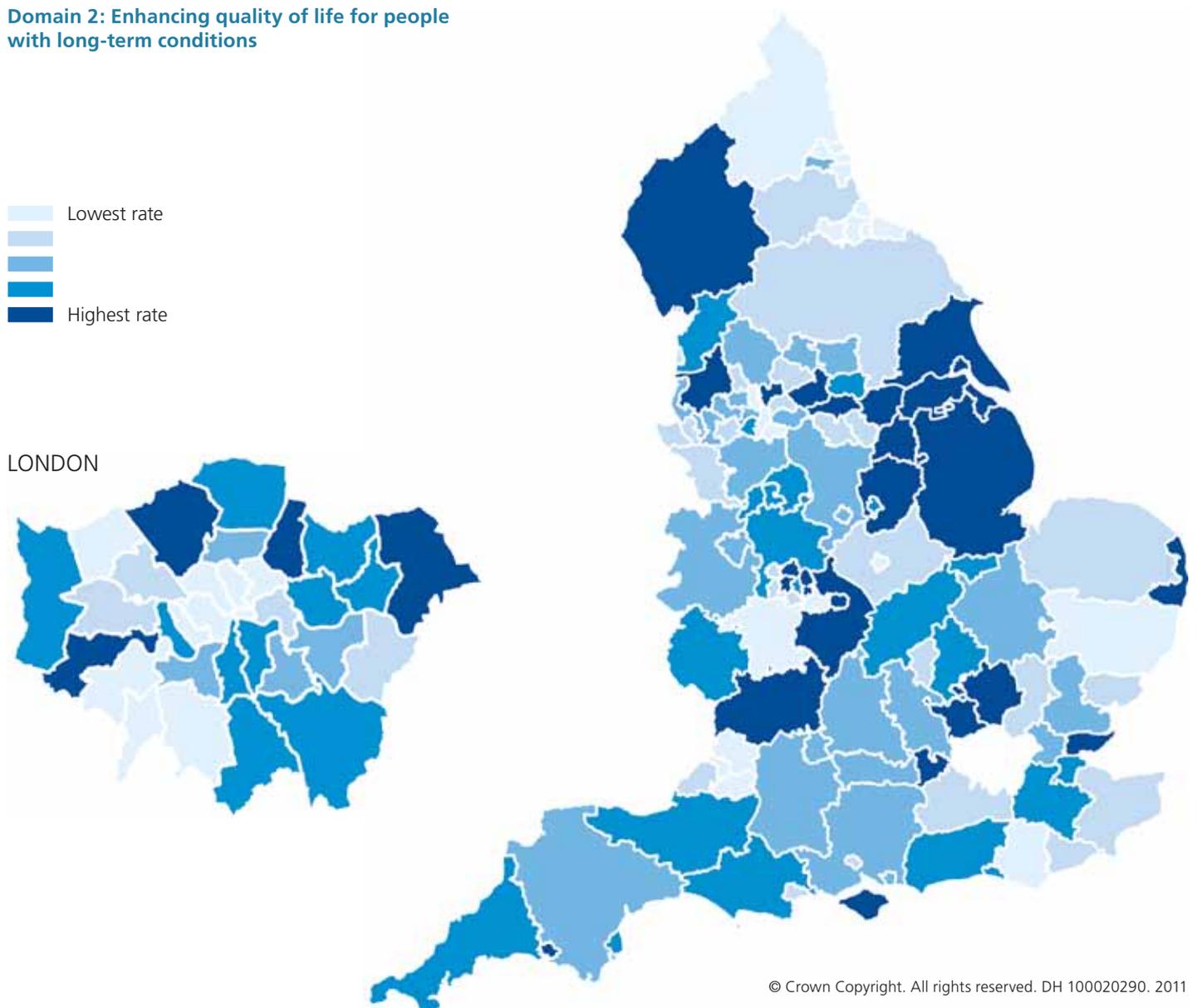
Map 49: Rate of knee washout procedures undertaken per population by PCT

Directly standardised rate 2009/10

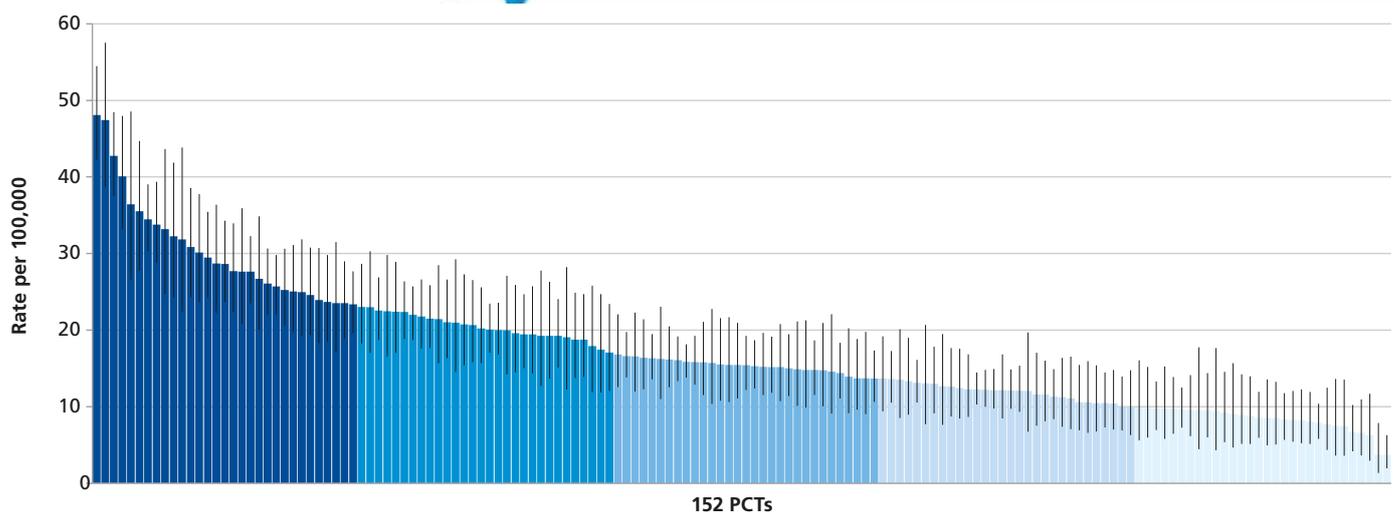
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

The knee washout procedure involves flushing the knee joint with fluid introduced through small incisions in the knee. The procedure is usually undertaken with “debridement” to allow loose debris around the joint to be removed.

NICE (NICE clinical guideline on osteoarthritis, see “Resources”) has recommended that:

- Washout alone should not be used in the treatment for osteoarthritis of the knee;
- Knee washout with debridement should be undertaken only under specific circumstances:

“Referral for arthroscopic lavage and debridement should not be offered as part of treatment for osteoarthritis, unless the person has knee osteoarthritis with a clear history of mechanical locking (not gelling, ‘giving way’ or X-ray evidence of loose bodies).”

Thus, there is a subgroup of patients who could benefit from knee washout with debridement according to criteria of clinical and cost effectiveness.

Magnitude of variation

For PCTs in England, the rate of knee washout procedures undertaken per 100,000 population ranged from 3.7 to 48.1 (13-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 7.5–35.5 per 100,000 population, and the variation is 4.8-fold.

Possible reasons for this variation include differences in:

- the prevalence of obesity, the principal cause of osteoarthritis;
- coding.

However, this degree of variation (almost fivefold) is probably greater than could be explained by the factors outlined above, suggesting there is some unwarranted variation in the rate of knee washout procedures, especially as the circumstances in which it should be performed are well defined and limited to relatively small numbers of patients. For example, some patients who undergo a knee washout procedure on the basis of a “positive” magnetic resonance imaging (MRI) scan do not have any foreign body when the washout is performed. Therefore, the availability and quality of MRI services may play a part in causing unwarranted variation.

Options for action

Commissioners and providers need to develop agreed local pathways for the management of knee pain, which clearly indicate the contribution of MRI assessment and knee washout procedures.

RESOURCES

- NICE guidance: Arthroscopic knee washout, with or without debridement, for the treatment of osteoarthritis (2007). <http://guidance.nice.org.uk/IPG230>
- NICE clinical guidelines: The care and management of osteoarthritis in adults (2008). <http://www.nice.org.uk/cg59>



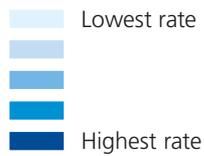
See what Right Care is doing on knee replacement procedures on page 32

PROBLEMS OF THE MUSCULO-SKELETAL SYSTEM

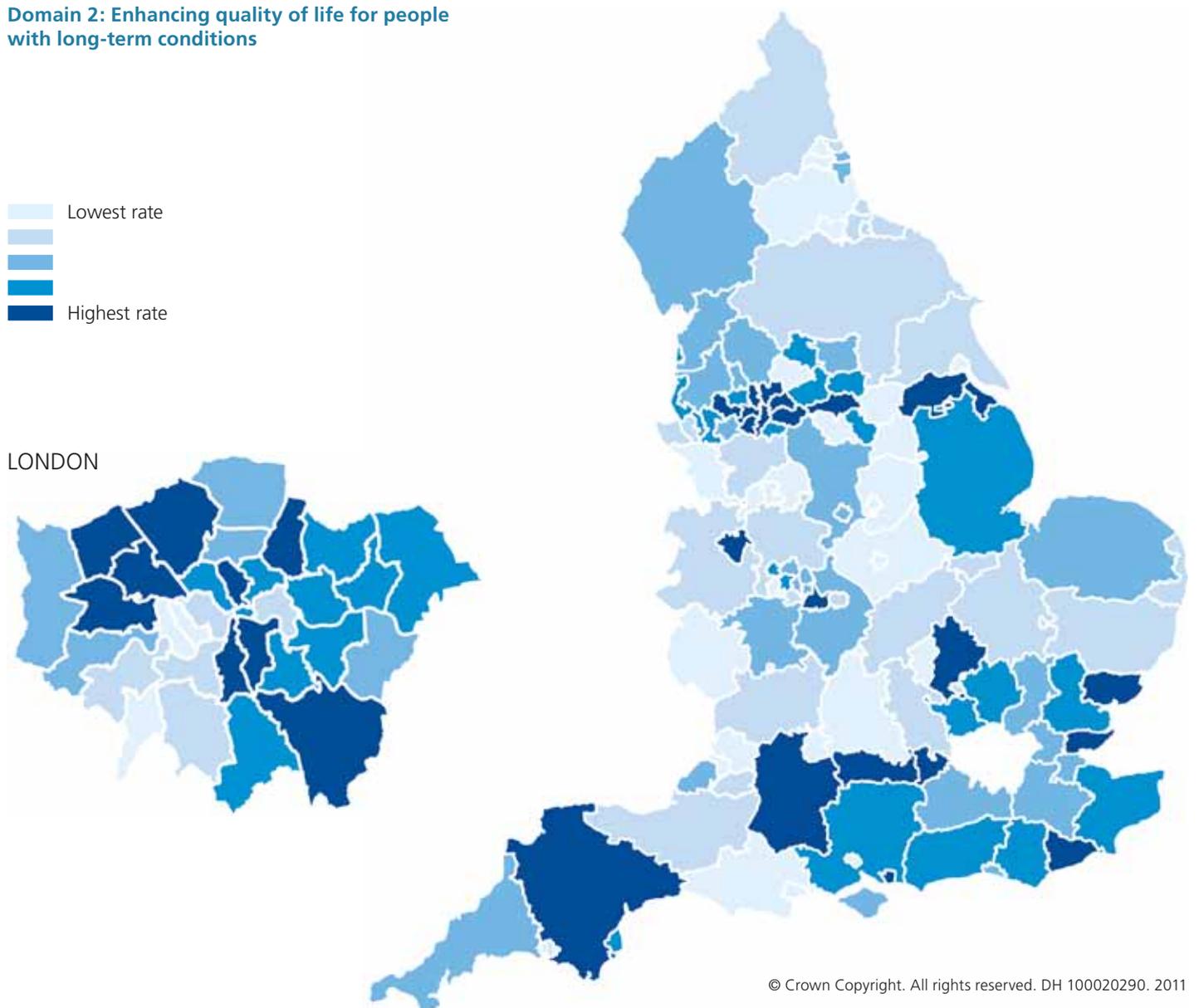
Map 50: Rate of all diagnostic knee arthroscopy procedures undertaken per population by PCT

Directly standardised rate 2009/10

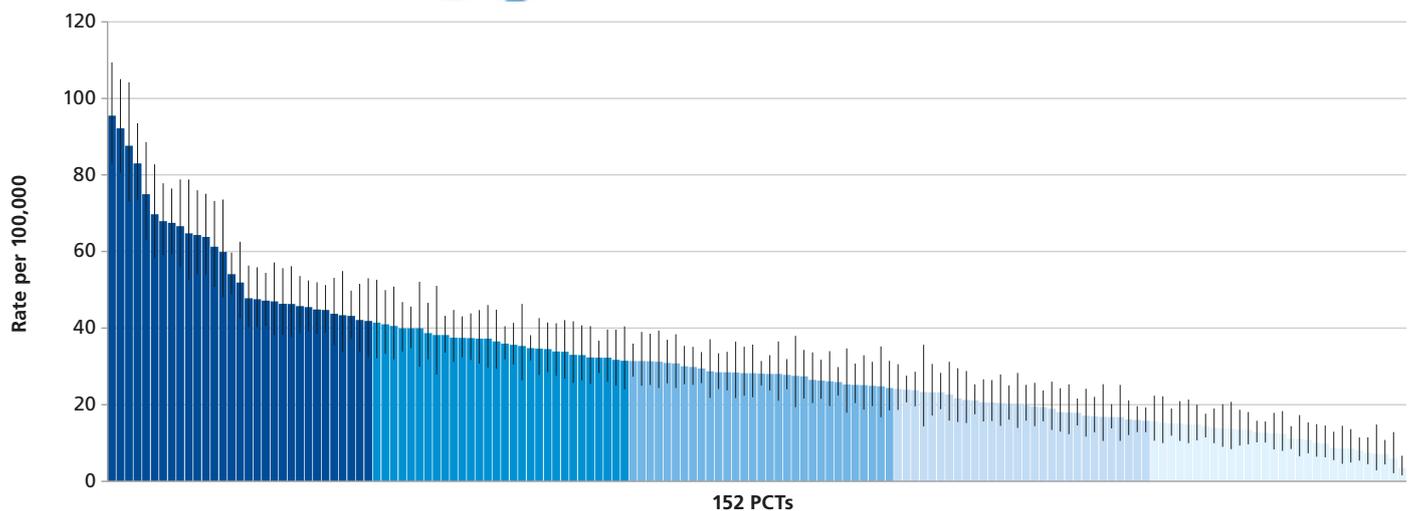
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Arthroscopy is a minimally invasive surgical procedure in which an arthroscope (a type of endoscope) is used to examine the interior of a joint.

Arthroscopy has two uses:

- To diagnose joint problems – this is less common now that magnetic resonance imaging (MRI) is more widely available;
- To repair any damage to the joint.

Arthroscopy can be used to diagnose unexplained joint pain, joint stiffness, joint swelling, and limited range of movement. It can also be used to assess joint damage due to injury or to underlying conditions such as osteoarthritis.

Arthroscopy was first used on the knee joint because it is the most easily accessible joint, and 17 out of every 20 arthroscopies in the UK involve the knee joint. Some of the conditions most frequently found during arthroscopic examination of the knee are:

- inflammation of the lining of the knee (synovitis);
- tears in cartilage (meniscal tears);
- wearing or injury of the cartilage cushion (chondromalacia);
- tears of the anterior cruciate ligament with instability;
- loose pieces of bone and/or cartilage in the joint.

However, MRI or X-ray can also be used to diagnose joint problems, and both are non-invasive, although X-ray is less useful because there is poor correlation between X-ray changes and clinical disability. However, diagnostic knee arthroscopy has been suggested as being of greater value when grading the cartilage for a decision concerning the therapeutic options in patients with osteoarthritis.¹

Magnitude

For PCTs in England, the rate of all diagnostic knee arthroscopy procedures undertaken per 100,000 population ranged from 3.5 to 95.5 (27-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 8.0–69.8 per 100,000 population, and the variation is almost ninefold.

Some of this variation is due to differences in coding. Therapeutic arthroscopy may be coded erroneously as diagnostic arthroscopy. Sometimes, it is lower grades of, or inexperienced, staff who code the procedure, which can result in systematic and substantial errors.

However, despite the potential for errors in coding, there would appear to be some unwarranted variation in the rate of diagnostic knee arthroscopy, especially as the procedure has limited application.

Options for action

Providers need to review coding procedures, and take steps to ensure that knee arthroscopy procedures are coded accurately, especially during coding of diagnostic and therapeutic arthroscopy procedures.

Providers could also consider benchmarking rates of diagnostic knee arthroscopy against those of other providers.

Commissioners and providers need to review all knee arthroscopy activity. If the diagnostic knee arthroscopy rate is high, it is important to identify the reasons for this.

In areas where the diagnostic knee arthroscopy rates are high but therapeutic knee arthroscopy rates are low, this could reflect coding errors.

In areas where both diagnostic and therapeutic knee arthroscopy rates are high, there is probably over-use of diagnostic knee arthroscopy, which should trigger discussion about the reasons for this and the action needed to reduce rates, including identifying an improved care pathway for patients.

If the diagnostic knee arthroscopy rate is low, the possibility of under-use needs to be considered.

Commissioners and providers need to consider diagnostic knee arthroscopy, therapeutic knee arthroscopy (Map 51) and knee washout procedures (Map 49) in the wider context of the management of knee pain, and work together to develop evidence-based pathways localised to address the particular needs of the population.

 **See what Right Care is doing on knee replacement procedures on page 32**

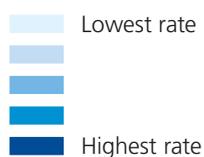
¹ von Engelhardt LV, Lahner M, Klusman A et al (2010) Arthroscopy vs. MRI for a detailed assessment of cartilage disease in osteoarthritis: diagnostic value of MRI in clinical practice. *BMC Musculoskelet Disord* 11: 75.

PROBLEMS OF THE MUSCULO-SKELETAL SYSTEM

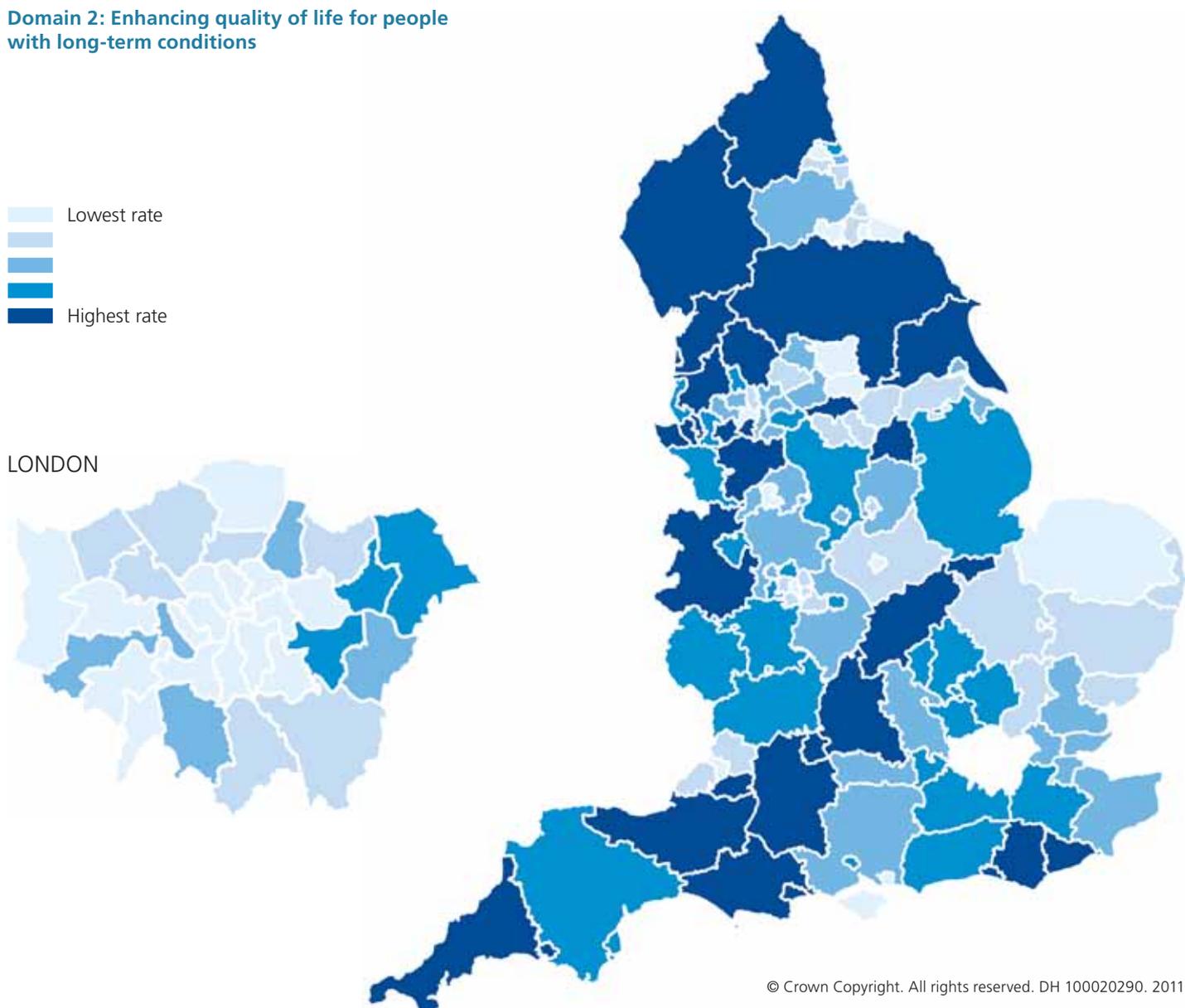
Map 51: Rate of all therapeutic knee arthroscopy procedures undertaken per population by PCT

Directly standardised rate 2009/10

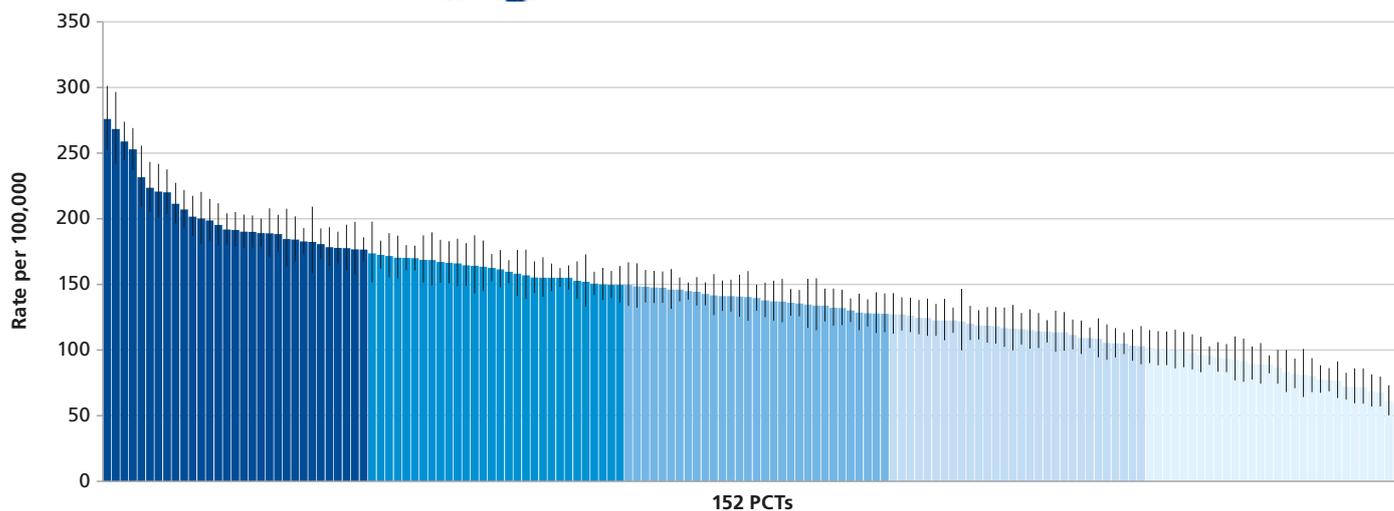
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Arthroscopy is a minimally invasive surgical procedure in which an arthroscope (a type of endoscope) is used to examine the interior of a joint. It is possible to pass surgical instruments through an arthroscope.

Arthroscopy has two uses:

- To diagnose joint problems – this is less common now that magnetic resonance imaging (MRI) is more widely available;
- To repair any damage to the joint.

Arthroscopy can be used:

- To repair damaged cartilage, tendons and ligaments;
- To remove small pieces of bone and/or cartilage loose within the joint;
- To drain excess build-up of synovial fluid;
- To treat problems associated with arthritis;
- To replace ligaments.

Arthroscopy was first used on the knee joint because it is the most easily accessible joint, and 17 out of every 20 arthroscopies in the UK involve the knee joint. Therapeutic knee arthroscopy is used to treat:

- Torn cartilage or meniscal injury;
- Torn cruciate ligaments;
- Early-stage osteoarthritis, by repairing rough and damaged surfaces of the joint and cartilage;
- Arthritis, by removing the inflamed synovial membrane around the joint.

Therapeutic knee arthroscopy is a higher-value intervention than open knee surgery; it is associated with:

- a much lower risk of complications, including a lower risk of infection;
- reduced pain;
- shorter hospital stays;
- quicker recovery times.

Magnitude of variation

For PCTs in England, the rate of all therapeutic knee arthroscopy procedures undertaken per 100,000 population ranged from 59.3 to 276 (4.7-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 71.8–223.6 per 100,000, the variation 3.1-fold.

Some of this variation is due to differences in coding. Therapeutic arthroscopy may be coded erroneously as diagnostic arthroscopy. Sometimes, it is lower grades of, or inexperienced, staff who code the procedure, which can result in systematic and substantial errors.

As with many elective procedures, it is not clear what the “right” rate is, the value of a particular rate being a function of the prevalence of the knee problems in the population, which in turn is a function of the prevalence of obesity and the level of provision of orthopaedic services not only at the present point in time but also in previous years.

Options for action

Providers need to review coding procedures, and take steps to ensure that knee arthroscopy procedures are coded accurately, especially during coding of diagnostic and therapeutic arthroscopy procedures.

Commissioners and providers need to develop agreed local pathways for the management of knee pain. As for all elective surgery procedures, surgical intervention is similar to the tip of an iceberg. Below the water level is a high prevalence of knee pain in the population but the rates of referral by GPs vary. For this reason, it is more effective to commission knee pain pathways than knee operations.



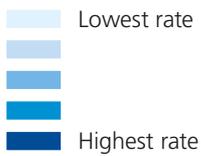
See what Right Care is doing on knee replacement procedures on page 32

PROBLEMS OF THE MUSCULO-SKELETAL SYSTEM

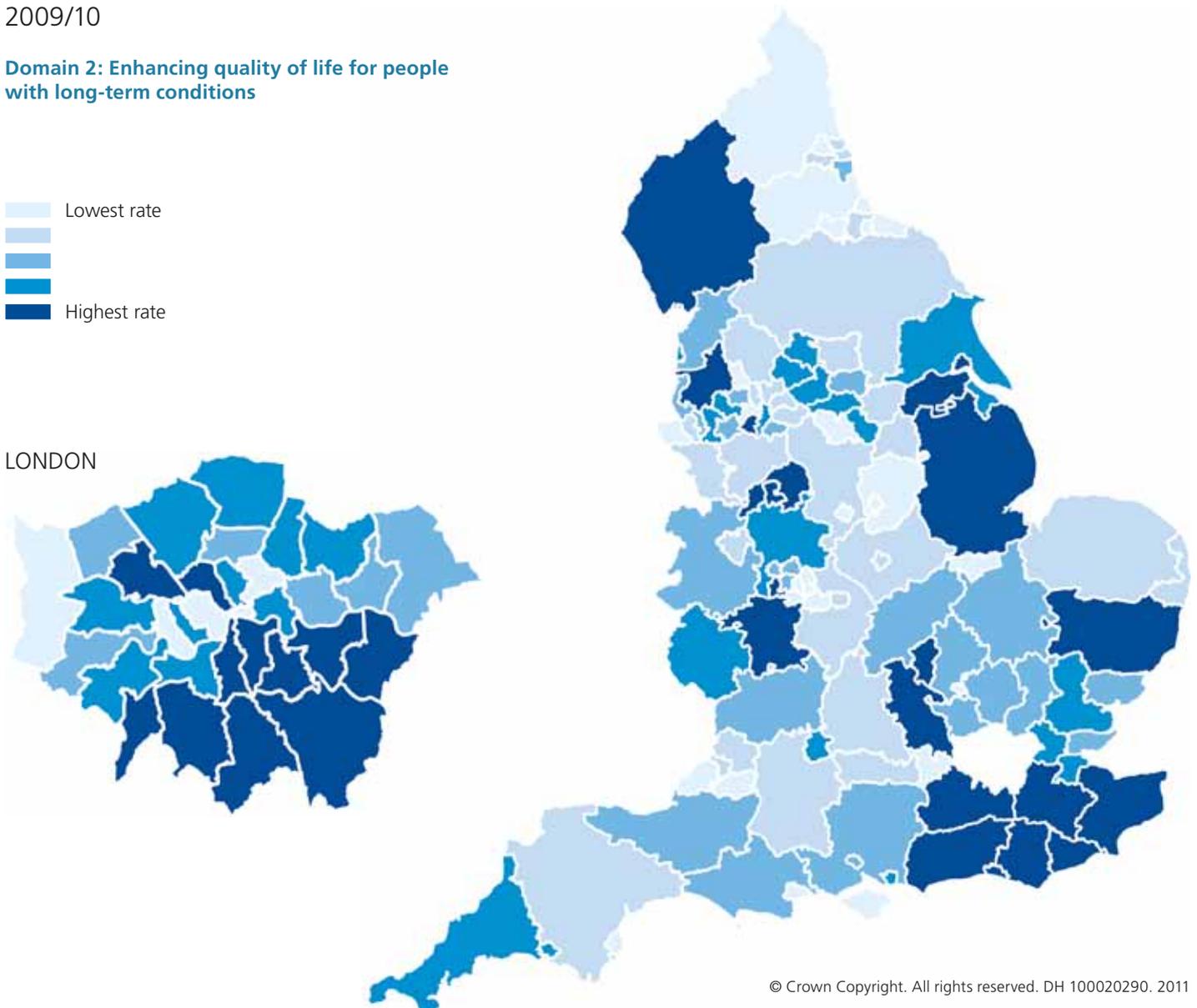
Map 52: Proportion (%) of cementless knee arthroplasty procedures per all knee arthroplasty undertaken in hospital by PCT

2009/10

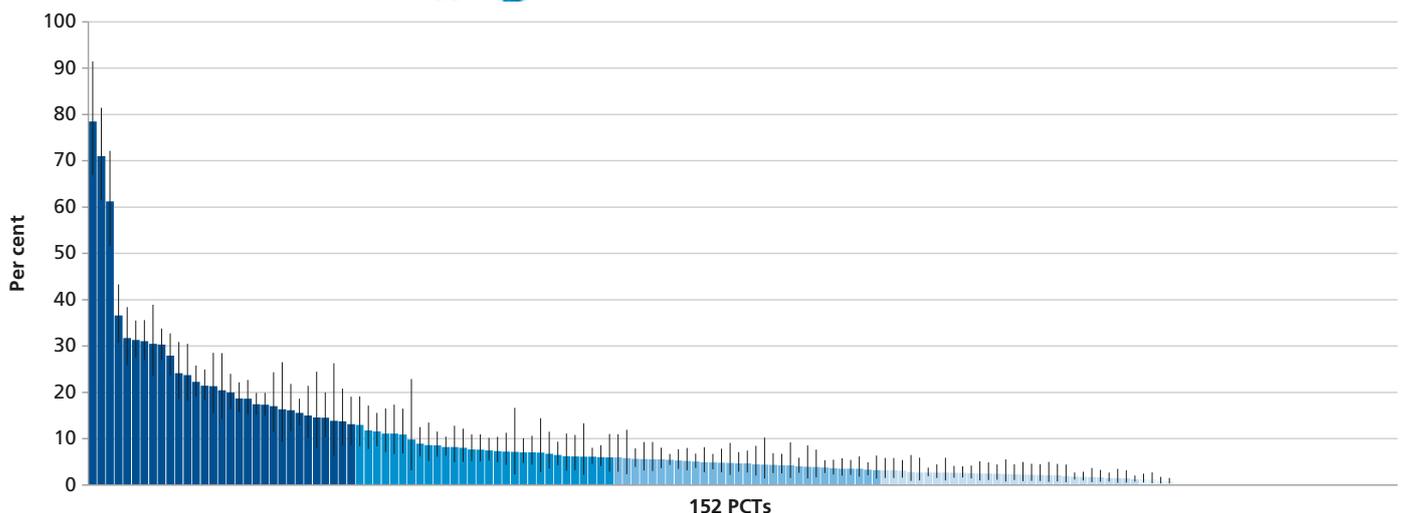
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Knee replacement surgery relieves pain and restores movement in patients suffering from knee pain. There are two types of fixation for knee replacement surgery:

- Cemented, in which a fast-curing bone cement (polymethylmethacrylate) holds the prostheses in place;
- Cementless, which depends upon bone growing into the surface of the prostheses for fixation.

At present, most of the knee replacement procedures undertaken are cemented into place, and prostheses using cemented fixation may last for more than 20 years.

Cemented fixation has been successful in all patient groups for whom total knee replacement is appropriate, including those who are young and active with degenerative disease. However, there is a tendency for cementless fixation to be used in younger, more active patients.

Data from the National Joint Registry for England and Wales show that cementless fixation is similar to cemented fixation with regard to short-term outcomes such as 3-year revision rates.¹

However, there is growing concern about the diffusion of the cementless type of fixation for total knee replacement in surgical practice on the basis of good early results alone and in the absence of evidence of good long-term outcomes. A similar diffusion was seen for cementless fixation of hip prostheses: the early results appeared to be promising, but then technical problems began to occur, and there was a higher rate of revision of hip prostheses with cementless fixation than that for hip prostheses using cemented fixation.

Magnitude of variation

For PCTs in England, the proportion of cementless knee arthroplasty procedures per all knee arthroplasty undertaken in hospital ranged from 0.8% to 78.5% (102-fold variation).² When the five PCTs with the highest percentages and the five PCTs with the lowest percentages are excluded, the range is 1.5–31.3%, and the variation is almost 22-fold.

However, for three-quarters of PCTs, the proportion of cementless knee arthroplasty procedures per all arthroplasty undertaken is ≤10%.

Some of the variation may be due to differences in:

- the prevalence of obesity among PCT populations;
- the clinical characteristics of patients requiring total knee replacement.

It is also likely that coding varies due to inconsistency in recording hybrid operations, in which the femoral component of the prosthesis is inserted without cement and the tibial and patellar components are inserted using cement.

However, it may be that there is some unwarranted variation in the proportion of cementless knee arthroplasty procedures per all knee arthroplasty undertaken as a result of differences in professional opinion and skill.

Options for action

In areas where there is a relatively high proportion of all knee arthroplasty using cementless fixation, commissioners, clinicians and GPs should ascertain the reasons for this, and review whether the balance can be justified in relation to the characteristics and need in the local population.

The relative contribution of these two technologies is not clear, and further research is needed. However, for some technologies, the technology itself is less important in determining outcome than the skill of the surgical team, which may be a function of the number of procedures performed.

Commissioners and providers need to discuss and agree what proportion of cementless knee arthroplasty procedures is right for the local population according to need, and taking into account the capacity and experience of the orthopaedic service to perform this type of joint replacement.

RESOURCES

- National Joint Registry for England and Wales.
<http://www.njrcentre.org.uk/njrcentre/Default.aspx>

 **See what Right Care is doing on knee replacement procedures on page 32**

1 Sibanda N, Copley LP, Lewsey J et al on behalf of the Steering Committee of the National Joint Registry (NJR) for England and Wales (2008) Revision Rates after Primary Hip and Knee Replacement in England between 2003 and 2006. *PLoS Med* 5(9): e179.

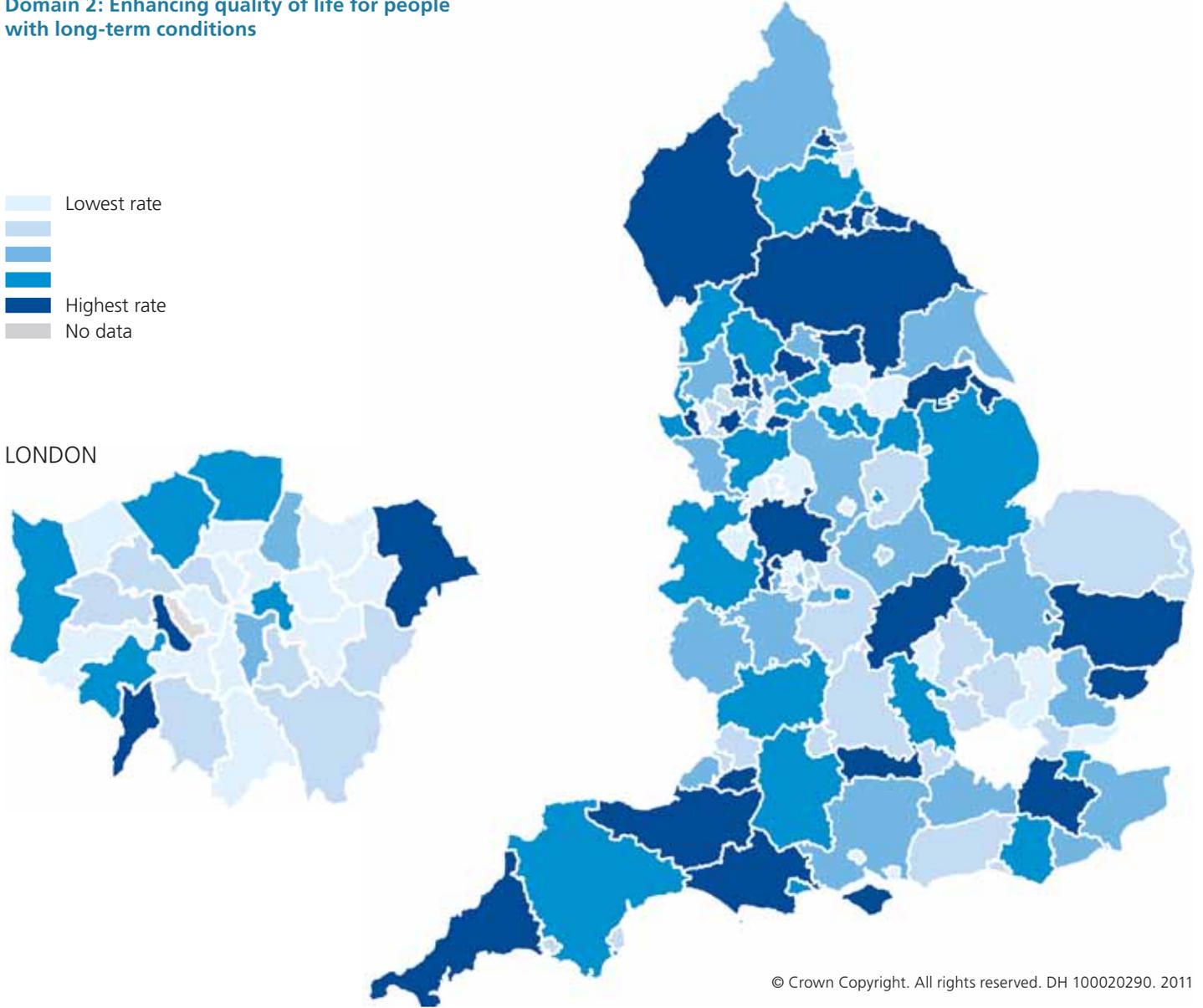
2 Data from 26 PCTs have been removed.

PROBLEMS OF THE MUSCULO-SKELETAL SYSTEM

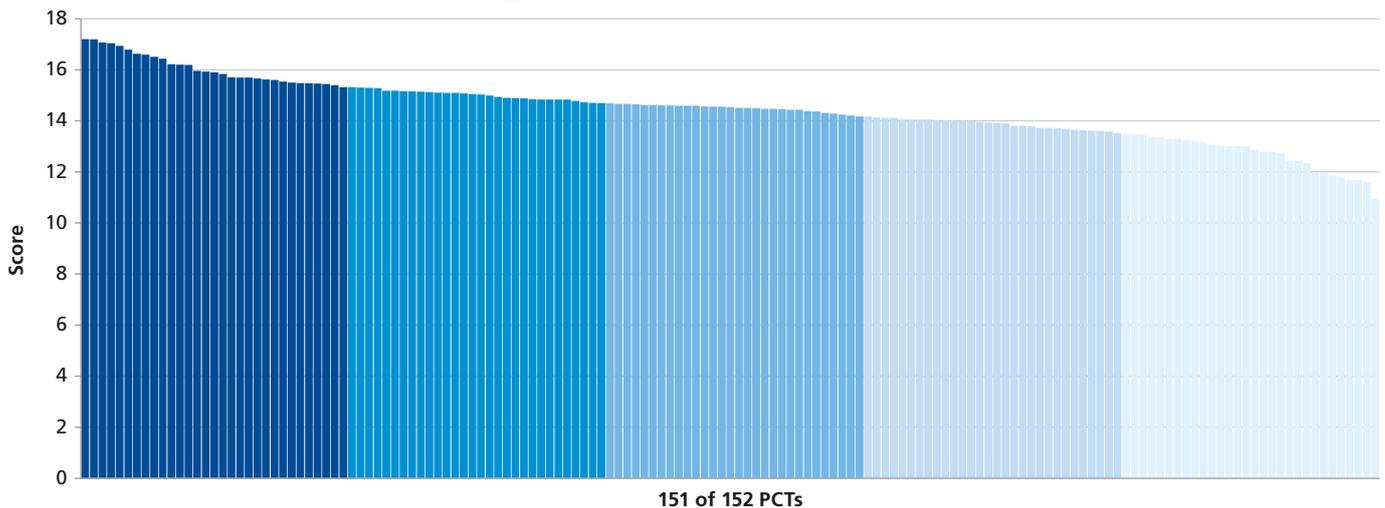
Map 53: Average patient reported health gain (Oxford Knee Score; OKS) from knee replacement procedures by PCT

2009/10

Domain 2: Enhancing quality of life for people with long-term conditions



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

The healthcare revolution of the last 50 years is epitomised by knee and hip replacement, the latter being voted the operation of the 20th century. Hip replacement is a perfect example of NHS innovation, it having been developed by an NHS surgeon, John Charnley, and not by a corporation. Joint replacements have transformed the lives of millions of people.¹ However, these interventions also epitomise the challenge faced by the NHS: need will increase as the population ages, and with the increasing prevalence of obesity.

That these interventions are effective is without dispute, but in future both commissioners and patients will want to know the following about the service that delivers care:

- The proportion of implants that need to be replaced within three years;
- The infection rate.

Commissioners and patients will also want to know that the introduction of any new implant is done as part of an ethically approved research study so that uncertainty about its safety can be resolved. This has not happened in the past, for example, with some metal-on-metal hip resurfacing implants (see Map 48).

Local information about revision rates and infection rates is not available to commissioners or patients at present. All that we have, which is more than that available in many countries, are the patient reported outcome measures (PROMs).

PROMs measure the outcomes of treatment from a patient's perspective, using the results of pre- and post-operative surveys to calculate health gain. PROMs are available for four surgical treatments: hip replacements, knee replacements, hernia and varicose veins. From 1 April 2009, all providers of NHS-funded care are required to collect PROMs for these procedures.

The Oxford Knee Score (OKS) is a short, practical self-completed questionnaire which measures need before and outcome after knee replacement surgery.²

Magnitude of variation

For PCTs in England, the average patient-reported health gain (OKS) from knee replacement procedures ranged from 11.0 to 17.2 (1.6-fold). When the five PCTs with the highest average patient-reported health gain and the five PCTs with the lowest average patient-reported health gain are excluded, the range is 11.9–16.8, and the variation is 1.4-fold.

Possible reasons for variation include:

- The age structure of the population;
- The case-mix of the patients treated – in some services, the people being operated upon could be in poorer health;
- The quality of the service offered, including the quality of information given to patients, which influences their expectations, and their level of post-operative satisfaction.

Options for action

Patients and commissioners need more information about joint replacement, and a better understanding of the information.

Even when the quality of knee or hip replacement is excellent, there will still be a proportion of patients for whom the outcome will not be good and it is essential, in an era in which litigation will probably increase, for every patient to have a full understanding of the risks as well as the benefits of an intervention. For this reason, shared decision-making and patient decision aids are vital.

In this indicator, the information available on patients' perceptions of the outcomes of knee replacement is presented, but the information about outcomes could be improved, and research is required to understand both need and outcome for all elective operations.

 **See what Right Care is doing on hip and knee replacement, and on shared decision-making on page 32 and page 22, respectively**

1 Anderson J, Neery F, Pickstone JV (2007) *Surgeons, Manufacturers and Patients. A Transatlantic History of Total Hip Replacement*. Palgrave MacMillan.

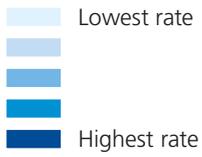
2 <http://web.jbjs.org.uk/cgi/reprint/80-B/1/63.pdf>

PROBLEMS OF THE GENITO-URINARY SYSTEM

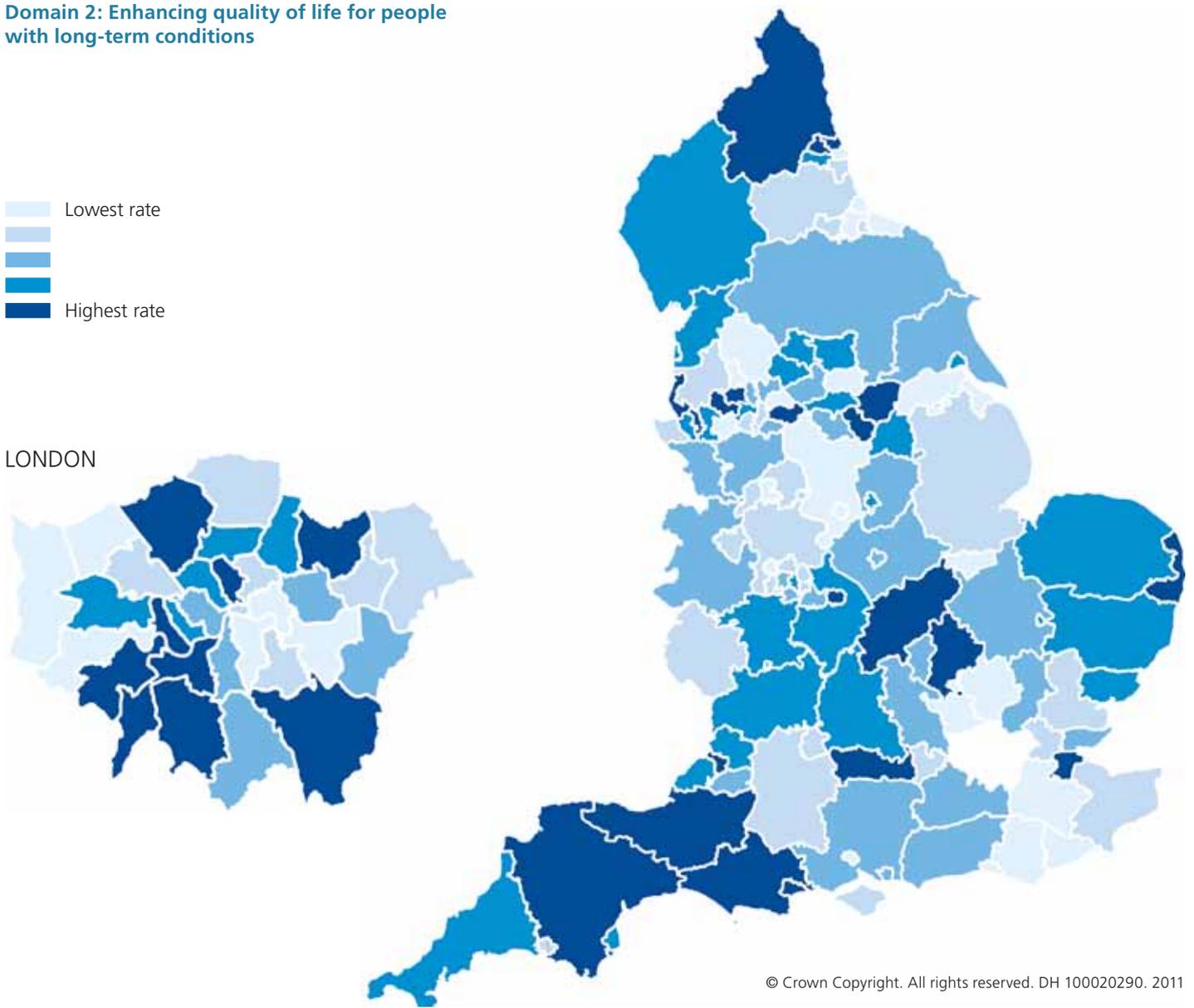
Map 54: Rate of urodynamic (pressures and flows) tests undertaken per population by PCT

2010

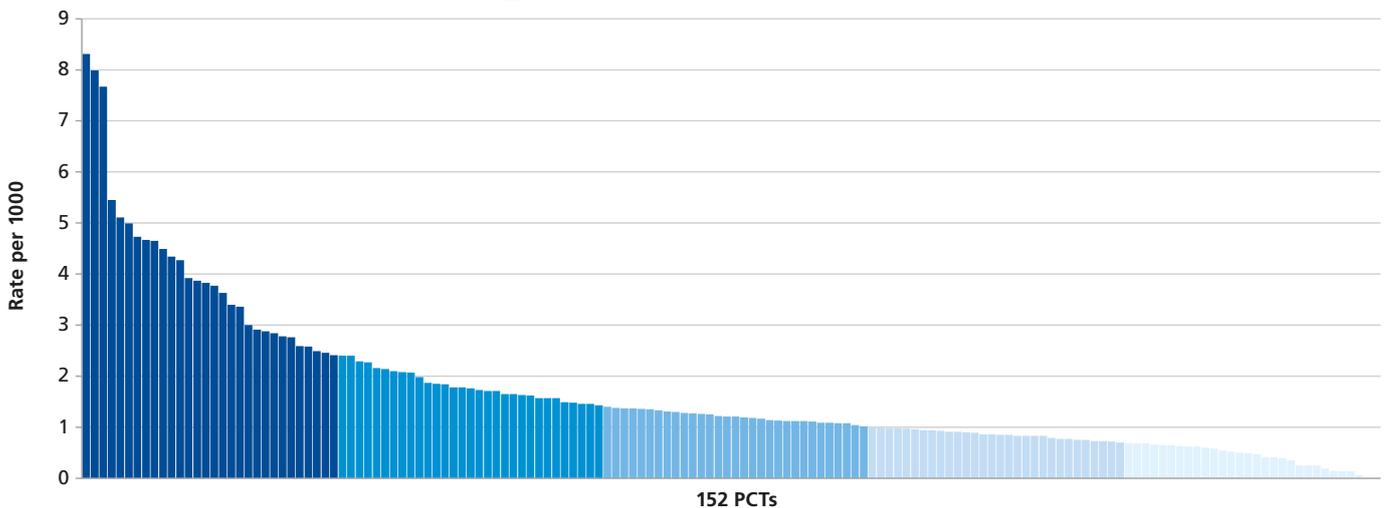
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

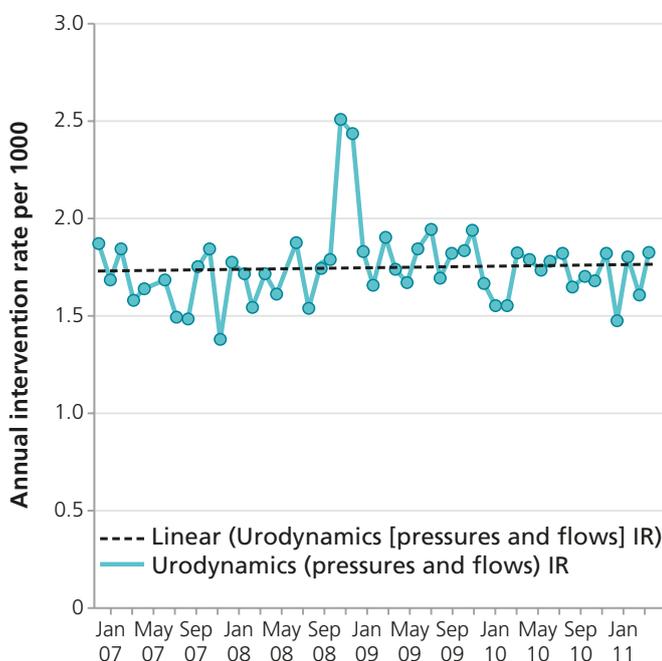
Urodynamics is an umbrella term, and predominantly involves the measurement of pressure and flow. It allows the clinician to determine what physical factors are involved in bladder disorders. This is important, for example, in the diagnosis of different types of incontinence for which there are different indicated treatments. This allows the patient to be offered the optimal therapy. The largest group of patients who undergo urodynamics tests are men with bladder outlet obstruction and women with incontinence. The underlying conditions that require urodynamics tests are more prevalent in older people.

There has been a small increase of 2.8% in the rate of urodynamics (pressures and flows) testing over the last four years (see Figure 54.1).

The current average rate of testing of 1.7 tests per 1000 population is thought to be appropriate for the prevalence and incidence of key conditions. However, as the population ages, need is likely to increase which may lead to an increase in the rate of testing over the long term, broadly in line with the proportion of the population over 60 years of age. Within the next 10 years, it is expected that the number of people over 60 years of age will have increased by around 20%.

Data are taken from DM01, which collects data only on standard urodynamics tests (cystometry and video urodynamics) and not on a more specialised test known as uroflowmetry (free flow rate).

Figure 54.1: Annual intervention rate (IR) for urodynamic (pressures and flows) tests by month from January 2007 to March 2011



Magnitude of variation

For PCTs in England, the rate of urodynamic tests undertaken per 1000 population ranged from 0.01 to 8.3 (831-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 0.2–5.0 per 1000 population, and the variation is 33-fold.

Reasons for the variation in the rate of urodynamic tests are:

- Population demographics – areas with a higher proportion of older people will have higher rates of testing;
- Presence of a large spinal injury unit – areas with or near such units have high rates of testing;
- Availability of departments and appropriate staff, for example, areas with or near a tertiary centre for continence have rates of testing above average, and in some organisations the number of tests performed each month can often be explained by the presence of key members of staff;
- Lack of national guidelines on which diagnostic tests are performed in patients with bladder outlet obstruction and incontinence.

Options for action

At present, there are few guidelines about where and how the urodynamics (pressures and flows) tests should be used. It is important that improved professional guidelines and/or agreements on local pathways and models of care are developed urgently.

Commissioners need to ensure equity of access to services. It is possible that basic urodynamics tests could be easily and more conveniently carried out in primary care, and this could be investigated where it has the potential to increase patient access and reduce unwarranted variation.

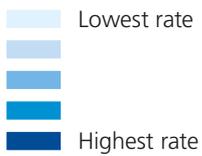
Commissioners and providers should consider developing local models and pathways for how urodynamics tests are used in key diagnostic and treatment pathways.

PROBLEMS OF THE GENITO-URINARY SYSTEM

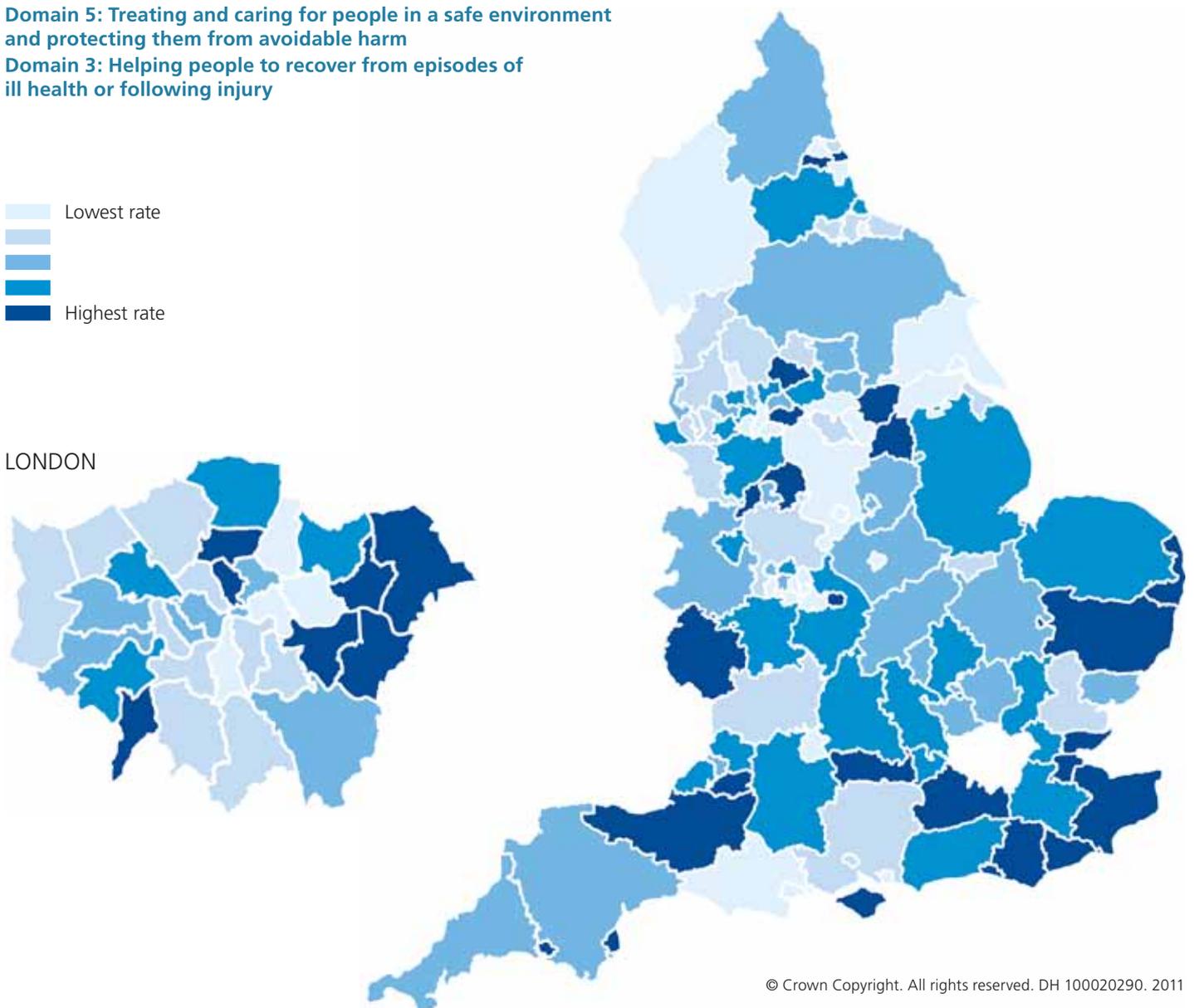
Map 55: Rate of admissions for acute kidney injury (AKI) per all emergency admissions to hospital by PCT

2009/10

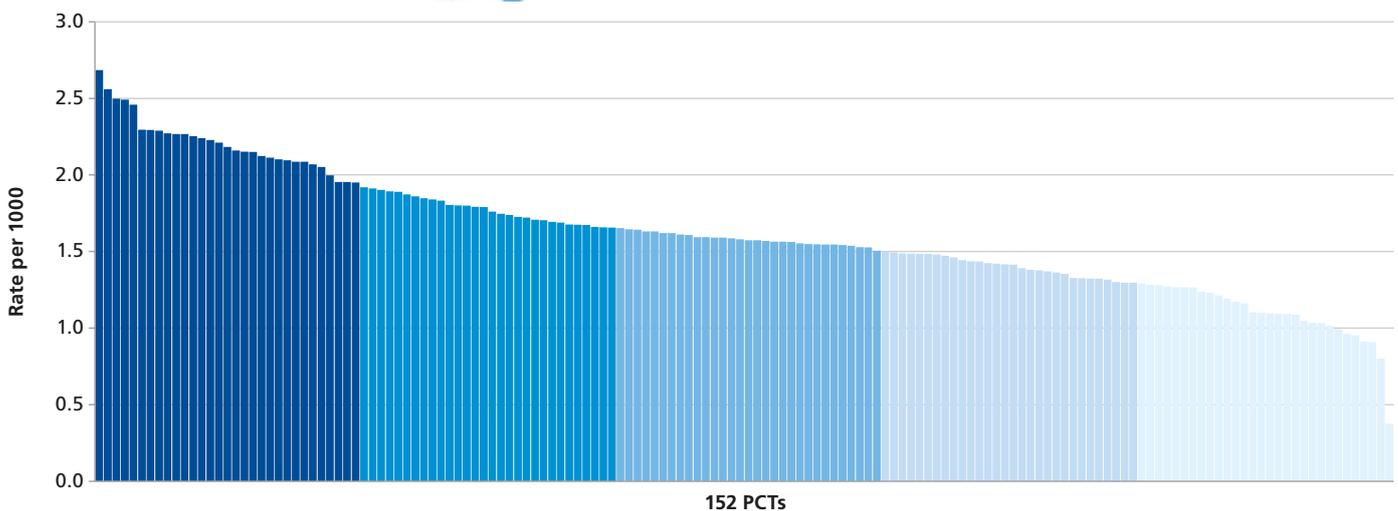
Domain 5: Treating and caring for people in a safe environment and protecting them from avoidable harm
 Domain 3: Helping people to recover from episodes of ill health or following injury



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Acute kidney injury (AKI), also known as acute renal failure, is a medical emergency characterised by the loss of kidney function over hours or days. It is very common, affecting up to 20% of people who are admitted to hospital as an emergency.¹ Older people and people with long-term conditions, such as chronic kidney disease or heart failure, are particularly at risk.

Acute kidney injury is usually the result of illness elsewhere in the body, such as pneumonia or dehydration. Good management of acute illness can prevent AKI in up to 30% of cases.² Early recognition and treatment can prevent progression to more severe stages of AKI. The consequences of AKI can be serious: the mortality rate for severe AKI is up to 50%,³ and survivors may have permanent damage or need lifelong renal replacement therapy.

Management of AKI is resource intensive, costing the NHS £600 million per annum and adding 4.7 days to the mean length of stay.⁴

Admissions attributed to AKI have been rising in recent years,⁴ possibly as a result of increasing awareness, although the results of epidemiological studies show rising prevalence of this condition.

Magnitude of variation

For PCTs in England, the rate of admissions attributed to AKI per all emergency admissions to hospital ranged from 0.4 to 2.7 per 1000 (7-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 1.0-2.3 per 1000, and the variation is 2.4-fold.

This degree of variation could reflect:

- the distribution of AKI risk factors, such as diabetes or chronic kidney disease;
- levels of awareness of AKI and subsequent coding of cases;
- the organisation and management of care for people who are acutely unwell in local healthcare services.

It is recognised that the majority of AKI cases go unrecorded, and so the data for this indicator represent only a fraction of the total burden of AKI on populations and health services.

Options for action

Reducing variation in AKI admissions depends on improving awareness and coding, and focusing on improving the quality and safety of acute care.

For commissioners, it is important:

- to implement an acute care CQUIN (see "Resources", NHS Kidney Care AKI Resource Pack);
- to ensure that the AKI care pathway is defined in every setting where people with acute illness are managed;
- to include tackling AKI in QIPP plans.

For clinicians, it is important to focus on improving the basic care of the acutely unwell including:

- recognising illness severity and deterioration;
- prompt resuscitation;
- timely management of infection and sepsis;
- safe prescribing;
- careful attention to hydration and nutrition.

It is also vital to agree protocols for the referral and safe transfer of patients with AKI.

For managers, it is important:

- to implement an electronic system of AKI alerts in laboratory reporting systems;
- to audit AKI outcomes and quality of care;
- to implement the National Confidential Enquiry into Patient Outcome and Death (NCEPOD) recommendations on AKI (see "Resources").

RESOURCES

- NHS Kidney Care AKI Resource Pack, including audit tools, example protocols, guidelines and CQUIN schemes. http://www.kidneycare.nhs.uk/_Ourworkprogrammes-AcuteKidneyInjury-ToolstoHelpYou.aspx
- National Confidential Enquiry into Patient Outcome and Death (NCEPOD) report into AKI, including recommendations and guidance. <http://www.ncepod.org.uk/2009aki.htm>
- Renal Association Clinical Guidelines on Acute Kidney Injury. <http://www.renal.org/Clinical/GuidelinesSection/AcuteKidneyInjury.aspx>
- NICE Guidance. Acutely ill patients in hospital. <http://www.nice.org.uk/CG50>

This indicator is from the Kidney Care Themed Atlas

1 Uchino S, Bellomo R, Goldsmith D, Bates S, Ronco C (2006) An assessment of the RIFLE criteria for acute renal failure. *Critical Care Medicine* 34: 1913–17.

2 Stevens PE, Tamimi NA, Al Hasani MK, et al (2001) Non-specialist management of acute renal failure. *Quarterly Journal of Medicine* 94: 533–540.

3 Waikar S, Liu K, Chertow G (2008) Diagnosis, Epidemiology and Outcomes of Acute Kidney injury. *Clin J Am Soc Nephrol* 3: 844–861.

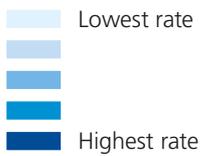
4 <http://www.hesonline.nhs.uk>

PROBLEMS OF THE GENITO-URINARY SYSTEM

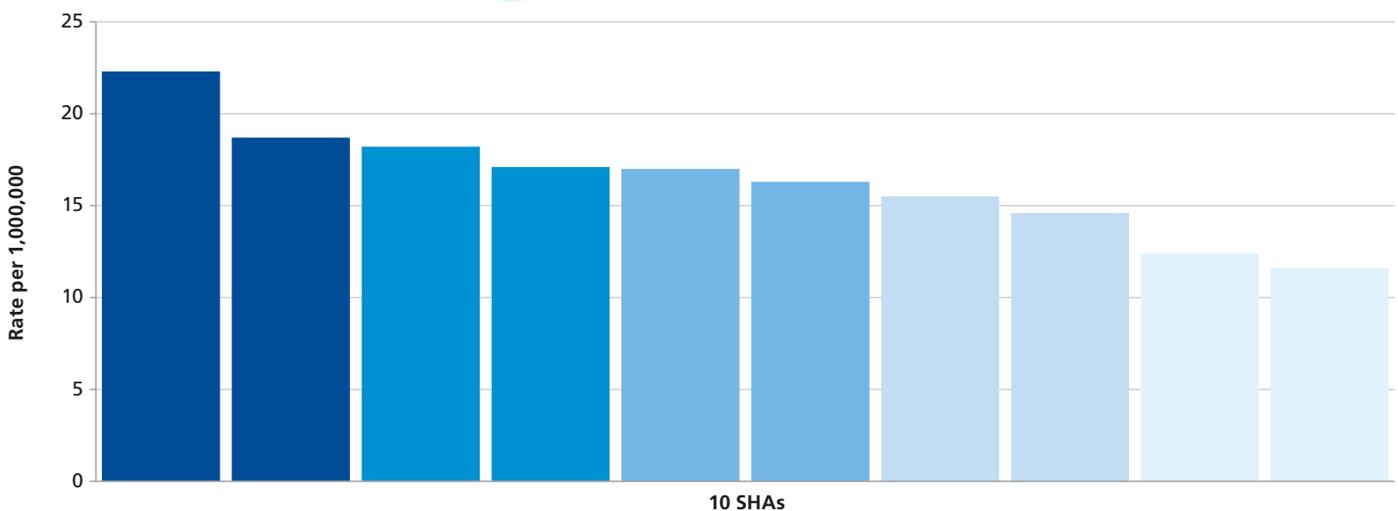
Map 56: Rate of kidney transplants from living donors per population by SHA

2010/11

Domain 1: Preventing people from dying prematurely
 Domain 2: Enhancing quality of life for people with long-term conditions



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Organ transplantation is the preferred form of therapy for many patients with end-stage kidney failure. In the UK in 2010/11, the number of people on the kidney transplant list fell by 4% from 7183 to 6871. However, the number of people waiting represents 111 patients per million population (pmp), and the number registered on the active transplant list at 31 March 2011 to receive a kidney or a kidney and pancreas transplant has increased by 38% since 2002.

Of the patients on the waiting list:

- 24% are transplanted within one year;
- 65% are transplanted within 5 years.

For an adult, the median waiting time for a kidney transplant is 1153 days, just over three years.

The number of living donor transplants performed has increased markedly over the last 10 years, and, despite a fall of 2% in living donor kidney transplants in 2010/11, living donation represents more than one-third of the total kidney transplant programme, and is integral to saving people's lives. The overall rate of kidney transplants from living donors for England in 2010/11 was 16.5 pmp.

There are three types of living donation:

- Directed living donation to relatives or friends, which represent the vast majority of living donations;
- Non-directed living donation, also known as altruistic donation, where a person donates a kidney to a stranger through the national matching and allocation system for kidneys from deceased donors;
- Paired/pooled living donation where an incompatible donor/recipient couple is paired anonymously with another couple in the same situation to exchange suitably matched organs between couples.

From January 2012, the National Living Donor Kidney Sharing Schemes (NLDKSS) will also include altruistic donor chains, where a non-directed living donor has an opportunity to donate into the paired/pooled scheme to generate a chain of transplants, with the last donation being to a recipient on the national transplant list.

The data for this indicator are from NHS Blood and Transplant (NHSBT).

Magnitude of variation

For SHAs in England, the rate of kidney transplants from living donors ranged from 11.6 to 22.3 pmp, a variation of almost twofold (1.9-fold).

Reasons that explain some of the variation include differences in:

- Demography;
- The prevalence of kidney disease;
- Local attitudes towards living donation.

Much of the variation is likely to be due to differences in:

- referral practice to transplant centres;
- practices within transplant centres.

Options for action

NHSBT have developed a strategic plan for living kidney donor transplantation that aims to promote continued expansion in this type of kidney transplantation, ensuring consistency of practice and the highest standards of donor care and safety.

Commissioners and providers need to ensure that they are implementing national guidelines and protocols to maximise living kidney donation.

RESOURCES

- NHS Blood and Transplant (NHSBT). Information on transplant activity by centre and nationally. <http://www.uktransplant.org.uk/ukt/statistics/statistics.jsp>
- NHSBT. Information on the process of allocation of living kidney donor organs. [http://www.organdonation.nhs.uk/ukt/about_transplants/organ_allocation/kidney_\(renal\)/living_donation/living_donation.jsp](http://www.organdonation.nhs.uk/ukt/about_transplants/organ_allocation/kidney_(renal)/living_donation/living_donation.jsp)
- NHSBT Potential Donor Audit (PDA). http://www.uktransplant.org.uk/ukt/statistics/potential_donor_audit/potential_donor_audit.jsp

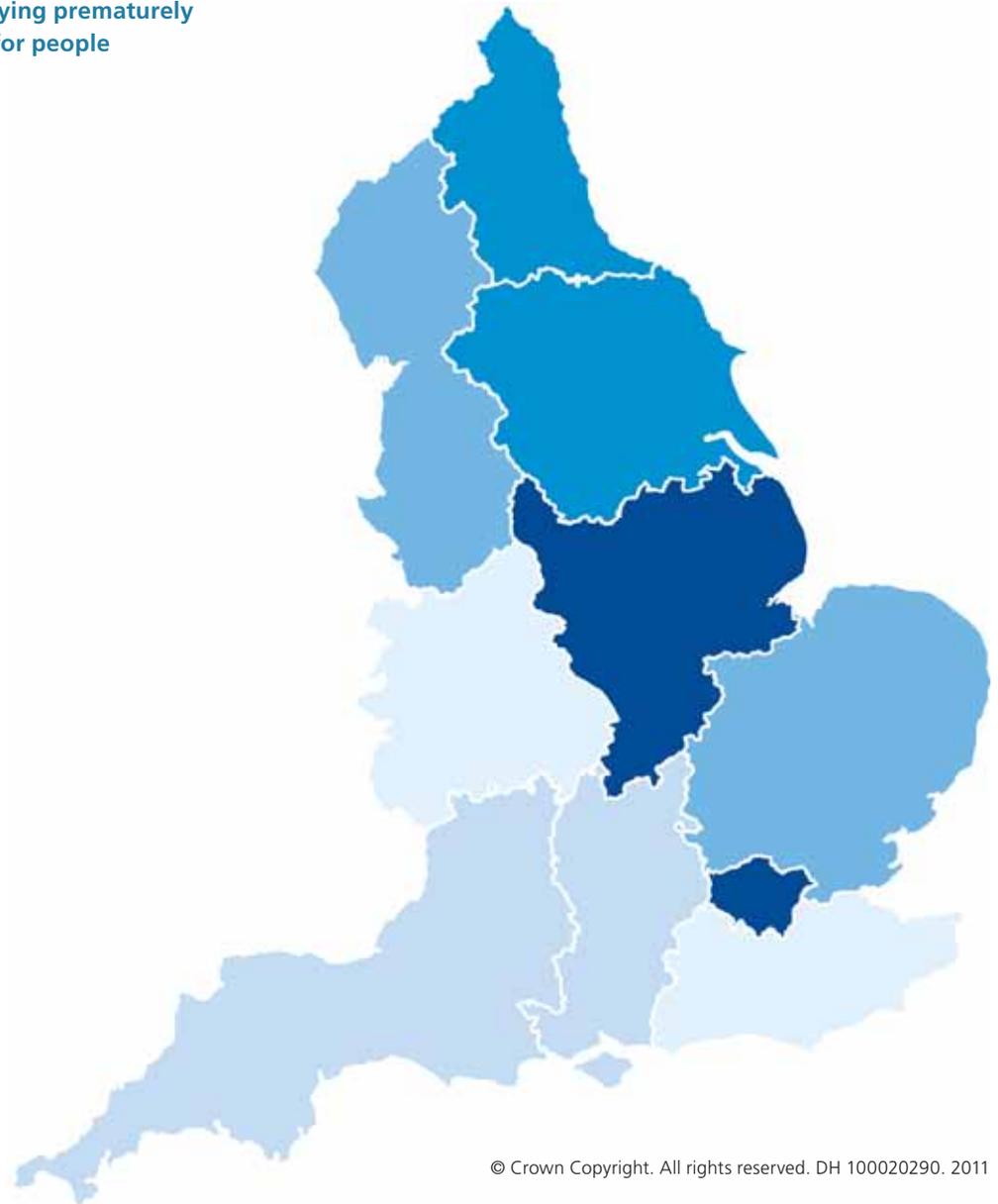
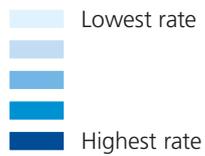
This indicator is from the Organ Donation and Transplantation Themed Atlas; it also appears in the Kidney Care Themed Atlas.

PROBLEMS OF THE GENITO-URINARY SYSTEM

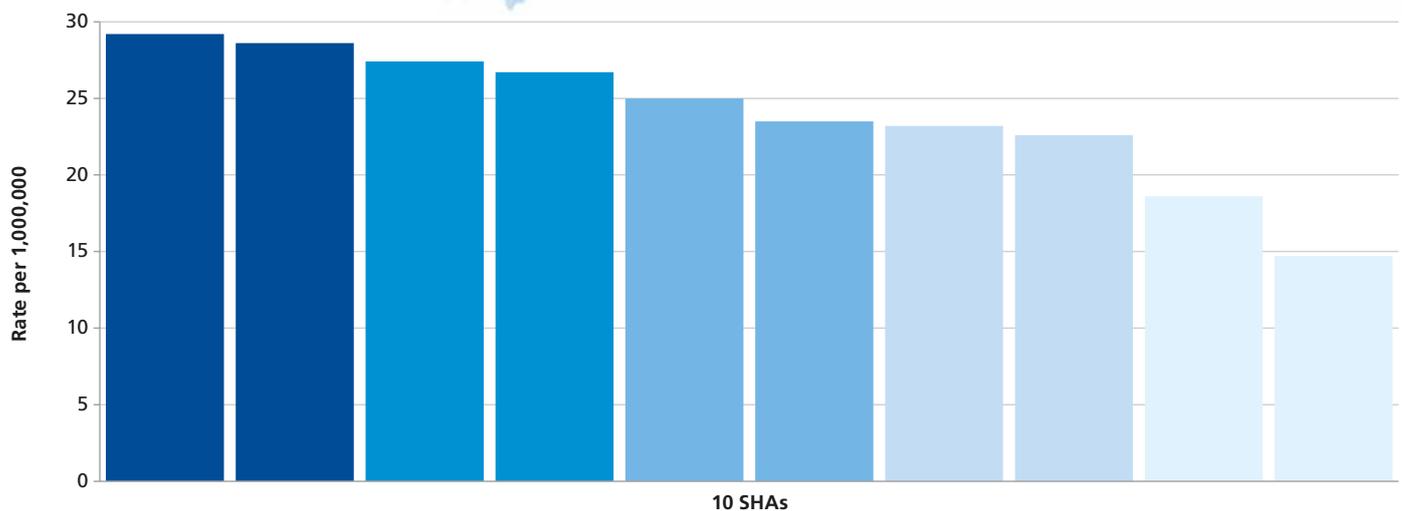
Map 57: Rate of kidney transplants from deceased donors per population by SHA

2010/11

Domain 1: Preventing people from dying prematurely
 Domain 2: Enhancing quality of life for people with long-term conditions



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Organ transplantation is the preferred form of therapy for many patients with end-stage kidney failure. In the UK in 2010/11, the number of people on the kidney transplant list fell by 4% from 7183 to 6871. However, the number of people waiting represents 111 patients per million population (pmp), and the number registered on the active transplant list at 31 March 2011 to receive a kidney or a kidney and pancreas transplant has increased by 38% since 2002.

Of the patients on the waiting list:

- 24% are transplanted within one year;
- 65% are transplanted within 5 years.

For an adult, the median waiting time for a kidney transplant is 1153 days, just over three years.

The number of deceased kidney donors increased by 3% in 2010/11, and the number of deceased donor kidney transplants increased by 1%. Deceased donation represents 60% of the total kidney transplant programme. The overall rate of kidney transplants from deceased donors for England in 2010/11 was 24.1 pmp.

There are two main types of deceased donors:

- Donors after brain death, who still comprise the majority;
- Donors after circulatory death, a form of donation becoming increasingly more common, and may exceed kidneys donated after brain death if the current trajectory is maintained.

The data for this indicator are from NHS Blood and Transplant (NHSBT).

Magnitude of variation

In SHAs in England, the rate of kidney transplants from deceased donors pmp ranged from 14.7 to 29.2, a twofold variation.

One reason for variation is differences in regional demography, particularly the proportion of black and minority ethnic (BME) groups in the population, who are three times more likely to need a kidney transplant but only 1.2% of people from the South Asian and 0.4% of people from the Black communities have joined the Organ Donation Register (ODR).

There is also large inter-centre variation in the number of kidneys transplanted from donors after circulatory death; such kidneys are not currently shared through the national kidney allocation scheme.

Other possible reasons for variation include differences in:

- The prevalence of kidney disease;
- The rate of referral to transplant centres.

Options for action

Commissioners and providers need to ensure that they are:

- Implementing national guidelines and protocols to maximise deceased kidney donation;
- Supporting the work in acute hospital and Foundation Trusts of Donation Committees, Clinical Leads in Organ Donation and Specialist Nurses for Organ Donation, all of whom are working to ensure that organ donation becomes a “usual” event (see case-study in the Organ Donation and Transplantation Themed Atlas).

Commissioners and providers could consider supporting the NHSBT BME campaign locally to encourage people from the BME community to join the ODR.

RESOURCES

- NHS Blood and Transplant (NHSBT). Information on transplant activity by centre and nationally. <http://www.uktransplant.org.uk/ukt/statistics/statistics.jsp>
- NHSBT Potential Donor Audit (PDA). http://www.uktransplant.org.uk/ukt/statistics/potential_donor_audit/potential_donor_audit.jsp
- NHSBT. Information on the process for allocation of deceased kidney donor organs, and Renal National Protocols and Guidelines. [http://www.organdonation.nhs.uk/ukt/about_transplants/organ_allocation/kidney_\(renal\)/kidney_\(renal\).jsp](http://www.organdonation.nhs.uk/ukt/about_transplants/organ_allocation/kidney_(renal)/kidney_(renal).jsp)

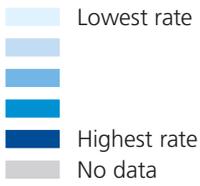
This indicator is from the Organ Donation and Transplantation Themed Atlas

MATERNITY AND REPRODUCTIVE HEALTH

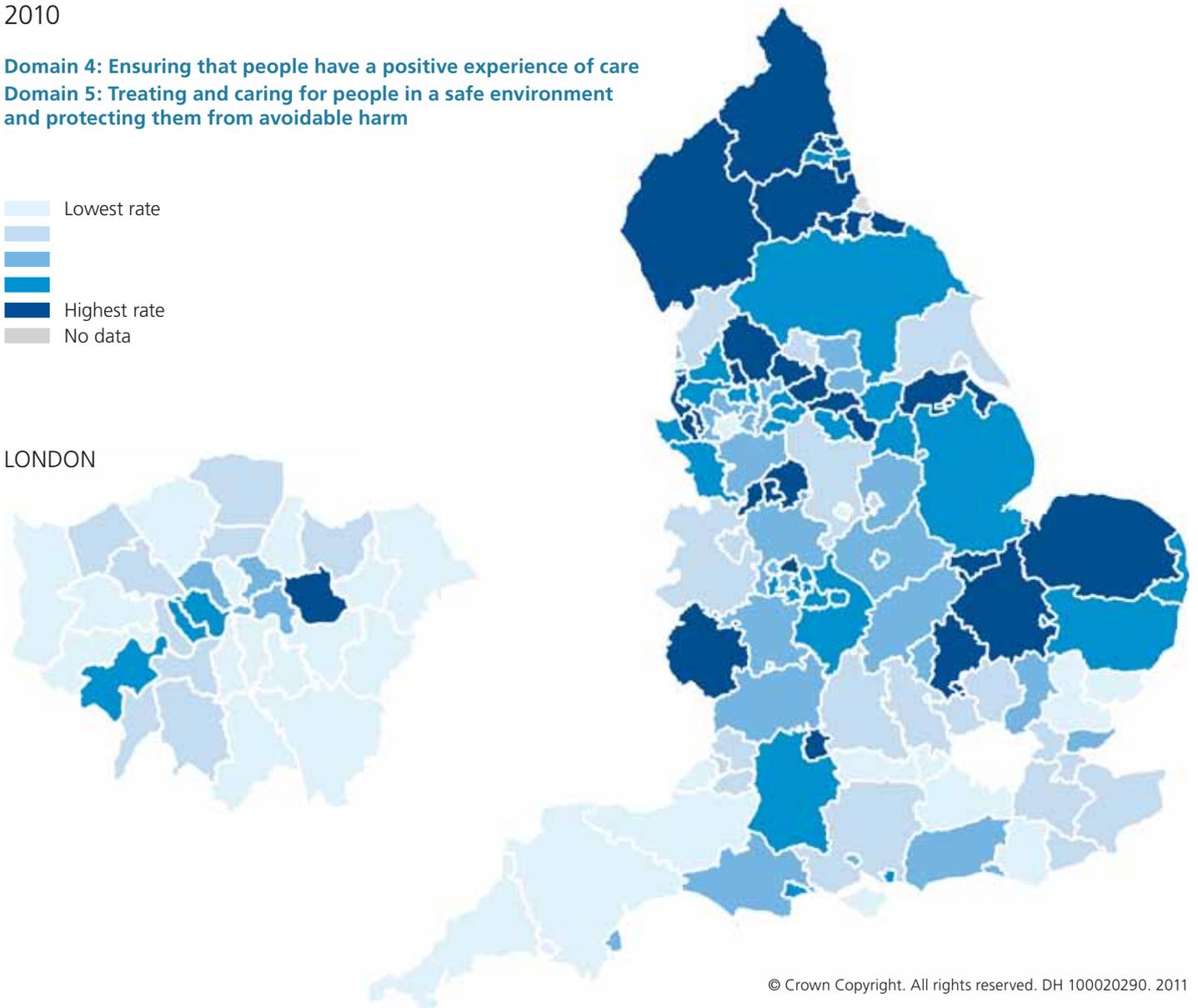
Map 58: Proportion (%) of medical abortions to all legal abortions undertaken at 13 weeks' gestation and under by PCT

2010

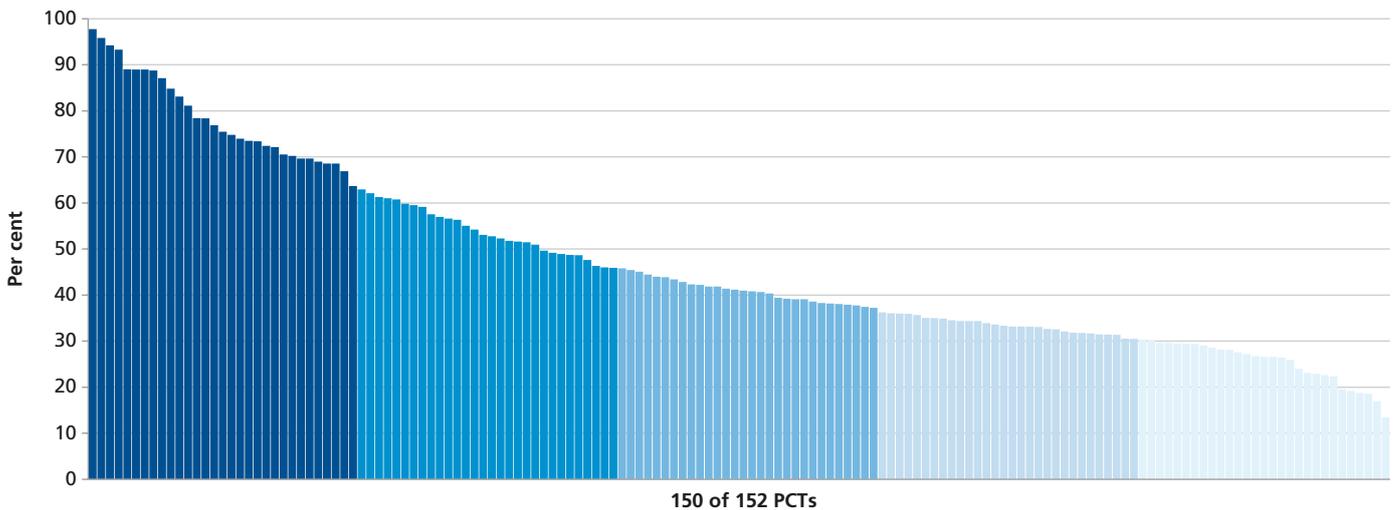
Domain 4: Ensuring that people have a positive experience of care
 Domain 5: Treating and caring for people in a safe environment and protecting them from avoidable harm



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Over 200,000 legal abortions are carried out in England and Wales, over 98% of which are undertaken because of the risk to the mental or physical health of the woman or her children.

In 2009, the NHS funded 94% of abortions in England and Wales, but over half (60%) took place in the independent sector under NHS contract.

In the Royal College of Obstetricians and Gynaecologists (RCOG) Guideline (see "Resources"), the aim is to ensure that all women considering abortion have access to uniformly high-quality care. It gives recommendations for professionals providing care, but is also a resource for those responsible for planning and commissioning services.

The earlier an abortion is performed, the lower the risk to women. In England and Wales, the proportion of procedures undertaken at gestational age under 10 weeks has increased to 75%. Increasing the number of early abortions results in reduced risks to women for:

- severe bleeding;
- uterine perforation and cervical damage at surgical abortion.

There is a small risk of:

- requiring surgical evacuation after medical abortion (<5%);
- failure to terminate the pregnancy following medical and surgical methods of abortion (<1%).

For abortion under 63 days, early discharge after administration of misoprostol is acceptable to some women. In an evaluation of early medical abortion (EMA; see "Resources"), women chose EMA because it:

- avoided surgery;
- enabled an earlier abortion;
- was less invasive;
- avoided physical trauma;
- avoided the administration of anaesthetic.

There is increasing evidence that taking misoprostol at home is safe. This intervention may be possible in future; at present, it is not legal.

Magnitude of variation

For PCTs in England, the proportion of medical abortions to all legal abortions undertaken at 13 weeks' gestation and under

ranged from 13.5% to 97.8% (7-fold variation). When the five PCTs with the highest percentages and the five PCTs with the lowest percentages are excluded, the range is 19.5–89.0%, and the variation is 4.6-fold.

One possible reason for variation is differences in women's preferences, demonstrating what is known as a preference-sensitive cause of variation. However, it seems unlikely that women's preferences vary to the degree observed in this indicator. It is probable, therefore, that the principal reason for the variation observed is differences in the organisation of service provision, and local practice, for instance, a failure to consider the full range of alternatives for abortion for gestations up to 13 weeks (see Figure 58.1), an example of a supply-sensitive cause of unwarranted variation.

Options for action

Commissioners need to:

- review the balance of medical to surgical abortions locally, and assess whether it meets the needs and preferences of women in the local population;
- ensure that women have access to abortion services locally, including a choice of medical or surgical abortion for all gestations up to the legal limit.

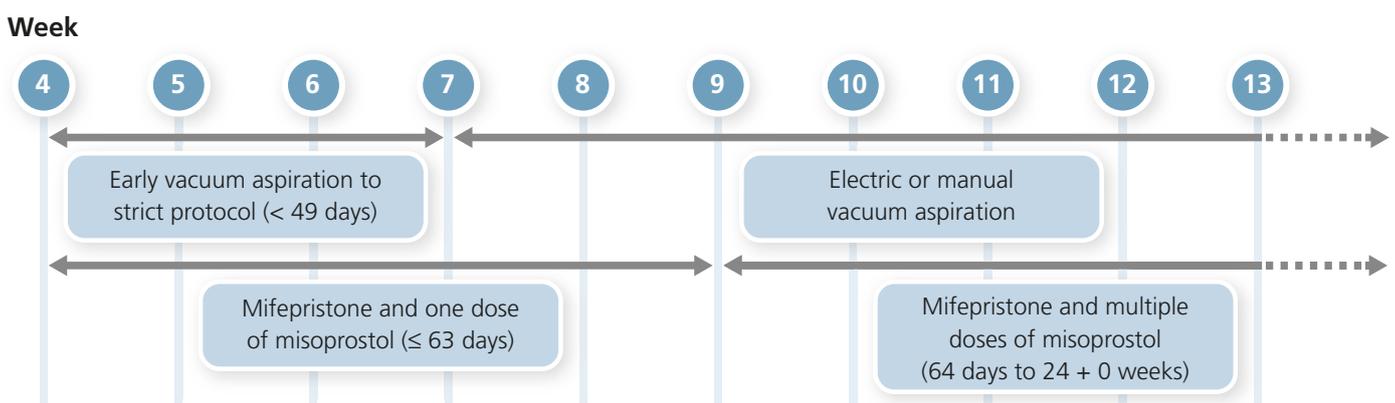
Commissioners and providers should collaborate to develop local pathways, including clinical care after engagement with abortion services.

Commissioners need to ensure that providers are undertaking suitable training and skills development, including developing the role of nurses, and for the counselling of women about their options.

RESOURCES

- Medical Foundation for AIDS & Sexual Health (MedFASH) (2008) Progress and priorities – working together for high quality sexual health. Review of the National Strategy for Sexual Health and HIV. http://www.medfash.org.uk/publications/documents/Progress_and_priorities_working_together_for_high%20quality_sexual_health_FULL_REPORT.pdf
- Department of Health (2008) Evaluation of Early Medical Abortion (EMA) Pilot Sites. Final Report. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_084618
- Royal College of Obstetricians and Gynaecologists (2011) The Care of Women Requesting Induced Abortion. Evidence-based Clinical Guideline Number 7. http://www.rcog.org.uk/files/rcog-corp/Abortion%20guideline_web_1.pdf

Figure 58.1: Abortion methods appropriate for use in abortion services in Great Britain up to 13 weeks' gestational age (adapted with permission from the RCOG Guideline Number 7; see 'Resources')

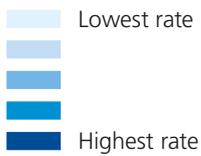


CONDITIONS OF NEONATES

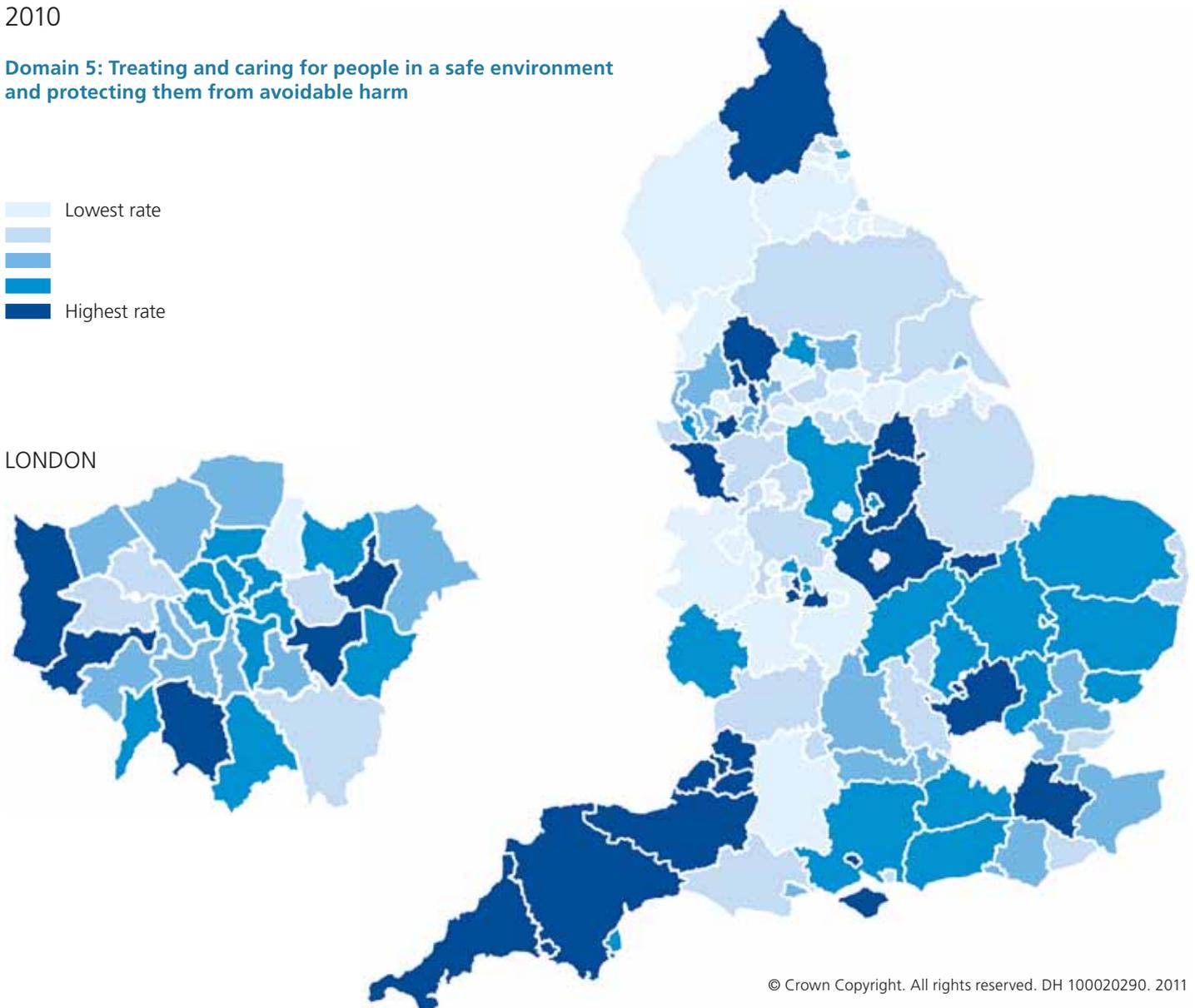
Map 59: Proportion (%) of full-term babies (≥ 37 weeks' gestational age at birth) of all babies admitted to specialist neonatal care by PCT 2010

2010

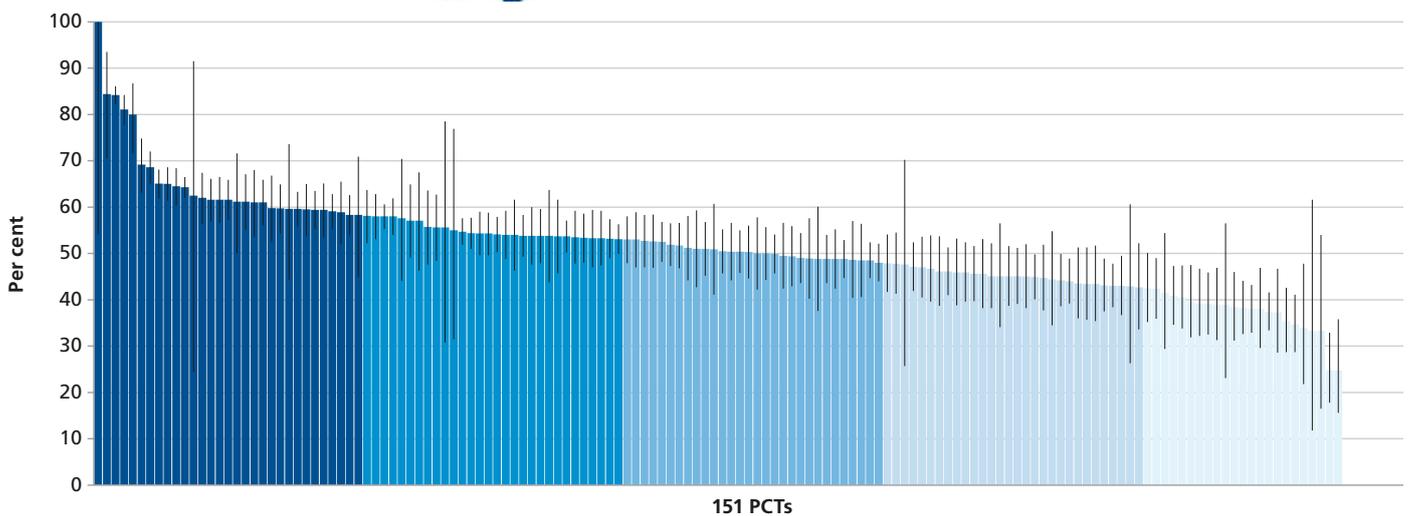
Domain 5: Treating and caring for people in a safe environment and protecting them from avoidable harm



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

In the NHS Outcomes Framework 2011/12, this is a national quality indicator.

Most activity in neonatal in-hospital care arises from managing premature babies. The number of premature babies is determined by local demography and socio-economic deprivation, and is not amenable to change through commissioning. However, sick babies of any gestation may be admitted for a variety of reasons amenable to intervention.

The health of newborn babies can be affected by maternal health, including:

- Smoking habit and alcohol consumption;
- Conditions such as diabetes.

Newborn babies can have respiratory distress syndrome as a complication of birth by Caesarean section. Often the baby needs to be admitted for treatment.

Record-level data from the National Neonatal Database, which holds live patient data from most neonatal units in England, were analysed by the Neonatal Data Analysis Unit, Imperial College London, to derive PCT-level data according to mother's usual place of residence. Of 171 neonatal units, 135 (79%) had complete data for 2010.

Magnitude of variation

For PCTs in England, the percentage of full-term babies (≥ 37 weeks' gestational age at birth) admitted to specialist neonatal care ranged from 24.7% to 100% (4-fold variation).¹ When the five PCTs with the highest percentages and the five PCTs with the lowest percentages are excluded, the range is 34.7–69.2%, and the variation is twofold.

Although socio-economic deprivation can affect neonatal mortality and morbidity, it has a greater impact on premature births and cannot explain the degree of variation in this indicator, which includes all births.

Possible reasons for variation are differences in:

- coding;
- maternal health;
- access to antenatal care;
- clinical practice in perinatal care or neonatal team clinical decision-making;
- admission criteria to neonatal units, special care baby units and transitional care within individual hospitals.

There are parallels with variations analysis of adult intensive care units where bed capacity has an independent effect on the level of medical intervention irrespective of clinical need. The decision to admit a full-term baby to specialist neonatal care is influenced by:

- the baby's clinical condition;
- the availability of cots.

Some variation may be due to different levels of provision, exemplifying what Wennberg termed a supply-side cause of unwarranted variation.

In total, 25,420 full-term babies were admitted to 135 reporting neonatal units. The total number of livebirths in England in 2009/10 was 687,007 (ONS, 2010). Assuming rates of premature births of 7% (ONS, 2008), this equates to an average of 4% of all babies ≥ 37 weeks' gestation being admitted in 2010. As there were data for only 79% of units, this percentage could be higher.

Reducing the admissions of full-term babies to specialist neonatal care could save substantial costs and allow resource reallocation.

Options for action

Each neonatal network needs to develop guidelines for clinical admission criteria, and all neonatal units need to implement them.

To reduce complications to newborn babies, commissioners and providers could review:

- interventions to reduce alcohol consumption and smoking during pregnancy;
- access to antenatal care and screening.

Commissioners and providers could review local Caesarean section rates in conjunction with admissions of full-term babies to specialist neonatal care.

Performance data could be analysed and benchmarked to enable comparisons:

- among units in each network;
- among networks in England;
- with other developed countries.

RESOURCES

- NICE Guidance. Gynaecology, pregnancy and birth. <http://guidance.nice.org.uk/Topic/GynaecologyPregnancyBirth>
- NICE Guidance. Postnatal care: Routine postnatal care of women and their babies. <http://www.nice.org.uk/CG037>
- NICE Specialist neonatal care quality standard. <http://www.nice.org.uk/guidance/qualitystandards/specialistneonatalcare/specialistneonatalcarequalitystandard.jsp>

This indicator is from the Child Health Themed Atlas

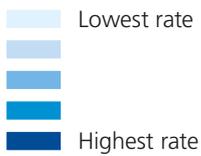
¹ Data from seven PCTs have been removed.

CONDITIONS OF NEONATES

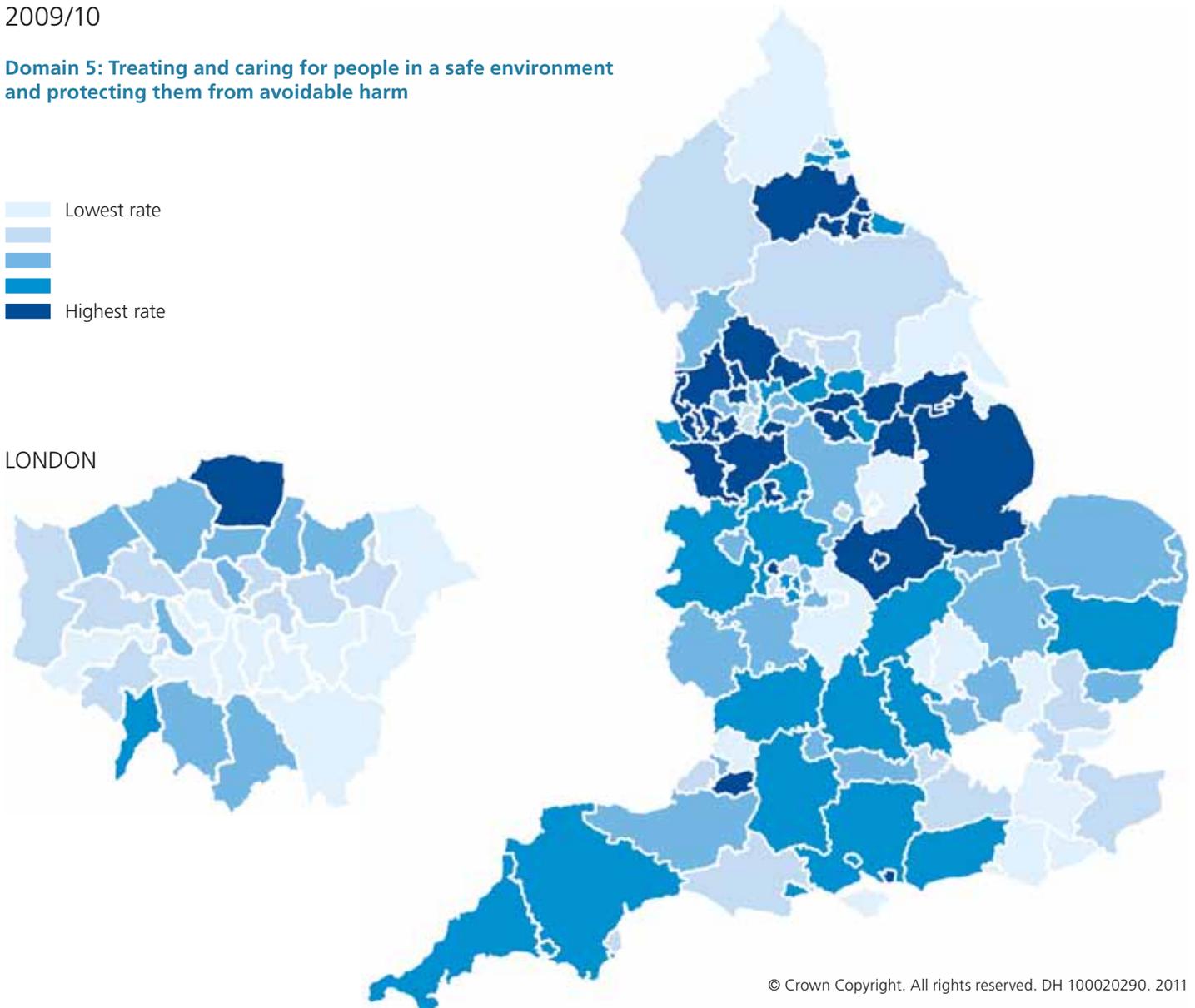
Map 60: Emergency admissions of home births and re-admissions to hospital of babies within 14 days of being born per all live births by PCT

2009/10

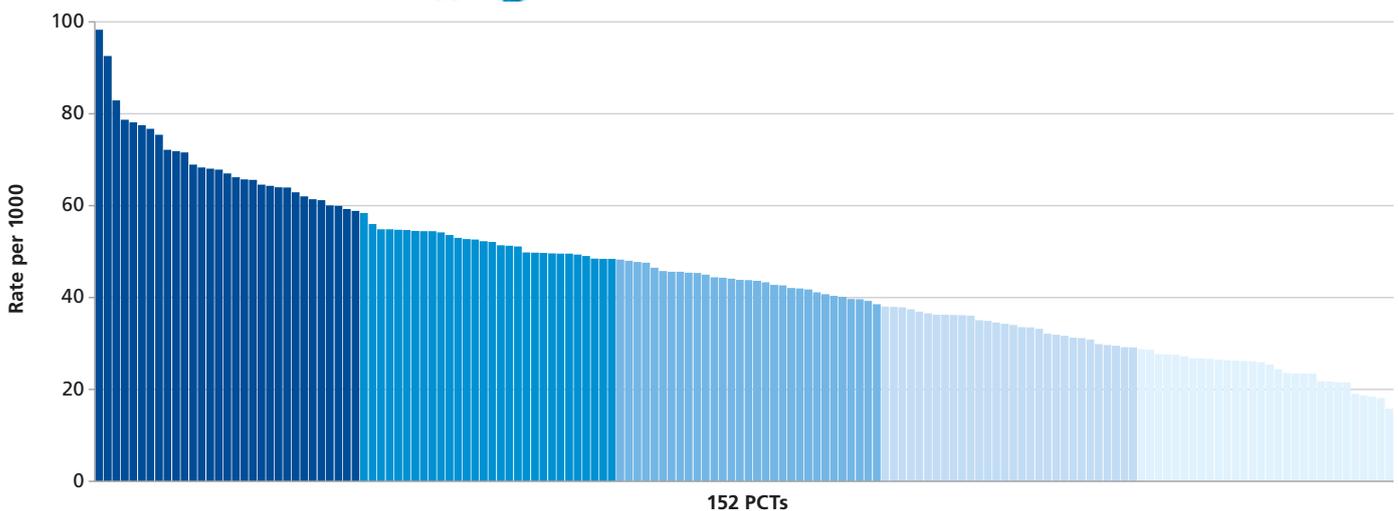
Domain 5: Treating and caring for people in a safe environment and protecting them from avoidable harm



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

The Healthcare Commission report *Towards better births: a review of maternity services in England* drew attention to the problem of re-admission of mothers and babies.

“High levels of re-admissions of either mother or babies can suggest problems with either the timing or quality of health assessments before the initial transfer or with the postnatal care once the mother is home. Dehydration and jaundice are two common reasons for re-admission of babies and are often linked to problems with feeding. Half of the trusts had an admission rate of eight per 1,000 babies or greater for these conditions two or more days after birth.”¹

Postnatal care provision crosses acute and primary healthcare sectors, with the majority of care taking place in the woman’s home. Care is likely to include:

- routine clinical examination and observation of the woman and her baby;
- routine infant screening to detect potential disorders;
- support for infant feeding;
- ongoing provision of information and support.

Helping mothers to know what signs and symptoms indicate something serious and what is normal gives them reassurance and confidence.

Giving babies the best start in life through good-quality postnatal care means they are less likely to have health problems during childhood and into adulthood.

Magnitude of variation

For PCTs in England, the emergency admissions of home births and re-admissions to hospital of babies within 14 days of being born per all live births ranged from 15.8 to 98.3 per 1000 (6-fold). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 21.5–77.5 per 1000, and the variation is 3.6-fold.

Options for action

Commissioners and providers need to ensure that improved antenatal education and information is provided to parents. At each postnatal contact, parents

should be offered information and advice to enable them:

- to assess their baby’s general condition;
- to identify signs and symptoms of common health problems in babies;
- to contact a healthcare professional or emergency service if required.

Commissioners should ensure the implementation of the NICE guidelines on postnatal care (see “Resources”), and in particular that:

- examination of the newborn is undertaken by suitably qualified healthcare professionals;
- each woman has her own personalised care plan which takes into account not only her needs but also her baby’s.

As a minimum standard, all maternity care providers should implement an externally evaluated structured programme that encourages breastfeeding, such as the Baby Friendly Initiative (see “Resources”).

Healthcare professionals need to care for newborn babies according to NICE guidance (see “Resources”):

- evaluating babies who develop jaundice within the first 24 hours;
- for babies aged ≥ 24 hours, monitoring and systematically recording the intensity of the jaundice together with the baby’s overall well-being with particular regard to hydration and alertness.

Healthcare professionals need to encourage the mother of a breastfed baby who has signs of jaundice to breastfeed frequently; if the baby is significantly jaundiced or appears unwell, evaluation of the serum bilirubin level should be carried out.

RESOURCES

- NICE Guidance. CG37 Postnatal care – NICE guideline. <http://guidance.nice.org.uk/CG37/NICEGuidance/pdf/English>
- Baby Friendly Initiative. <http://www.babyfriendly.org.uk>
- Royal College of Obstetricians and Gynaecologists (RCOG) Standards for Maternity Care. <http://www.rcog.org.uk/womens-health/clinical-guidance/standards-maternity-care>

This indicator is from the Child Health Themed Atlas

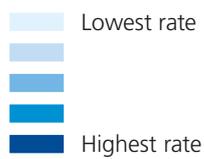
¹ Healthcare Commission (2008) *Towards better births: A review of maternity services in England*. <http://webarchive.nationalarchives.gov.uk/20101014074803/http://www.cqc.org.uk/aboutcqc/howwedoit/involvingpeoplewhouseservices/patientsurveys/maternityservices.cfm>

CARE OF ALCOHOL-RELATED CONDITIONS

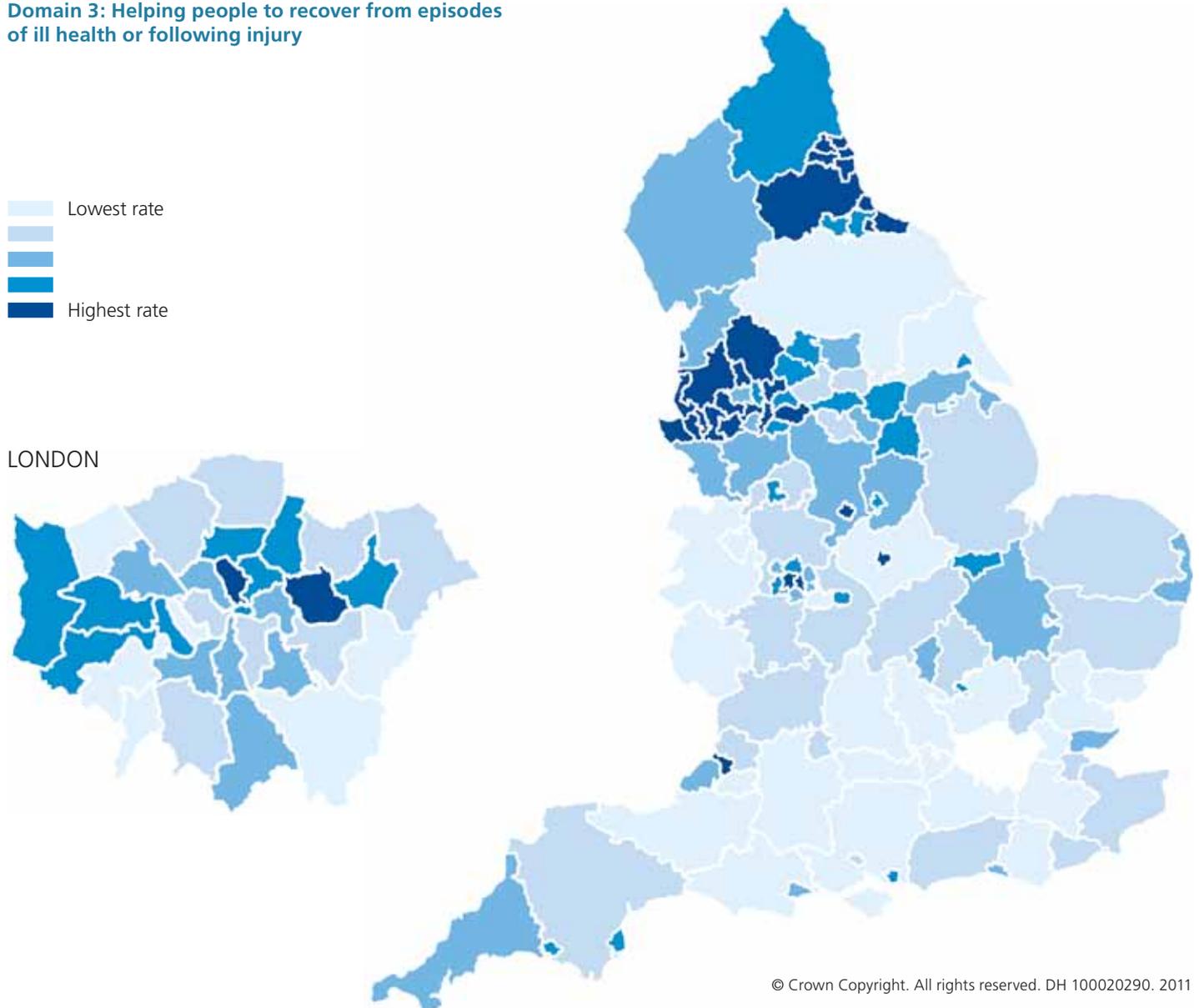
Map 61: Rate of alcohol-related admissions per population by PCT

Directly standardised rate 2009/10

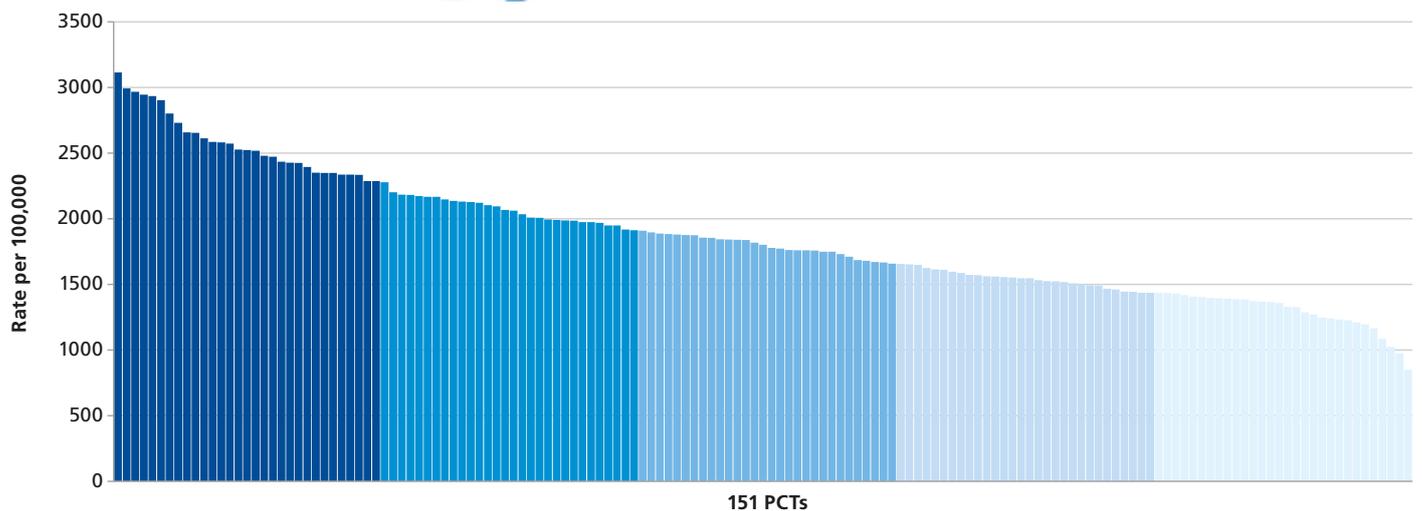
Domain 3: Helping people to recover from episodes of ill health or following injury



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Alcohol misuse is thought to cost the country £20 billion a year.¹ In 2008, the Department of Health estimated that the cost to the NHS of alcohol-related harm was £2.7 billion at 2006/07 prices (a breakdown of these costs is shown in Table 61.1).²

Table 61.1: Cost to the NHS of alcohol-related harm

Hospital inpatient and day visits:	Estimated cost (£ million)
Directly attributable to alcohol	167.6
Partly attributable to alcohol	1,022.7
Hospital outpatient visits	272.4
Accident and emergency visits	645.7
Ambulance services	372.4
GP consultations	102.1
Practice nurse consultations	9.5
Dependency prescribed drugs	2.1
Specialist treatment services	55.3
Other healthcare costs	54.4
Total	2,704.1

Hospital admissions with a primary diagnosis of a condition related to alcohol consumption have increased by 37% in the last 7 years,³ and death rates doubled between 1992 and 2008.⁴ The conditions associated with alcohol use include injuries and trauma (some associated with alcohol-related violence or road traffic accidents), gastro-intestinal disease including liver disease, cancers, stroke, heart diseases, respiratory diseases, and co-existing mental health problems.

Magnitude of variation

For PCTs in England, the rate of alcohol-related admissions per 100,000 population ranged from 849.5 to 3114.3 (3.7-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 1196.1–2903.7 per 100,000 population, and the variation is 2.4-fold.

Some or much of the variation in alcohol-related admission rates is likely to be due to differences in the rates of alcohol use across England, although other factors such as differences in coding for association with alcohol could also explain some of the variation.

Options for action

Commissioners and primary and secondary care providers need:

- To consider working on and implementing the seven “High Impact Changes”, with particular attention to numbers 4, 5, and 6, identified by the Department of Health to be the most effective actions for local areas that have

prioritised a reduction in alcohol-related harm (Box 61.1; see “Resources”);

- To review the current patterns of acute service provision and ascertain whether alternatives to hospital admission are available when appropriate;
- To learn from the initiatives undertaken in other local services, such as the Alcohol Liaison Service at the Royal Free Hospital, London, as part of NHS Evidence (see “Resources”);
- To explore the opportunities for early detection within the health service;
- To develop a local alcohol treatment pathway (see “Resources”).

Box 61.1: High Impact Changes

1. Work in partnership
2. Develop activities to control the impact of alcohol misuse in the community
3. Influence change through advocacy
4. Improve the effectiveness and capacity of specialist treatment
5. Appoint an Alcohol Health Worker
6. Identification and brief advice (IBA) – provide more help to encourage people to drink less
7. Amplify national social marketing priorities

RESOURCES

- NICE Guidance PH24. Alcohol-use disorders – preventing harmful drinking. <http://guidance.nice.org.uk/PH24>
- NICE Guidance CG115. Alcohol dependence and harmful alcohol use. Alcohol-use disorder: diagnosis, assessment and management of harmful drinking and alcohol dependence. <http://www.nice.org.uk/guidance/CG115>
- NICE Guidance CG100. Alcohol-use disorders – physical complications. <http://guidance.nice.org.uk/CG100>
- Alcohol Learning Centre. <http://www.alcohollearningcentre.org.uk/>
- High Impact Changes. <http://www.alcohollearningcentre.org.uk/Topics/Browse/HIC/>
- Royal Free Hospital, London, Alcohol Liaison Service. http://www.royalfree.nhs.uk/pip_admin/docs/ALS_1234.pdf
- NICE Pathway on alcohol-use disorders. <http://pathways.nice.org.uk/pathways/alcohol-use-disorders>
- Department of Health. Local Routes: Guidance for developing alcohol treatment pathways. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_110423
- North West Public Health Observatory (NWPHO) Local Alcohol Profiles for England, available in two geographies: Local Authorities; PCTs (24 indicators). <http://www.lape.org.uk/>

1 Crome I, Chambers C with Frisher M, Bloor R, Roberts D (2008) SCIE Research briefing 30: The relationship between dual diagnosis: substance misuse and dealing with mental health issues. <http://www.scie.org.uk/publications/briefings/briefing30/references.asp#44>

2 Department of Health, Health Improvement Analytical Team (2008) The cost of alcohol harm to the NHS in England – An update to the Cabinet Office (2003) study, July 2008.

3 DH analysis of Hospital Episode Statistics (HES), NHS Information Centre.

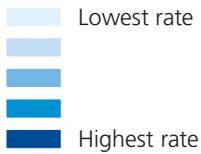
4 Office for National Statistics (ONS). Alcohol-related deaths in England and Wales, 1991 to 2009.

EMERGENCY CARE

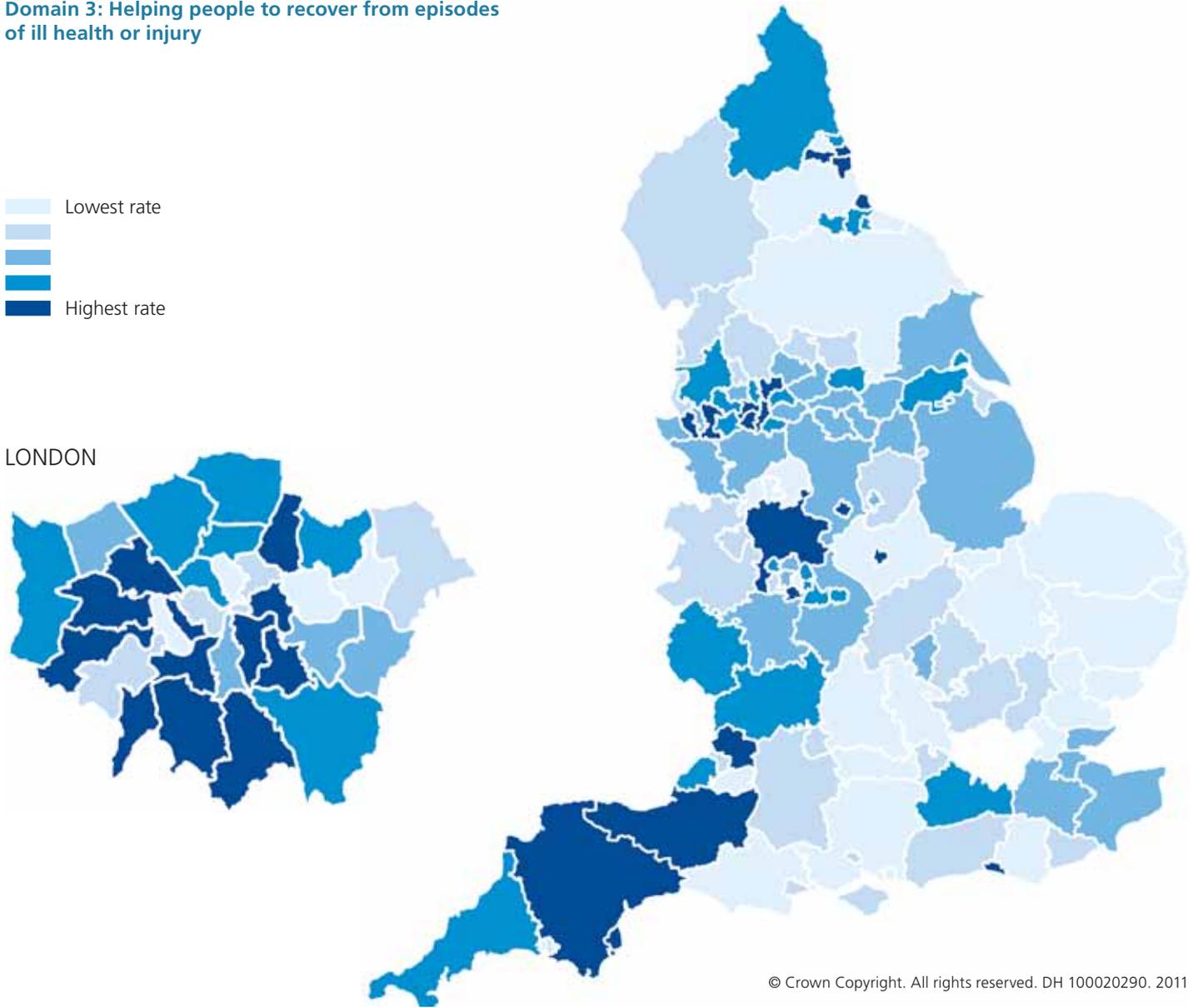
Map 62: Rate of accident and emergency (A&E) attendances per population by PCT

Directly age-, sex- and deprivation-standardised rate 2010

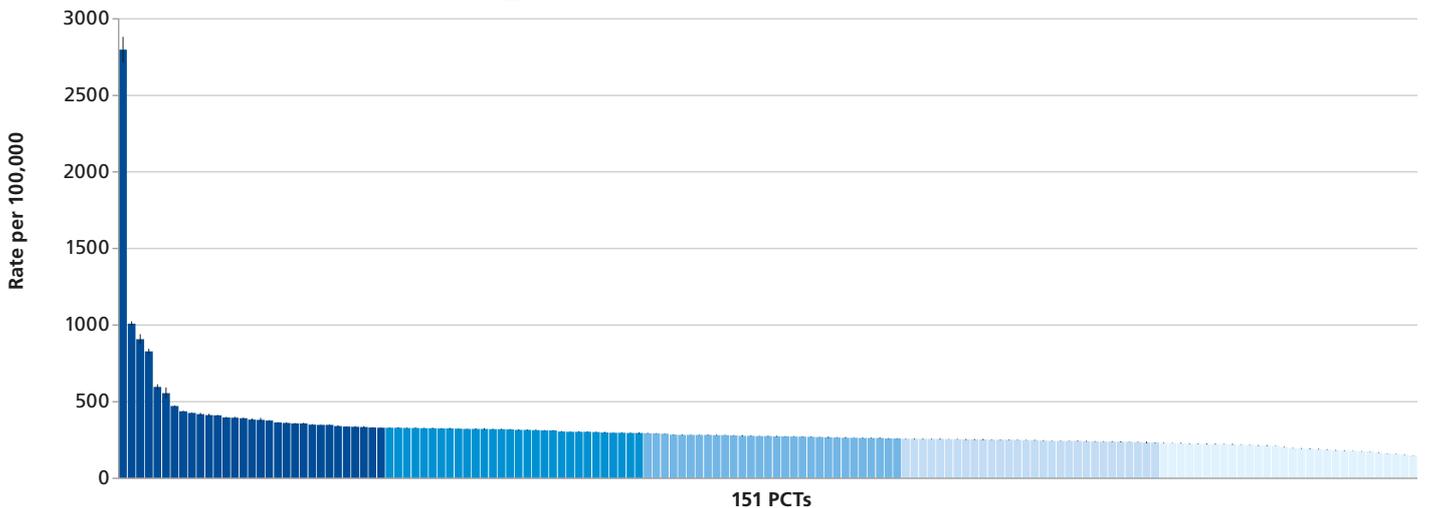
Domain 3: Helping people to recover from episodes of ill health or injury



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

In England, there were about 21.4 million attendances at all departments in 2010/11. On average, a person attends accident and emergency (A&E) once every five years. Rate of attendance is higher for people during the first and the last five years of life. Reasons for attendance at A&E vary with age:

- Children attend for illness and injury;
- Young people attend usually by reason of an accident, which may be related to sport or alcohol consumption in those aged 15–30 years;
- Older people attend for acute episodes of illness or because of deterioration in functional ability often related to multisystem failure.

Magnitude of variation

For PCTs in England, the rate of A&E attendances per 100,000 population ranged from 148.9 to 2798.2 (19-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 174.8–556.0 per 100,000 population, and the variation is 3.2-fold.

Reasons for variation include differences in:

- Health profiles of populations, including the number of people with chronic disease;
- Injury rate in different areas;
- The way different groups choose to access healthcare.

Reasons for unwarranted variation include differences in:

- Ease of access to primary care and alternative urgent care services;
- Access to other services and facilities in the community, e.g. community nurses for the management of long-term conditions;
- Re-attendance rates (although some variation is warranted when patients are advised to return);
- The proportion of 999 calls closed with telephone advice or managed without transport to A&E where clinically appropriate.

Options for action

To prevent attendances related to chronic disease, commissioners and providers need to review chronic

disease and case management for the local population, with the emphasis on care being available in the community.

To prevent attendances by older people in nursing or residential care homes, commissioners and providers need to explore the options that would enable older people to remain in the home, rather than be taken to hospital (see Map 65), or to die in their usual place of residence (see Map 66).

To reduce the overall number of attendances, commissioners and providers could use the A&E quality indicator on re-attendance to ascertain the reasons for re-attendance. Effective case management and ensuring patients receive the right care first time will also improve patient experience and outcomes.

To reduce the number of 999 calls resulting in conveyance by ambulance to A&E, commissioners and ambulance trusts should collaborate to ensure that best use is made of telephone advice, definitive treatment at scene and conveyance to community services where appropriate.

To increase access to primary care, commissioners, providers and GPs could:

- implement the Doctor First Programme, developed in East Midlands SHA, an evidence-based method of reversing the rising trend of A&E attendances and emergency admissions through access to GPs by telephone; it also reduced the number of surgery consultations by one-third;¹
- consult the work of the Primary Care Foundation on Urgent Care in General Practice (see “Resources”).

To simplify access to alternative urgent care services, commissioners, providers and GPs need to ensure the provision of a coherent 24/7 service, together with in-hours GP services, that patients find easy to navigate. Roll-out of the NHS 111 service will support easier navigation.

RESOURCES

- Primary Care Foundation (2009) Urgent Care in General Practice (report). A web-based tool to help practices write capacity plans to ensure effective resource use and improve the management of urgent care is in development. <http://www.primarycarefoundation.co.uk/urgent-care-in-general-practice.html>

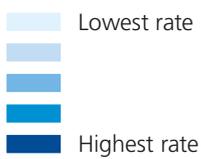
1 <http://healthcareinnovationexpo.com/sha-nhseastmidlands-transformingurgentcare.asp>

EMERGENCY CARE

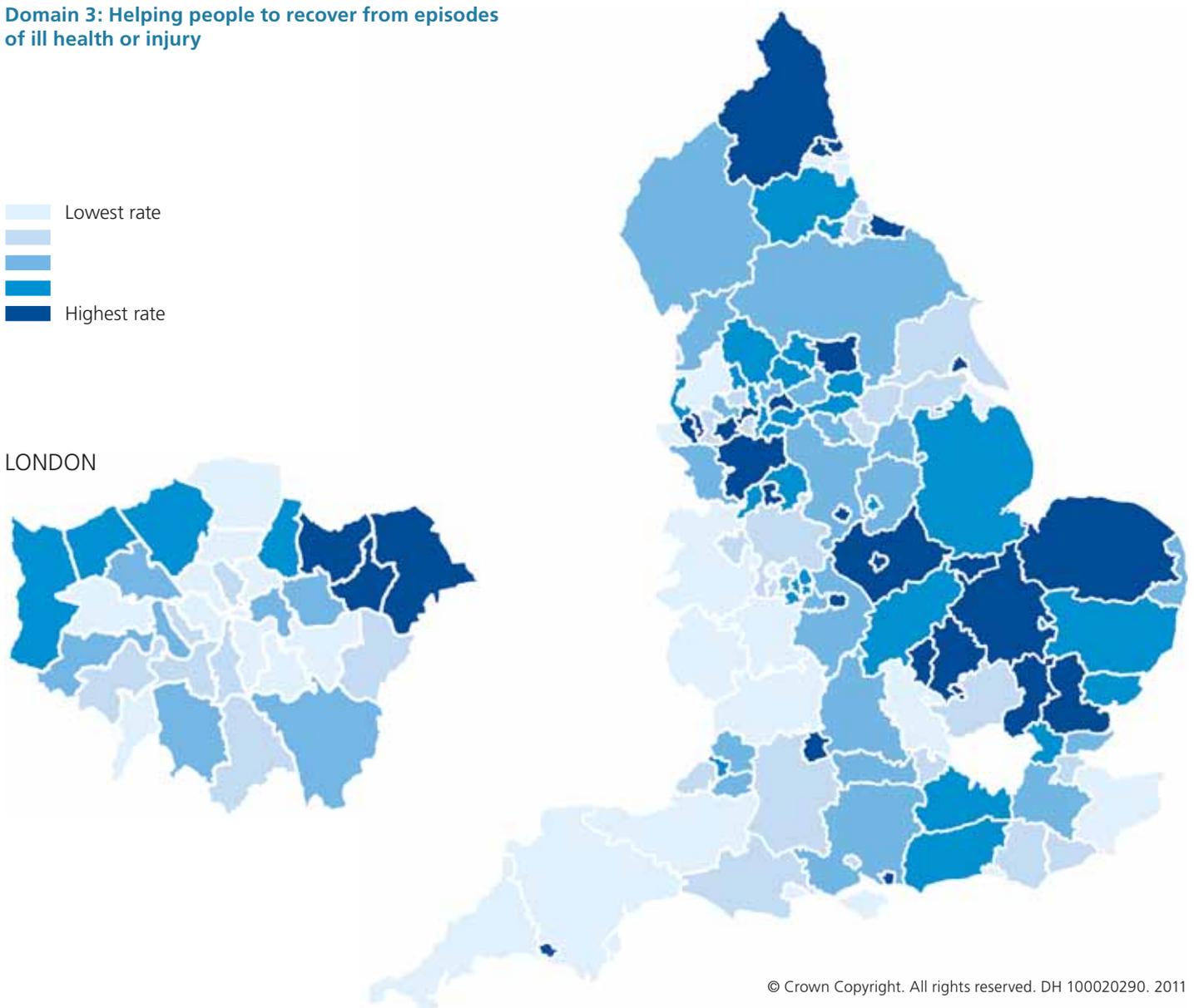
Map 63: Rate of conversion from accident and emergency (A&E) attendance to emergency admissions by PCT

Directly age-, sex- and deprivation-standardised rate 2010

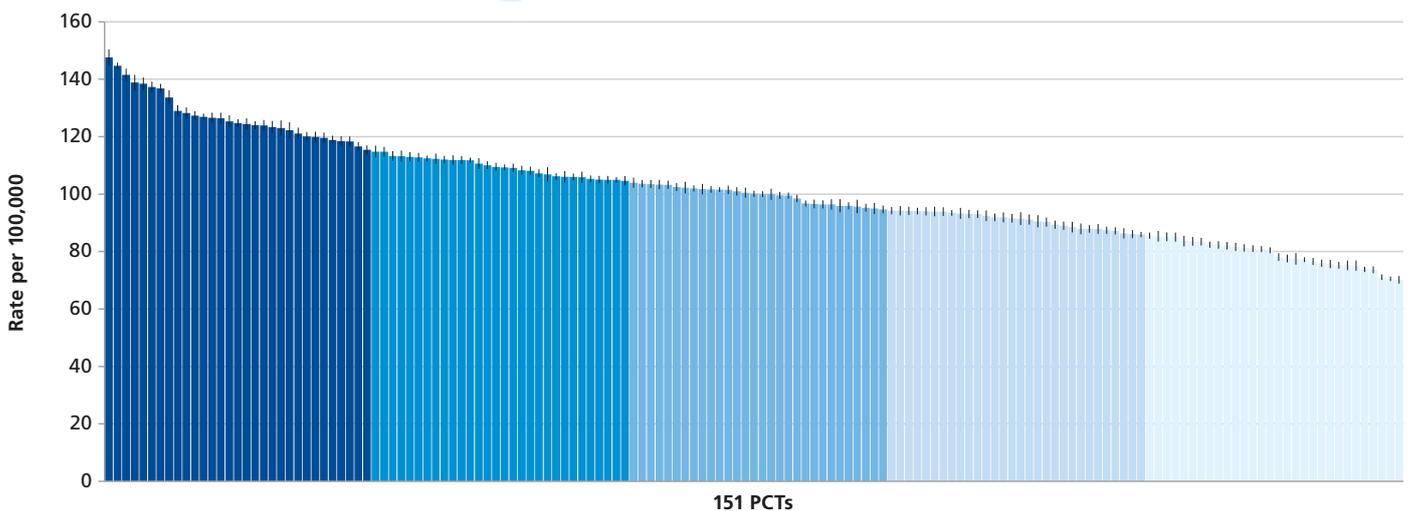
Domain 3: Helping people to recover from episodes of ill health or injury



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

The majority of conversions of accident and emergency (A&E) attendances to admissions are medical; only a minority are related to major trauma.

The conversion of an A&E attendance to an admission has a considerable impact on the cost of care.

Magnitude of variation

For PCTs in England, the rate of conversion from A&E attendance to admissions per 100,000 population ranged from 70.1 to 147.6 (2.1-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 75.1–137.3 per 100,000 population, and the variation is 1.8-fold.

Although the degree of variation for this indicator is less than that seen for A&E attendances (see Map 62), the cost of conversion to admission is much greater than that for A&E attendance. Thus, the financial implications of variation in this indicator are of greater concern, but offer an opportunity for maximising value for patients and local populations by improving the quality of care.

Reasons for variation include differences in:

- Access to primary and community services for long-term conditions;
- Service models for urgent and emergency care, and, in particular, the availability of ambulatory emergency care;
- Disease case-mix in different populations.

Although there are differences in case-mix, variation is still observed across the country in conversions for the same condition in the same age-group. This would indicate that there is some unwarranted variation in the conversion of A&E attendances to admissions.

Another reason for unwarranted variation could be differences in access to good-quality primary and community care for long-term conditions at the time of need, which means that for some patients their condition declines to the point that a hospital stay is required.

Once a patient's condition requires an emergency response, the availability of ambulatory emergency care services, in which the patient can be treated without the need for admission to hospital, can have a considerable impact on variation (see Map 64).

Options for action

Commissioners and providers need to review the case-mix seen at A&E, and the conversion of A&E attendance to admissions, and ascertain the reasons for the rate observed locally. For instance:

- conversion rates could appear to be high if A&E departments deal with only major cases, and minor injuries are dealt with in community hospitals;
- conversion rates could appear to be low if minor injuries are dealt with at A&E.

A key element in the review is to investigate short-stay admissions, and assess whether people are being admitted for assessment rather than being assessed then admitted, although advances in medical practice have led to some reductions in length of stay.

Commissioners and providers should consider:

- The ways in which unplanned admissions to hospital can be reduced [see table on page 33 of Ham (2006) under "Resources" for a summary of evidence about interventions to reduce unplanned admissions and length of stay];
- The role ambulatory emergency care can play in treating patients effectively without the need for hospital admission (see Map 64).

RESOURCES

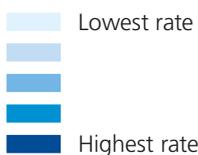
- Ham C (2006) Reducing unplanned hospital admissions. HSMC, University of Birmingham.
<http://www.birmingham.ac.uk/Documents/college-social-sciences/social-policy/HSMC/publications/2006/Reducing-unplanned-hospital-admissions.pdf>
- The College of Emergency Medicine.
<http://www.collemergencymed.ac.uk/>

EMERGENCY CARE

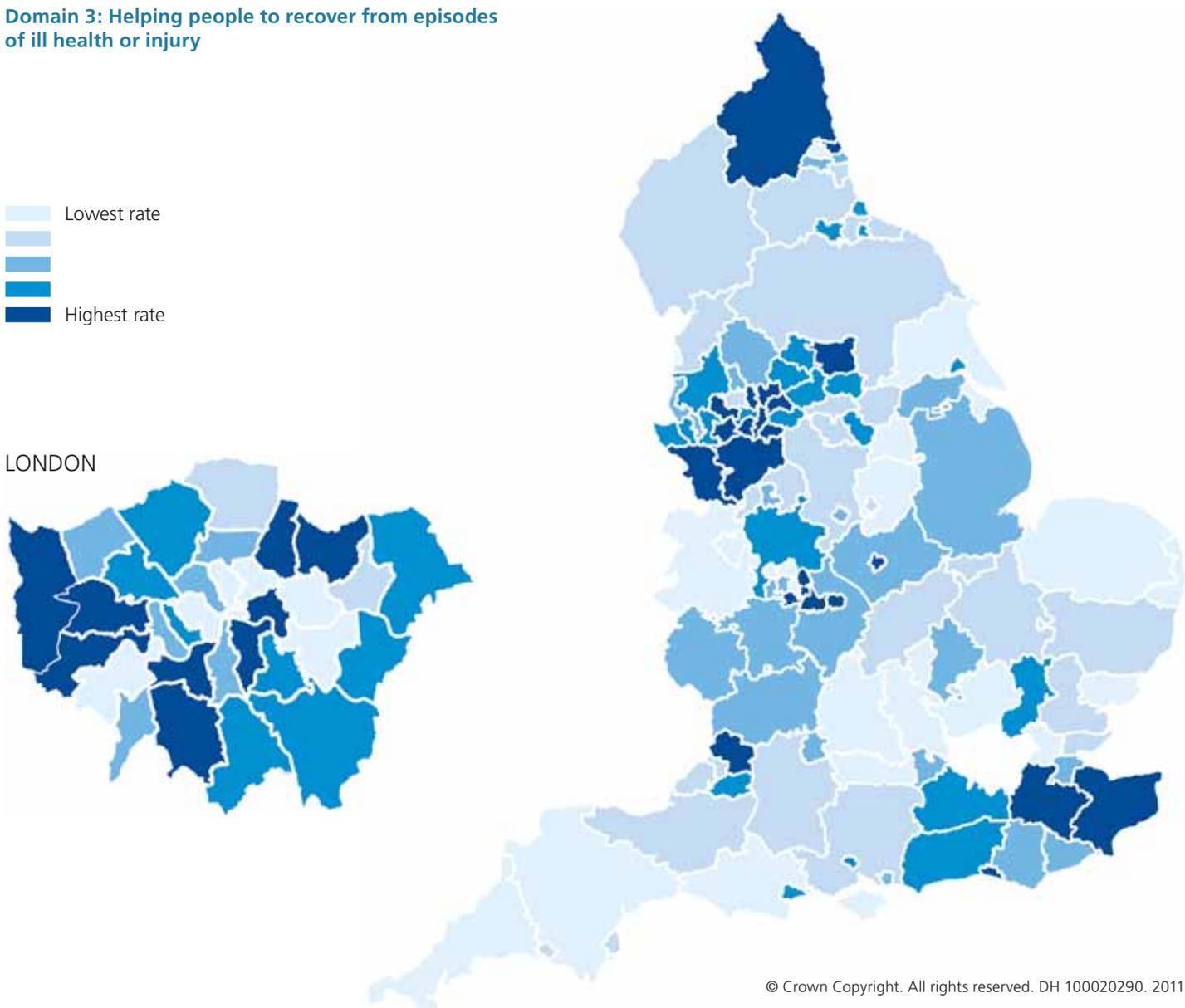
Map 64: Rate of admissions with emergency ambulatory care conditions (EACCs) per population by PCT

Directly age-, sex- and deprivation-standardised rate 2010

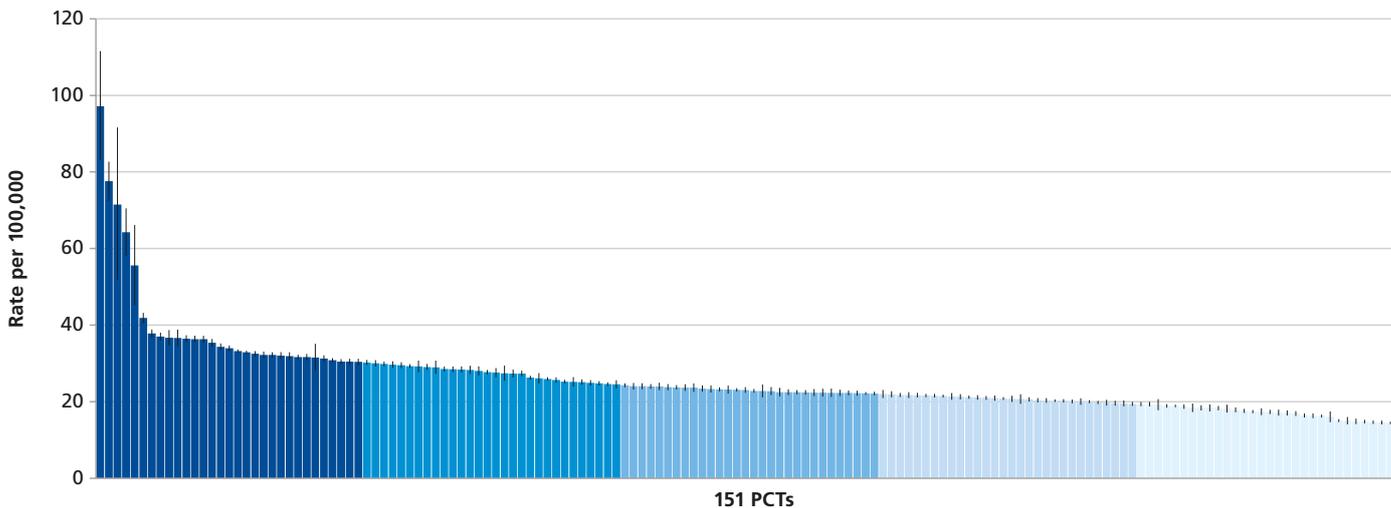
Domain 3: Helping people to recover from episodes of ill health or injury



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Admissions to hospital beds can be reduced by introducing ambulatory emergency care models, which avoid unnecessary overnight stays for emergency patients. This change in medical practice, with a shift towards treating people outside the acute hospital setting, has occurred for several reasons:

- Improving patient outcomes;
- Patient preference not to be hospitalised;
- Reduced healthcare costs.

The NHS Institute has compiled a Directory of 49 emergency conditions and clinical scenarios that have the potential to be managed on an ambulatory basis (see “Resources”). Furthermore, the NHS Institute has estimated that reducing variation in the rates of admission with EACCs in England could save £170–£250 million.¹

The King’s Fund has made managing ambulatory care-sensitive conditions one of its 10 priorities for commissioners to transform the healthcare system (see “Resources”).

Magnitude of variation

For PCTs in England, the rate of admissions with EACCs per 100,000 population ranged from 14.5 to 97.2 (7-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 15.0–41.9 per 100,000 population, and the variation is 2.8-fold.

Reasons for variation include differences in:

- The number of admissions to hospital that are necessary;
- Co-morbidities patients may have;
- The social circumstances of some patients – can they cope with the condition at home or do they need to be cared for in hospital?

Possible reasons for unwarranted variation include:

- The organisation of local services, including the availability of community services and facilities;

- The capacity and level of expertise among healthcare personnel in the local community, such as nurses able to administer intravenous drugs;
- The level of collaborative working among accident and emergency departments, ambulance services, primary care, and different secondary care specialities;
- Access, including rapid access, to diagnostic services.

Options for action

Commissioners and providers need to work together to:

- Review the range of chronic conditions for which active disease management can be used to prevent acute exacerbations and reduce the need for emergency hospital admissions in the local population, e.g. diabetes (see Maps 6, 7 and 9), epilepsy (see Map 20), chronic obstructive pulmonary disease (COPD; see Map 36) and asthma (see Maps 38 and 39), taking into account local capacity;
- Develop care pathways for relevant EACCs;
- Learn from the work of other services.

A best practice tariff for Ambulatory Care is starting in 2012. Commissioners and providers could take this opportunity to negotiate appropriate tariffs for EACCs, and ensure there is not a perverse financial incentive to admit patients.

RESOURCES

- NHS Institute for Improvement and Innovation. Ambulatory emergency care – manage your emergencies as day cases, including the Emergency Care Innovation Delivery Network (which will run for 12 months), The Directory of Ambulatory Emergency Care for Adults (2007), Increasing Day Case Rates for Emergency Care (dataset of Q1 and Q2 2010 data), and How to Implement Ambulatory Emergency Care (2010). https://www.institute.nhs.uk/index.php?option=com_content&task=view&id=1530&Itemid=4009
- The King’s Fund. Managing ambulatory care sensitive conditions, including a link to a risk stratification tool that uses inpatient data to identify patients at risk of re-hospitalisation within 1 year. http://www.kingsfund.org.uk/current_projects/gp_commissioning/ten_priorities_for_commissioners/acs_conditions.html

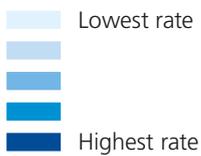
¹ <http://www.productivity.nhs.uk/Indicator/608/For/National/And/25th/Percentile>

CARE OF OLDER PEOPLE

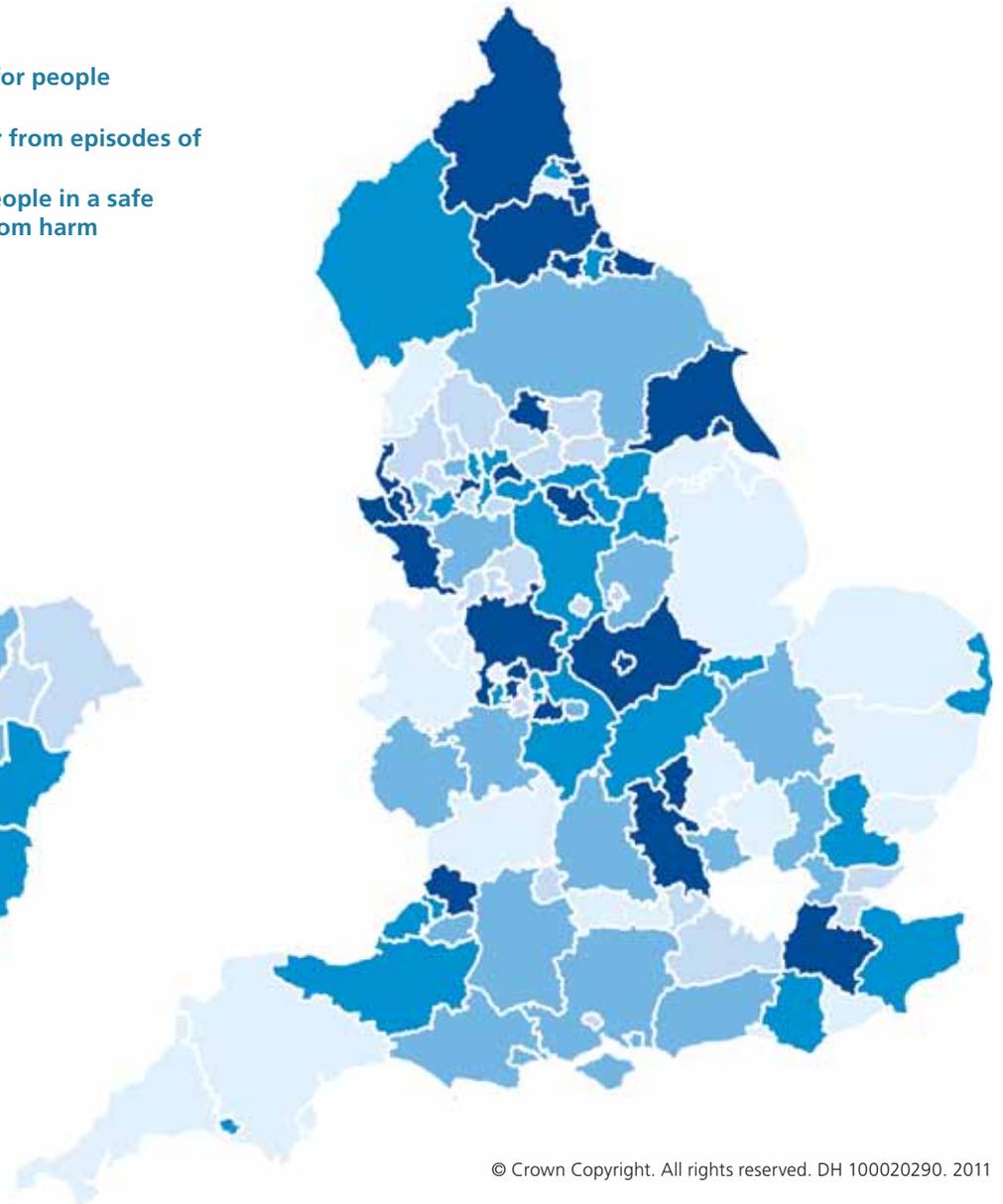
Map 65: Admission rate for people aged >74 years from nursing home or residential care home settings per population by PCT

Age-specific rate 2009/10

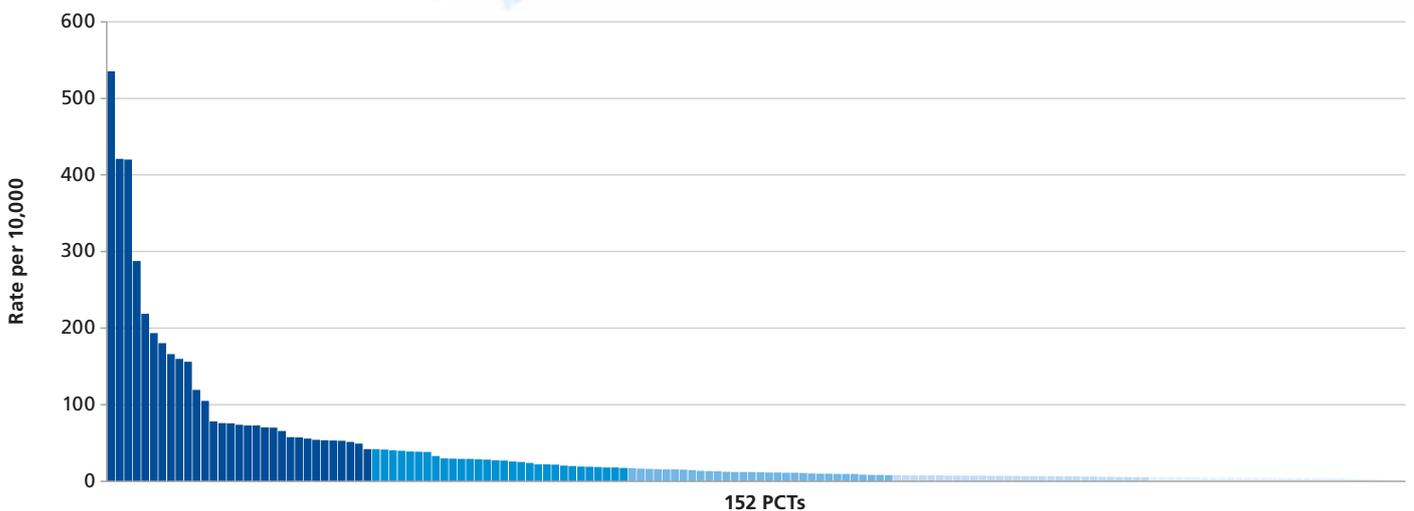
- Domain 2: Enhancing quality of life for people with long-term conditions
- Domain 3: Helping people to recover from episodes of ill health or following injury
- Domain 5: Treating and caring for people in a safe environment and protecting them from harm



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

There are about 380,000 people living in nursing or residential care homes in England, who are increasingly old and vulnerable with multiple medical co-morbidities and receiving several medications.

Access to healthcare – GPs, pharmacists, and hospital specialists and therapies – is more variable for older people in some long-term care settings than for older people living in their own homes.

People in nursing or residential care homes can frequently be admitted to hospital for one of several reasons:

- End-of-life care, although with advanced care planning and support many older people could receive dignified end-of-life care in the long-term care setting;
- Acute medical illness, particularly out of hours when the person's usual medical practitioner is not on call;
- Complications of medication use;
- Accidental falls – 1 in 5 hip fracture admissions are from the nursing or residential care home sector.

Hospital admission can be distressing and disorientating for older people, leading to deterioration. A greater level of pro-active and responsive healthcare planning can prevent hospital admission of older people from nursing or residential care homes.

Magnitude of variation

For PCTs in England, the admission rate for people aged >74 years from nursing home or residential care home settings ranged from 0.7 to 535.4 per 10,000 population (767-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 2.8–193.4 per 10,000 population, and the variation is 69-fold.

Reasons for this considerable variation, with very high admission rates in several locations, could be due to differences in the management of care for older people (e.g. greater concentration of local authority-funded care homes or greater use of care homes as temporary residential placements). In addition, it is highly likely there are differences in coding accuracy of the admission "source".

Possible reasons for unwarranted variation include differences in:

- Access to health services for people in long-term care settings;

- Quality of management of older people who are vulnerable with multiple medical co-morbidities;
- Capacity and skills of staff working in longstay care.

Options for action

Commissioners and providers need to understand the scale of the problem locally, and explore options that would enable older people to remain in nursing or residential care homes rather than be admitted to hospital, including:

- Pro-active medication reviews and medication adjustment;
- Advanced care planning for end-of-life care, with access to community palliative care support;
- Programmes to reduce falls and fractures, such as case management by nurse specialists and dedicated GP input, especially for high-risk residents;
- Hospital-at-home teams, especially for administration of intravenous fluids and antibiotics.

RESOURCES

- Quest for quality. British Geriatrics Society Joint Working Party Inquiry into the Quality of Healthcare Support for Older People in Care Homes 2011. http://www.bgs.org.uk/campaigns/carehomes/quest_quality_care_homes.pdf
- Care and compassion. Report of the Health Service Ombudsman on ten investigations into NHS care of older people. http://www.ombudsman.org.uk/__data/assets/pdf_file/0016/7216/Care-and-Compassion-PHSO-0114web.pdf
- Care Quality Commission Review. Meeting the health care needs of people in care homes. <http://www.cqc.org.uk/public/reports-surveys-and-reviews/reviews-and-studies/meeting-health-care-needs-people-care-homes>
- Barber ND et al (2009) Care homes' use of medicines study: prevalence, causes and potential harm of medication errors in care homes for older people. *Qual Saf Health Care* 18: 341-6.
- The Health Foundation (2011) Learning report: Making care safer. Improving medication safety for people in care homes: thoughts and experiences from carers and relatives. <http://www.health.org.uk/public/cms/75/76/313/2568/Making%20care%20safer%20learning%20report.pdf?realName=EyZflQ.pdf>
- Department of Health (2009) Falls and fractures. Effective interventions in health and social care. http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/@pg/documents/digitalasset/dh_109122.pdf



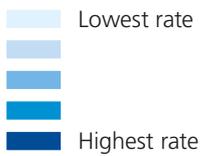
See what Right Care is doing on services for the frail elderly on page 31

END-OF-LIFE CARE

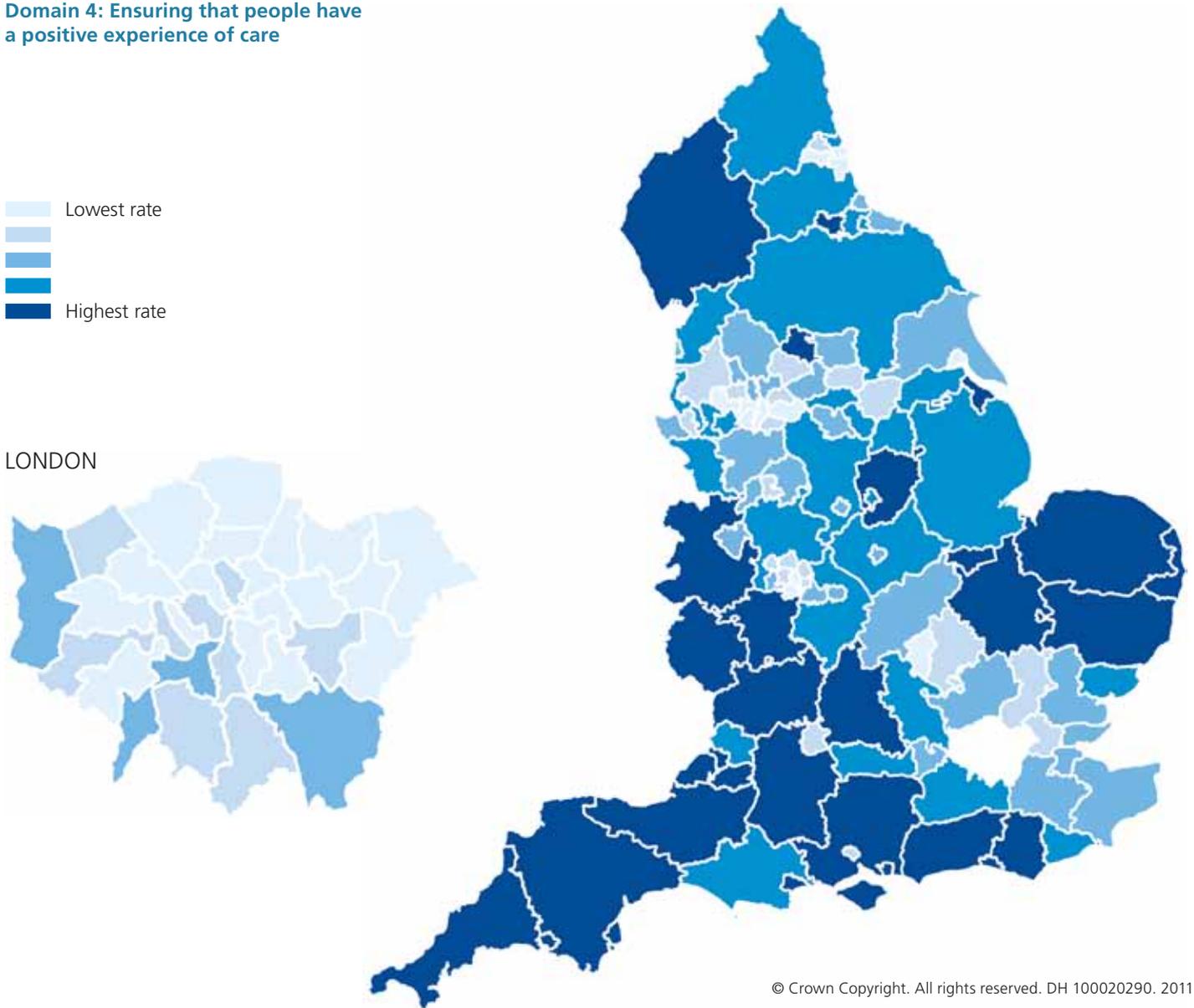
Map 66: Percentage of all deaths at usual place of residence by PCT

2010

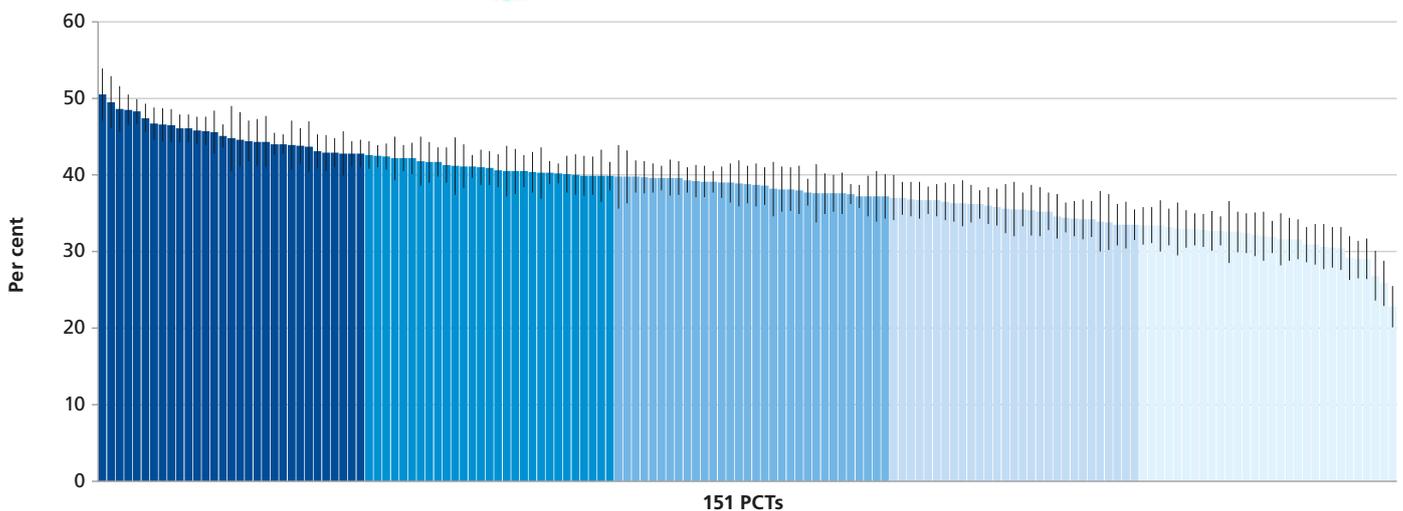
Domain 4: Ensuring that people have a positive experience of care



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Over 450,000 people die in England each year, 40% of whom die in their usual place of residence (defined as own home or care home). Several places qualify as “home”, not only a private house, but also a residential care or nursing home.

Almost two-thirds of deaths occur in people over 75 years. Elderly people are more likely to have multiple morbidities at death, but even very elderly people with multiple conditions can be helped to die at home.

Most deaths occur in hospital; most of the deaths at home are actively supported by the NHS or its providers. Social services plays a critical role in personal care. Voluntary organisations and hospices actively support many people and their families with respite and care, although less than 10% of deaths occur in hospices.

Magnitude of variation

For PCTs in England, the percentage of all deaths at usual place of residence ranged from 22.8% to 50.5% (2.2-fold variation). When the five PCTs with the highest percentages and the five PCTs with the lowest percentages are excluded, the range is 29.2–47.4%, and the variation is 1.6-fold.

In 2010, 40% of all deaths occurred in people’s usual place of residence, which although similar to the proportion in 2006–2008 (see Map 29, Atlas 1.0) the improvement of 2% represents almost 9000 people. However, in nearly two-thirds of PCTs, less than 40% of people die at their usual place of residence.

Possible reasons for variation include differences in the proportion of people over 75 years, but this does not explain the degree of variation observed. Likely factors are:

- Proximity to a hospital;
- Availability of 24-hour telephone and other community support;
- Existence of a clear end-of-life care plan;
- Professional and family understanding that a patient is in a palliative phase.

Options for action

Commissioners should consider:

- Assertive identification and planning with people in the last year of life through active primary care registration and management;
- Reviewing investment to ensure 24/7 resilience and response in community services to cover 1% of the population;
- Information sharing and flagging (with consent) such that individual plans and status are visible to relevant agencies;
- Working with social services to adopt and implement the fast-track continuing healthcare assessment process for all people identified as at end of life.

Providers, particularly GPs, should consider which people may be in or approaching the last year of life (support available from Dying Matters and the Gold Standard Framework; see “Resources”). A discussion needs to take place with each person to identify a preferred place of death, and to develop a plan to support the realisation of that preference, which should be made available to the GP, community services, ambulance services, accident and emergency and personal care, as relevant.

Current models of unplanned care are expensive. Emerging good practice suggests that effective community teams working with clearly identified patients who have a plan ensure better experiences for people at end of life, and their families, while reducing or not increasing cost to the local system.

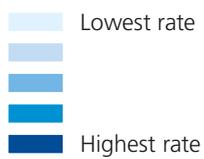
RESOURCES

- National End of Life Care Programme. <http://www.endoflifecareforadults.nhs.uk/>
- Dying Matters. <http://www.dyingmatters.org/>
- National End of Life Care Intelligence Network. <http://www.endoflifecare-intelligence.org.uk/home.aspx>
- Gold Standards Framework. Enabling a gold standard of care for all people nearing the end of life. <http://www.goldstandardsframework.org.uk/>
- Department of Health (2008) End of Life Care Strategy – promoting high quality care for all adults at the end of life. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_086277
- Electronic Palliative Care Coordinating System pilots. <http://www.endoflifecareforadults.nhs.uk/publications/localities-registers-report>

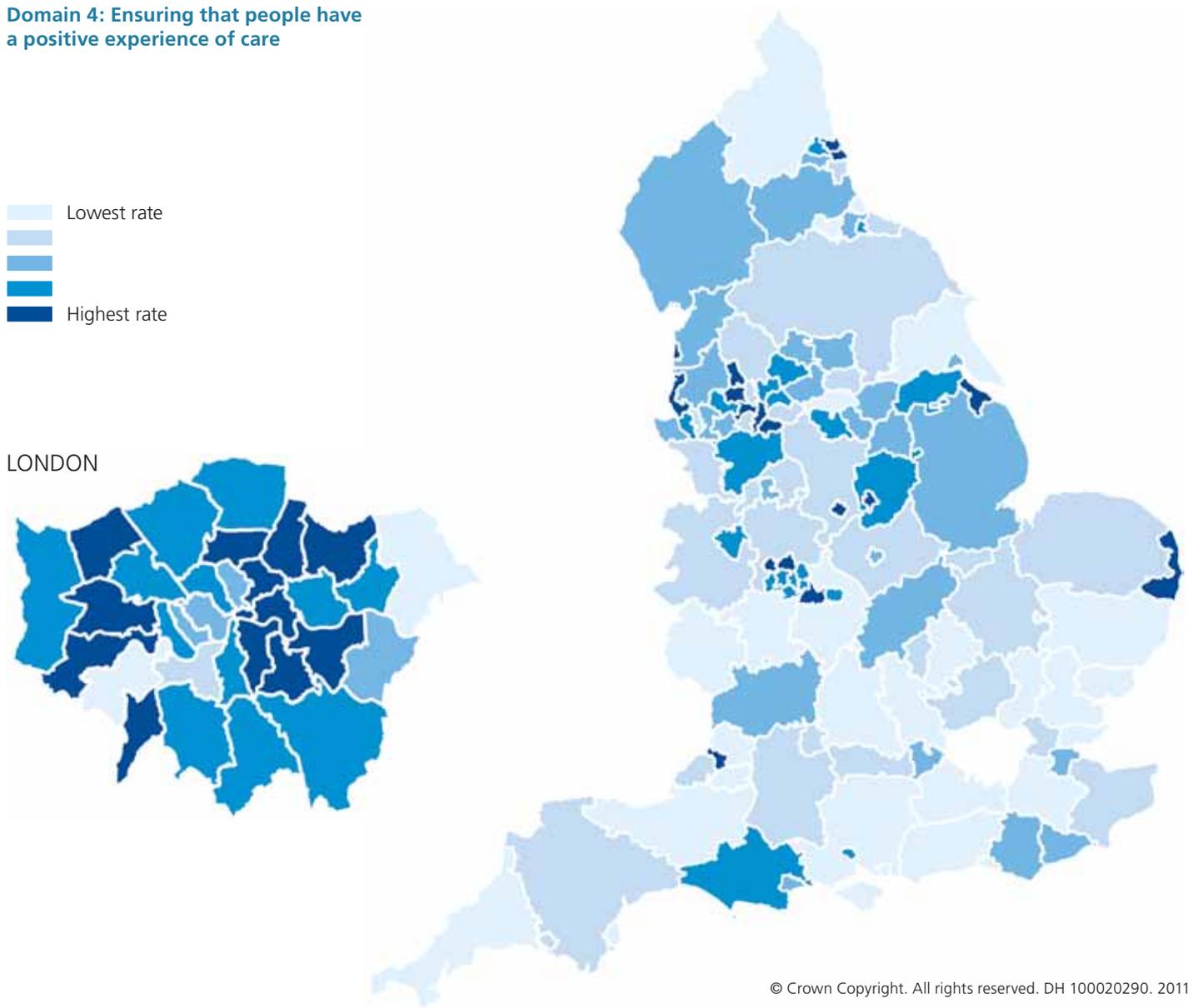
END-OF-LIFE CARE

Map 67: Percentage of all deaths that occur in hospital for children aged 0–17 years with life-limiting conditions by PCT 2005–2009

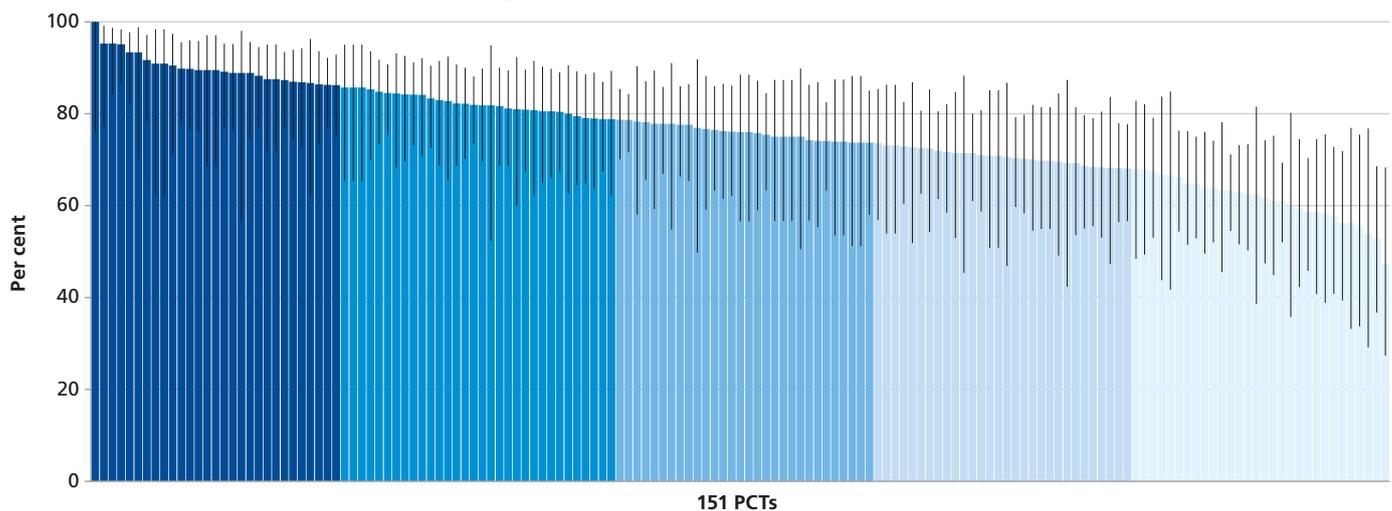
Domain 4: Ensuring that people have a positive experience of care



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Life-limiting conditions are those in which no reasonable hope of cure exists and from which children or young people will die prematurely. Most children with life-limiting conditions and their families express a preference for death to take place at home. However, even when that is medically possible, lack of community support can prevent this preference being realised.

This indicator is one of many showing the quality of palliative care services. Palliative care is not simply about “end of life” care. It is an active process that encompasses physical, emotional and social support to maximise quality of life for children from the moment of diagnosis to providing support for families during the bereavement process.

Magnitude of variation

For PCTs in England, the percentage of all deaths that occur in hospital for children aged 0–17 years with life-limiting conditions ranges from 47.4% to 100% (2.1-fold variation). When the five PCTs with the highest percentages and the five PCTs with the lowest percentages are excluded, the range is 56.3–93.3%, and the variation is 1.7-fold.

The corollary is that after exclusions the percentage of children dying out of hospital (at home or in a hospice) ranges from 6.7% to 43.7%, a variation of 6.5-fold.

The relatively high percentage of children dying in hospital may reflect the nature of service provision and level of support available to families outside hospital.

Options for action

Commissioners and clinicians should consider the proportion of children dying in local hospitals and investigate whether this reflects family choice. The care team should work with the family to clarify the family’s wishes for end-of-life care, in terms of the type of care and place of care. Families should be provided with the support and resources they need to enable their child to die in the place of their choice.

Commissioners should review other indicators relating to the quality of palliative care provided for families and children with life-limiting conditions, such as:

- › the number of children who have an end-of-life plan;
- › whether choice in place of death is offered to the child’s family;
- › whether there are adequate resources to provide care and support 24 hours a day 7 days a week within the child’s home or other preferred place of death, such as a children’s hospice.

Commissioners should ascertain whether the workforce have the skills, knowledge and expertise to support children at end of life together with their families (see “Resources”).

The availability of efficient and effective end-of-life care to children and young people depends on strong clinical leadership, with local networks of service providers working together to make 24-hour palliative care a reality.

RESOURCES

- › Department of Health guidance “Better Care: Better Lives – Improving outcomes and experiences for children, young people and their families living with life-limiting and life-threatening conditions” (2008) provides a framework for the level of service that commissioners and clinicians should be delivering for children’s palliative care. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_083106.
- › ACT provides a range of information and resources for professionals, children and families. <http://www.act.org.uk>
- › Skills for health has identified the workforce functions mapped to the specific National Occupational Standards required to care for children with life-limiting and life-threatening conditions. <http://www.skillsforhealth.org.uk/about-us/news/caring-for-children-with-life%11limiting-and-life%11threatening-conditions/>

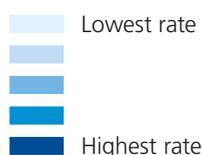
This indicator is from the Child Health Themed Atlas

IMAGING SERVICES

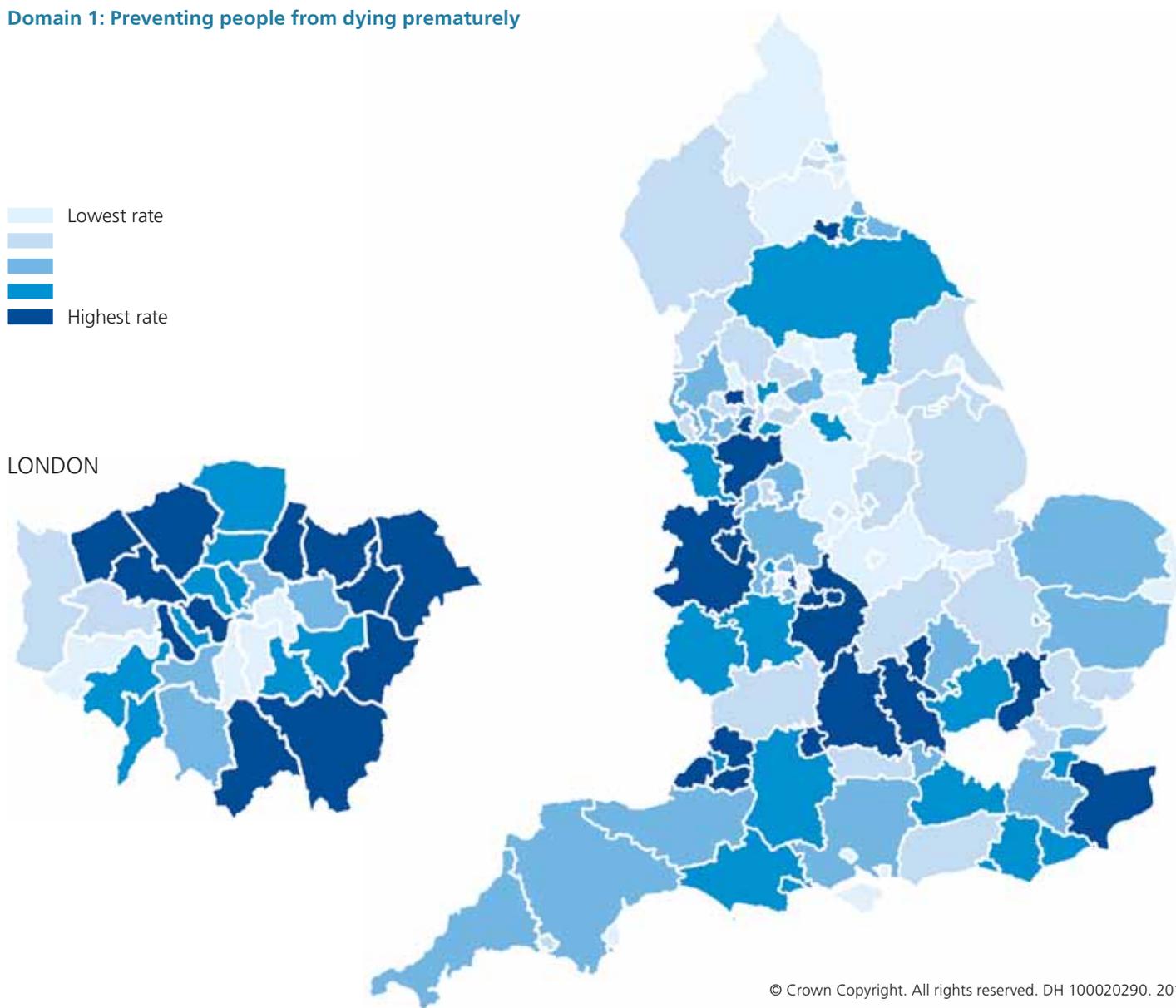
Map 68: Rate of magnetic resonance imaging (MRI) activity per weighted population by PCT

2010/11

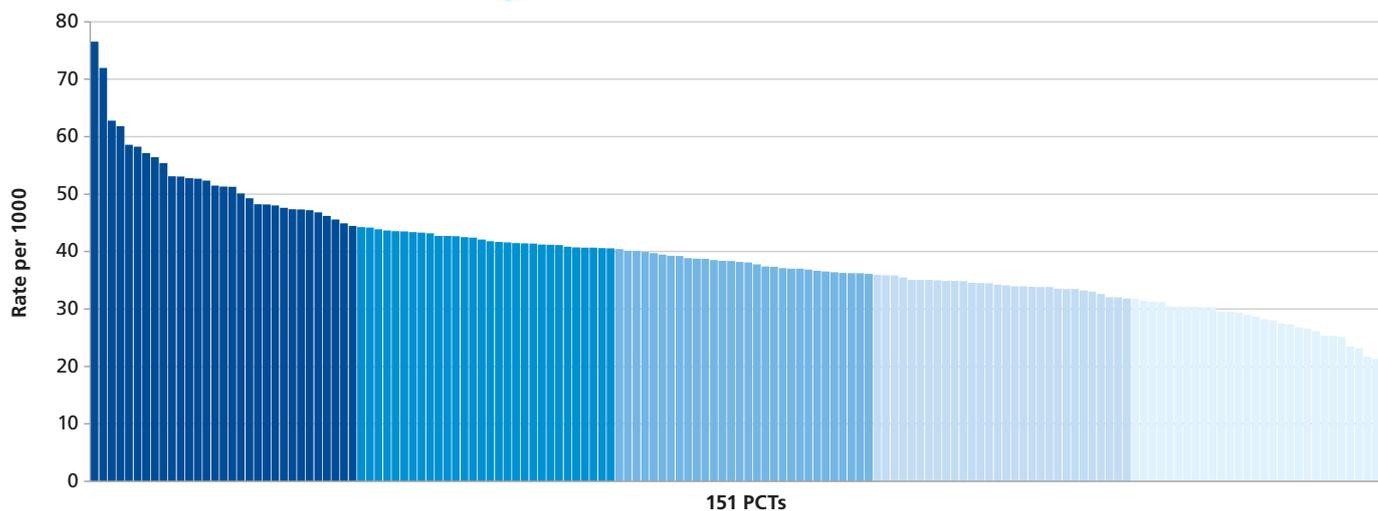
Domain 1: Preventing people from dying prematurely



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Magnetic resonance imaging (MRI) is similar to a CT scan, but it does not use X-rays. Instead, MRI uses magnetism and radio waves to build up a series of cross-sectional images. As MRI pictures can be very precise, they can often provide as much information as looking at the tissues directly, which is why MRI has the potential to reduce the number of diagnostic procedures that need to be performed. The cost of MRI equipment means that it is used primarily at centres where it is kept most busy.¹

Magnitude of variation

For PCTs in England, the rate of MRI activity per 1000 weighted population ranged from 18.1 to 76.5 (4.2-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 25.1–58.3 per 1000 population, and the variation is 2.3-fold.

In 2009/10, the variation was fourfold (see Map 31, Atlas 1.0), and after exclusions it was slightly greater than twofold. The degree of variation among PCTs in the rate of MRI activity per 1000 population has persisted.

Although some of this variation can be attributed to the availability of both equipment and workforce, much of the variation could be due to local clinical practices that have evolved over time, which may need re-assessing.

There is concern about the increasing use of MRI because of incidental findings, that is, findings unrelated to the original reason for undertaking MRI. Incidental findings can lead to unnecessary investigation and anxiety. In one systematic review and meta-analysis, the authors conclude that:

“Incidental findings on brain MRI are common, prevalence increases with age, and detection is more likely using high-resolution MRI sequences than standard resolution sequences. These findings deserve to be mentioned when obtaining informed consent for brain MRI in research and clinical practice.”²

Options for action

Commissioners and providers should collaborate to review rates of MRI activity in the local area to identify whether there is any unwarranted variation.

To address unwarranted variation, commissioners and providers need to work together to apply evidence-based practice at a local level, including:

- ▶ Using evidence-based patient pathways for diagnostics;
- ▶ Promoting research to understand the benefits and harms resulting from different rates of MRI investigation, and promoting audit to identify both under-use and over-use.

The Royal College of Radiologists plays a leading role in the education of all clinicians. Providers need to ensure that education and skills development are available to the relevant clinicians.

RESOURCES

- ▶ Guidelines for diagnostic imaging have been produced for commissioners (NB: at the time of writing, contents were under review): <http://www.improvement.nhs.uk/CommissioningAWorldClassImagingService/tabid/65/Default.aspx>
- ▶ Royal College of Radiologists produces referral guidelines (MBUR6) entitled “Making best use of clinical radiology services” (6th edition, 2007; 7th edition due for publication December 2011), which should be used to apply evidence-based practice and resolve any unwarranted variation in imaging activity. <http://www.rcr.ac.uk/content.aspx?PageID=995>

 **See what Right Care is doing on Imaging Services on page 32**

1 The Royal College of Radiologists. FAQs in radiology. <http://www.rcr.ac.uk/content.aspx?PageID=504>

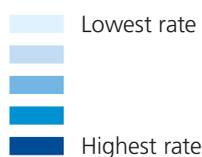
2 Morris Z, Whiteley WN, Longstreth WT Jr et al (2009) Incidental findings on brain magnetic resonance imaging: systematic review and meta-analysis. *BMJ* 339:doi:10.1136/bmj.b3016 (Published 17 August 2009).

IMAGING SERVICES

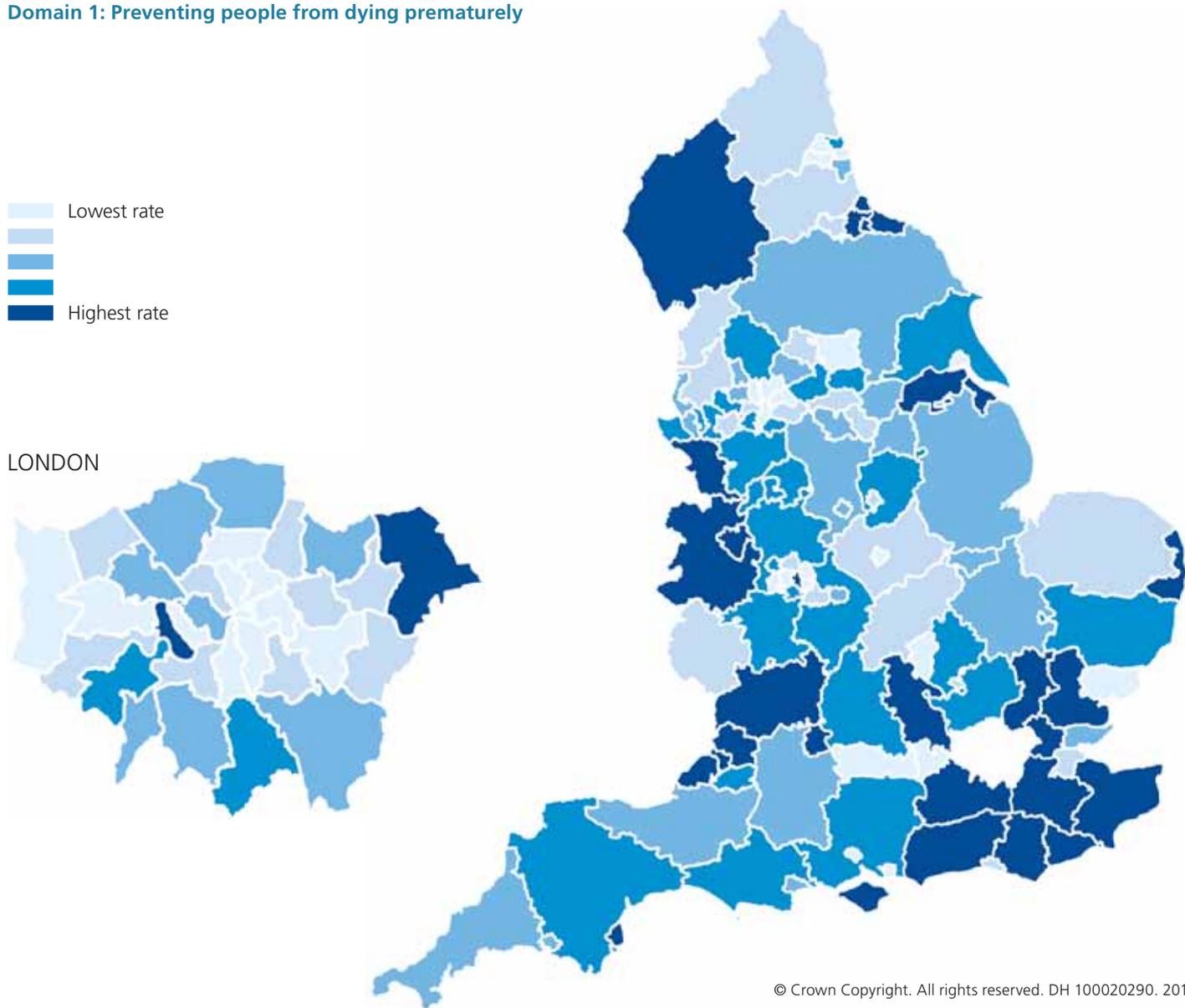
Map 69: Rate of computed axial tomography (CT) activity per weighted population by PCT

2010/11

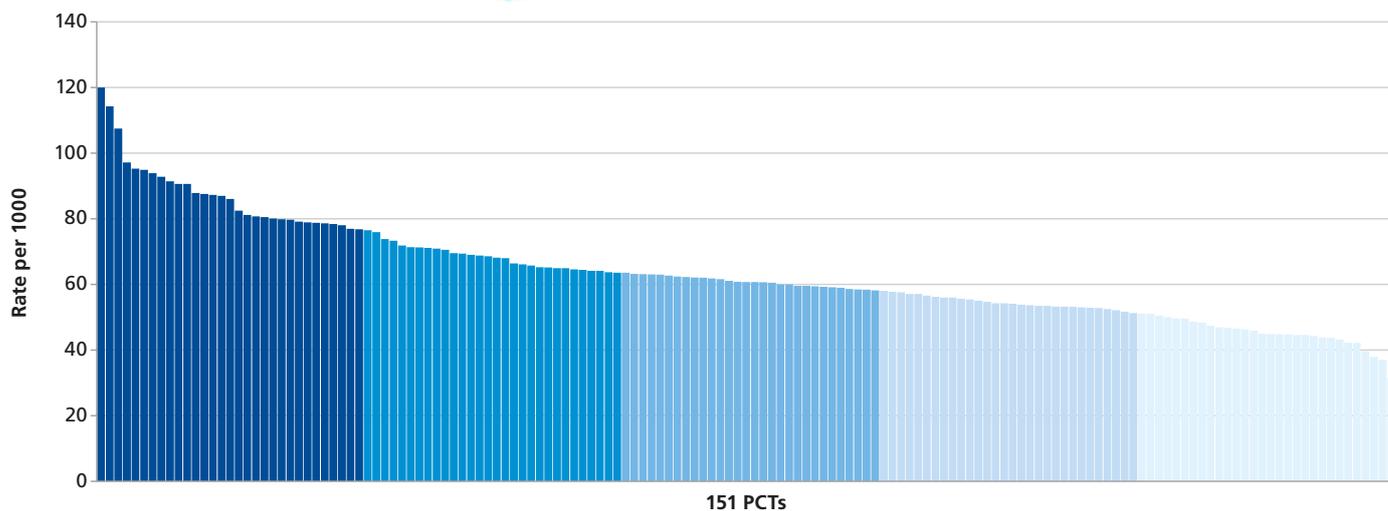
Domain 1: Preventing people from dying prematurely



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Computed axial tomography (a CAT or CT scan) is an X-ray technique using a scanner that takes a series of pictures across the body allowing a radiologist to view the images in a two- or three-dimensional form.¹

It complements and supplements information obtained from MRI (see Map 68), and other imaging modalities such as ultrasound.

Magnitude of variation

For PCTs in England, the rate of CT activity per 1000 weighted population ranged from 31.4 to 120.0 (3.8-fold variation). When the five PCTs with the highest rates and the five PCTs with the lowest rates are excluded, the range is 42.2–94.9 per 1000 population, and the variation is 2.2-fold.

In 2009/10, the variation was threefold (see Map 32, Atlas 1.0), and after exclusions it was greater than twofold. This would seem to indicate that the spread has increased but the degree of variation has persisted once outlying PCTs have been excluded.

Although some of this variation can be attributed to the availability of both equipment and workforce, much of the variation could be due to local clinical practices that have evolved over time, which may need re-assessing.

From the patient's perspective, it is important to reduce any unwarranted variation, especially in CT activity, because unlike MRI this intervention carries a heavy radiation burden, which is to be avoided whenever possible because of the potential harm it could inflict.

The over-use of CT in the United States of America is now a major public health concern, and articles published in the *New England Journal of Medicine* warn of the dangers:

*"our findings that in some patients worrisome radiation doses from imaging procedures can accumulate over time underscores the need to improve their use"*²

"we have to adopt a public health mind set ... and talk explicitly about the elements of danger in exposing our patients to radiation".³

Although this is less of an issue in England, partly due to the leadership of the Royal College of Radiologists, whole-body screening is being promoted by independent providers, which is of no benefit to the individuals concerned while increasing the level of radiation to which they are exposed, and generating referrals to the NHS.

Options for action

Commissioners and providers should collaborate to review rates of CT activity in the local area to identify whether there is any unwarranted variation.

To address unwarranted variation, commissioners and providers need to work together to apply evidence-based practice at a local level, including:

- Using evidence-based patient pathways for diagnostics;
- Promoting research to understand the benefits and harms resulting from different rates of CT investigation, and promoting audit to identify both under-use and over-use.

RESOURCES

- Guidelines for diagnostic imaging have been produced for commissioners (NB: at the time of writing, contents currently under review): <http://www.improvement.nhs.uk/CommissioningAWorldClassImagingService/tabid/65/Default.aspx>
- Royal College of Radiologists produces referral guidelines (MBUR6) entitled "Making best use of clinical radiology services" (6th edition, 2007; 7th edition due for publication December 2011), which should be used to apply evidence-based practice and resolve any unwarranted variation in imaging activity. <http://www.rcr.ac.uk/content.aspx?PageID=995>

 **See what Right Care is doing on Imaging Services on page 32**

1 The Royal College of Radiologists. FAQs in radiology. <http://www.rcr.ac.uk/content.aspx?PageID=504>

2 Fazel R et al. Exposure to low dose ionizing radiation from medical imaging procedures. *New England Journal of Medicine* 2009; 361:849-857.

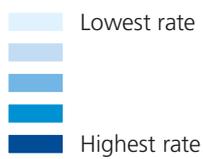
3 Lauer MS. Elements of danger – the case of medical imaging. *New England Journal of Medicine* 2009; 361:841-842.

IMAGING SERVICES

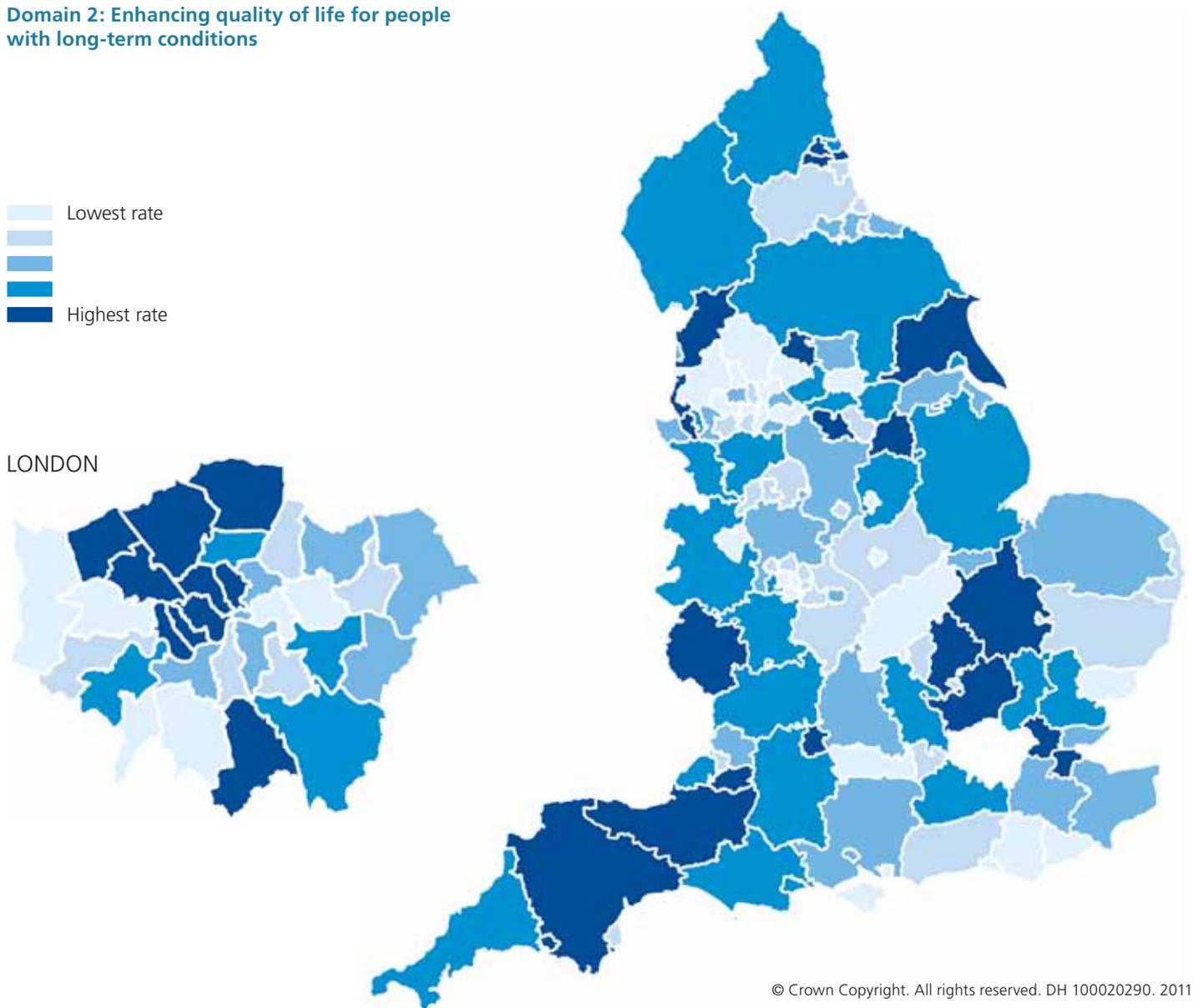
Map 70: Rate of dual-energy X-ray (DEXA) scan activity per weighted population by PCT

2010/11

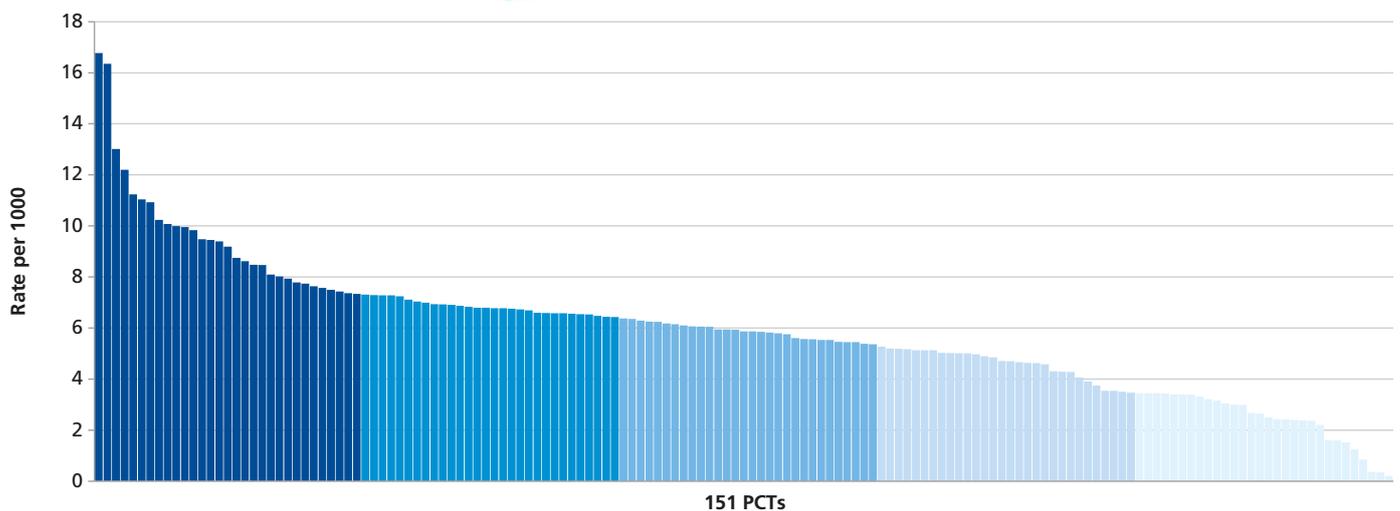
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Dual-energy X-ray (DEXA) scans are a type of X-ray used to measure the amount of the mineral calcium in bones. It is one of several techniques known as bone densitometry that can be used to measure the density of bones.

When measuring low bone density, a DEXA scan is more sensitive than a normal X-ray. It is also safer in that it delivers a much lower dose of radiation, which is equivalent to less than one day's exposure to natural background radiation.

There are two types of DEXA scan:

- Axial or central DEXA scan, in which a scanning arm passes over the body to measure bone density in the centre of the skeleton;
- Peripheral DEXA (pDEXA) scan, in which a scanning arm or portable device measures bone density in peripheral parts of the body, such as the wrist or heel.

Measurements of bone density are used for several purposes:

- In the diagnosis of osteoporosis;
- To assess the risk of osteoporosis developing;
- To monitor the effectiveness of treatment for conditions such as osteoporosis;
- In the diagnosis of other bone disorders, such as osteopenia.

DEXA Scans can also be used to measure the relative amount of body fat and muscle. However, the most common use is in the measurement of bone density.

In addition to structural changes, osteoporosis involves a gradual loss of calcium from the bones which results in the bones becoming thinner, more fragile and more likely to break. Osteoporosis is most commonly seen in women following the menopause, although it can affect men. The risk of a fragility fracture is affected by age, weight, prior history, family history, smoking habit and excessive consumption of alcohol.

Magnitude of variation

For PCTs in England, the rate of DEXA scan activity ranged from 0.2 to 16.8 per 1000 population (83-fold variation). When the five PCTs with the highest rates

and the five PCTs with the lowest rates are excluded, the range is 1.5–11.0 per 1000 population, and the variation is sevenfold.

Possible reasons for variation include differences in:

- The use of other tests to measure bone density;
- Population composition in different areas – populations with a greater proportion of older people may have higher rates of activity;

However, it is unlikely that these reasons for warranted variation explain the degree of variation observed.

Possible reasons for unwarranted variation include differences in:

- Availability of imaging services;
- Development of integrated systems for fracture prevention.

Options for action

Commissioners and providers need to review the prevention of falls and fractures in local populations, including issues ranging from excessive prescribing to the prevention of fragility fractures. Commissioners and providers may find the Department of Health's Impact Assessment of fracture prevention interventions useful in this review.¹

RESOURCES

- Guidelines for diagnostic imaging have been produced for commissioners (NB: at the time of writing, contents currently under review): <http://www.improvement.nhs.uk/CommissioningAWorldClassImagingService/tabid/65/Default.aspx>
- Royal College of Radiologists produces referral guidelines (MBUR6) entitled "Making best use of clinical radiology services" (6th edition, 2007; 7th edition due for publication December 2011), which should be used to apply evidence-based practice and resolve any unwarranted variation in imaging activity. <http://www.rcr.ac.uk/content.aspx?PageID=995>

 **See what Right Care is doing on Imaging Services on page 32**

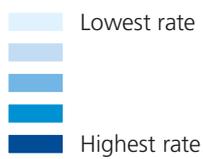
¹ Department of Health (2009) Impact Assessment of fracture prevention interventions. http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_106379.pdf

PRESCRIBING

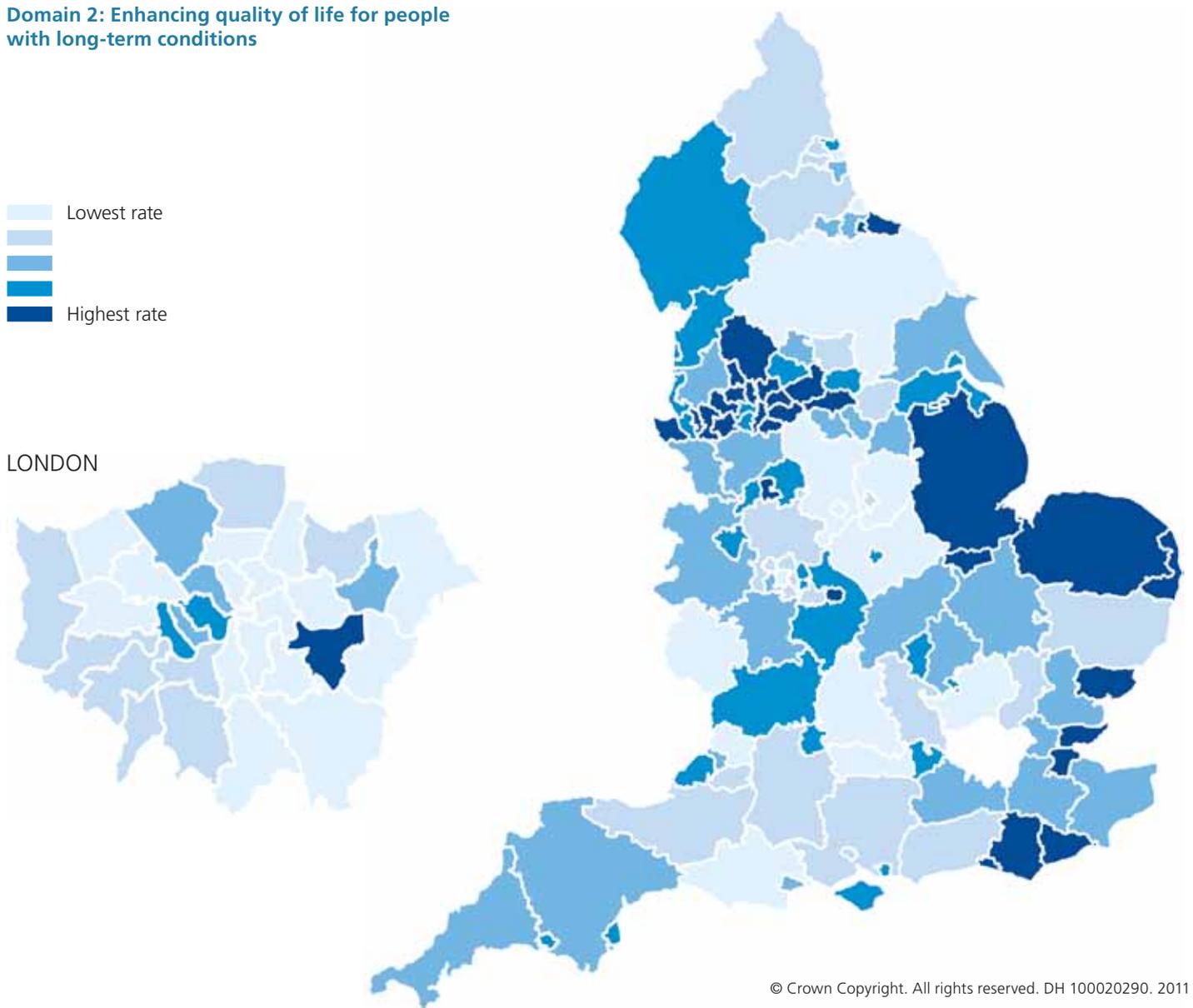
Map 71: Hypnotics drug items prescribed per weighted population (STAR-PU) in primary care by PCT

2009/10

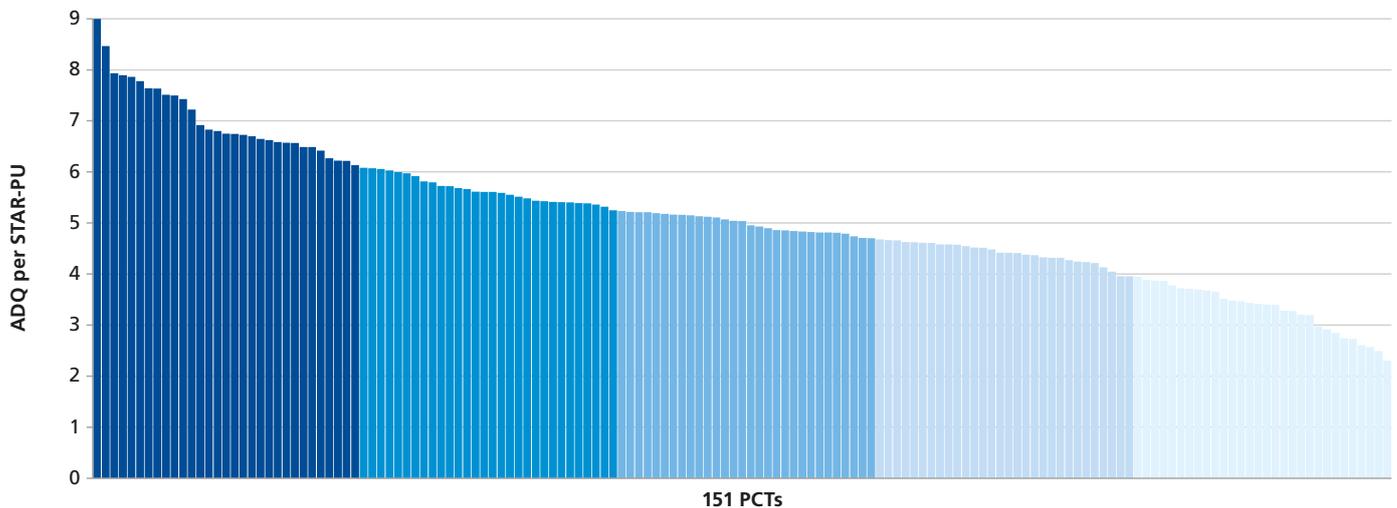
Domain 2: Enhancing quality of life for people with long-term conditions



LONDON



© Crown Copyright. All rights reserved. DH 100020290. 2011



Context

Hypnotics are medications that encourage sleep for people with insomnia, but they are recommended for short-term treatment (up to 4 weeks) only, and tend to be prescribed only after non-drug therapies, such as “sleep hygiene” and cognitive behavioural therapy (CBT), have been tried and failed. The drugs include benzodiazepines (Temazepam or Loprazolam) and the “Z medicines” (Zalepon, Zolpidem or Zopiclone; see “Resources” for NICE guidance).

There are several concerns about the use of hypnotics:

- As they tend to be prescribed for people with clinical insomnias, most of which are chronic, most hypnotics may be prescribed for periods longer than four weeks;
- People may become psychologically dependent on them;
- The drugs lose effectiveness over time.

Insomnia and sleep problems are treated primarily as psychological problems, although there is rarely a clear-cut criterion for diagnosing whether a person has an underlying psychological disorder. A person with sleep problems may present with tiredness or any one of a range of physical symptoms, but they will often ask for help with sleeping.

Except for people with sleep apnoea, there are very few specialist services to which people with sleep problems can be referred. GPs may not have the time or capacity to explore all the behavioural approaches with people who present at the surgery, and it is likely that many GPs do not know how their peers manage sleep disorders.

Data for the numerator of this indicator are expressed as average daily quantities (ADQ), a measure of prescribing volume based upon prescribing behaviour in England: it represents the assumed average maintenance dose per day for a drug used for its main indication in adults (it is an analytical unit and not a recommended dose).¹ The patient denominator is expressed as Specific Therapeutic group Age-sex weightings Related Prescribing Units (STAR-PU).²

1 <http://www.ic.nhs.uk/services/prescribing-support-unit-psu/using-the-service/reference/measures/volume-measures/average-daily-quantities-adq>

2 <http://www.ic.nhs.uk/services/prescribing-support-unit-psu/using-the-service/reference/measures/patient-denominators/star-pus>

Magnitude of variation

For PCTs in England, hypnotics drug items prescribed per weighted population in primary care ranged from 2.3 to 9.2 ADQ per STAR-PU (4-fold variation). When the five PCTs with the highest ADQ per STAR-PU and the five PCTs with the lowest ADQ per STAR-PU are excluded, the range is 2.7–7.8 ADQ per STAR-PU, and the variation is 2.8-fold.

As hypnotics are prescribed mainly for people presenting with sleep problems, this degree of variation probably represents widely differing approaches to managing this common problem.

Options for action

More research is needed into the management of sleep disorders using non-drug therapies.

Tools that would be helpful in primary care include:

- A care pathway on sleep disorders;
- Decision support software for people presenting with sleep disorders, including a warning of the risk of becoming dependent on hypnotics;
- Capacity to deliver cognitive and behavioural support for people with sleep disorders over the Internet;
- Public information and education about good “sleep hygiene”.

In the mean time, commissioners and GPs could collaborate to review the prescribing of hypnotics to ascertain whether:

- It is in accordance with guidance (see “Resources”), and that non-drug therapy options are explored first in the management of sleep disorders;
- It matches need and prevalence of clinical insomnia in the local population.

RESOURCES

- NICE Guidance TA77. Insomnia – newer hypnotic drugs. Zalepon, zolpidem and zopiclone for the management of insomnia. <http://guidance.nice.org.uk/TA77>
- Royal College of Psychiatrists. Information for patients. <http://www.rcpsych.ac.uk/mentalhealthinformation/mentalhealthproblems/sleepproblems.aspx>

Dealing with unwarranted variation locally

Understanding unwarranted variation at a local level

The indicators in *The NHS Atlas of Variation in Healthcare* highlight variation across NHS England. Clinicians and commissioners in PCT Clusters and, in future, local clinical commissioning groups (CCGs) need to understand:

- whether such variation in their locality is warranted or unwarranted;
- their level of expenditure on diseases;
- the outcomes they obtain for that expenditure, especially when compared with populations that are similar in terms of demographic composition and need.

To illustrate the issues local commissioners need to address, we present some of the data available for performance in cancer services in one London PCT, which is considered an “outlier” in terms of both expenditure and outcome when compared with other London PCTs, and ask:

Is the population living in this borough obtaining maximal value for the £30 million per year investment in cancer services?

To answer this question, commissioners need to address the following:

Is the PCT a low spender on cancer, including prescribing expenditure, when compared with other London PCTs, taking into account the age structure of the population? (See Figures L.1A and L.1B.)

Important contextual information on health outcomes that needs to be born in mind is that, when compared with other populations in London, this population has:

- the highest number of years of life lost (see Figure L.2) and a relatively high incidence of cancer, i.e. a high rate of new cases a year (see Figure L.3);

- the lowest rate of cancer bed-days (see Figure L.4) and the lowest rate of death at home (see Figure L.5).

From this example, it is clear that cancer care should be a priority for action for the population and for individual cancer patients in this London borough: spending is low and outcomes are poor.

Taking steps to reduce unwarranted variation at a local level

Although identifying variation and reducing unwarranted variation is a challenge at the local level, there are tools available to help identify potential savings and improve health outcomes. Identifying and understanding unwarranted variation should be seen as an opportunity to increase the value obtained from expenditure on healthcare. Local commissioners need to adopt a systematic approach to tackling unwarranted variation, involving local clinicians, managers and personnel from a public health observatory (PHO) or quality observatory (QO) with expertise in healthcare data collection, analysis and interpretation.

Steps 1–5 below (summarised in Table L.1) show the Right Care approach to “Commissioning for Value”, a locally focussed initiative currently being piloted with the CCGs in the Derbyshire PCT Cluster. This initiative will be rolled out in 2012, using the Do Once Locally and Share principle (see Figure T.1).

Step 1: Identify relative spend across programmes

In Step 1, PCTs and CCGs need to use the **programme budgeting benchmarking tool**¹ to identify how much is spent by a PCT on each disease group when compared with expenditure in other similar PCTs. The tool can be used to identify how a PCT’s allocation is spent across the 23 programme budget categories (PBCs) and their respective subcategories, e.g. the subcategories of asthma, chronic obstructive pulmonary disease and sleep apnoea in the Problems of the Respiratory System PBC. The tool also shows a PCT’s expenditure per head compared with that in other PCTs nationally, locally, or

1 http://www.dh.gov.uk/en/Managingyourorganisation/Financeandplanning/Programmebudgeting/DH_075743

Is the proportion of spend on cancer appropriate compared with other diseases?

Key to charts:

Each bar represents a London PCT. The lowest quintile values are pale yellow, the highest quintile values are dark red. The PCT under investigation is blue. Some charts include 95% confidence intervals which are shown as vertical black lines.

Figure L.1A: Low cancer expenditure rate (weighted) compared with other London PCTs

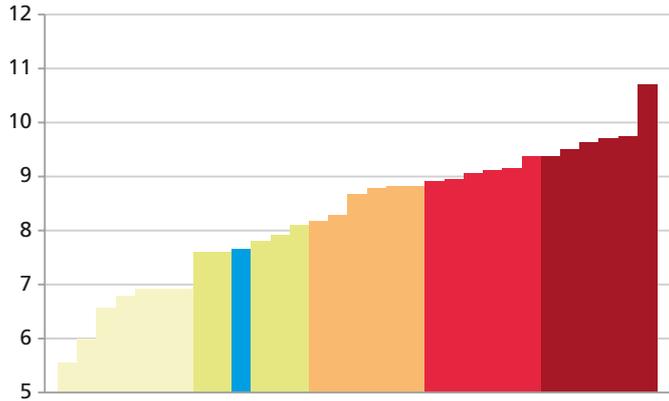


Figure L.3: High incidence of cancer compared with other London PCTs

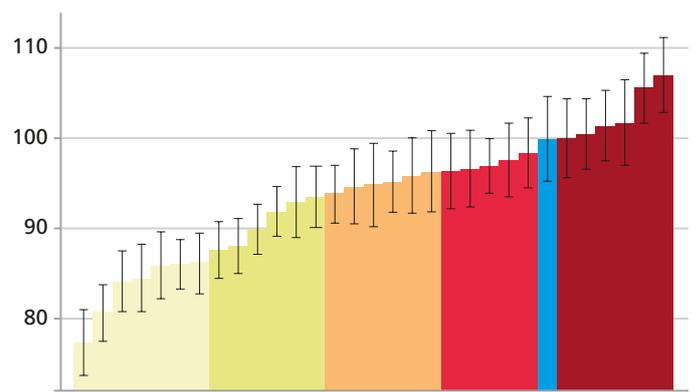


Figure L.1B: Lowest FHS prescribing expenditure rate for cancer in London

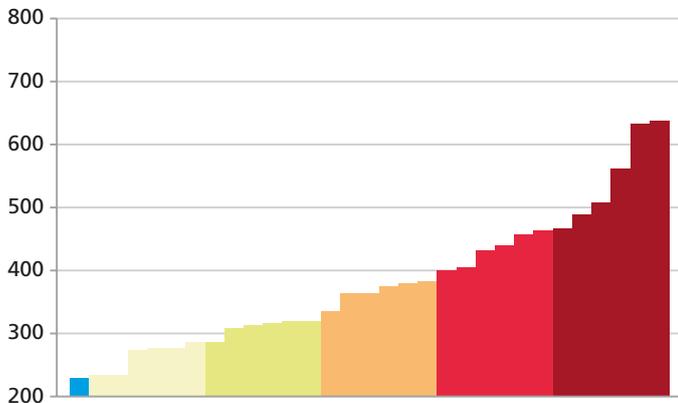


Figure L.4: Lowest bed days for all cancer admissions in London

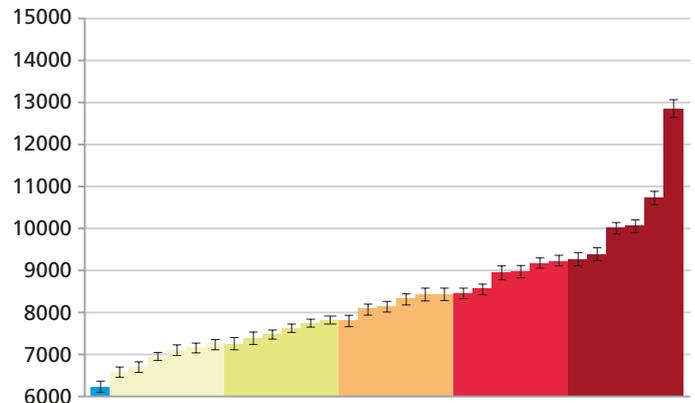


Figure L.2: Highest years of life lost from cancer in London

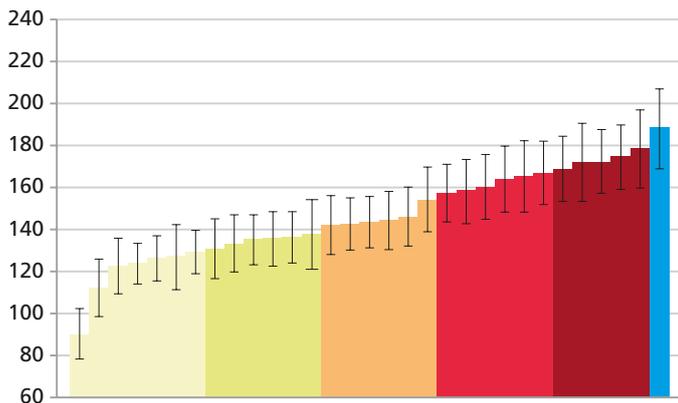
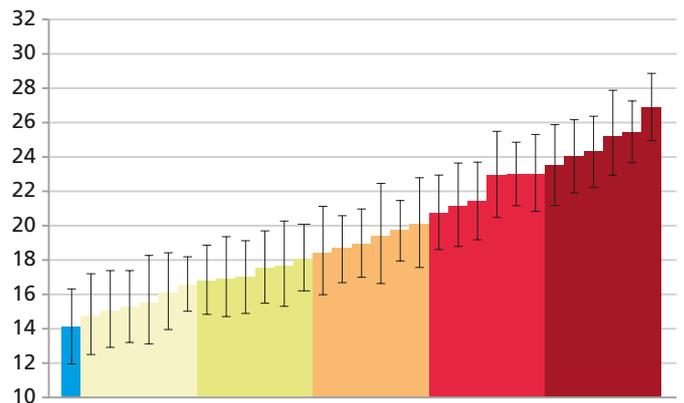


Figure L.5: Lowest rates of deaths at home for cancer patients in London



which have similar population characteristics.

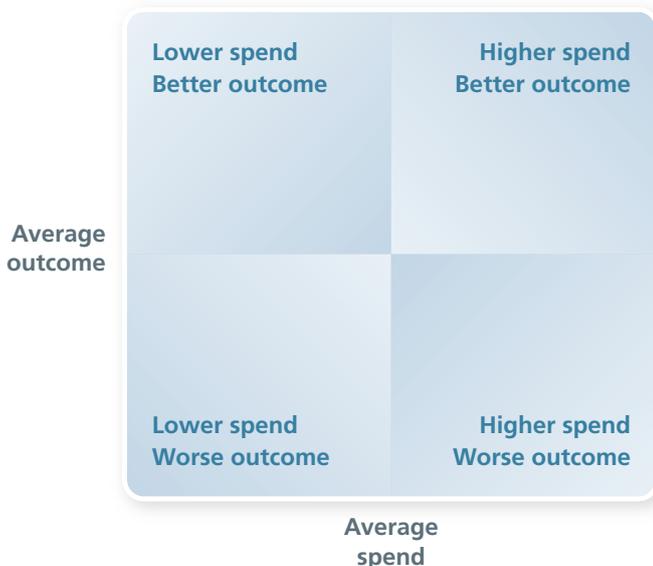
The **Inpatient Variation Expenditure Tool**² can also be used to look at potential expenditure savings for the high-spending PBCs.

Step 1 results in an understanding of expenditure across different disease categories.

Step 2: Identify the relationship between spend and health outcomes

In Step 2, PCTs and CCGs need to examine the relationship between spend and a range of health outcomes. **The Spend and Outcome Tool (SPOT)**³ (see schematic in Figure L.6) enables commissioners to compare the expenditure and outcomes in a PCT with those in other PCTs nationally, locally, or which have similar population characteristics, and against any other PCT of interest.

Figure L.6



Step 2 results in the identification of programmes across a PCT in which expenditure is relatively high or relatively low, and in which outcomes are relatively good or relatively poor. This will highlight which programmes at PCT level could benefit from further investigation.

Step 3: Identify the relative spend and outcomes across programmes at GP commissioner level

In Step 3, PCTs and CCGs need to examine whether the programmes that could benefit from further investigation at a PCT level are also of concern for the GP commissioner and constituent practices. **NHS Comparators**⁴ can be used to look at the relative

expenditure on primary care prescribing, outpatients and inpatients across programmes.

To identify corresponding outcomes across the geography, several sources may be of help. If the population broadly corresponds to a local authority boundary, the **Health Profiles**⁵, published by the Association of Public Health Observatories (APHO), provide a range of health outcomes. If the population does not correspond with a local authority boundary, the PCT's Joint Strategic Needs Assessment (JSNA) will contain a section showing health outcomes at a small scale.

Step 3 results in the identification of programmes for which there is the potential to improve outcomes through investment, and the identification of the source of the investment, whether from another programme budget or disinvestment within the same programme budget.

Step 4: Identify the drivers of spend within a programme budget

NHS Comparators can be used to examine a range of activities that affect overall expenditure at practice level, e.g. prevalence rates, prescribing rates, outpatient attendances, and elective and emergency admissions. To enable comparisons with similar patient populations, the tool can be used to compare practices with similar needs profiles. Both expenditure and activity volumes on disease groups (programmes) can be compared.

APHO General Practice Profiles⁶ can be used to compare the uptake of Quality and Outcome Framework (QOF) measures to examine management in primary care.

Step 4 results in a detailed understanding of relative expenditure on different diseases within a programme budget, health outcomes and opportunities for cost reduction.

2 <http://www.networks.nhs.uk/nhs-networks/health-investment-network/documents/Inpatient%20Variation%20Expenditure%20Tool%20-%20FINAL%20-%20v2.0%20-20110119.xls>

3 <https://nww.nhscomparators.nhs.uk/> (N3 connection required)

4 <https://nww.nhscomparators.nhs.uk/> (N3 connection required)

5 <http://www.apho.org.uk/default.aspx?RID=49802>

6 <http://www.apho.org.uk/pracprof/>

Step 5: Implementation

Once potential programmes have been identified, PCTs and CCGs need to use a reliable method, such as marginal analysis, to prioritise investments that deliver the greatest health benefits for patients, thereby maximising value.

Step 5 results in a draft list of investments that would deliver the greatest health benefits for patients at

maximal value, and suggestions about how those investments would be funded. This draft list could form the basis for the active engagement of clinicians and patient groups.

SIGNPOST TO RESOURCES

- › An eGuide to using the tools described in this section is available on the Right Care website.
<http://www.rightcare.nhs.uk/index.php/tools-resources/health-investment-packs/>

Table L.1: Five steps to reduce unwarranted variation at a local level

Step	Action	Result/Output
1	Identify relative spend across programmes	An understanding of the expenditure across different disease categories
2	Identify the relationship between spend and health outcomes	The identification of programmes across a PCT which could benefit from further investigation because: <ul style="list-style-type: none"> • expenditure is relatively high or relatively low; • outcomes are relatively good or relatively poor.
3	Identify the relative spend and outcomes across programmes at GP commissioner level	The identification of programmes for which there is the potential to improve outcomes through investment, with the resources for investment coming from: <ul style="list-style-type: none"> • another programme budget; • disinvestment within the same programme budget.
4	Identify the drivers of spend within a programme budget	A detailed understanding of: <ul style="list-style-type: none"> • relative expenditure on different diseases within a programme budget; • health outcomes; • opportunities for cost reduction.
5	Implementation	To begin the active engagement of clinicians and patient groups, a draft list of investments that would deliver the greatest health benefits for patients at maximal value, and how they would be funded.

Right Care for Patients, Right Care for Populations

The primary objective for Right Care is to maximise value

- › the value that the patient derives from their own care and treatment
- › the value the whole population derives from the investment in their healthcare



Case-study 1: Delivering improved healthcare in Warrington from indicative data

Matthew Cripps, Turnaround Director, Warrington Health Consortium

The setting

Warrington Health Consortium is an aspiring Clinical Commissioning Group (CCG) with the same footprint as NHS Warrington, a medium-sized primary care trust with a commissioning budget of £310 million. It gained full delegated authority from NHS Warrington in April 2011. The Consortium commissions safe and high-quality health services for the 203,000 people of Warrington, and implements improvements in health and well-being for the population.

NHS Warrington undertook a major programme of financial recovery which achieved £8.4 million non-recurrent savings and £15.4 million recurrent savings in 2010/11. This was delivered through a range of actions that focussed on improving efficiency in service provision and management costs.

The situation or problem

Warrington's population has increased by 4% since 1995, including a 1% increase in the number of people aged over 65 years old. This compares with an increase of 0.1% in England as a whole.¹ The funding available, coupled with these increases in demand and inflationary pressures, means that the Consortium began 2011/12 with a £25-million pressure. Warrington Health Consortium thus began its first full year of operation with the task of achieving a Quality, Innovation, Productivity and Prevention (QIPP) programme that had to incorporate a £25-million savings requirement. The consortium needed to identify areas where savings ought to and could be made. To do this, it turned to *The NHS Atlas of Variation in Healthcare November 2010*² and the Health Investment Pack 2010, both of which were produced by the Right Care team.

What action was taken?

As commissioners of healthcare, the Consortium is committed to increasing the value of its resources.³ The Consortium faced the significant challenge of delivering its QIPP programme at a time when the organisation itself was in transition from the previous configuration. The Consortium needed quickly:

- To identify where efficiencies in healthcare could be made;
- To identify where benchmarking showed efficiencies ought to be made;
- To establish that these changes would improve quality and productivity, leading to improved patient care.

The Consortium used *The NHS Atlas of Variation in Healthcare* to identify outcomes, pathways and services where it was an "outlier", in terms of activity, expenditure, quality, outcomes, value, and/or equity.

What happened as a result?

The Atlas enabled the Consortium to identify the service areas and pathways where its Office of National Statistics (ONS) cluster peers collectively delivered more efficient, effective and/or appropriate pathways for a similar demographic population. This initial benchmarking data was then used to inform a full service review that determined the causes of over-spend and suboptimal performance.

The first wave of reviews focused on the following services for which the Atlas showed we had significantly higher activity and expenditure than the norm:

- Mental health;
- Trauma and injury;
- Respiratory;
- Musculo-skeletal.

1 NHS Warrington (2010) Public Health Report for 2009/10.

2 <http://www.rightcare.nhs.uk/atlas/>

3 Department of Health (2010) Equity and Excellence: Liberating the NHS.
http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_117353

The Atlas acted as the catalyst for service reform, efficiency and improvement.

The reviews analysed data from several sources on activity, expenditure, outcomes and quality, and we used these to demonstrate the need for service reform and the shape of those reforms. As part of this, ONS cluster peers achieving lower expenditure and better outcomes (as identified using *The NHS Atlas of Variation in Healthcare*) were contacted to share their pathways and learning.

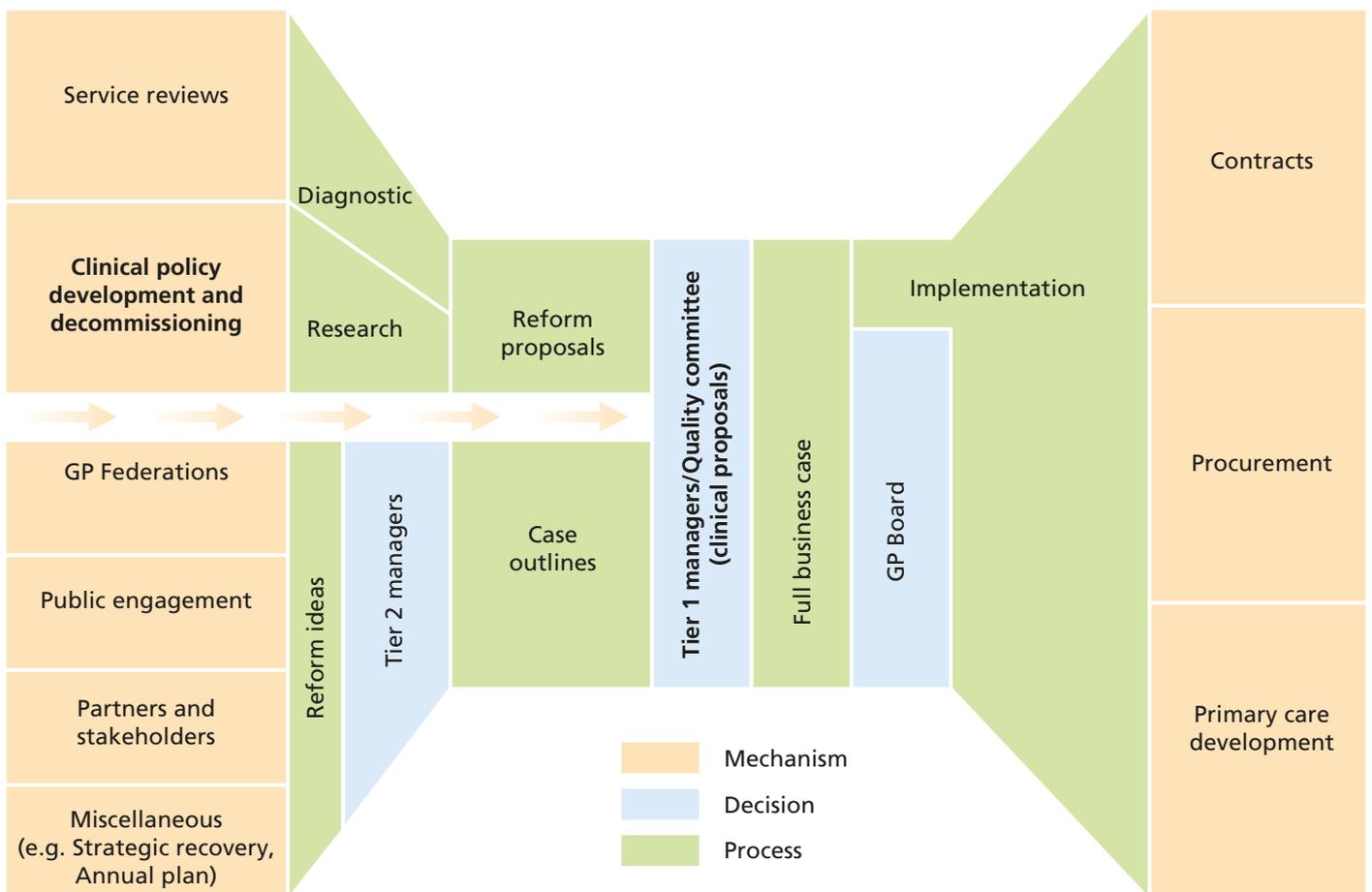
The service reviews identified many opportunities for improvement and transformation, which are now being implemented. Clinical pathways have been re-designed, in collaboration with stakeholders, to deliver

high-quality and sustainable services for the future. The service reviews also highlighted several areas where improvements could be made with the application of NICE guidance and Better Care, Better Value indicators.

Learning points

The NHS Atlas of Variation in Healthcare provided an effective benchmarking tool, enabling organisations to identify variations in quality, outcome, activity and expenditure. When coupled with an effective business process that focuses on delivery of reform and improvement (see Figure CS1.1 for that of Warrington Health Consortium), this allows commissioners to focus on optimising high-quality, high-value services that are cost-effective.⁴

Figure CS1.1: Warrington Health Consortium: Healthcare Reform Process



4 Warrington Health Consortium (2011) Strategic Commissioning Plan.

Case-study 2: Examining the variation in orthopaedic thresholds and highlighting the need for change

Rob Wakeman, Consultant Orthopaedic Surgeon, Basildon and Thurrock University Trust

Luke Twelves, Chair, High Impact Changes Subgroup, Delivering Sustainable Care QIPP Workstream

The setting

Delivering Sustainable Care QIPP Workstream, East of England Strategic Health Authority, 2011.

The situation or problem

Regional variation in surgical practice has been of concern for the past 100 years.¹ Although some variation is comprehensible due to demographic, genetic and geographic factors and the development of new services, the QIPP programme is committed to determining where variation is unwarranted and to see that future expenditure is targeted to achieve the best outcomes.

Wennberg et al have demonstrated that local health economies have a characteristic “surgical signature” of variation in preference-sensitive procedures that persists over time unless it is modified by developing shared decision-making programmes which help to ensure that the right patient gets the right operation.²

Building on the principles of Wennberg and the theme from the *NHS Atlas of Variation in Healthcare*,³ there was agreement that consideration should be given to “the need to identify and reduce unwarranted variation” as part of commissioning decisions from both clinicians and patients. We undertook a review of standard orthopaedic procedures to explore the degree of variation in some of the procedures that feature commonly in service restrictions across the East of England region, with a particular emphasis on the clinical aspect of referral thresholds.

What action was taken?

As part of the former Planned Care Programme Board and now the High Impact Changes Sub-Group of the Delivering Sustainable Care QIPP Workstream for the East of England, this review was developed together with the of Eastern Region Public Health Observatory (ERPHO) and also involved a group of primary and secondary care clinicians interested in improving orthopaedic care for patients. The aim was that the final report should be seen as a tool that complements the work of the NHS Information Centre for health and social care and the Right Care Health Improvement Packs 2010.

The following procedures were analysed in detail with respect to PCT of residence and provider, using funnel plots to review the rate of procedure per population, but also with reference to national guidance:

- › Total hip procedures;
- › Total knee replacements;
- › Diagnostic arthroscopy of the knee;
- › Therapeutic arthroscopy of the knee;
- › Excision of ganglion from wrist;
- › Palmar fasciectomy for Dupuytren’s disease;
- › Trigger finger release;
- › Carpal tunnel decompression;
- › Lumbar spine procedures.

Following analysis, a report was producing including a summary of high-provision outlying activity by PCT categorised as ‘alarm’ or ‘alert’. All the PCTs that appear as ‘alarm’ or ‘alert’ were encouraged to review their activity as per recommendations.

1 Glover AJ (2008) The incidence of tonsillectomy in school children. *Proc R Soc Med* 31:1219–1236. Reprinted in *Int J Epidemiol* 2008;37:09–19.

2 Wennberg JE (2010) *Tracking Medicine. A Researcher’s Quest to Understand Health Care*. Oxford University Press.

3 The *NHS Atlas of Variation in Healthcare* November 2010. http://www.rightcare.nhs.uk/atlas/qipp_nhsAtlas-LOW_261110c.pdf

What happened as a result?

The report was published in August 2011,⁴ and commissioners are reviewing their status:

- › Clinical commissioners and PCT commissioners in one locality are now examining their outlier status for various procedures and questioning their future commissioning plans, both internally and with care providers;
- › Several East of England commissioners will be using this work during the current round of negotiations for April 2012 contracts with providers.

Learning points

Following this review, several proposals for future commissioning have been made.

- › The development of local service restrictions should include consultation with clinicians from both the purchaser and potential provider, and should be couched in terms that are both medically specific and accessible to lay readers.
- › Any commissioning restriction policy should be evidenced, and make a clear distinction between procedures limited on clinical grounds and those limited on economic grounds.
- › Commissioners should ensure that shared decision-making is adopted as the standard approach in elective surgery, utilising programmes and decision aids as they become available.

ACKNOWLEDGEMENTS

Shane Gordon, Associate Medical Director, East of England SHA

Jill Gamlin, Physiotherapist Musculo-Skeletal, Cambridgeshire Community Services

Julian Owen, Orthopaedic Surgeon, Addenbrooke's Hospital, Cambridge

Maggie Pacin, Consultant in Public Health, NHS Mid Essex

Arthur Hibble, Director of Postgraduate General Practice & Head of General Practice, East of England SHA

Simon Wood, QIPP Director and Programme Director, Towards the Best, Together, NHS East of England.

Kirsty Smith, Analyst, Eastern Region Public Health Observatory (ERPHO)

Julian Flowers, Director, ERPHO

Graham Gie, The Hip Society

Joe Dias, The British Society for Surgery of the Hand

Tim Germon, The British Association of Spinal Surgeons

4 https://www.eoe.nhs.uk/page.php?page_id=1138

Glossary of Essential Terms

Introduction

Much of the disagreement that occurs during the commissioning or management of services arises because different people use the same term but have a different understanding of its meaning. This Glossary is provided to help develop a shared or common language. If there is a clear, short and memorable definition from the literature, this has been cited and presented in italics; where definitions in the literature are overly long, Right Care has composed and provided a short definition.

Accountable Care Organisations (ACOs)

ACOs consist of providers who are jointly held accountable for achieving measured quality improvements and reductions in the rate of spending growth.

Source: McLellan M, McKethan AN, Lewis JL, Roski J, Fisher ES (2010) A National Strategy to put Accountable Care Into Practice. *Health Affairs* 29: 982.

Allocative efficiency

Allocative efficiency is maximised when it is impossible to get more value by switching resources from one programme budget to another.

Appropriate

A procedure is termed appropriate if its benefits sufficiently outweigh its risks to make it worth performing ...

Source: Kahan JP et al (1994) Measuring the necessity of medical procedures. *Medical Care* 32: 352-365.

Coefficient of variation (CoV)

See time trends glossary, page 60

Confidence intervals

Confidence intervals give the range within which the true size of a treatment effect (which is never precisely known) lies, with a given degree of certainty (usually 95% or 99%).

Source: Evans I, Thornton H, Chalmers I (2006) *Testing Treatments. Better Research for Better Healthcare*. The British Library.

Costs

Cost are not only financial. Cost may be measured as the time used, the carbon produced, or the benefit that would be obtained if the resources were used for another group of patients (i.e. the opportunity cost).

Effective care

The extent to which an intervention, procedure regimen, or service produces a beneficial outcome under ideal circumstances (e.g., in a randomized controlled trial).

Source: Canadian Agency for Drugs and Technologies in Health (2009) *Optimal Therapy Report: Cost effectiveness of blood glucose test strips in the management of adult patients with diabetes mellitus*. Volume 3, Issue 3.

Efficiency

See also Allocative efficiency, and Productivity

... efficiency can be defined as maximising well-being at the least cost to society.

Source: Mitton C and Donaldson C (2004) *Priority setting toolkit. A guide to the use of economics in healthcare decision making*. BMJ Publishing Group.

Equity

Equity is a subjective judgment of fairness.

Health

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

Source: Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19 June-22 July 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948. The definition has not been amended since 1948.

<http://www.who.int/suggestions/faq/en/index.html>

Inequality

Inequality is objectively measured differences in health status, healthcare access and outcome.

Input, Output and Outcome

Input is a term used by economists to define the resources used, such as the number of hospital beds, to produce the output, such as the number of patients admitted per bed per year.

The economists' terminology is different from the language utilised in quality assurance, in which the terms structure, process and outcome are used. Input equates to structure and process, i.e. the number of beds and the number of admissions per bed, respectively. However, the outcome is distinct from the output. Outcome includes some measure of the effect the process has had on the patients, for example, the number of patients who were discharged to their own home.

Integrated care

Clinical integration, where care by professionals and providers to patients is integrated into a single or coherent process within and/or across professions such as through use of shared guidelines and protocols.

Source: Kodner DL, Spreeuwenberg C (2002) Integrated care: meaning, logic, applications and implications – a discussion paper. *International Journal of Integrated Care* 2: 1-6.

Mean

See *time trends glossary*, page 60

Range

See *time trends glossary*, page 60

Medical care epidemiology

... studies the use of health care services among populations living within the geographic boundaries of "natural" health care [populations].

Source: Wennberg JE (2010) *Tracking Medicine. A Researcher's Quest to Understand Health Care*. Oxford University Press.

Network

If a system is a set of activities with a common set of objectives, the network is the set of organisations and individuals that deliver the systems.

Opportunity cost

The opportunity cost of a service is measured by the value that would be obtained if the resources were used for another group of patients.

Optimality, Donabedian

Donabedian optimality is reached when resources allocated to a service create maximal benefit with the least harm.

Optimality, Pareto

Pareto optimality is reached when resources have been allocated among programme budgets, or within a programme budget to different diseases, in a distribution from which it is impossible to obtain greater value by reallocating a single pound from one budget to another.

Outcome

See Input

Output

See Input

Population medicine

Population medicine is a style of clinical practice in which the clinician is focused not only on the individual patients referred but also on the whole population in need.

Preference-sensitive treatment decisions

Preference sensitive treatment decisions involve making value trade-offs between benefits and harms that should depend on informed patient choice.

Source: O'Connor AM et al (2007) Toward the 'Tipping Point': Decision aids and informed patient choice. *Health Affairs* 26: 716-725.

Preference-sensitive care

"Elective", or "preference-sensitive" care, interventions for which there is more than one option and where the outcomes will differ according to the option used

because patients delegate decision making to doctors, physician opinion rather than patient preference often determines which treatment patients receive. I argue that this can result in a serious but commonly overlooked medical error: operating on the wrong patients – on those who, were they fully informed, would not have wanted the operation they received.

Source: Wennberg JE (2010) *Tracking Medicine. A Researcher's Quest to Understand Health Care*. Oxford University Press.

Productivity

Productivity is the relationship between inputs and outputs, such as the number of operations per theatre per year; efficiency is the relationship between outcomes and inputs, such as the number of successful operations per theatre per year.

Quality

The degree to which a service meets pre-set standards of goodness.

Source: Donabedian A, personal communication.

Safety

Patient safety can, at its simplest, be defined as: The avoidance, prevention and amelioration of adverse outcomes or injuries stemming from the process of healthcare. ... the reduction of harm should be the primary aim of patient safety, not the elimination of error.

Source: Vincent C (2006) *Patient Safety*. Churchill Livingstone.

Shared decision-making

In a shared decision, a health care provider communicates to the patient personalized information about the options, outcomes, probabilities, and scientific uncertainties of available treatment options, and the patient communicates his or her values and the relative importance he or she places on benefits and harms.

Source: Wennberg JE (2010) *Tracking Medicine. A Researcher's Quest to Understand Health Care*. Oxford University Press.

Signature, medical and surgical

... is a characteristic pattern of clinical variation within a defined population.

Source: Wennberg JE (2010) *Tracking Medicine. A Researcher's Quest to Understand Health Care*. Oxford University Press.

Standard deviation

See *time trends glossary*, page 60

Stewardship

The stewardship concept demands that we constantly ask the question: Will the resource be in better shape after my stewardship?

Source: Holmgren D (2002) *Permaculture. Principles and pathways beyond sustainability*. Holmgren Design Services.

Supply-Sensitive Care

It differs in fundamental ways from both effective care and preference-sensitive care. Supply-sensitive care is not about a specific treatment per se; rather, it is about the frequency with which everyday medical care is used in treating patients with acute and chronic illnesses. Remedying variation in supply-sensitive care requires coming to terms with the "more care is better" assumption. Are physician services and hospitals in high-cost, high-use regions overused?

Source: Wennberg JE (2010) *Tracking Medicine. A Researcher's Quest to Understand Health Care*. Oxford University Press.

System

A set of activities with a common set of objectives with an annual report.

Unwarranted variation

Variation in the utilization of health care services that cannot be explained by variation in patient illness or patient preferences.

Source: Wennberg JH (2010) *Tracking Medicine. A Researcher's Quest to Understand Health Care*. Oxford University Press.

Value

... value is expressed as what we gain relative to what we give up – the benefit relative to the cost.

Source: Institute of Medicine of the National Academies (2008) *Learning Healthcare System Concepts v. 2008*. The Roundtable on Evidence-Based Medicine, Institute of Medicine. Annual Report.

Variance

See *time trends glossary*, page 60

Table S.2: List of indicators in Atlas 1.0 and Atlas 1.0

Map no., Atlas 1.0	Title of indicator, Atlas 1.0	Comment
1	Number of cancer bed-days per 1000 population by PCT Q4 2008/09–Q3 2009/10	
2	Cancer inpatient expenditure per 1000 population by PCT	
3	Incidence of major amputations in a five-year period (2004/05–2008/09) per 1000 patients registered with Type 2 diabetes in 2008/09 by SHA	Map 8 in Atlas 2.0 shows major amputations for all patients with diabetes by PCT
4	Percentage of people with diabetes receiving nine key care processes by PCT 2008/09	Data for 1/1/2009 to 31/3/2010 for people with Type 1 and Type 2 diabetes in Atlas 2.0 – see Maps 6 & 7, respectively
5	Directly standardised rate of bariatric procedures in hospital per 100,000 population by PCT 2007/08–2009/10	Same data re-run with improved coding in Atlas 2.0 – see Map 12
6	Directly standardised rate of suicide mortality per 100,000 population by PCT 2006–2008	
7	Mental health expenditure per 1000 population by PCT 2008/09	
8	Claimants of Incapacity Benefit/Severe Disablement Allowance with mental or behavioural disorders per 1000 working-age population by local authority 2008	
9	Ratio of reported to expected prevalence of epilepsy by PCT 2008/09	
10	Directly standardised rate of emergency admissions in person with epilepsy per 100,000 population by PCT 2006/07–2008/09	For rate in children 0–17 years 2007/08–2009/10, see Map 20, Atlas 2.0
11	Directly standardised rate of elective admissions in persons diagnosed with epilepsy per 100,000 population by PCT 2006/07–2008/09	
12*	Directly standardised rate of cataract surgery recorded in hospital admissions per 10,000 population by PCT 2008/09	
13	Percentage of patients admitted to hospital following a stroke who spend 90% of their time on a Stroke Unit by PCT 2009/10	Q4 2010/11 data in Atlas 2.0 – see Map 34
14	Percentage of transient ischaemic attack (TIA) cases with a higher risk who are treated within 24 hours by PCT 2009/10	Q4 2010/11 data in Atlas 2.0 – see Map 33
15	Directly standardised rate of coronary heart disease mortality in persons aged under 75 years per 100,000 population by PCT 2006–2008	
16	Directly standardised rate of emergency admissions in persons aged 18 years and over with asthma per 100,000 population by PCT 2008/09	2010/11 data in Atlas 2.0 – see Map 38
17	Rate of emergency admissions in persons aged 18 years and under with asthma per 100,000 population by PCT 2008/09	2010/11 data in Atlas 2.0 for children 0–17 years – see Map 39
18	Emergency bed-days per 1000 population weighted by chronic obstructive pulmonary disease (COPD) prevalence by PCT 2008/09	
19	Musculo-skeletal expenditure per 1000 population by PCT 2008/09	
20*	Mean (average) pre-operative EQ-5D Index score for knee replacement surgery by PCT 2009/10	For health gain (Oxford Knee Score) for knee replacement 2010/11, see Map 53, Atlas 2.0
21***	Rate of provision of hip replacement per 1000 people in need by local authority 2002	
22	Rate of anterior cruciate ligament reconstruction expenditure per 1000 population by PCT 2008/09	
23	Average length of stay (days) for emergency admissions with fractured neck of femur by PCT 2008/09	
24	Ratio of reported to expected prevalence of chronic kidney disease (CKD) by PCT 2008/09	

Map no., Atlas 1.0	Title of indicator, Atlas 1.0	Comment
25	Rate of expenditure on Caesarean section (without complications) per 1000 population by PCT 2008/09	
26	Abdominal and vaginal excision of uterus inpatient admission expenditure per 1000 population by PCT Q4 2008/09–Q3 2009/10	
27	Percentage of babies screened in the NHS Newborn Hearing Screening Programme (NHSP) referred to diagnostic services by PCT 2009	For mean time from referral to diagnosis 2010, see Map 24, Atlas 2.0
28	Directly standardised rate of emergency admissions in persons over 75 years per 1000 population by PCT 2008/09	
29	Percentage of all deaths in an area that occur in hospital by local authority 2006–2008	Deaths at usual place of residence 2010 in Atlas 2.0 – see Map 66
30	Organ donation rates per million population by SHA 2009/10	
31	Rate of magnetic resonance imaging (MRI) activity per 1000 population by PCT 2009/10	2010/11 data in Atlas 2.0 – see Map 68
32	Rate of computed axial tomography (CT) activity per 1000 population by PCT 2009/10	2010/11 data in Atlas 2.0 – see Map 69
33*	Quinolone items per 1000 Antibacterial STAR-Pus by PCT 2008/09	
34*	Percentage of pravastatin/simvastatin items per all statins prescribed by PCT July 2009–September 2009	
Map no., Atlas 2.0	Title of indicator, Atlas 2.0	Comment
1*	Rate of colonoscopy procedures and flexisigmoidoscopy procedures per population by PCT 2009/10	
2	Rate of urgent GP referrals for suspected cancer per population by PCT 2010/11	
3	Number of emergency cancer bed-days per new cancer registration by PCT 2009/10	
4	Mean length of stay for elective breast surgery by PCT 2009/10	
5*	Percentage of histologically confirmed non-small cell lung cancer (NSCLC) patients receiving surgery by cancer network 2009	
6	Percentage of people in the National Diabetes Audit (NDA) with Type 1 diabetes receiving all nine key care processes by PCT 1 January 2009 to 31 March 2010	See Map 4, Atlas 1.0
7	Percentage of people in the National Diabetes Audit (NDA) with Type 2 diabetes receiving all nine key care processes by PCT 1 January 2009 to 31 March 2010	See Map 4, Atlas 1.0
8	Percentage of people in the National Diabetes Audit (NDA) having major amputations five years prior to the end of the audit period by PCT 1 January 2009 to 31 March 2010	See Map 3, Atlas 1.0
9	Excess length of stay (%) in hospital among people with diabetes when compared with people without diabetes by PCT 2009/10	
10	Insulin total net ingredient cost per patient on GP diabetes registers by PCT 2010/11	
11	Non-insulin anti-diabetic drugs total net ingredient cost per patient on GP diabetes registers by PCT 2010/11	
12	Rate of bariatric procedures in hospital per population by PCT 2007/08–2009/10	See Map 5, Atlas 1.0
13	Reported numbers of dementia on GP registers as a percentage of estimated prevalence by PCT 2009/10	
14	Anti-dementia drug items prescribed per weighted population (STAR-PU) in primary care by PCT 2009/10	
15	Rate of admissions to hospital for patients >74 years with a secondary diagnosis of dementia by PCT 2009/10	

Map no., Atlas 2.0	Title of indicator, Atlas 2.0	Comment
16	Total bed-days in hospital per population for patients >74 years with a secondary diagnosis of dementia by PCT 2009/10	
17	Rate of inpatient admissions >3 days' duration in children per population aged 0–17 years for mental health disorders by PCT 2007/08–2009/10	
18	Percentage of primary school children in state-funded schools with a statement of special educational needs (SEN) by local authority at January 2011	
19*	Parkinson's disease drug items prescribed per weighted population (STAR-PU) in primary care by PCT 2009/10	
20	Emergency admission rate for children with epilepsy per population aged 0–17 years by PCT 2007/08–2009/10	See Map 10, Atlas 1.0
21	Percentage of the diabetic population receiving screening for diabetic retinopathy by PCT January to March 2011	
22	Rate per population of certificates of vision impairment (CsVI) issued with a main cause of diabetic eye disease by PCT 2008/09–2009/10	
23	Rate of audiology assessments undertaken per population by PCT 2010	
24	Mean time from referral to assessment for hearing tests in newborns by PCT 2010	For % of babies referred to diagnostic services 2009, see Map 27, Atlas 1.0
25	Percentage of adults who participate in sport and active recreation at moderate intensity (equivalent to 30 minutes on 3 or more days a week) by local authority 2009–2011	
26	Reported numbers of people with hypertension on GP registers as a percentage of estimated prevalence by PCT 2009/10	
27	Reported numbers of people with coronary heart disease (CHD) on GP registers as a percentage of estimated prevalence by PCT 2009/10	
28	Percentage of STEMI patients receiving primary angioplasty by PCT 2010	
29	Rate of elective admissions to hospital for angioplasty per population by PCT 2009/10	
30	Rate of pacing devices implanted for the first time per population by PCT 2010	
31	Rate of implantable cardioverter-defibrillator (ICD) devices implanted for the first time per population by PCT 2010	
32	Rate of cardiac resynchronisation therapy (CRT) devices implanted per population by PCT 2010	
33	Percentage of transient ischaemic attack (TIA) cases with a higher risk who are treated within 24 hours by PCT January–March 2011	Update of Map 14, Atlas 1.0
34	Percentage of patients admitted to hospital following a stroke who spend 90% of their time on a stroke unit by PCT January–March 2011	Update of Map 13, Atlas 1.0
35	Rate of sleep studies undertaken per population by PCT 2010	
36	Rate of all admissions to hospital with a primary diagnosis of chronic obstructive pulmonary disease (COPD) per population by PCT 2009/10	
37*	Rate of expenditure on home oxygen therapy per population by PCT 2010/11	
38	Rate of emergency admissions to hospital in people aged 18 years and over with asthma per population by PCT 2009/10	Update of Map 16, Atlas 1.0
39	Emergency admission rate for children with asthma per population aged 0–17 years by PCT 2007/08–2009/10	See Map 17, Atlas 1.0
40	Mean number of decayed, missing and filled teeth in 12-year-olds by PCT 2008/09	
41	Percentage of people who succeeded in gaining access to NHS dentistry services after requesting an appointment in the last two years by PCT October–December 2010	
42	Rate of activity for gastroscopy (upper gastro-intestinal endoscopy) per population by PCT 2009/10	

Map no., Atlas 2.0	Title of indicator, Atlas 2.0	Comment
43	Admission rate for children for upper and/or lower gastro-intestinal endoscopy per population aged 0–17 years by PCT 2007/08–2009/10	
44	Rate of cholecystectomies per population by PCT 2009/10	
45	Percentage of elective adult day-case laparoscopic cholecystectomy per all elective cholecystectomies by PCT 2010/11	
46	Proportion (%) of admissions attributed to liver disease that are emergency admissions to hospital by PCT 2009/10	
47	Rate of liver transplants from deceased donors per population by SHA 2010/11	
48	Rate of metal-on-metal hip resurfacing procedures undertaken per population by PCT 2009/10	
49	Rate of knee washout procedures undertaken per population by PCT 2009/10	
50	Rate of all diagnostic knee arthroscopy procedures undertaken per population by PCT 2009/10	
51	Rate of all therapeutic knee arthroscopy procedures undertaken per population by PCT 2009/10	
52	Proportion (%) of cementless knee arthroplasty procedures per all knee arthroplasty undertaken in hospital by PCT 2009/10	
53	Average patient-reported health gain (Oxford Knee Score; OKS) from knee replacement procedures 2009/10	
54	Rate of urodynamic (pressures and flows) tests undertaken per population by PCT 2010	
55	Rate of admissions for acute kidney injury (AKI) per all emergency admissions to hospital by PCT 2009/10	
56	Rate of kidney transplants from living donors per population by SHA 2010/11	
57	Rate of kidney transplants from deceased donors per population by SHA 2010/11	
58	Proportion (%) of medical abortions to all legal abortions undertaken at 13 weeks' gestation and under by PCT 2010	
59	Proportion (%) of full-term babies (≥ 37 weeks' gestational age at birth) of all babies admitted to specialist neonatal care by PCT 2010	
60	Emergency admission of home births and re-admissions to hospital of babies within 14 days of being born per all live births by PCT 2009/10	
61	Rate of alcohol-related admissions to hospital per population by PCT 2009/10	
62	Rate of accident and emergency (A&E) attendances per population by PCT 2010	
63	Rate of conversion from accident and emergency (A&E) attendance to emergency admissions by PCT 2010	
64	Rate of admissions with emergency ambulatory care conditions (EACCs) per population by PCT 2010	
65	Admission rate for people aged >74 years from nursing or residential care home settings per population by PCT 2009/10	
66	Percentage of all deaths at usual place of residence by PCT 2010	See Map 29, Atlas 1.0
67	Percentage of all deaths that occur in hospital for children aged 0–17 years with life-limiting conditions by PCT 2005–2009	
68	Rate of magnetic resonance imaging (MRI) activity per weighted population by PCT 2010/11	Update of Map 31, Atlas 1.0
69	Rate of computed axial tomography (CT) activity per weighted population by PCT 2010/11	Update of Map 32, Atlas 1.0
70	Rate of dual-energy X-ray (DEXA) scan activity per weighted population by PCT 2010/11	
71	Hypnotics drug items prescribed per weighted population (STAR-PU) in primary care by PCT 2009/10	

Acknowledgements

SPONSORS

Jim Easton
Bruce Keogh

RIGHT CARE ATLAS TEAM

Philip DaSilva
Muir Gray
Erica Ison
Ian McKinnell
Mehrunisha Suleman

Editors

Muir Gray
Erica Ison

Project Manager

Ian McKinnell

Technical Team

Andrew Hughes
Caroline Ridler
Kevin Watson

DH QIPP

Ian Bishop
Jane Dwelly

MAP 1

Roland Valori
Cheryl Cavanagh
Sheila Dixon
Robert Logan
Mike Richards
Rob Stones
Kevin Watson

MAPS 2–4

Mike Richards
Jane Albery
Chris Carrigan
Lucy Ellis-Brookes
Tessa Ing
Lucy Irvine
Stephen Parsons
Jonathan Shelton
Alison Stone
Janet Williamson

MAP 5

Mick Peake
Jane Albery
Chris Carrigan
Lucy Ellis-Brookes

Tessa Ing
Lucy Irvine
Stephen Parsons
Mike Richards
Jonathan Shelton
Alison Stone
Janet Williamson

MAPS 6–11

Naomi Holman
Rowan Hillson
Lorraine Oldridge
David Merrick
Nathan Moore
Gerry Rayman
Caroline Ridler
(Maps 6, 7, 9–11)
Bob Young

MAP 12

Harry Rutter
Caroline Ridler
Monica Dent
Shireen Mathrani

MAPS 13 AND 14

Alistair Burns
Gillian Ayling
David Corcoran
Adrian Fletcher
Andrew Hughes
Erica Ison
Lorraine Jackson
Rajbant Kaur
Rebecca Spavin
Helen Wiggins

MAPS 15 AND 16

David Oliver
Alistair Burns
Andrew Hughes
Erica Ison
Kevin Watson

MAP 17

Raphael Kelvin
Ronny Cheung
Caroline Ridler

MAP 18

Gillian Baird
Ronny Cheung

MAPS 19 AND 71

Muir Gray
Sue Faulding
David Lloyd
Neal Maskrey
Peter Rowe
Jonathan Underhill

MAP 20

Helen Cross
Ronny Cheung

MAP 21

Aeesha Malik
Sue Cohen
Parul Desai
Donna Prentis

MAP 22

Aeesha Malik
Catey Bunce
Parul Desai

MAPS 23 AND 35

Paul White
Adrian Davis
Cheryl Cavanagh
Sue Hill

MAP 24

Adrian Davis
Erica Ison

MAP 25

Stephen Green
Caroline Ridler

MAPS 26 AND 27

Stephen Green

MAP 28

Stephen Green
John Birkhead

MAP 29

Stephen Green
Huon Gray
Andrew Hughes
Iain Simpson

MAPS 30–32

Stephen Green
Richard Charles
David Cunningham
Edward Rowland

MAPS 33 AND 34

Stephen Green
Alan Finlayson
Sarah Gilham
Damian Jenkinson
Barbara Zutshi

MAP 36

Matt Kearney
Sue Hill
Kevin Holton
Kevin Watson

MAP 37

Matt Kearney
Julian Flowers
Sue Hill
Kirsty Smith
Jamil Hamza
Kevin Holton

MAP 38

Bronwen Thompson
Sue Hill
Kevin Holton
Kevin Watson

MAP 39

Edward Wozniak
Ronny Cheung

MAP 40

Jerry Read
Barry Cockcroft
Ben Dyson
Sue Gregory
Andrew Hughes
David Lye
Helen Miscampbell

MAP 41

Jerry Read
Barry Cockcroft
Ben Dyson
Sue Gregory
David Lye
Helen Miscampbell

MAP 42

Roland Valori
Cheryl Cavanagh
Sheila Dixon
Robert Logan

Rob Stones
Kevin Watson

MAP 43

Mark Beattie
Nick Croft
Ronny Cheung

MAP 44

Douglas McWhinnie
Muir Gray
Mark Skues
Kevin Watson

MAP 45

Mark Skues
Heather Walker

MAP 46

Martin Lombard
Giles Doy
Sian Gordon-Brown
Mushi Rahman
Kevin Watson

MAP 47

Alexander Gimson
Rachel Johnson

MAPS 48–52

Alan Nye
Muir Gray
Erica Ison
Peter Kay
Kevin Watson

MAP 53

Muir Gray
Andrew Hughes
Peter Kay
Alan Nye
Veena Raleigh

MAP 54

Paul White
Benjamin Bray
Cheryl Cavanagh
Adrian Davis
Sue Hill
Donal O'Donoghue

MAP 55

Benjamin Bray
Donal O'Donoghue
Kevin Watson

MAP 56

Andrew Bradley
Lisa Burnapp
Erica Ison
Rachel Johnson

MAP 57

Andrew Bradley
Erica Ison
Rachel Johnson

MAP 58

Heather Mellows
Andrea Duncan
Lisa Westall

MAP 59

Ronny Cheung
Neena Modi
Shalini Santhakumaran
Eugene Statnikov
Kevin Watson

MAP 60

Jane Verity
Heather Mellows
Nazma Nessa
Sheila Shribman
Kevin Watson

MAP 61

Erica Ison
Dianne Draper
Chris Gibbins
Clive Henn
Andrew Hughes
Alanna Wolff

MAPS 62–64

Matthew Cooke
Stephen Anderson
Erica Ison
Dylan Knight
Emma O'Donnell
Chris Parkin
Louise Plewes
Simon Swift

MAP 65

David Oliver
Erica Ison
Jonathan Mason
Kevin Watson

MAP 66

Sophia Christie
Philip DaSilva
Claire Henry
Tessa Ing
David Oliver
Adebowale Osinowo
Andy Pring
Mike Richards
Julia Verne

MAP 67

Alan Craft
Lizzie Chambers
Ronny Cheung
Richard Hain
Katrina
McNamara-Goodridge

MAPS 68 AND 69

Erika Denton
Mohammed Adrish
Jeremy Burrows
Erica Ison
Joanne Ainley-McHugh
Paul Steele

MAP 70

Erika Denton
Juliet Compston
Erica Ison
Paul Steele
Robert Wakeman

EXTENDING COVERAGE

Muir Gray
Erica Ison

PETICT

Erika Denton
Jane Hubert
Mike Saunders

Ambulance quality indicators

Stuart Knight

Pathology analytes

Ian Barnes
Maxine Chappell
Brenda Fowler
Richard Jones

Donal O'Donoghue
Mike Richards
Miranda Seed
NLMC Governance Board

Trauma services

Keith Willett
Antoinette Edwards
Andrew Hughes
Tom Jenks
Maralyn Woodford

Pain services

Richard Langford
Cathy Price
Beverly Collett
Charles Dobson
Robert Douce
Ellen Klaus
Stephen Ward

EXPLORING VARIATION IN DIFFERENT DIMENSIONS

Kevin Watson

DEALING WITH UNWARRANTED VARIATION LOCALLY

Philip DaSilva
Ian McKinnell
Philip Wilcock

GLOSSARY OF ESSENTIAL TERMS

Muir Gray
Anant Jani

WE ALSO ACKNOWLEDGE THE CONTRIBUTION OF:

Roger Boyle
Iain Chalmers
Marie-Anne Durand
Mark Fenton
Steven Laitner
Ahmad Moolla
Sarah Moore
Alec Morton
Chris Rudge
Pam Scoular
Helen Tomkys
Jo Watson

In the leading machine the Head of the Air Force was sitting beside the pilot. He had a world atlas on his knees and he kept staring first at the atlas, then at the ground below, trying to figure out where they were going. Frantically he turned the pages of the atlas.

"Where the devil are we going?" he cried.

"I haven't the foggiest idea" the pilot answered. "The Queen's orders were to follow the giant and that's exactly what I'm doing."

The pilot was a young Air Force officer with a bushy moustache. He was very proud of his moustache. He was also quite fearless and he loved adventure. He thought this was a super adventure. "It's fun going to new places," he said.

"New places!" shouted the Head of the Air Force.

"What the blazes do you mean new places?"

"This place we're flying over now isn't in the atlas, is it?" the pilot said, grinning.

"You're darn right it isn't in the atlas!" cried the Head of the Air Force. "We've flown clear off the last page!"

"I expect that old giant knows where he's going", the young pilot said.

"He's leading us to disaster!" cried the Head of the Air Force. He was shaking with fear. In the seat behind him sat the Head of the Army who was even more terrified.

"You don't mean to tell me we've gone right out of the atlas?" he cried, leaning forward to look.

"That's exactly what I'm telling you!" cried the Air Force man. "Look for yourself. Here's the very last map in the whole flaming atlas! We went off that over an hour ago!" He turned the page. As in all atlases, there were two completely blank pages at the very end. "So now we must be somewhere here", he said, putting a finger on one of the blank pages.

"Where's here?" cried the Head of the Army.

The young pilot was still grinning broadly. He said to them, "That's why they always put two blank pages at the back of the atlas. They're for new countries. You're meant to fill them in yourself."

Roald Dahl, *The BFG*

With kind permission from Jonathan Cape Ltd and Penguin Books

Additional printed copies of this document can be ordered free,
or view the interactive atlas online on the Right Care website at
www.rightcare.nhs.uk/atlas/

Follow Right Care online

Subscribe to get a weekly digest of our blog alerts in your inbox

Receive occasional eBulletins

Follow us on Twitter @qiprightcare

www.rightcare.nhs.uk