Literature Review

NHS Health Checks

Vascular disease is the largest single cause of long-term ill health and disability affecting the lives of over four million people in England (DH, 2008a). It includes coronary heart disease (CHD) with the main forms being angina and heart attack, stroke, diabetes and kidney disease. An individual suffering from one vascular condition also has increased risk of developing other vascular conditions (DH, 2008a; Voors *et al*., 2011).

Damage to the vascular system increases with age, and progresses faster in men than women, in those with a family history of vascular disease and in some ethnic groups. The risk factors for developing vascular disease include obesity, physical inactivity, smoking, high blood pressure, dyslipidaemia and impaired glucose regulation (higher than normal blood glucose levels, but not as high as in diabetes)(DH, 2008a; O'Donnell *et al*., 2010; Yusuf *et al*., 2004).

Cardiovascular disease (CVD)

CVD accounts for almost 191,000 deaths – a third of all deaths - each year in the UK (British Heart Foundation, 2010a). The main forms of CVD are CHD and stroke. Over a quarter of premature deaths (death before the age of 75) in males and a fifth of premature deaths in females were due to CVD, accounting for 50,000 premature deaths in total in 2008. The CVD related death rate has fallen considerably since the early 1970s, although in recent years the decline in CHD deaths seems to have started to level off in younger age groups and might even be reversing in younger women (49 and under) (Allender *et al*., 2008; British Heart Foundation, 2010a). Over half (58%) of the decline can be attributed to changes in major risk factors, e.g. smoking, whereas the rest of the decline is due to developments in medical and surgical treatment (British Heart Foundation, 2010a). Although the mortality rate in older age groups is falling, the total death toll of CHD might actually be increasing with the ageing population (Allender *et al*., 2008). Despite the fact that death rates from CVD has been falling in the UK at one of the fastest rates in Europe, rates in the UK are still high compared to other Western European countries (British Heart Foundation, 2010a).

Vascular disease accounts for the largest part of health inequalities in England (DH, 2008a). CVD death rates exhibit a clear socioeconomic gradient, with rates being highest in the lowest social group and lowest in the highest group (British Heart Foundation, 2010a). In the UK, there is a North-South gradient of CVD mortality, the figures being highest in the North. The rates are also high in urban areas. Moreover, there is a strong positive relationship between CHD mortality rates and increasing levels of deprivation. Despite the overall decline in mortality rates, the relative difference between the most and the least deprived areas has not been narrowing (British Heart Foundation, 2010a). Furthermore, a study (Soljak *et al*., 2011) comparing model-based expected prevalence of three cardiovascular conditions with diagnosed prevalence on practice disease registers suggests that there

may be significant and highly variable under-diagnosis of CVD across England, which in the authors' view could be partially explained by persistent inequity in the supply of General Practitioners.

Different ethnic groups are affected by CVD in different ways. For example, strokes are more frequent among the Black ethnic groups than in the White ethnic groups (British Heart Foundation, 2010b). Moreover, the incident rate of heart attack is higher in South Asians than in non-South Asians. The prevalence of CHD is highest in Indian (6%) and Pakistani (8%) males. About a quarter of all deaths of those born in South Asia but dying in England and Wales is attributable to CHD. According to a recent study (Williams *et al.*, 2011), over 20% of the excess mortality of South Asians could be explained by physical inactivity highlighting the need to prioritise the promotion of physical activity in this high-risk subpopulation.

Annually, CVD costs the UK economy £30.7 billion. In 2006, CVD cost the UK heath care system[1] around £14.4 billion, 72% of the cost accounting for hospital care and 20% for medication. In the same year, production losses due to mortality and morbidity were over £8.2 billion; 55% of which were due to death and 45% due to illness in those of working age. The cost for informal care[2] was over £8 billion (British Heart Foundation, 2010a).

[1] Including inpatient care, outpatient care, primary care and accident and emergency care
[2] Opportunity cost of unpaid care

Kidney disease

In England, chronic kidney disease (CKD) is thought to affect up to 1 in 8 people (DH, 2009). CKD is a common and treatable condition. However, if not diagnosed at early stage, patients are subject to progressive illness and possibly renal failure, resulting in the need for transplantation, dialysis or conservative management. Prevalence of kidney disease is increasing, as it is closely linked with other conditions such as diabetes and hypertension, which also have increasing prevalence and similar risk factors (DH, 2009). As the rate of renal failure of CKD patients is relatively low, these patients are more likely to die due to cardiovascular events rather than due to progression of their kidney disease (National Collaborating Centre for Chronic Conditions, 2008).

In the latest Health Survey for England (Craig & Hirani, 2009) the overall prevalence of moderate to severe CKD was 6% with the prevalence increasing with age from 1-2% in those aged 16-54 to over 30% in those aged 75 and over. Moreover, prevalence was greater in women and was associated inversely with measures of socio-economic status; prevalence being higher in people with lower income. Similar figures were achieved by a study analysing pre-existing primary care data from regions of Kent, Manchester and Surrey (Stevens *et al.*, 2007) in which the age-standardised prevalence of moderate or severe CKD or kidney failure was 10.6% for females and 5.8% for males with a dramatic increase of prevalence with age for both sexes. Increased incidence with age is highly significant in view of the ageing population. In addition, CKD tends to be more prevalent

among black and minority ethnic communities (DH, 2009; Roderick *et al*., 1996).

Although early diagnosis and good management of CKD within primary care are vital, CKD was rarely identified in primary care before 2006 and the introduction of four renal domains to the Quality and Outcomes Framework[3], which has helped to ensure better diagnosis and resulted in a dramatic increase in the number of patients being diagnosed with CKD (DH, 2009).

Diabetes

Worldwide, the prevalence of diabetes is increasing (Shaw *et al*., 2010). Those with diabetes often die due to cardiovascular events or renal failure and diabetes often fails to be recorded as an underlying cause of death. Therefore, the national figures often underestimate the death toll attributable to diabetes (Roglic and Unwin, 2010). It has been estimated that 6.8% of global mortality (over all ages) in the year 2010 is attributable to diabetes accounting for almost 4 million deaths among those aged from 20 to 79 (Roglic and Unwin, 2010). For Europe, the mortality estimate due to diabetes in the year 2010 was over 630,000 deaths (11% of all-cause deaths) in age group 20-79 years. A UK study (Mulnier *et al*., 2006) using national data from the General Practice Research Database concluded that the risk of death for patients with diabetes is almost double the risk for those without diabetes.

In 2010, the prevalence of diagnosed diabetes in England was 5.4%, which equals to almost 2,339,000 people[4]. Moreover, the APHO[5] Diabetes Prevalence model for England estimates that in 2010, there were about 3.1 million people (aged 16 or over) with diagnosed and undiagnosed diabetes in England, the overall prevalence being 7.4%. The estimate for the year 2030 is 4.6 million and 9.5%, respectively (Yorkshire & Humber Public Health Observatory, 2010a). This increase is due to the changing age and ethnic group structure of the population and the projected increase in obesity. There is considerable geographical (Yorkshire & Humber Public Health Observatory, 2010a & b) and ethnic variation in prevalence of diabetes. In the Health Survey for England 2004 (Sproston & Mindell, 2004), observed prevalence of doctor-diagnosed diabetes was significantly higher in Black Caribbean, Indian, Pakistani, and Bangladeshi men (ranging from 7.3 to 10.1%) and women (5.2 to 8.6%) than in the general population (4.3% men, 3.4% women).

NHS Health Checks

In 2008, Department of Health (DH, 2008a) published the results of a detailed clinical modelling exercise indicating that a nationwide vascular risk assessment and management programme targeting those aged between 40 and 74 would be both clinically effective and cost-effective. Within the programme, a vascular risk assessment should be followed by an offer of personalised

[3] http://www.dh.gov.uk/en/Healthcare/Primarycare/PMC/Quality/OutcomesFramework/index.htm

[4] Diabetes UK, available at http://www.diabetes.org.uk/Professionals/Publications-reports-and-resources/Reports-statistics-and-case-studies/Reports/Diabetes-prevalence-2010/

[5] APHO Association for Public Health Observatories

advice and treatment and an individually tailored management programme to help individuals manage their risk more effectively (Figure 1) (DH, 2008a). Early intervention to reduce vascular risk can prevent, postpone and even reverse the onset of the disease (DH, 2008a). In England, there are about 15 million people aged between 40 and 74 who are eligible for an NHS Health Check (DH, 2008b). At full roll out of the five year programme, it is anticipated that around 3 million people annually would be invited for their NHS Health Check and around 2.2 million of these would take up the opportunity of a check (at estimated take up rate of 75%). The NHS Health Check programme could on average prevent 1,600 heart attacks and strokes and save at least 650 lives each year. Moreover, the programme could prevent over 4,000 people a year from developing diabetes and enable early detection of at least 20,000 cases of diabetes or kidney disease, allowing individuals to be better managed and improve their quality of life (DH, 2008c). There are very few health interventions where improvements in quality of life and survival can be achieved so cost effectively, as cost per QALY for NHS Health Checks is £2,142 (Kerr, 2010). In England, it has been

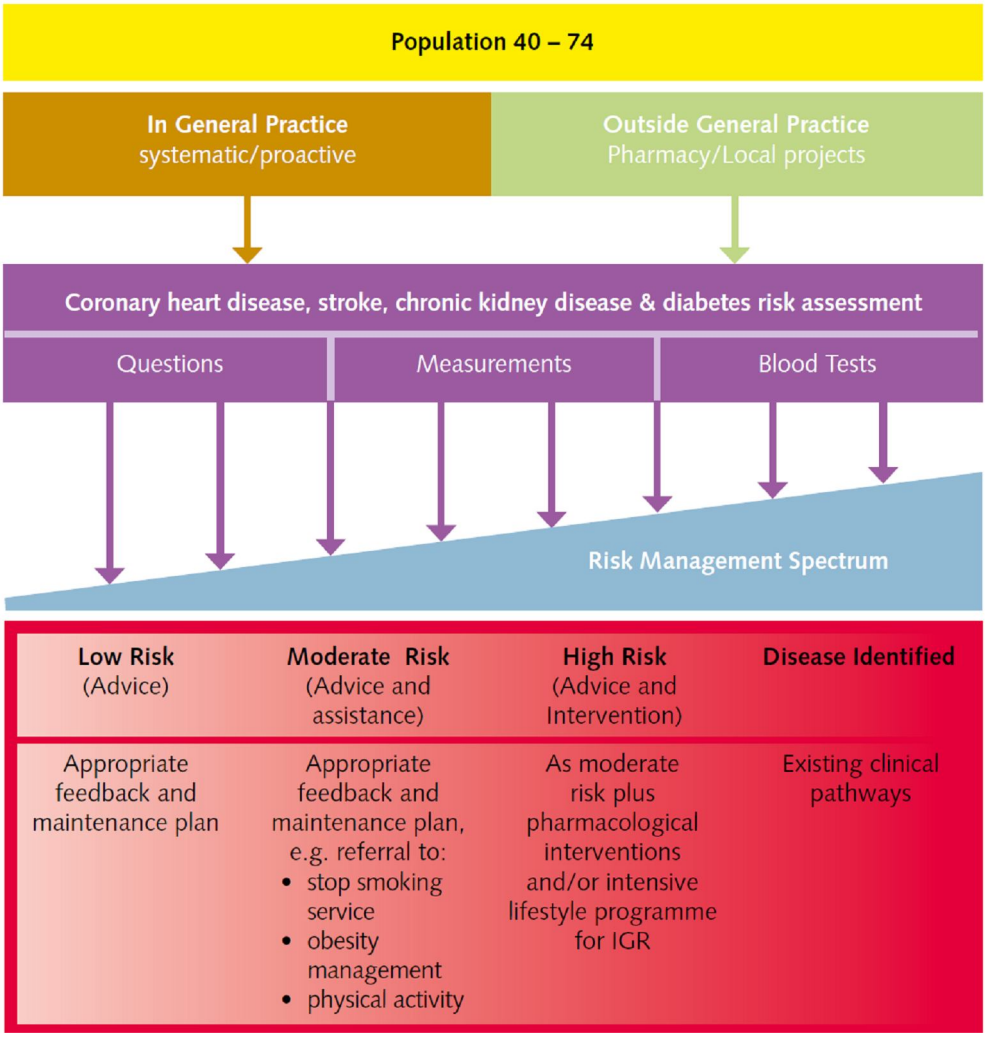

Figure 1. The Vascular Risk Assessment and Management Programme (DH, 2008a)

estimated that approximately 119,000 QALYs would be gained annually over the first four years of the roll-out, which is on average 783 QALYs per PCT per year (Kerr, 2010).

> "The NHS Health Check programme aims to help prevent heart disease, stroke, diabetes and kidney disease. Everyone between the ages of 40 and 74, who has not already been diagnosed with one of these conditions, will be invited (once every five years) to have a check to assess their risk of heart disease, stroke, kidney disease and diabetes and will be given support and advice to help them reduce or manage that risk."
>
> -www.healthcheck.nhs.uk-

NHS Health Checks and the role of community pharmacy

In general, recording of risk factors for CVD has improved considerably in UK primary care among patients with established chronic diseases. However, among patients without a current diagnosis of CVD and diabetes there remain considerable gaps in recording of the risk factors which are required for the NHS Health Check programme. Moreover, there are marked variations in recording between general practices and between age, gender, ethnic and socio-economic groups (Dalton *et al*., 2011).

There is a variety of current and previous screening programmes and programme pilots for both individual and various combinations of the vascular risk factors. The NHS Health Check programme commenced on 1st April 2009 and provides a universal vascular risk assessment, although the full implementation of the national programme is not planned until 2013 (DH, 2008b). Patel *et al*. (2009) state that "The long-awaited vascular risk checks programme provides a unique opportunity to harness, guide and endorse the multitude of cardiovascular prevention and screening programmes and projects which exist nationwide".

The implementation of NHS Health Checks will considerably increase workload of health professionals not only due to increased screening of the risk factors, but also due to giving health advice, managing and following up the high-risk patients (Dalton *et al*., 2011). PCTs are already commissioning preventive health services from GP surgeries, health centres, walk in centres and pharmacies to ensure as many people can benefit from these services as possible (DH, 2008a). It is crucial that NHS Health Checks are available in a variety of settings to ensure that the widest possible range of people is being reached, including those traditionally harder for health services to get in touch with. This will allow the programme to realise its full potential to narrow health inequalities rather than widening them (DH, 2008a).

The Operating Framework 2011/2012 published in December 2010 (DH, 2010a) acknowledges that most PCTs now have an NHS Health Check programme in place and are looking at ways to ensure that it positively contributes to reducing health inequalities. PCTs are encouraged to carry on with the implementation of these

programmes. In the recent White paper 'Healthy lives, healthy people: Our strategy for public health in England' the present government (DH, 2010b) states that the NHS Heath Check "can be carried out in a variety of settings, including pharmacy and community settings and the workplace, to help ensure that the service is accessible to all those eligible, including those in groups at highest risk of these diseases".

From August 2004 to April 2006, 217 pharmacies of a large chain provided Healthy Heart Assessment service free-of-charge across the UK to screen for CHD and provide lifestyle advice. The service reached over 8000 clients and was accessed by people from a wide range of socioeconomic categories. A study (Donyai & Van den Berg, 2009) evaluating the service found evidence that pharmacists are able to conduct screening services, to determine CHD risk and to provide information. Thus, the study concluded that community pharmacies can serve as a suitable setting for CHD risk screening in the UK (Donyai & Van den Berg, 2009).

A pharmacy-based CVD screening programme piloted in Birmingham in 2006 was targeted especially to men. A study evaluating the pilot (Horgan *et al.*, 2010) showed that community pharmacy-based screening is feasible across a range of providers including both large pharmacy chains and independently owned pharmacies and that the programme has potential to reach deprived communities and Black and Asian communities. Moreover, a pharmacy-based service can support GP practices in identifying and managing the workload of around 30% of clients (Horgan *et al.*, 2010).

Another pharmacy-based cardiovascular disease screening programme was piloted in Leicester in 2008. Clients who took up the invitation were very satisfied with the service. The evaluation report (Khunti *et al.*, 2010) concluded that the screening programme can be provided by pharmacies in a variety of locations and that the pilot had demonstrated the ability to successfully access hard to reach groups across the deprivation range. The report calls for improved IT infrastructure to provide a better interface for pharmacists and information pathway to GPs.

A pharmacy-based screening scheme piloted in Islington in 2008 was found to be successful and cost-effective (Davies *et al.*, 2009). Community pharmacies and patients demonstrated positive attitudes towards the pilot scheme, and the majority of GPs acknowledged the potential of the scheme to contribute to the improvement of public health in Islington. The qualitative evaluation report (Davies *et al.*, 2009) concluded that the scheme places Islington in a robust position to take forward national policy on vascular disease risk assessment service provision in pharmacy and other settings.

In the South West of England, about 10% of NHS Health Checks for clients invited to attend a vascular risk assessment to the end of August 2010 were performed at a community pharmacy. Moreover, an outreach event for the delivery of NHS Health Checks by community pharmacists, where a shop unit in a major shopping centre was hired for a

week assessed 162 clients (South West Region Local Pharmaceutical Committee, 2010).

International evidence

In addition to screening services, pharmacies have been successful worldwide in the delivery of management services for individual vascular conditions and risk factors both by themselves and in collaboration with other health care professionals (e.g. Blenkinsopp, *et al*., 2008; Botomino *et al*., 2008; Clifford *et al*., 2005; Machado *et al*., 2007a & b; McLean *et al*., 2008; Olenak & Caplin, 2010; Simpson *et al*., 2004; Tobari *et al*., 2010; Wermeille *et al*., 2004).

In Australia, there have been several research projects assessing the potential for screening and management of, for example, CVD and diabetes at pharmacies within the Research and Development programme funded by the Australian Government Department of Health and Ageing as part of the Community Pharmacy Agreements[6]. One project (Peterson *et al*., 2005, 2010a) assessed the suitability of community pharmacies as screening centres for CVD risk and evaluated the role of pharmacists in detection, education and referral of high risk patients. The results indicate that this pharmacy-based screening programme has the potential to identify and refer undiagnosed patients at high risk of CVD, and help to restrain the burden of heart disease.

Another project (McNamara *et al*., 2010) studied a model for community pharmacy-based prevention of CVD, where a pharmacist performed a risk assessment and provided recommendations and targets for risk reduction, which were addressed by the pharmacist and the client during five monthly follow up sessions. The results were promising as the CVD risk onset over the next four years reduced by 24%, as there were reductions in waist circumference, blood pressure, cholesterol and other risk factors. According to a survey (Peterson *et al*., 2010b), a widely held view by the Australian public is that pharmacists are capable of providing advice on lifestyle changes and screening for hypertension and diabetes. Moreover, the majority of those surveyed were very satisfied with the service provided at their regular pharmacy.

[6] See http://www.guild.org.au/The_Guild/home.page for further information

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