**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





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.<sup>1</sup>

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 Wellbeing 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/mentalhealth-a-z/E/exercise-mental-health/
- > NHS Choices. Physical Activity Guidelines for Adults. http:// www.nhs.uk/Livewell/fitness/Pages/physical-activityguidelines-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-andlifestyles/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%20 inquiries/Developing%20physical%20activity%20and%20 health%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 activity<sup>1</sup>

<sup>1</sup> 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.

**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







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.<sup>1</sup>

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.<sup>1</sup>

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.<sup>2</sup> 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.

- 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

<sup>1</sup> NICE (2011) Hypertension. Management of hypertension in primary care (CG127) http://guidance.nice.org.uk/CG127

<sup>2</sup> Association of Public Health Observatories. Modelled estimates and projections of hypertension

http://www.apho.org.uk/resource/item.aspx?RID=48309

**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 Lowest rate Highest rate LONDON



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."<sup>1</sup>

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.<sup>2</sup> 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.

- 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

<sup>1</sup> Coronary Heart Disease: National Service Framework - Modern standards and service models http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\_4094275

<sup>2</sup> Association of Public Health Observatories. Modelled estimates and projections of CHD http://www.apho.org.uk/resource/item.aspx?RID=48310

# **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





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.<sup>1</sup> Prompt and appropriate treatment reduces the likelihood of death and recurrent heart attack. Goodquality 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.<sup>2</sup>

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 reopened 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.<sup>1</sup>

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.<sup>1</sup>

#### 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.

- 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

<sup>1</sup> NHS Information Centre. Clinical & Health Outcomes Knowledge Base.

<sup>2</sup> 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

## **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





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.<sup>1</sup>

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 COURAGE<sup>2</sup> 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.

- > 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

<sup>1</sup> 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/guidelinessurveys/esc-guidelines/GuidelinesDocuments/guidelines-revasc-FT.pdf

<sup>2</sup> 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

## **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





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.<sup>1</sup>

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 ..."<sup>1</sup>

## 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.

- 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

<sup>1</sup> Cunningham D, Charles R, Cunningham M, de Lange A (2011) Cardiac Rhythm Management: UK National Clinical Audit 2010. http://www.devicesurvey.com/

**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





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.<sup>1</sup>

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 ..."<sup>1</sup>

## 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.

- 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

<sup>1</sup> Cunningham D, Charles R, Cunningham M, de Lange A (2011) Cardiac Rhythm Management: UK National Clinical Audit 2010. http://www.devicesurvey.com/

# **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





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.<sup>1</sup>

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.<sup>1</sup>

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.

- 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

<sup>1</sup> Cunningham D, Charles R, Cunningham M, de Lange A (2011) Cardiac Rhythm Management: UK National Clinical Audit 2010. http://www.devicesurvey.com/

**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** 





147 out of 151 PCTs

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.<sup>1</sup>

## 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%.<sup>2</sup> 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").

- 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

<sup>1</sup> 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/Performancedataandstatistics/Integratedperfomancemeasuresmonitoring/ index.htm

<sup>2</sup> 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.

**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

Lowest rate

Domain 3: Helping people to recover from episodes of ill health or following injury







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151 PCTs

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.<sup>1</sup>

## 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 2010<sup>2</sup> 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.<sup>3</sup>

## 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.<sup>2</sup>

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.

- 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

<sup>1</sup> 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/Performancedataandstatistics/Integratedperfomancemeasuresmonitoring/ index.htm

<sup>2</sup> Royal College of Physicians (RCP) (2011) National Sentinel Stroke Clinical Audit 2010, Round 7. RCP.

<sup>3</sup> http://www.rcplondon.ac.uk/press-releases/stroke-care-audit-results