Bolton's HealthMatters

JSNA: Cardiovascular disease (CVD)

Introduction

Cardiovascular disease (CVD) is a term used to cover all the disorders that can affect the heart and the body's system of blood vessels (vascular). This summary will include a related cerebrovascular disease – stroke – due to its close association with other cardiovascular conditions. Many cardiovascular diseases result in chronic conditions that develop or persist over a long period of time. However, these conditions may also cause acute events such as heart attacks and strokes that occur suddenly when a vessel supplying blood to the heart or brain becomes blocked.

Diseases of the circulatory system account for more deaths in Bolton than any other disease (approximately 33% of all local deaths) and such deaths account for much of the gap in life expectancy between Bolton and England. For 2012, 703 people died of CVD; within this the greatest numbers were classed as coronary heart disease (306) and stroke (183). CVD is also the chief cause of premature death (aged under 75) in Bolton. Tackling premature CVD death is vitally important if we are to reduce health inequalities in the borough.

Heart disease and stroke are largely preventable diseases. Individuals can reduce their risk of CVD by engaging in regular physical activity, avoiding tobacco use and second-hand smoke, choosing a diet rich in fruit and vegetables and avoiding foods that are high in fat, sugar, and salt, and maintaining a healthy body weight. Medical management of blood pressure and cholesterol levels in targeted individuals can also reduce the risk of future CVD and developing further complications.

Primary prevention concentrates on altering the modifiable lifestyle factors mentioned above, but there is also a Public Health role in secondary and tertiary prevention including ensuring appropriate availability of medicine as necessary and equity of access to high quality surgical procedures.

The NHS expenditure per head of weighted population for all circulatory diseases in Bolton was £172.39 in 2010/11, and this is £40.31 greater than is average for England. The greatest proportion of this is spent on secondary care (66%, which includes A&E and ambulance costs); this is the pattern seen nationally.

Implications for commissioning

Population level approaches

NICE guidance CMG45[1] 'Services for the prevention of cardiovascular disease' recommends that commissioners should work with their Health and Wellbeing Board to:

- Ensure that information is collected on local knowledge of CVD risk factors and used to enable appropriate targeting of population-wide approaches and community-level interventions;
- Set realistic targets for levels of CVD prevention activity and encourage prioritising this in future work programmes;
- Encourage health outcomes to be used as a measure for the achievements of regulatory and licensing action.

Assessing an individual's risk of CVD

The commissioning of systematic CVD risk assessment programmes is recommended by NICE[2]. This was achieved on a large scale locally by the 'BIG Bolton Health Check' and the development of this work through the Triple Aim programme in primary care. NICE also recommends:

- Ensure that services are available for people who are not eligible for a screening Health Check but who may be at risk. These people include: people younger than 40 or older than 74, people with existing vascular conditions, people with suspected familial hypercholesterolemia, and other high risk groups (those in deprived areas, those of South Asian origin, and those with severe mental illness including schizophrenia and bipolar disorder);
- Opportunistic approaches to identify additional people with undiagnosed CVD in line with the aims of 'Making Every Contact Count' is recommended by NICE as a valuable preventative tool;
- To ensure that there is consistency in health messages provided during health checks and other CVD risk assessments. Templates have been developed and installed on GP systems in Bolton towards this end;
- Ensure the uptake interventions are maximised. Examples are to specify that healthcare professionals make referrals rather than asking the patient to make their own referral, monitor the number who do and do not take up the offer of lifestyle interventions, discuss the pros and cons of different referral systems with providers, and conduct local audits of referral practice and effectiveness.

[1] National Institute of Clinical Excellence (2012) *NICE Guidance CMG45: Services for the prevention of cardiovascular disease*, NICE.
[2] National Institute of Clinical Excellence (2012) *NICE Guidance CMG45: Services for the prevention of cardiovascular disease*, NICE.

Behaviour change and lifestyle interventions

Develop and monitor local intervention services key to CVD prevention: the main four are smoking cessation services, dietary interventions, physical activity interventions, and alcohol services. These are considered in more detail in the relevant JSNA chapters.

Commissioners should ensure that all commissioned services continue to complete Equality Impact Assessments (EIA) to ensure that all population groups are targeted.

Ensure monitoring and evaluation of all programmes of work to include collection of quantitative and qualitative data.

Medical interventions

Continue to develop systems to monitor and improve the quality of disease management in primary care.

Clinical pathway development to continue and roll out to all relevant health care professionals.

Ensure primary care is prescribing NICE recommended medical interventions for the management of CVD risk factors. These will include drugs to reduce cholesterol (lipid modification drugs including statins), interventions to reduce blood pressure including antihypertensive drugs, and drugs to prevent blood clots including anticoagulants and antiplatelet treatments.

Ensure that GPs are aware of local lifestyle and behaviour change interventions, including how to refer into these services.

Ensure people receiving preventative drugs receive regular drug reviews and assessment which should include discussion of modifiable lifestyle risk factors.

Who's at risk and why?

Fixed risk factors

There are some risk factors for CVD that are irreversible and out of our control. These include: ageing, being male, and having a family history of CVD. People of South Asian ethnicity may have a greater susceptibility to CVD because of genetic and metabolic factors. It is reported that these factors account for approximately 14% of the risk for CVD. Therefore, the vast majority of risk factors (84%) are reversible.

Modifiable risk factors

NICE Commissioning Guidance CMG45[3] identifies nine major modifiable risk factors for myocardial infarction (heart attack) in adults in order of population attributable risk:

1. Abdominal obesity: This is measured in particular by a raised waist circumference and has the highest population attributable risk at 63.4%;
2. Abnormal lipids (cholesterol): This means a cholesterol level above 5.0 mmol/litre and has an attributable risk of 44.6%;
3. Psychosocial factors: Measured by a 'high' GHQ12 score of 4 and above (used to measure possible mental health problems). Population attributable risk of 38.9%;
4. Regular physical activity: This is the proportion of the population not meeting exercise guidelines. Population attributable risk of 38.4%;
5. Smoking or tobacco use: Measured by the current smokers in the population and has an attributable risk of 29.3%;
6. High blood pressure (hypertension): The level of high blood pressure in the population and has a population risk of 21.9%;
7. Excess alcohol consumption: Measured by the proportion of the population drinking over recommended levels at least one day a week and has an attributable risk of 18.7%;
8. Diabetes: This includes both diagnosed and undiagnosed diabetes and has an attributable risk of 15.0%;
9. Diet: This includes consumption of food that is high in fat, salt, and sugar and not consuming five portions of fruit or vegetables daily. Diet carries a population attributable risk factor of 12.4%.

Locally, these factors are all measured by the *Bolton Health & Wellbeing Survey*. NICE estimates that 57.1% of the national adult population aged over 18 years will have at least one of these factors. This increases to around 80% for the population aged 55 and over, and further to around 84% for those aged 65 and over. These risk factors contribute to other illnesses that are also key causes of CVD themselves – hypertension, diabetes, and hyperlipidaemia. Ultimately, the presence of one vascular condition further increases the risk of developing others. Of particular importance are individuals with a clustering of these risk factors as these are the people at greatest risk of early death and chronic illness in Bolton.

[3] National Institute of Clinical Excellence (2012) *NICE Guidance CMG45: Services for the prevention of cardiovascular disease*, NICE.

In addition to the above, there are modifiable risk factors beyond the biological/psychological and these include:

1. Deprivation;
2. Poor housing;
3. Fuel poverty;
4. Education;
5. Insufficient access to high quality primary care, particularly in relation to cholesterol and blood pressure lowering treatments and smoking cessation services.

The level of need in the population

Impact on life expectancy

CVD is the most significant contributor to the gap in life expectancy between Bolton and England. Coronary heart disease (CHD) is the greatest contributor to the male gap (17.3%) and second to pneumonia for the female gap (11.9%). Strokes are a growing contributory factor in the gap for women.

Mortality

One in three deaths in Bolton is due to CVD, with a total of 703 deaths in 2012; within this the greatest numbers are due to coronary heart disease (306) and stroke (183). The Standardised Mortality Ratio (SMR) for all major circulatory disease related deaths is higher in Bolton than both England and the North West. Furthermore, out of fifteen local authorities in its statistical peer group, Bolton has the fourth highest mortality rate. Following the national picture the male mortality rate is much higher than the female rate in Bolton (male Directly Standardised Rate (DSR) is 273.8 per 100,000 compared to a female rate of 173.4 per 100,000). However, CVD mortality is reducing for both sexes locally, regionally, and nationally. Going forward, the SMR for stroke is of particular concern in Bolton; being 39% higher than England for Bolton men and 23% higher for Bolton women.

In some more deprived parts of Bolton the CVD mortality rate is up to 80% higher than the national average. The inequality gap in Bolton continues to persist with the most deprived fifth of the population having the highest rate, but deprivation quintile 3 is beginning to show a higher mortality rate than quintile 2 (the second most deprived fifth). The inequality is greater for premature (<75 years of age) death due to CVD, with some parts of Bolton over 220% higher than the national average. Furthermore, within Bolton the gap in premature mortality between the most deprived fifth and the Bolton average is widening, while it is relatively stable, but significant, for all age CVD mortality in the borough.

The South Asian population of Bolton have a greater likelihood of premature death from circulatory related disease.

Prevalence

In Bolton an estimated 24,709 people have CVD; as a rate per population this is comparable to England, and lower than the North West. GPs record information on whether patients have certain types of CVD; this information is crude and does not take into account population structure. Therefore, it is useful to compare those identified on the registers with an estimated prevalence that is population adjusted. Primary care (QOF) registers (2012) report 10,383 as having CHD in Bolton, with modelled estimates giving an expected prevalence of 14,469. This is a difference of 4,086 people who can be expected to have undiagnosed CHD in the borough. The same is true with the stroke disease register; with 5,043 reported compared to 6,097 expected (a difference of 1,054). The diabetes register currently records more people than expected (16,614).

The CVD primary prevention reported prevalence (those people at >20% risk of developing CVD In next ten years) stands at 4,653 individuals in Bolton based on QOF 2012. Of those recorded over the last year 84.6% have had a face-to-face CVD risk assessment, and in total for all identified to date 81.1% have been given lifestyle advice.

CVD predominantly affects people aged over 50 years of age and the lifetime burden is greater in women because of their longevity and their increased risk of stroke over the age of 75. South Asian men however are more likely to develop CVD at a younger age, and have higher rates of myocardial infarction. The South Asian population in Bolton are significantly more likely than average to have diabetes and this is especially true of our Asian Pakistani population.

Hospital activity[4]

Emergency admission rates for both CHD and stroke in Bolton are significantly higher than the national rate. This can be mostly assumed to be a result of the greater need in Bolton, but may also suggest unmet need in the population (people arriving as an emergency rather than being treated earlier) as well as poor disease management for people who have been diagnosed with CVD:

- This picture is reinforced when we consider that despite a higher rate of admissions the rate of angiography procedures are significantly lower in Bolton than the national rate. The angiography procedure rate in 2011/12 was 156.9 per 100,000 (475

[4] South East Public Health Observatory (2013) *National Cardiovascular Disease Profiles* http://www.sepho.org.uk/NationalCVD/NationalCVDProfiles.aspx

procedures). This is significantly lower than England (278.2 per 100,000) and Greater Manchester, Lancashire & South Cumbria (252.4 per 100,000);

- The emergency admission rate for CHD in the most deprived areas of Bolton is 2.3 times higher than that for persons living in the least deprived areas, which is a recent reduction from being 3.1 times higher. For England as a whole, and for Greater Manchester, Lancashire & South Cumbria, this inequality gap in emergency admissions is 2.2 times higher in the most deprived areas;
- The total emergency admission rate for CHD in Bolton has decreased by 24.3% between 2004/05 and 2011/12; for comparison, in England as a whole there has been a 23.1% decrease;
- Heart failure shows a decrease in Bolton for emergency admissions of 7.7% between 2004/05 and 2011/12 compared to a decrease nationally of 18%, and of 20.4% in Greater Manchester, Lancashire & South Cumbria, indicating that more must be done locally to prevent such admissions;
- Also of importance, 96.2% of all deaths due to heart failure in Bolton (2007-2011) occurred in the usual place of residence, which compares very unfavourably to England (58.5%);
- In 2011/12 the emergency admission rate for stroke in Bolton was 111.8 per 100,000 (422 admissions) – a recent increase. This is significantly higher than England (89.5 per 100,000);
- The emergency stroke admission rate in the most deprived fifth of the population was 132.3, which is 1.5 times higher than those in the least deprived fifth of Bolton (90.3). In England this difference is 1.8 times greater in the most deprived;
- In Bolton, emergency stroke admissions have increased between 2004/05 and 2011/12 by 51.7%, whilst nationally there has been a 3.0% decrease. Furthermore, the rate of readmissions within 30 days for Bolton is 5.1%, which is higher than England (2.9%).

Revascularisation is a surgical procedure for the provision of a new, additional, or augmented blood supply to an organ by unblocking obstructed blood vessels or by surgically implanting replacements. Two of the major procedures for revascularisation are coronary artery bypass graft (CABG) and angioplasty. In 2011/12 the all persons angioplasty rate in Bolton was 106.1 per 100,000 (320 procedures), 28.0 elective and 78.0 non-elective. This is lower than England (107 per 100,000). Male angioplasty rates are 2.9 times greater than female rates in Bolton. For the same period, the all persons CABG rate in Bolton was 25.5 per 100,000 (81 procedures). This is lower than England (29.5 per 100,000). Furthermore, non-elective angioplasty rates in Bolton have increased by 155% between 2004/05 and 2011/12. CABG procedure rates in Bolton have decreased by 40.9% between 2004/05 and

2011/12, which compares to a decrease of 25.4% nationally. The total revascularisation rate for those who live in the most deprived areas of Bolton are 2.0 times greater than those who live in the least deprived areas. In England the difference is 1.6 times greater.

Regarding stroke and TIA management, the proportion of patients under the age of 75 discharged home or to their usual place of residence in Bolton during 2011/12 is 64.6%, which is significantly lower than seen nationally (77.9%). Just over a third of patients aged over 75 are discharged home compared to 70.1% nationally. The level of carotid endarterectomies performed per 100,000 in Bolton is 12.7 which is higher than England (8.7), but lower than the local region.

Valve surgery rates in Bolton were 10.6 per 100,000 people between 2010/11-2011/12, which is lower than the England average (14.8).

Key JSNA Indicator Sheets

MORTALITY: Cardiovascular Disease

MORTALITY: Coronary Heart Disease

MORTALITY: Stroke

PREMATURE MORTALITY: Cardiovascular Disease

DISEASE AND ILL HEALTH: Cardiovascular Disease

DISEASE AND ILL HEALTH: Diabetes

Current services in relation to need

Hospitalised prevalence of CVD is lower in Bolton than typical for the Greater Manchester conurbation, but is much higher than this average in the more deprived areas around the Town Centre – up to 60% higher in Great Lever, Halliwell, Crompton, and Highfield & New Bury.

Using self-reported angina as a proxy for CVD, we see an inequality gradient in Bolton with the most deprived fifth of the population more likely to complain of angina and not visit a doctor. Furthermore, in Bolton angina is more common in people of South Asian ethnicity, disabled people, and lesbian, gay, and bisexual (LGB) groups.

Awareness raising and early identification of CVD and diabetes continues to be developed through the follow up to the 'BIG Bolton Health Check', during which 19,000 people with an increased risk of developing CVD were identified across the Bolton population. Following the 'BIG Bolton Health Check' Bolton has recently refined its CVD risk assessment programme into the 'Triple Aim in Primary Care', which involves working with GP practices

on a range of initiatives to increase identification of people with various diseases and ensure they are recorded on the appropriate disease register, improve disease management, and support the delivery of Public Health targets. As a result Bolton has seen significant increases in the recording of people with CVD on registers and has been able to track a reduction in referrals to secondary care.

Pathways into services which support people to make health related lifestyle changes have been developed within primary care and within Royal Bolton Hospital. Information on services relating to lifestyle changes are detailed in the individual chapters.

Over the past several years new services related to CVD have been established or enhanced. These include: a Rapid Access Chest Pain Clinic to ensure early diagnosis and quick referral to appropriate services; Cardiac Rehabilitation services for patients referred by the Chest Pain Clinic and those who have had a heart attack, to prevent further hospital admissions; the Community Stroke Team help stroke patients with rehabilitation after discharge from hospital.

Cost effectiveness[5]

Length is stay for CHD emergency admissions is 5.3 days, which is lower than the England average (6.6 days). If length of stay was reduced by 5% in Bolton (0.3 days) this would save 277 emergency bed days per year. Assuming the cost of an individual bed day to be £169 (the default value – the long stay day payment for E12) this reduction would save £46,769 per year. The admissions rate is approximately 10.0 per 100 people on the CHD disease register in Bolton. If this were reduced to the England average (8.3 admissions) this would save 157 admissions per year. Assuming the cost of an admission to be £3,111 (the PbR tariff for E12 – excluding any long stay payment), reducing admissions for CHD to the English average would save £487,544 per year.

Length of stay for stroke emergency admissions is 24.9 days; if length of stay was reduced to the England average (18.7 days) this would save 2,225 emergency bed days per year. Assuming the cost of an individual bed day to be £124 (the long stay day payment for A22) this reduction would save £275,913 per year. The admissions rate is approximately 8.5 per 100 people on the stroke disease register in Bolton, which is similar to the England average (8.4 days). If this were reduced by 5% this would save 18 admissions per year. Assuming the cost of an admission to be £4,293 (the PbR tariff for A22 – excluding any long stay payment), reducing admissions as such would save £77,059 per year.

Length of stay for heart failure is around 13 days, slightly higher than the England average (12.2 days). If this was reduced to the England average this would save 240 emergency bed

[5] To indicate the scale of potential savings only. It is appreciated that any bed days saved by the acute trust will likely be used to meet other demands.

days (reduction by 5% (0.6 days) would save 199 bed days). Assuming the cost of an individual bed day to be £163 (long stay day payment for E18) reducing length of stay to the English average would save £39,107 per year (reduction by 5% would save £32,487 per year). The admission rate for heart failure in Bolton is around 18.0 per 100 people of the disease register which is higher than the England average (12.5 admissions). If this was reduced to the England average this would save 94 admissions per year. Assuming the cost of an admission to be £2,619 (the PbR tariff for E18 – excluding any long stay payment) reducing admissions to the English average would save £246,127.

Projected service use and outcomes

The 'BIG Bolton Health Check' has increased the numbers of people identified to have CVD related conditions and also those at risk. These additional patients will require quality primary care and 'wellness services' to manage their symptoms and increased risk.

Bolton's population is ageing, with the 65+ population projected to increase from 44,700 in 2012 to 51,400 in 2020, with obvious impacts on disease and services. Furthermore, based on current estimates there will be 342 more people over 65 in Bolton living with a longstanding health condition caused by a heart attack in 2020 than there are currently in 2012. An estimated 177 more people over 65 will be living with a longstanding health condition caused by a stroke in 2020 than are in 2012 in Bolton. There will also be 1,537 extra people (a total of 13,323) in 2020 who over 65 and are obese than there are in Bolton at present (an estimated 11,786)[6]. Following this increase in obesity, diabetes prevalence will also increase substantially.

Whilst smoking levels have declined in Bolton in recent years, those still smoking after the recent legislation banning smoking in public places are likely to be the most difficult to engage with concerning interventions. In addition, locally we know that the female smoking rate, whilst lower than the male, is declining at a slower pace.

Evidence of what works

Bolton's Health Matters has created a collection of evidence and intelligence to ensure best practice in decision within this area. To view this collection, please click here

[6] Institute of Public Care (2013) *Projection Older People Population Information* http://www.poppi.org.uk/

Community views and priorities

A health needs assessment[7] was conducted in three of Bolton's NRS Areas to ascertain peoples' understanding of health, their experiences, expectations, and engagement with services and to allow comparison with other data sources.

From the findings, that there is a gap in these communities between peoples' aspirations to adopt 'healthier' behaviours and them taking action to do so can be explained by their lived situations, and understood in terms of the effect of those situations on their mental wellbeing and its constructs such as self-esteem, self-efficacy, and aspiration – each of which were shown as being relevant to the efficacy and appropriateness of interventions designed to improve health.

The report includes analysis from questions asked regarding many of the risk factors for CVD and the full report is available on Bolton's Health Matters here.

Equality impact assessments

No recent local equality impact assessments have been carried out that we are aware of. If you are aware of any such work locally please let us know at Bolton Health Matters

Unmet needs and service gaps

The Wellness Services in Bolton are not all of scale to meet need; this is especially true for weight management, and as we have seen in this chapter obesity has the highest population attributable risk for CVD. Furthermore, Wellness Services need integrating to reflect the clustering of unhealthy behaviours.

In Bolton there persists inequalities in access to treatment procedures for CVD such as angiograms, coronary artery bypass graft (CABG), and percutaneous transluminal coronary angioplasty (PCTA), with the least deprived populations more likely to have such procedures after taking health need into account.

Greater exploration is required of the variability and under recording of CVD related diseases and also the management of CHD across primary care in Bolton is needed.

Preventative services such as the Stop Smoking Service tend to receive more referrals from the less deprived parts of the borough, where smoking prevalence is lower. People from more deprived areas also generally have lower rates of successful outcome.

Stroke patients under 75 years of age are much less likely in Bolton to be discharged back to their usual place of residence compared to the national picture.

[7] Griffiths, B. et al (2012) *Concerning Health Matters: Voices from 3 NRS Areas*, NHS Bolton.

The observed prevalence for hypertension in Bolton is 44.0% of the estimated prevalence. This is a similar difference to that seen across England and the gap between recognised and treated hypertension, and actual hypertension levels in the community have long been recognised[8].

Recommendations for further needs assessment work

Assessment and regular monitoring/analysis of the Public Health Outcomes Framework indicators linked to CVD are necessary. These are: 2.11 Diet; 2.12 Adult obesity; 2.13 Physically active and inactive adults; 2.14 Smoking prevalence – adults; 2.17 Recorded diabetes; 4.4 Mortality from all CVD in <75s.

Work to be undertaken on the upcoming 2013 *Bolton Health & Wellbeing Survey* to greater assess and target the areas and key equality groups especially vulnerable to the clustering of unhealthy behaviours. This data will inform the Wellness Services across the borough.

We require further comprehensive information regarding public views on their cardiovascular health and health needs and the barriers faced in addressing unhealthy lifestyles. We also require further consultation to enhance our understanding of patient's opinions on current services and interventions.

The opinions of clinicians and other healthcare staff on cardiovascular related conditions and services need to be sought in order to further assess current and future service provision and need.

Key contacts

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[8] South East Public Health Observatory (2013) *National Cardiovascular Disease Profiles* http://www.sepho.org.uk/NationalCVD/NationalCVDProfiles.aspx