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Cost-effective analysis of vascular and sexual health pharmacy services

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Abstract

The role of community pharmacy (CP) in health promotion has developed over the last decade and a half following the introduction of the new National Health Service (NHS) plan in 2000. CPs have been turned into healthy living centres where individuals can access a variety of services designed to prevent disease and promote health. In 2005, three types of pharmacy service were introduced; essential, advanced and enhanced (currently known as locally commissioned). Enhanced pharmacy services were provided by Primary Care Trusts (PCTs) (until 2010) based on local needs identified by PCTs. In 2010, the Government decided to abolish the PCTs by 1st April 2013; hence, PCTs entered a transition phase between 2010 and April 2013. By February 2011, each PCT was required to publish Pharmaceutical Needs Assessment (PNA) report regarding the provision and need for pharmacy services. The national commissioned vascular and sexual health enhanced pharmacy services in England are Stop Smoking Service (SSS), NHS health check, Emergency Hormonal Contraception (EHC) and chlamydia screening and treatment services. In 2012, the Healthy Living Pharmacy (HLP) scheme, which was piloted in Portsmouth PCT, was expanded to 30 PCTs known as HLP pathfinder PCTs.

The aim of this research was to identify the correlation between needs, provision and uptake of vascular and sexual health pharmacy services at a PCT and CP level. It also aimed to investigate whether the provision of those services was cost effective. Finally, it aimed to determine the impact of the introduction of the HLP scheme on the provision and uptake of those services.

At a PCT level, the PNA reports were used to identify the CP provision of SSS, EHC service and chlamydia screening service for the financial year 2009/2010. The local need for SSS (prevalence of smoking adults) and EHC services (rates of teenage pregnancy) were obtained from Health Profiles for each PCT. The need for chlamydia screening service (prevalence of positive chlamydia infection) was obtained from the National Chlamydia Service Programme (NCSP). Uptake and cost attributed to provision of those services for the financial year 2009/2010 were obtained from a short questionnaire targeted the public health leads for the related services in PCTs where the provision of services and the needs were identified. Simple cost-effectiveness analyses were performed on CP SSS and CP EHC provision, based on identified uptake and cost. At a CP level, a cross-sectional survey was conducted on 1 249 CPs in 28 PCTs across England in 2013. PCTs

were chosen based on provision of SSS, EHC and chlamydia screening service identified in the PNA reports. 7 PCTs out of 28 PCTs were HLP pathfinder PCTs. CPs were allocated to one of five groups based on deprivation.

The response rates for SSS, EHC and chlamydia screening surveys were 30% (42/138), 30% (42/139) and 19% (21/111) respectively. Data analysis identified that the need for SSS and EHC services were highly correlated with deprivation, with Spearman's rank correlation coefficients (rho) of 0.76 and 0.83 respectively (both $P < 0.001$). The correlation between deprivation and the need for a chlamydia service was weak (rho = 0.25, $P = 0.009$). Higher number of CPs per 25 000 population were observed in more deprived PCTs (rho = 0.63, $P < 0.001$). CP provision (percentage of CPs offering a service out of total CPs in a PCT) of SSS, EHC and chlamydia service did not correlate with needs. The uptake of SSS, EHC and the chlamydia screening service did not correlate with increasing need or deprivation. However, pharmacists in areas of higher need dealt with a greater number of clients in relation to SSS and EHC services to meet their local needs, with rho of 0.4 and P of 0.01 in case of SSS and Pearson's correlation coefficient (R) of 0.36 and P of 0.02 in case of EHC. A cost-effective analysis of CP SSS provision found it to be cost effective when compared to no intervention based on NHS perceptive and the incremental cost per Quality Adjusted Life Year (QALY) gained was £1 511. Similarly, the CP EHC service was also found to be cost effective with an NHS saving of £689 per unintended pregnancy prevented.

The response rate for the CP survey was 19.3% (241/1 249). No significant differences were identified in terms of provision or uptake of SSS, EHC, chlamydia screening and NHS health check services between CPs with different deprivation neighbourhoods. 18.5% (31/168) of the respondent community pharmacists were working in HLPs. The uptake of SSS through HLPs (median = 6) was higher than that through non-HLPs (median = 4; $P = 0.02$). Playing a more active role in health promotion was cited as the main driver for pharmacists to adopt an HLP scheme. Respondent pharmacists indicated that the introduction of an HLP scheme had improved public awareness of vascular and sexual health services available in CPs and they suggested the use of social media websites to further improve public awareness. Lack of time and the provision of similar services via other providers were considered the main barriers.

Local Authorities should increase the provision of vascular and sexual health pharmacy services to meet the needs of their localities. They should use the latest

technology to improve public awareness regarding availability of those services in CPs.

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List of abbreviations

BME: Black and Minority Ethnic

BMI: Body Mass Index

CHD: Coronary Heart Disease

CI: Confidence Interval

CO: Carbon Monoxide

CP: Community Pharmacy

DH: Department of Health

EHC: Emergency Hormonal Contraception

FDA: Food and Drug Administration

GP: General Practice

GPhC: General Pharmaceutical Council

HAZ: Health Action Zone

HLC: Healthy Living Champion

HLP: Healthy Living Pharmacy

HSCIC: Health and Social Care Information Centre

ICER: Incremental Cost Effective Ratio

IT: Information Technology

IUD: Intrauterine Device

IMD: Index for Multiple Deprivation

LA: Local Authority

LQ: Lower Quartile

LSOA: Lower Layer Super Output Area

MCQ: Multiple Choice Question

MHRA: Medicines and Healthcare Products Regulatory Agency

NCSP: National Chlamydia Service Programme

NHS: National Health Service

NICE: National Institute for Health and Care Excellence

NRT: Nicotine Replacement Therapy

OFT: Office of Fair Trading

ONS: Office for National Statistics

OTC: Over the Counter

PCT: Primary Care Trust

PGD: Patient Group Direction

PNA: Pharmaceutical Needs Assessment

POM: Prescription Only Medicine

PSNC: Pharmaceutical Services Negotiating Committee

QALY: Quality Adjusted Life Year

R: Pearson's Correlation Coefficient

RCT: Randomised Control Trial

Rho: Spearman's Rank Correlation

RPS: Royal Pharmaceutical Society

RPSGB: Royal Pharmaceutical Society of Great Britain

RRR: Relative Risk Ratio

SEU: Social Exclusion Unit

SES: Socioeconomic Status

SHA: Strategic Health Authority

SSS: Stop Smoking Service

STI: Sexual Transmitted Infection

TDI: Townsend Deprivation Index

UI: Unprotected Intercourse

UK: United Kingdom

UQ: Upper Quartile

WHO: World Health Organisation

External outputs

Some of the work presented in this thesis is published through abstracts which were presented in two conferences:

- W. Chalati, J. Fletcher, R. Kayyali. An assessment of the provision of enhanced vascular and sexual health pharmacy services based on local needs. *International Journal of Pharmacy Practice* (2012); 20 (supp 2): 31- 101. Available from: http://onlinelibrary.wiley.com/doi/10.1111/j.2042-7174.2012.00235.x/pdf

- W. Chalati, J. Fletcher, R. Kayyali. Variations in provision and uptake of stop smoking services through community pharmacies based on variations in deprivation. *International Journal of Pharmacy Practice* (2014); 22 (supp 1): 28- 53. Available from: http://onlinelibrary.wiley.com/doi/10.1111/ijpp.12102/pdf

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Chapter One: General introduction

1.1 Historical developments in community pharmacy practice that led to the current pharmacy practice roles

The modern history of pharmacists in Great Britain can be attributed to the foundation of the Pharmaceutical Society of Great Britain (PSGB) in 1841. In 1843 Queen Victoria granted the Society Royal Charter and in 1988, Queen Elizabeth II granted the Society its Royal Title (Hudson *et al.*, 2013). Prior to the creation of the PSGB, the pharmacy profession was closer to an apprentice than to a profession, when anyone could work in a pharmacy and could dispense medicines (they used to be called as apothecaries, chemists or druggists) (Anderson, 2005). Unlike chemists and druggists, apothecaries had to take qualifications to become an apothecary and pass oral exams which included the recognition of ingredients and preparing medicines (Hudson and Boylan, 2013). Between 1815 and 1834, most of the new apothecaries acted as general practitioners rather than expert in medicines, while chemists and druggists became apprentices for a pharmacist (Hudson and Boylan., 2013). The PSGB was the professional and regulatory body that used to control and supervise pharmacists in England, Wales and Scotland (Taylor and Harding, 2003). At its beginning, the PSGB intended to define clear boundaries between pharmacists and other healthcare professionals (doctors). In England and Wales, doctors were allowed to prescribe and dispense medicines, while in Scotland, their role was restricted to prescribing medicines (Anderson, 2005). The role of dispensing by English and Welsh doctors was reflected on pharmacists who made their profits by selling over the counter products rather than dispensing prescribed medicines (Anderson, 2005).

Two Pharmacy Acts were the milestones that controlled the pharmacy profession; the Pharmacy Act 1852 which restricted titles related to pharmacist for those who passed the Society's examination but it lacked legal definition for those who could practice the pharmacy profession, and the Pharmacy Act 1868 which empowered the Society and provided it with rights to examine and register all chemists and druggists (Anderson, 2005). Pharmacists were considered as doctors for poor people, who could not afford to pay (Whalley *et al.*, 2008). In May 1911, the National Insurance Bill was introduced; the bill provided free medical help for those who were insured. However, the bill was restricted only to working persons who earned less than £160 per annum and up to 70 years old (Anderson, 2005). In 1948, the creation of the National Health Service (NHS) in England, brought the hope for people, as the provision of health care services became free at the point of

access (Whalley *et al.*, 2008). Community Pharmacists became independent contractors to the NHS with the capacity to dispense only NHS prescriptions (Richardson and Pollock, 2010). The role that community pharmacists used to play in health promotion and advice giving diminished and the workload increased. It was said that “Pharmacists effectively became invisible” (Anderson, 2007). The number of doctor’s prescriptions dispensed from Community Pharmacies (CPs) jumped from 65 million in 1937 to 250 million in 1950. Several Attempts have been made to retrieve the pharmacist traditional role in health promotion between 1948 and 2000 (Anderson, 2007). In July 1999, the Government introduced the white paper “saving lives: our healthier nation” (Department of Health (DH), 1999). The white paper set a 10 years plan to improve health in general for everyone with focus on those who were in worst health situation. Given consideration to the main causes of death by that time (cancer, Coronary Heart Disease (CHD) and stroke, accidents and mental health), the Government set its plan to reduce the rate of each event by investment of more money, tackling smoking, improving health and setting high health standard (DH, 1999). In 2000, the Government introduced its plan for the new NHS in the new century, and considered the need for the expansion of community pharmacist's role to meet the new challenges of the new century (DH, 2000b). The NHS plan 2000 was followed by the Government white paper ″pharmacy in the future-implementing the NHS plan″ (DH, 2000a). The latter paper intended to explain the pharmacists’ role according to the NHS new plan and it set the challenges that pharmacy has to face in the upcoming years. These challenges were concerned with meeting patients’ needs. These needs are met by ensuring people are getting their medicines or pharmaceutical advice easily and conveniently, and by providing them with more support in using their medicines. Improving patients' confidence upon consultation by their pharmacist is also a key priority. The document also discussed the environmental changes for pharmacies with a vision for a more competitive retail environment for CP where arrangements for securing and paying for generic medicines are considered and electronic ordering and home delivery are achievable. Finally, the document outlined how professional standards should be maintained through better dealing with mistakes, professional education and training and making sure that pharmacists are keeping their skills up to date (DH, 2000a).

In 2003, the document ″A vision for pharmacy in the NHS″ was released; the document came to assess the success that happened as a result to the NHS plan 2000 and how pharmacy needs to move in the future (DH, 2003a). The document listed the top ten key roles for pharmacists which have been identified by the chief

pharmaceutical officer for England, Dr Jim Smith (the roles are summarised in Table1.1). The document stated that as pharmacies are in the heart of the community, where the public can have easy access, the pharmacists have an important contribution in improving public health and broadening promotion of health such as smoking cessation, sexual health, reducing obesity and minimising health inequalities (DH, 2003a). The role of pharmacists in prescribing was re-emphasised in this document with pharmacists to begin supplementary prescribing by the end of 2003 while independent prescribing to begin later in 2006 (DH, 2003a, Cooper *et al.*, 2008a). An early experience of supplementary prescriber pharmacist showed benefit both to patients in terms of their medical management and to pharmacists in terms of job satisfaction and self-confidence, but the challenges identified included lack of funding, IT support and awareness by others (Cooper *et al.*, 2008a).

Table 1.1: Summarises the key role for pharmacists set be chief pharmaceutical officer

CHIEF PHARMACEUTICAL OFFICER'S 10 KEY ROLES FOR PHARMACY
To provide convenient access to prescription and other medicines
To advise patients and other health professionals on the safe and effective use of medicines
To be a point of first contact with healthcare services for people in the community
To provide medicines management services, especially for people with enduring illness
To promote patient safety by preventing, detecting and reporting adverse drug reactions and medication errors
To contribute to seamless and safe medicines management throughout the patient journey
To support patients as partners in medicines taking
To prescribe medicines and to monitor clinical outcomes
To be a public health resource and provide health promotion, health improvement and harm reduction services
To promote value for money in the use of medicines and to reduce wastage

In January 2003, the Office of Fair Trading (OFT) recommended the abolition of the control of entry regulations for CPs which were introduced in 1987 (Hassel, 2003). It emphasised that due to these regulations, the prices of Over the Counter (OTC) medicines are becoming higher, the innovation is lower (as the roles of pharmacists and providers in delivering new enhanced services were limited) and the quality of service is poorer (Hassel, 2003). In July 2003, the decision of DH was to reject the

recommendations made by the OFT report and to continue with the current regulations (DH, 2003b).

In 2005, four categories of CPs were exempted from the control of entry test; a pharmacy established in a large retail area (15 000 m^2 or more), a pharmacy with intention to open more than 100 hours per week, an internet based pharmacy and a pharmacy established within a one stop primary care centre (DH, 2005).

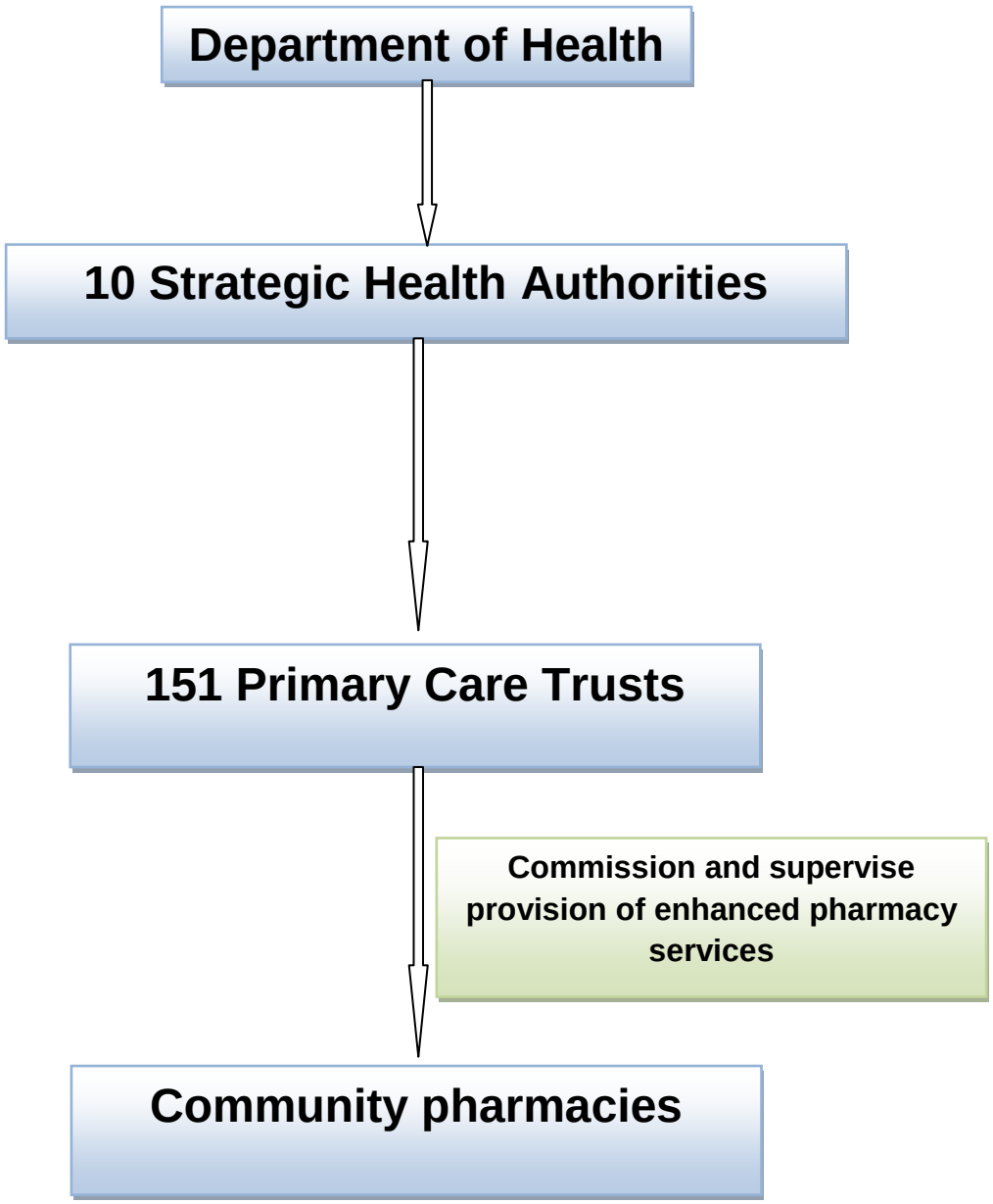
A new era for the community pharmacist started in 2005, following the introduction of the new pharmacy contract. Three categories of pharmacy services were introduced; essential, advanced and enhanced. All CPs which are in contract with the NHS have to provide essential services. Essential services are the services that maintain the daily work of pharmacy through dispensing medicines, repeat dispensing, waste management, sign posting,.., etc. Advanced services need accreditation of pharmacist and premises. They include the services that assure the safe and good use of medicines and appliances such as; medicines use review, appliances use review and new medicine service. The last category (enhanced services) is provided based on needs identified by Primary Care Trusts (PCTs) for these services within each area. It includes stop smoking, chlamydia screening and treatment, Emergency Hormonal Contraception (EHC), NHS health check, needle and syringe exchange, and minor ailments (PSNC, 2014).

In 2008, the document ″pharmacy in England building on strengths – delivering the future″ was released (DH, 2008a). The document emphasised that services providing prevention rather than cure must be the NHS priority in the future as well as services that help people take care of themselves (DH, 2008a). In order to promote good health and prevent ill health, the pharmacy's contribution must be enhanced through initiatives such as; stopping smoking, reducing teenage pregnancy rates through access to EHC and sexual health advice. It should also provide fast and effective treating for minor ailments and chlamydia screening and treatment. In general, CPs should be seen as community-based healthy living centres, which offer easily accessible and informal yet wholly professional advice and support, including support for self-care.

There was a hierarchy of organisations that led the health services; the PCTs were the organisations that are in direct touch with CPs (Figure 1.1). The DH supervised Strategic Health Authorities (SHAs), which in turn supervised PCTs. In 2000, 28 SHAs were created but they were merged into 10 in July 2006. On the other hand, 303 PCTs were created in 2002, but they were merged into 152 PCTs in October

2006 (Whalley *et al.*, 2008). In April 2010, the number of PCTs in England decreased from 152 to 151, as East and North Hertfordshire PCT merged with West Hertfordshire PCT (DH, 2011b).

Figure 1.1: Summary of NHS structure prior to April 2013



1.2 Changes following the election of the new Government in May 2010

In July 2010, a white paper "equity and excellence: liberating the NHS" was released. One of the aims of the document was that PCTs should enter a transition period by which the commissions and roles of PCTs will be transferred to other suppliers and by April 2013, the PCTs will be phased out (DH, 2010). In September 2010, the RPSGB was no longer the regulatory body for pharmacists and pharmacy

technicians and its regulatory role was moved into the new formed regulatory body the General Pharmaceutical Council (GPhC). RPSGB sustained its leadership role and its name was changed to the Royal Pharmaceutical Society (RPS) (RPS, 2014). The commissioning of enhanced services changed on 1st April 2013. Services related to public health such as SSS, screening services (such as chlamydia and NHS health check), EHC service, needle and syringe exchange service and supervised administration service were transferred to Local Authorities (LAs). Services such as minor ailment service, anticoagulation service and independent prescribing service were transferred to the NHS Commissioning Board (known also as NHS England) (Primary Care Commissioning, 2013).

1.3 Trends in pharmacists and pharmacy type

The last 50 years did not only witness changes in the role of pharmacist, but it also experienced a significant trend in the pharmacists' gender. More than half of pharmacists who registered with the RPSGB in 2008 were females (Seston *et al.*, 2009), compared to less than 20% being females in 1964 (Hassell, 2003). Furthermore, in 2008, 30% of pharmacists who were registered belonged to non-white ethnicity (Seston *et al.*, 2009).

In the UK, CPs can be owned by a pharmacist or a company that employs a designated superintendent pharmacist (there is no limit on how many pharmacies a company can own) (Bush *et al.*, 2009). In 1999, independent pharmacies used to represent more than 55% of all CPs within England and Wales. This rate has greatly changed with less than 40% being independents in 2009. This was attributed to the market competition where many CPs were taken over by big companies (OFT, 2010).

1.4 Remuneration of CPs

Three legal classes of medicines can be provided at CPs; Prescription Only Medicines (POMs), pharmacy medicines and general sale list ones. The POM category requires prescription from a qualified prescriber. The pharmacy category requires pharmacist's supervision and it can be sold only in pharmacies. The last category (general sale list) does not require neither prescription nor pharmacist's supervision and can be sold in pharmacies, supermarkets or even in gas stations (Medicines and Healthcare Products Regulatory Agency (MHRA), 2013a).

The remuneration of CPs comes mainly from the NHS (Richardson and Pollock, 2010). In CPs which depends mainly on prescribed medicines the NHS is responsible for 90% of their overall turnover. However, this share is lower in CPs

which has a health and beauty or supermarket business models. The NHS reimburses pharmacists for the dispensing of prescribed medicines and providing of advanced and enhanced services. In the case of prescribed medicines, the more the pharmacist dispenses, the more the turnover will be. Advanced services are paid for based on the number of services provided and the payment is fixed for all CPs in England. Enhanced services are paid for by the NHS, but the methods of payment and the amount differ between one PCT and another. Pharmacists are also able to earn more profit by selling pharmacy medicines, general sale medicines, goods and appliances (OFT, 2010).

1.5 Vascular and sexual health enhanced pharmacy services

Two types of enhanced services were the concern of this research; vascular and sexual health services. In England, in 2009/2010, the two nationally commissioned enhanced vascular health services were SSS and NHS health check service. Although alcohol screening and brief intervention and weight management services were commissioned in some PCTs, those services have not been yet nationally agreed. On the other hand, chlamydia screening and treatment services and EHC service were the services that were connected with sexual health (PSNC, 2014)

1.5.1 Stop Smoking Service (SSS)

Smoking is still the most preventable cause of death in developed countries, including England (Doll *et al*., 2004, Pirie *et al*., 2013). Smoking is strongly connected with socioeconomic status (SES), such as low educational attainment and unemployment. In addition, smokers who live in lower SES areas are less likely to quit smoking than those who live in higher SES ones (Health and Social Care Information Centre (HSCIC), 2011b). The difference in smoking habits between lower and higher SES areas is the main factor in increasing health inequalities (Jha *et al*., 2006). A key strategy to overcome health inequalities related to smoking habits is to increase smoking quit rates in lower SES areas and find the cost-effective avenues to achieve this goal. At the beginning of SSS, the plan was to target 26 areas known as Health Action Zones (HAZs). The HAZs were areas chosen by the Government, where deprivation status is common with the aim was to reduce health inequalities by helping smokers in those areas (McNeill *et al.*, 2005). The initial guidance sent to HAZs distinguished between two types of interventions (based on settings); opportunistic SSS interventions provided by health care professionals which resulted in maximum reach but minimum effectiveness. The second type was SSS through clinics which resulted in minimum reach and maximum effectiveness (McNeill *et al.*, 2005). Currently, smokers can

get help to quit smoking from brief advice, to intermediate intervention and intensive intervention (DH, 2011a). A group-intervention is more effective than one-to one treatment (Bauld *et al.*, 2009b, McEwen *et al.*, 2006).

1.5.1.1 Hazards of smoking and benefits of stop smoking

Most smokers are aware of the hazards of smoking, but they try to convince themselves that smoking is not harmful if they smoke moderately (Heikkinen *et al*., 2010). In fact, smoking is responsible for causing several types of diseases; vascular, neoplastic and respiratory ones. It worsens the life condition of an individual and leads to an early death (Doll *et al.*, 2004). For example, in England, in 2010/2011, around 457 800 of hospital admissions, among adults aged 35 and over, were caused by smoking (HSCIS, 2011). The harm of smoking depends mainly on the heaviness of smoking and the age at the time the smoking started (Oza *et al*., 2011). The effects of smoking are cumulative and in order to reduce the harm of smoking, stop smoking should be achieved at an early age. For example, 90% of the excess hazards attributed to smoking can be avoided if a smoker stops at 40 years of age and 97% could be avoided if he/she stops at 30 years of age (Doll *et al.*, 2004). Not all diseases will respond to stopping smoking in the same way, the ex-smoker will witness faster decline in heart disease and stroke risk than in lung cancer and chronic obstructive pulmonary disease (Oza *et al*., 2011).

1.5.1.2 Smoking prevalence and other factors

Smoking is responsible for 50% of the variations in death rates between adults who live in higher SES areas and those who live in lower ones (Jha *et al.*, 2006, Hiscock *et al*., 2012a). Between 2001 and 2006 in England, the prevalence of smoking adults declined in general, but there was no decline among lower SES people (Jha *et al*., 2006). Despite that, smokers who were in lower SES received higher numbers of interventions than those who were in higher SES (Douglas and Szatkowski, 2013); the lower quit rates among lower SES decreased the chances of meething the goal of bridging the gap in health inequalities resulting from smoking (DH, 2011a). The stronger addiction to tobacco, insufficient social support and lower motivation to quit were the main suggested reasons for lower quit rates among lower SES (Hiscock *et al.*, 2012b). Hiscock and co-workers (2012b) suggested raising the price of tobacco products, which will have a higher effect on low SES smokers and hence might help in reducing health inequalities.

In terms of ethnicity, the prevalence of smoking is higher in Bangladeshi and Black Caribbean men when compared to White men (Karlsen *et al.*, 2011). The variations

in smoking prevalence were explained by the variations in SES, where the two minor ethnicities lived in lower SES areas (Karlsen *et al.*, 2011). The common barriers for successful quits among ethnic groups are language, religion and culture, lack of time and negative attitudes to services and doctors (White *et al*., 2005, Fu *et al.*, 2007).

1.5.1.3 Types of pharmacological products provided for SSS

Tobacco companies have tried to change the design of cigarettes by inclusion of filters, low-tar, and light variations. All those attempts have failed to reduce the disease risk. Contrary, they may have encouraged non-smokers to start smoking and thus slow down smoking cessation (Centers for Disease and Control Prevention (US), 2010). Cigarettes contain 93 harmful and potentially harmful compounds. They are carcinogenic, toxic to the respiratory and cardiovascular systems and contain reproductive or development toxic compounds (Food and Drug Administration (FDA), 2012). Only four compounds have addiction effect, which are acetaldehyde, anabasin, nornicotine and nicotine (the most important compound) (FDA, 2012). Smoking cigarettes causes quick absorption of nicotine through the lungs, which in turn, leads to a rapid increase in nicotine levels in the blood, hence making smoking the most powerful and dependence-produced form of nicotine administration (Hukkanen *et al.*, 2005).

Smoking cessation is accompanied with withdrawal symptoms which include irritability, urge/craving to smoke, depression, restlessness, increased heart rate, increased appetite and poor concentration (Hendricks *et al.*, 2006). These symptoms reach their peak in the first week, and then decrease to preabsitence level within 1 to 4 weeks following the abstinence of smoking (Hendricks *et al.*, 2006). Three types of pharmacological products are available to help smokers quit smoking, Nicotine Replacement Therapy (NRT), bupropion and varenicline (DH, 2011a). NRT reduces the withdrawal symptoms of nicotine, by stimulation of the nicotine receptors in the ventral tegmental area of the brain, which in turn leads to the release of dopamine in the nucleus accumbens. NRT mimics the mechanism of nicotine by smoking but in slower and lower levels than smoking cigarettes, thus it does not get rid of all the withdrawal symptoms (Molyneux, 2004). Various types of NRT are available in the UK; chewing gum, patches, tablets and lozenges, inhalators and nasal spray (MHRA, 2014). All types of NRT proved to increase the quit rate in comparison to placebo (Stead *et al*., 2012). The addition of rapid delivery of NRT with nicotine patch proved to be more effective than a single type of

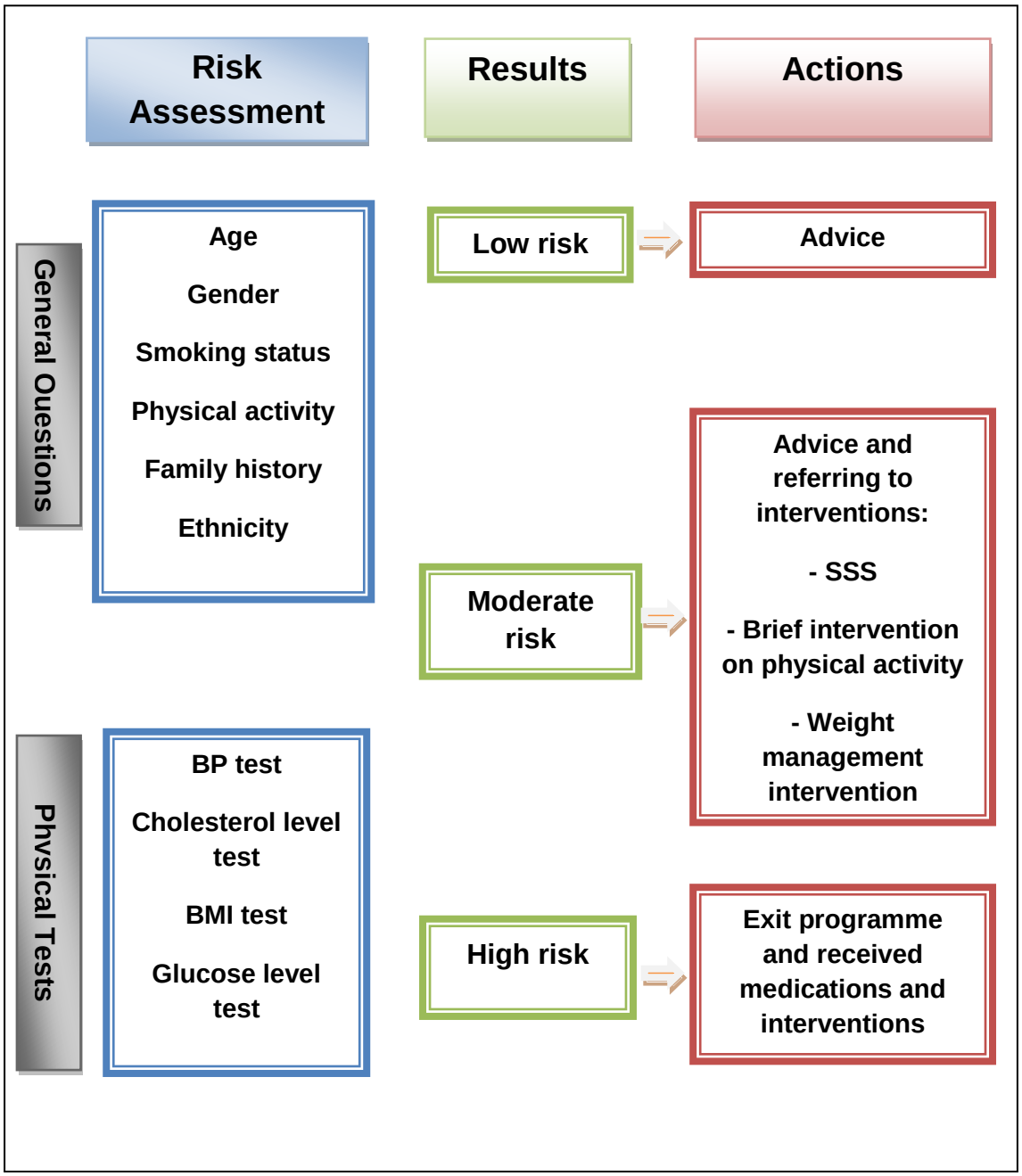
NRT, such as nicotine gum (Stead *et al.*, 2012). Bupropion, the second medication available to help quit smoking, eases withdrawal symptoms by mimicking nicotine effects on dopamine and noradrenaline. By its ability to antagonize nicotine receptors (it inhibits nicotine from binding to the nicotine receptors without inducing a biological response), it reduces the outcomes of nicotine uptake, which helps in preventing relapse (Warner *et al*., 2005). Bupropion is more effective than placebo (Aubin *et al*., 2004) and the addition of NRT to bupropion increases the efficacy of quitting smoking (Stead *et al*., 2012). Varenicline, the latest medication that became available to help in quit smoking, works as agonist and antagonist. It binds with nicotine acetylcholine receptors (nAChR) of the α4β2 subtype and increases the release of dopamine in relevant brain areas and hence minimizes the craving for nicotine and eases the symptoms of withdrawal (agonists effects). It also inhibits nicotine from binding with those receptors, which result in reduction of nicotine-induced dopamine release (Fagerström and Hughes, 2008). The drug effect of pharmaceutical products against placebo varies from 2.27 (95% Confidence Interval (CI) 2.02, 2.55) for varenicline, 1.69 (95% CI, 1.53, 1.85) for bupropion and 1.60 (95% CI, 1.53, 1.68) for any form of NRT (Aubin *et al.*, 2013). Bupropion and varenicline require a prescription to be dispensed, while NRT can be sold as general sale list medicine (MHRA, 2014).

1.5.2 NHS health checks service

The NHS health check was introduced in 2009, following the publication of the white paper “putting prevention first- vascular checks: risk assessments and management”. The service aimed to provide risk assessment of diseases which affect the vascular system for everyone who is aged 40-74 years old. The risk is identified through physical assessment of the body, including blood samples. It also requires full details about family history with consideration of any lifestyle risk such as smoking (Figure 1.2). Those who are identified with low risk will receive advice and those who are at moderate risk will receive advice and assistance such as referring to SSS, obesity management and physical activity. Advice and intervention is required for those who are at high risk in addition to pharmacological intervention and intensive lifestyle programme for those with impaired glucose regulation (DH, 2008b). The service aimed to identify those at risk such as; smokers, obese people, high alcohol drinkers and those with diabetes (PSNC, 2014). The economic model of NHS health check programme was estimated to cost no more than £ 3 000 per Quality Adjusted Life Year (QALY) gained (DH, 2008b). Initially, the programme aimed to target all eligible people over a period of 5-years with a minimum of 20%

of those eligible each year (DH, 2008b). However, the percentage of screened individuals varied in different Boroughs. For instance, in Ealing, in 2008/2009, 44.8% of the patients who were invited attended the check (Dalton *et al.*, 2011).In Hammersmith and Fulham, 32.7% of those who were invited in 2008/2009 attended compared to 20% in 2009/2010 (Artac *et al.*, 2013a). Therefore, in 2011/2012, the DH asked PCTs to target 90% of their target, which is equivalent to 18% instead of 20% per year (Artac *et al.*, 2013b). The PCTs in total reached 8.2% of their target in 2011/2012, with higher reach in more deprived PCTs compared to least deprived ones (Artac *et al.*, 2013b).

Figure 1.2: Summarises different actions based on results of health checks



1.5.2.1 Obesity prevalence

The obesity is measured by the Body Mass Index (BMI) which is a measure of weight relative to height (Butland *et al.*, 2007). In 2003/2004 the mean BMI for men and women in the UK was 27 kg/m^2 which lay outside the healthy range (18-24.9 kg/m^2) but within the overweight range (25-29.9 kg/m^2) (Butland *et al.*, 2007). However, it is still lower than the obese range (30-40 kg/m^2) and morbidity obese one (>40kg/m^2) (Butland *et al.*, 2007). There is a strong correlation between deprivation and obesity, especially among children where childhood obesity is more common in more deprived areas (Conrad and Capewell, 2012; Stafford *et al.,* 2010). Different explanations were suggested to explain this finding; the effect of fast food which is more common in more deprived areas (Fraser and Edwards, 2010) and the lower level of physical activity in more deprived areas (Annear *et al.,* 2009) are the most accepted ones.

1.5.2.2 Alcohol intake

Alcohol intake over the allowed limit was seen among 42% of working men and 39% of working women (HSCIC, 2011a). Furthermore, the level of drinking is higher among the employed (75% of men and 65% of women) than among the unemployed (59% of men and 62% of women) or economically inactive (54% of men and 45% of women) (HSCIC, 2011a). Drinking alcohol is associated with harm to the drinker, the people surrounding the drinker and to the society (World Health Organisation (WHO), 2014). Alcohol might be responsible for causing gastrointestinal disease, neuropsychiatric conditions, cancers, cardiovascular diseases and many other diseases (WHO, 2014).

1.5.3 EHC service

1.5.3.1 Risks of teenage age pregnancy

The UK has the highest teenage pregnancy rates when compared to the other European countries (Social Exclusion Unit (SEU), 1999). The burden of the problem affects both affluent and deprived areas, with higher rates in more deprived areas (SEU, 1999). The rates of teenage pregnancy are associated with three main factors; dislike of school, pessimistic view of the future and poor circumstances and unhappy childhood (Harden *et al.*, 2009). Kaplan and co-workers (2004) found that a female who gave a birth as a teenager, is more likely to have a lower income at the age of 30 and is likely to receive 34% to 39% more benefits than a female who does not. She is more likely to have a less well qualified partner who has a lower weekly wage. Such a female, is more likely to work lower hours per week, which in

turn will be reflected in less earning and more financial support from the Government. Furthermore, they found that she is less likely to complete post-compulsory education by the age of 30 when compared to the ones who had not given birth when they were teenagers. Same findings were suggested by Goodman and co-workers (2004) and Ermisch and Pevalin (2004). According to Goodman and co-workers (2004) the family size is the main driver in determining the disadvantages related to the income, and the level of benefits claimed as the UK benefit system compensates the shortness in family income which is caused by less working hours per week. In addition to the financial disadvantages, teenage pregnancy is associated with higher risk of premature birth, low birth weight and neonatal mortality (Chen *et al.*, 2007) and higher incidence of anaemia and pyelonephritis (renal inflammation) among pregnant teenagers (Gupta *et al.*, 2008).

1.5.3.2 Interventions to reduce teenage pregnancy

In 1999, the UK Government suggested a national plan to halve the teenage pregnancy rates by 2010 (SEU, 1999). The plan suggested a national campaign to improve knowledge among teenagers about the risks of teenage pregnancy and how to achieve better prevention (SEU, 1999). Harden and co-workers (2009) found reliable evidence in their review, to support the effectiveness of interventions versus no intervention to improve knowledge among children and youths in preventing teenage pregnancies. This knowledge was reflected in 39% lower rates of teenage pregnancies among the intervention groups than those who did not receive any support with 0.61 as Relative Risk Ratio (RRR) and 95% confidence interval between 0.48 and 0.77 (Harden *et al.*, 2009). In the UK, provision of contraception is free to all women and men through the NHS (NHS Choices, 2013). In the USA, Peipert and co-workers (2012) found that the provision of free contraceptive is significantly effective in preventing teenage pregnancy. However, a teenager can have unprotected sexual intercourse, which is defined by failure of using contraceptive methods (such as tearing of a condom or forgetting to take contraceptive pill) or using no protection at all. In this case, a teenager can ask for an emergency contraception. There are two methods of emergency contraception that can be obtained in the UK; emergency contraceptive pill and Intrauterine Device (IUD) (NHS Choices, 2013). There are two types of emergency contraceptive pill; EHC (levonorgestrel) which can be bought or obtained free from CPs under PGDs and does not require a prescription and can be bought as a pharmacy medicine under the supervision of a pharmacist. Ulipristal (the second type) requires a prescription from a qualified prescriber to be dispensed (NHS

Choices, 2013). Further details of the two types of emergency pills are presented in Chapter 3. The IUD is a small device which is T-shaped and requires a trained person to insert it into the uterine for up to 5 days following the unprotected intercourse to prevent the pregnancy (NHS Choices, 2013).

1.5.3.3 Role of CPs in reducing teenage pregnancy

Community pharmacists who agreed to provide EHC as an enhanced service, supply the EHC to clients under Patient Group Directions (PGDs), which are defined as a written instruction that allow the supply or administration of medicines to certain types of clients (MHRA, 2013b). The locally agreed PGDs will identify the age range for those who are eligible for the service (PSNC, 2014). The service aims mainly to target young people, and increase their knowledge about emergency contraception and other forms of contraception and hence increase access to the service in case of unprotected intercourse and reduce the rates of unintended pregnancies (PSNC, 2014).

1.5.4 Chlamydia screening and treatment services

1.5.4.1 Risks of Chlamydia

Chlamydia trachomatis is a bacterium and its sexually transmitted strains D-K is responsible for causing genital tract infections in both women and men (Low *et al.*, 2007). The problem with chlamydia infections is that it can be asymptomatic and may cause severe complications if it is left untreated (Adams *et al.*, 2004). Sonnenberg and co-workers (2013) found in their study on a sample of 15 162 women and men in Britain between 2010 and 2012, that the chlamyida infection came second among the most sexually transmitted diseases, following human papillomarivus infection and followed by HIV and gonorrhoea.

1.5.4.2 Interventions for Chlamydia screening

In 2003, the National Chlamydia Screening Programme in England was introduced (Low *et al.*, 2007). The programme was first piloted to target women in Portsmouth and Wirral. It was expanded later to 25% of PCTs by end of 2004 and by end of March 2007 the programme was nationally provided (Low *et al.*, 2007). The programme aimed to target those who are sexually active and under 25 years old. The tests are available through GPs, CPs, community sexual and reproductive health and termination pregnancy services (Woodhall *et al.*, 2012). Chlamydia infection can be treated with azithromycin (1 g single dose) or doxycycline (100 mg twice daily for 7 days) (Low *et al.*, 2007).

1.5.4.3 Role of CPs in Chlamydia screening

In 2008, azithromycin was reclassified from prescription only medicine into pharmacy medicine (MHRA, 2008). This allowed CPs to sell it to those aged 16 years and above with confirmed asymptomatic chalmydia infection (MHRA, 2008). Chalmydia screening and treatment as an enhanced service through CPs was introduced in 2010 (PSNC, 2014). Pharmacists can participate in screening, treatment or screening and treatment. For those who deliver screening only, they supply the service user with chlamydia screening kit. Pharmacists should inform clients how to use the kit, how to return it to be tested and what will happen after that. The service user should complete the screening form and provide urine sample. Then, the service user has the choice to send it to the microbiology laboratory by themselves or to return it back to the pharmacist. In the later case, the pharmacist should ensure sending it to the laboratory. The service user will be informed of results by the post or via pharmacy. Those with positive results can get free treatment from sexual health clinics or from CPs, which offer chlamydia treatment services. A proof of positive results should be shown in both cases (PSNC, 2014, National Chlamydia Screening Programme (NCSP), 2010a).

1.6 Healthy Living Pharmacy (HLP)

In general, Portsmouth population have a health life worse than the England average based on their health profiles and there is a wide variation in life expectancy between those who live in most deprived areas and those who live in least deprived ones (NHS Portsmouth, 2009). In 2009, a model was developed by Portsmouth City PCT through which the CP will become a healthy living centre. The model was rolled out in 30 PCTs following the success of Portsmouth's model. In HLP model, pharmacists should deliver at least one service of EHC, chlamydia screening, alcohol service and weight management in addition to delivering SSS. HLP should have at least one Healthy Living Champion (HLC), who is member of the pharmacy team (not a pharmacist). In order to be a HLC, a member of pharmacy team has to attain certain course which can be attained by different providers (NHS networks, 2014). HLC plays as a contact point to attract individuals and answer their questions (Duggan *et al.*, 2013). The candidate HLC has to study four modules in order to pass an exam of multiple choice question (MCQ) (National Pharmacy Association, 2014).The modules cover four topics; health and health inequalities, effective communication, promotion of health and wellbeing and impact of behaviour change in health and wellbeing (National Pharmacy Association, 2014). The exam has to be taken under the supervision of the pharmacist within a

pharmacy within 45 minutes (National Pharmacy Association, 2014). In September 2013, there were more than 700 CPs that adopted HLPs scheme and a number of 2 100 were trained to be HLCs (Public Health England, 2014).

1.7 Cost-effectiveness analysis of health interventions

1.7.1 Cost-effectiveness definition

Cost-effectiveness analysis is an analytical tool to compare the cost and health effect of an intervention with a purpose to prevent, diagnose and treat disease with an alternative strategy to achieve the same goal (Mandelblatt *et al.*, 1997). It is important to distinguish between two types of cost-effectiveness analysis based on the relation between the intervention and the alternative strategy. The first type is called independent, where the costs and effects of one intervention are not affected by the introduction of the other intervention. The second type is called mutually exclusive, where implementation of one intervention restricts the implementation of the other, or where implementation of one intervention affects the cost and results of the other (Phillips, 2009). In addition to cost-effectiveness analysis, there are two types of health economic methodologies; cost-utility analysis and cost-benefit analysis (McCabe, 2009). The only difference between the three methodologies is the outcome measure, as the outcome measure in cost-utility analysis is the quantity and quality of life which can be expressed by QALYs and the outcome measure in cost-benefit analysis utilises monetary benefits (McCabe, 2009).

1.7.2 Application of cost-effectiveness analysis

The Incremental Cost- Effectiveness Ratio (ICER) is a measure to test the cost effectiveness. It is calculated based on difference in costs divided by difference in health effects as in Equation 1.1 (Phillips, 2009).

$$\text{ICER} = \frac{\text{Costs of intervention 1} - \text{Costs of intervention 2}}{\text{Health effects of intervention 1} - \text{Health effects of intervention 2}} \qquad \text{(Equation 1.1)}$$

The National Institute for Health and Care Excellence (NICE) requires the use of cost-utility analysis which utilises the QALYs as an outcome measure and the ICER becomes ICER per QALY gained (Phillips, 2009). QALY is a measure of quality of life which utilises both quality and quantity of life. A QALY measures the years of life the individual will live in better health. A year of perfect health has the value of 1, a year of less than perfect health has the value less than 1 and death has the value

of 0 (Phillips and Thompson, 2009). The quality of life is measured by using the EQ-5D measure (Phillips and Thompson, 2009). The EQ-5D involves 5 categories. The first category is the mobility which identifies whether the individual is able to move freely, has some difficulties in move or unable to get out of bed. The second category is the pain/discomfort which identifies whether the individual has no pain at all, moderate pain or severe pain. The third category is self-care which tests whether the individual is able to clean himself/herself, has some difficulties in cleaning himself or unable at all to clean himself/herself. The fourth category is the anxiety/depression which measures whether an individual is not depressed suffers from moderate depression or has severe depression. The last category is usual activities such as work, study, house work and leisure. The individual has no problem, moderate problem or severe problem in performing usual activities. Based on the three cases of each of the EQ-5D, there are 243 possible health states. When unconscious and death states were added the total, there will be 245 possible health states (Phillips and Thompson, 2009). A recent study of economic model of the new medicine service from the NHS England perception found that the intervention will save the NHS £ 3 005 per QALY gained (Elliott *et al.*, 2014). The NHS health check service was estimated to cost the NHS around £3 000 per QALY (DH, 2008b). NICE considered interventions of ICER of less than £20 000 per QALY gained to be cost effective (NICE, 2012). Furthermore, interventions with ICER between £20 000 and £ 30 000 per QALY gained could be considered as cost-effective if certain conditions are applied (NICE, 2012).

1.7.3 Sensitivity analysis

Cost-effectiveness analysis is highly connected with uncertainty in terms of used methods or the parameters that have been used to populate the model (Thaban *et al.*, 2013). Hence, a sensitivity analysis is required to overcome this uncertainty, which can be conducted in one-way or multiway (Taylor, 2009). In case of the one-way analysis the parameters should be varied according to the confidence interval of the data or they should be varied according to the whole range of values that have been reported in the literature (Taylor, 2009). In a multi-way analysis, more than one parameter is changed simultaneously (Taylor, 2009). For instance, there is uncertainty in both the cost of an intervention and its effectiveness. A one way sensitivity analysis would deal with either cost or effectiveness but not with both of them at the same time. Multi-way analysis will suggest different scenarios where

both the cost and effectiveness are increasing, decreasing or one is increasing and the other is decreasing.

1.8 Literature review of vascular and sexual health pharmacy services

A search of the literature on vascular and sexual health pharmacy services was performed to identify studies that were conducted to evaluate vascular and sexual health pharmacy services provision from CPs. Medline, Embase, Cinahl databases and Google scholars were used to conduct the search. The search was conducted in two stages; stage one (prior to proceeding with the identification of methods to be used and collection of data before end of 2011), stage two (during the time spent in data collection until the time of writing this thesis). The search included UK studies which were published between January 2000 and August 2014. The search strategy used the following key words; CP service, stop smoking/ smoking cessation, weight management, alcohol intervention, health check, cardio-vascular assessment, chlamydia screening, emergency contraception.

1.8.1 Results of the search

3652 articles were found through the search, 391 were UK studies. Only 44 studies were related to the CP vascular and sexual health services and hence they were included in the review (Tables 1.2 and 1.3).

1.8.1.1 Method used in identified studies

21 studies were related to vascular health pharmacy services and 23 studies were related to sexual health pharmacy services. Two Randomised Control Trials (RCTs) studies were identified (Maguire *et al.*, 2001; Jolly *et al.*, 2011). Twelve studies included interviews and focus groups (Fitzgerald *et al.*, 2009; Dhital *et al.*, 2010; Krska *et al.*, 2010; Folkes *et al.*, 2001; Seston *et al.*, 2001; McAllister *et al.*, 2002 Bissell and Anderson, 2003; Bissell *et al.*, 2006; Cooper *et al.*, 2008b; Thomas *et al.*, 2010b, Dabrera *et al.*, 2011, McNaughton *et al., 2011*). Nine studies were survey questionnaire type studies (McCaig *et al.*, 2011; Newlands *et al.*, 2011; Killick and Irving, 2004; Cameron *et al.*, 2007; Seston *et al.*, 2007; Gale and Watson, 2011, Taylor *et al.*, 2012, Weidmann *et al.*, 2012, Cameron *et al.*, 2012). Four studies used more than one method as its methodology (Baraitser *et al.*, 2007, Dhital *et al.*, 2013, Jhan *et al.*, 2013, Krska and Mackridge, 2014). The remaining 17 studies were observational studies (Tables 1.2 and 1.3).

1.8.1.2 Sample population and response rate

The sample size was less than 50 community pharmacists in case of phone interviews, face-to-face interviews and focus groups based studies (Fitzgerald *et al.*, 2009; Dhital *et al.*, 2010; Krska *et al.*, 2010; Seston, 2001; Bissell and Anderson, 2003; Bissell *et al.*, 2006; Cooper *et al.*, 2008b; Thomas *et al.*, 2010b). The sample covered all eligible CPs in chosen areas in the case of the postal surveys conducted by McCaig and co-workers (2011) and Newlands and co-workers (2011). The study by Killick and Irving (2004) targeted all community pharmacists of one large chain in the UK. It targeted 140 community pharmacists in the UK in the study by Cameron and co-workers (2007) and 128 community pharmacists in Scotland in the study by Gale and Watson (2011). The sample size was 6000 in case of targeting the public in the study conducted by Weidmann snd c-workers (2012) and 204 in the study conducted by Cameron and co-workers (2012). The observation studies dealt with a large number of service users (Boyd and Griggs, 2009; Horgan *et al.*, 2009; Bauld *et al.*, 2009b; Lloyd and Gale, 2005, Hunt *et al*., 2013, Morrison *et al*., 2013, Parsons *et al*., 2013) (Tables 1.2 and 1.3)

The response rate of community pharmacist in the survey studies ranged from 20.6% to 64.8% (Cameron *et al.*, 2007; Gale and Wastson, 2011; McCaig *et al.*, 2011; Newlands *et al.*, 2011, Weidmann, 2012, Dhital *et al*., 2013) (Tables 1.2 and 1.3)

1.8.1.3 Opportunities and success of vascular pharmacy services

The services in general showed a good accessibility for the vascular health pharmacy services in terms of stop smoking service (Boyd and Griggs, 2009; Bauld *et al.*, 2011), alcohol screening (Fitzgerald *et al.*, 2008; Dhital *et al.*, 2010, Dhital *et al*., 2013 krska *et al.*, 2013, Krska and Mackridge, 2014), cardio-vascular assessment (Horgan *et al.*, 2009, Taylor *et al*., 2012, Hunt *et al*., 2013) and weight management services (Jolly *et al.*, 2011; Newlands *et al.*, 2011; Krska *et al.*, 2010, Weidmann et al., 2012, Morrison *et al*., 2013, Boardmann and Avery, 2014) (Table 1.2). SSS was found to be effective (Maguire *et al.*, 2001; Boyd *et al.*, 2009; Bauld *et al.*, 2009b). However, SSS was found to be more effective when it is provided through group based interventions compared to pharmacy intervention, as the time and frequency of meetings are higher (Bauld *et al.*, 2009b). Similar findings were identified in case of the weight management service, where the intervention at shorter time (12 weeks) through CPs was effective and its effectiveness diminished

in a longer time (one year), unlike other interventions such as group based programmes which its effectiveness lasted for year (Jolly *et al.*, 2011). Community pharmacists felt that lack of confidence when providing services such as alcohol screening and weight management can be overcome if additional training is provided (McCaig *et al.*, 2011; Fitzgerald *et al.*, 2009; Newlands *et al.*, 2011). Donyai and Berg (2009) found that the risk attributed to cardio-vascular disease was higher among people from deprived areas and Krska and co-workers (2010) found that the use of weight management service through CPs was higher in more deprived areas. Furthermore, Krska and Mackridge (2014) found that alcohol drinkers from more deprived areas are more willing to use alcohol screening service through CPs compared to those from less deprived ones. This suggests the importance of the role of CPs in reaching those who live in more deprived areas to tackle the gap related to vascular diseases that can be prevented by interventions through CPs (Table 1.2)

1.8.1.4 Opportunities and success of sexual health pharmacy services

Community pharmacists showed positive views towards deregulation of EHC into a pharmacy status medicine (Folkes *et al.*, 2001; Seston *et al.*, 2001; McAllister *et al.*, 2002; Bissell and Anderson, 2003; Bissell *et al.*, 2006; Baraitser *et al.*, 2007). Early experience of deregulation raised concerns from community pharmacists about misuse of EHC and its impact on the use of regular contraceptive methods, which in turn might increase the chances of sexually transmitted infections (Folkes *et al.*, 2001; Seston *et al.*, 2001; Bissell and Anderson, 2003; Cooper *et al.*, 2008b). Pharmacists also showed a lack of knowledge regarding the mechanism of EHC and training programmes proved to be effective in filling this gap in knowledge (Seston *et al.*, 2001; Bacon *et al.*, 2003). Following couple of years after reclassification, pharmacists were found to be efficient and they showed a high standard in terms of EHC provision (Glasier *et al.*, 2010). However, mistakes were seen through few numbers of pharmacists who supplied EHC in case of contraindication (Weiss *et al*., 2010). The accessibility of CPs was the factor that enabled clients to obtain EHC faster than other venues (family health clinics and General Practices (GPs)) and hence increased the number of obtaining EHC from CPs when compared to other providers (Killick and Irving, 2004; Lewington and Marshall, 2006; Black *et al.*, 2008). In a recent study conducted by Cameron and co-workers (2012), it was found that the uptake of EHC was irrelevant to the knowledge of its free supply through CPs and women of less deprived areas are more willing to use EHC than women of more deprived ones (Table 1.3).

In case of chlamydia services, community pharmacists showed willingness to provide kits, to do the screening in house and to provide treatment (Cameron *et al.*, 2007; Dabrera *et al.*, 2011). Anderson and Thronley (2011) found that public are accessing the services through CPs and Brabin and co-workers (2009) and Dabrera and co-workers (2011) suggested that the provision of kits to those who requested EHC can increase the accessibility of chlamydia screening (Table 1.3).

1.8.2 Barriers towards provision of services

The workload and inadequate training were found to be the most important barriers in terms of provision of vascular and sexual health services (Fitzgerald *et al.*, 2009; Dhital *et al.*, 2010; McCaig *et al.*, 2011; Newlands *et al.*, 2011; Gale and Watson, 2011) (Table 1.2 and 1.3). CP was not the first choice for the public to access services such as weight management services (Krska *et al.*, 2011). A lack of reimbursement and additional staff were barriers towards provision of vascular and sexual health services (Newlands *et al.*, 2011; Gale and Watson, 2011). Lack of privacy was reported as barrier in terms of provision of vascular health services (Taylor *et al.*, 2012, Krsaka and Mackridge, 2014) (Tables 1.2 and 1.3).

1.8.3 Methods to improve the uptake of vascular and sexual health services

Posters in CPs or GPs were found to be the main method to inform individuals about availability of alcohol brief screening through CPs (Krska and Mackridge, 2014). McNaughton and co-workers (2011) suggested overcoming IT barriers to improve uptake of health check service. Pharmacists were lacking a secure internet connection which enables them to transfer patients' data to the NHS server in a safe and secure way. In case of sexual health services, a combination of the two services (EHC service and chlamydia screening service) could improve the reach of chlamydia services, by enabling community pharmacists to offer young people who ask for an EHC a urine kit in order to be tested for chlamydia as it was recommended by Dabrera and co-workers (2011) (Tables 1.2 and 1.3).

Table 1.2: Published studies related to vascular health service through CPs

Author (s) / Title (year)	Aims/ Objectives	Method	Setting, and number participating	Key findings	Comments
Maguire *et al.* A randomized controlled trial of a smoking cessation intervention based in community pharmacies (2001).	To evaluate whether a structured CP-based smoking cessation programme (the PAS model) would give rise to a higher smoking cessation rate compared with ad hoc advice from pharmacists	RCT	100 CPs in Northern Ireland and 24 CPs in London. 484 smokers were recruited; n=265 for the intervention group and n=219 for the control group. Self-reported validation was used at 12 months	The abstinence rate at 12 month follow up was 14.3% (38) for the intervention versus 2.7% (6) for the control group, with P < 0.001.	The study covered only Northern Ireland and London, with more focus on Irish pharmacists and Irish smokers. Findings should be treated carefully upon generalisation.
Boyd *et al.* Cost-effectiveness of pharmacy and group behavioural support smoking cessation services in Glasgow (2009)	Examine the cost-effectiveness of NHS SSS group and pharmacy fresh programme.	Observational study and information from the NHS	Data for 1979 smokers (1508 through CPs and 471 through group) who attended the service between March and May 2007 in Glasgow was analysed.	The incremental cost per QALY for lifetime quitter was £4 400 for pharmacy and £5 400 for group.	The study was well conducted using direct measures to calculate costs and effectiveness (short-term) and literature (long-term effectiveness). It also used sensitivity analysis to overcome any uncertainty in effectiveness.
Fitzgerald *et al.* Developing and evaluating training for community pharmacists to deliver interventions on alcohol issues (2009).	To evaluate pharmacists' readiness to provide alcohol intervention and to develop a training based on findings to intervene hazards and harmful drinking.	Phone interview with pharmacists, followed by two days training.	8 CPs in Scotland.	Pharmacists felt that the provision of alcohol intervention is feasible. Training should focus on communication skills and alcohol related knowledge. The developed training course was positively evaluated and led to increase in knowledge, attitudinal scores and self-related competence	The study had a low number of interested pharmacists who participated in interviews and training. The effectiveness of training was only measured on a short-term (after 2 days) with no further tests.

Continued - Table 1.2: Published studies related to vascular health service through CPs

Author (s) / Title (year)	Aims/ Objectives	Method	Setting, and number participating	Key findings	Comments
Horgan *et al.* Evaluation of a cardiovascular disease opportunistic risk assessment pilot ('Heart MOT' service) in community pharmacies (2009)	To investigate the pilot of cardio vascular (CVD) assessment in CPs	Observational study	23 CPs in Birmingham, England. A number of 1141 people used the service (1 June 2007- 31 March 2008) and data were available for 1130 (99%).	The service succeeded in reaching the targeted population as 70% of the people attended were referred to their GPs with 25% being at CVD risk of 20% or more.	The study covered a reasonable number of people to be tested in a city with an identified poor health. However, it was underrepresented of women in the city. No follow up of the referred patients was conducted.
Donyai and Berg. Coronary heart disease risk screening: the community pharmacy Healthy Heart Assessment Service (2009)	Explore the characteristics and CHD risk of people who accessed free healthy heart assessment (2004-2006)	Importing the data from the large chain where the services were conducted	Large chain CPs in the UK. 8278 people data was checked	64.89% were at low risk and 35.12% were at moderate risk. Male had a higher moderate to higher risk than female, with RRR (1.72). Labour manual working and deprivation was associated with higher moderate risk.	The study analysed data of 8287 people. However, the study did not conduct any follow up for any of those who were at low risk.
Bauld *et al.* A comparison of the effectiveness of group-based and pharmacy-led smoking cessation treatment in Glasgow (2009b)	To compare the characteristics and outcomes of users accessing pharmacy and group-based smoking treatment.	Observational study	Glasgow, Scotland. Pharmacy fresh and group NHS SSS. Data for 1785 users between March and May 2007 was analysed	Pharmacy co-validated quit rate at 4 weeks was 18.6% compared to 35.5% in the group-based service.	The study was well conducted which clearly reported the benefit and costs of stop smoking cessation interventions.

Continued - Table 1.2: Published studies related to vascular health service through CPs

Author (s) / Title (year)	Aims/ Objectives	Method	Setting, and number participating	Key findings	Comments
Krska *et al.* Community pharmacy contribution to weight management: identifying opportunities (2010).	To identify the public's views on weight-management services, including pharmacies as a potential venue, and the extent of current pharmacy involvement in weight management.	Face- to-face interview	Sefton PCT, England. 177 public were interviewed. 66 CPs were invited to be interviewed.	75% of the public who were interviewed tried to lose weight. OTC medicines and weight-loss products were used more than prescribed medicines. Respondents felt that pharmacists and pharmacies are not the favourable to provide weight management services. The pharmacy response rate was 75% (49). 48 CPs dispended prescriptions for weight loss and 38 supplied OTC weight-loss products. Supply frequency increased with increasing deprivation of pharmacy's location.	The study did not represent the whole population as almost 70% of respondents were female. It was conducted in shopping centres during day time only and BMI of respondents was not measured by the researcher.
Dhital *et al.* Community pharmacy service users' views and perceptions of alcohol screening and brief intervention (2010)	To investigate potential barriers and enablers of CP to deliver alcohol screening and brief intervention	Semi-structured interviews with users of the service	4 CPs within London. 237 participants were approached	43% agreed to be interviewed. 52% were identified as risky drinkers and it was higher among younger age group and professional. Higher qualification was least frequent visitors to CPs and they were seen in multiple rather than independent CPs. Public identified CPs as accessible and anonymous place, but lack of privacy and time as a barrier.	The study was conducted in Westminster Borough, a Borough with an average deprivation score. The small sample size and 43% response rate limit the findings from generalisation.

Continued - Table 1.2: Published studies related to vascular health service through CPs

Author (s) / Title (year)	Aims/ Objectives	Method	Setting, and number participating	Key findings	Comments
Bauld *et al.* One-Year Outcomes and a Cost-Effectiveness Analysis for Smokers Accessing Group-Based and Pharmacy-Led Cessation Services (2011)	To identify the proportion of NHS SSS recipients who reported prolonged abstinence for 52 weeks and confirmed by CO-validation	Observational study	NHS SSS Scotland.	Quit rate at 4 weeks was 22.5% which dropped to 3.6% at 52 weeks. The group service achieved quit rate of 6.3% while the pharmacy 2.8%. The incremental cost per QALY gained was £4 800 for the group versus £2 600 for pharmacies.	The study was well conducted and calculated both benefits and costs for one year follow up. It used sensitivity analysis to overcome uncertainty in calculations after one year. The only comment is that was conducted in Glasgow with significantly lower CO-validated quit rate when compared to England.
McCaig *et al.* Provision of advice on alcohol use in community pharmacy: a cross-sectional survey of pharmacists' practice, knowledge, views and confidence (2011)	To identify CPs' level of provision of advice to alcohol users in Scotland.	A postal questionnaire survey.	All CPs in Scotland (n= 1098).	The response rate was 45% (497). Good level of knowledge (97% among male and 84% among female). Lower level of advice provision (5% did advice once or more per week and 29% no advice at all). Lack of confidence in screening and providing alcohol services	The study targeted all CPs in Scotland and succeeded in achieving 45% response rate. The study depended mainly on perceptions and memory rather than recording data which might result in bias in answers.
Jolly *et al.* Comparison of range of commercial or primary care led weight reduction programmes with minimal intervention control for weight loss in obesity: Lighten Up randomised controlled trial (2011).	To assess the effectiveness of a range of weight management programmes in terms of weight loss.	8-arm RCT	Birmingham PCT. 740 obese with comorbid disorder. The intervention includes a choice of one of six programmes counselling. The control group was provided with 12 vouchers to use local leisure fitness free.	Significant weight loss was seen through all interventions at the end of 12 weeks. At one year, all interventions had significant loss except GPs and CPs.	The study was able to cover a various strata of society with focusing on mostly disadvantaged groups where the problem might be more serious. The self-report method in measuring effectiveness is still a short coming.

Continued - Table 1.2: Published studies related to vascular health service through CPs

Author (s) / Title (year)	Aims/ Objectives	Method	Setting, and number participating	Key findings	Comments
McNaughton *et al*. Making a success of providing NHS Health Checks in community pharmacies across the Tees Valley: a qualitative study (2011)	To identify the challenges in delivering the Healthy Heart Checks through CPs and to make use of identified challenges to improve service through other settings.	Interviews	Tees Valley, England.	Four challenges were identified; developing confident, establishing and maintaining pharmacy Healthy Heart Checks, overcoming IT barriers, competent staff and ensuring volume and through flow in pharmacy.	The study was well conducted as it identified barriers based on pharmacists' perceptions and members of PCTs. It covered all possible barriers at the early stage of commissioning NHS health check service but not at long-term.
Newlands *et al.* The provision of current and future Healthy Weight Management (HWM) services from community pharmacies: a survey of community pharmacists' attitudes, practice and future possibilities (2011)	To identify the community pharmacists' activities and attitudes towards the current and the future of healthy weight management services.	A postal survey	All 128 CPs in Grampian, Scotland.	The response rate was 64.8% (83). Supply of weight-loss medication was the most common activity 69 (84.1%), advice about its use (84%), dietary advice (72.8%), BMI calculation (68.3%) and physical activity advice (66.3%).67.5% CPs felt there is a need for those services and 57.9% a need to extend them. Barriers included workload, additional staff and inconvenient reimbursement. CPs felt there is a need for extra training	The study targeted all CPs within one area of Scotland and achieved good response rate (%65). Most of the respondents (85.5%) studied in the same local university, which might cause a bias in responses.

Continued - Table 1.2: Published studies related to vascular health service through CPs

Author (s) / Title (year)	Aims/ Objectives	Method	Setting, and number participating	Key findings	Comments
Taylor *et al*. A community pharmacy-based cardiovascular screening service: views of service users and the public (2012)	To identify whether pharmacy-based cardiovascular disease (CVD) screening reached the desired population and to investigate the local population's awareness of pharmacy screening and the views of service users and the general public about CVD screening.	Handed questionnaire by pharmacist and face-to-face questionnaire survey with public in participating pharmacies' neighbourhood.	8 CPs in Sefton PCT, England	259 individuals were screened, (97 (37.4%)) completed the questionnaire. A significantly more service users (90.7%) agreed that pharmacy was a good place for screening comparing to non- users (77.4%; P < 0.005) and a significantly fewer service users (10.3%) compared to 25.3% of non-users felt that screening should be by doctors (*P* < 0.005). Lack of privacy and confidently were the main barriers	The study is limited to one PCT and had a low response rate which inhibits the findings from generalisation.
Weidmann *et al.* Views of the Scottish general public on community pharmacy weight management services: international implications (2012)	To investigate Scottish general public views on provision of weight management through CPs	Cross-sectional postal questionnaire survey	6000 member of Scottish general public aged 18 years and above.	Response rate was 20.6%, 751 (60.1%) agreed or strongly agreed that they had easy access to pharmacy services, 438 (35%) said that it was more convenient to obtain weight management advice from a pharmacist. Lack of awareness of the types of health services available was reported by 162 (13.2%) and 320 (25%) would not feel comfortable speaking to a pharmacist or medicines counter assistant about weight related issues. Privacy and perceived lack of pharmacists' specialist knowledge were identified as barriers to service uptake.	The study had a low response rate (20%). Most of the respondents were male and of age 60 years or older, which incurred bias in representing the findings.

Continued - Table 1.2: Published studies related to vascular health service through CPs

Author (s) / Title (year)	Aims/ Objectives	Method	Setting, and number participating	Key findings	Comments
Dhital *et al.* The impact of training and delivering alcohol brief intervention on the knowledge and attitudes of community pharmacists: A before and after study (2013)	To evaluate: pharmacists' attitudes towards hazardous/harmful drinkers and knowledge before training and after delivering brief intervention; and their experience of training	Questionnaires survey, observational and focus group	Community pharmacists of 62 CPs in inner London, England.	37 pharmacists expressed their willingness to participate, 2 were excluded due to lack of consultation room and 6 did not attend the training leaving 29 as final sample. 139 alcohol interventions were delivered by *19* pharmacists over five months (recruiters).10 pharmacists completed no interventions (non-recruiters). Knowledge was improved and motivated pharmacists recruited more participants.	The short-term training and the fast decrease in knowledge following the end of training did not reflect the real role the pharmacists can deliver in alcohol screening. Most of the surveyed pharmacists were already delivering a wide range of health services.
Hunt *et al*. Evaluation of the Healthy Life Check programme: a vascular risk assessment service for community pharmacies in Leicester city, UK (2013)	To evaluate the effectiveness of a pharmacy-led risk assessment service in Leicester City, UK.	Observational study	39 CPs in Leicester City, England.	2521 individuals were recruited (1059 (42%) males, 1696 (67%) South Asians and 199 (7.9%) individuals not registered with a GP. A total of 462 (18%) individuals were referred to primary care and 52.6% of a representative subset were subsequently recorded as having attended an appointment with their GP.	The study was conducted in a city with a possible coronary heart disease due to deprivation and high percentage of minor ethnicities. It proved that pharmacists were able to reach a good number of people, especially those who were at high risk.

Continued - Table 1.2: Published studies related to vascular health service through CPs

Author (s) / Title (year)	Aims/ Objectives	Method	Setting, and number participating	Key findings	Comments
Khan *et al.* Alcohol brief intervention in community pharmacies: a feasibility study of outcomes and customer experiences (2013)	To identify the uptake of the CP alcohol brief intervention service, to establish post-brief intervention changes in alcohol consumption for hazardous drinkers, to report the acceptability of the service to customers who received it and to determine the cost effectiveness of service through CPs	Observational study, questionnaire and telephone interview	26 CP in Lambeth, London, England.	141 (21%) of eligible customers used the service, 75% were risky drinkers. The brief intervention was effective in significantly reducing a 7-day alcohol unit consumption and drinking days for hazards.10 (91%) of harmful drinkers who were contactable post-BI had accessed further alcohol related services. The provision of service was estimated to cost £134 per customer.	The study was well conducted and covered costs for providing alcohol BI, in addition to alcohol's impact on employment status. However, the study only estimated a short-term benefit (3-months) and did not investigate any further benefit upon reducing alcohol consumption.
Morrison *et al.* A community pharmacy weight management programme: an evaluation of effectiveness (2013)	To evaluate weight change among patients who used Counterweight management programme which delivered by community pharmacist.	Observational study.	16 CPs in Scotland.	458 patients were enrolled (75% women, with mean age of 54 years and mean BMI of 36.1 $kg/m^{2.}$. 32 patients out of 77 who attended for a year had achieved the target weight loss of ≥5% with 4.1 kg as a mean weight loss. No difference in weight loss was related to sex, baseline BMI or age.	It targeted CPs in areas where overweight is a common problem and no offering of counterweight services. However, it has an over estimation of women in that areas.

Continued - Table 1.2: Published studies related to vascular health service through CPs

Author (s) / Title (year)	Aims/ Objectives	Method	Setting, and number participating	Key findings	Comments
Boardman and Avery. Effectiveness of a community pharmacy weight management Programme (2014)	To evaluate the effectiveness of community pharmacists in helping patients to reduce their weights	Observational study.	CPs in four PCTs in England (Berkshire West, Cornwall and Isles of Scilly, Coventry and Plymouth) Data of 281 patients were analysed.	77% were female, with mean age 52.8 years and mean baseline weight 96.3 kg, mean weight loss at 3 months was 3.07 kg and mean waist circumference loss was 3.87 cm, with no difference in blood pressure. Mean weight loss at 6 months was 4.59 kg and mean waist circumference loss was 4.79 cm, with reduction in systolic blood pressure of 9.5 mmHg and diastolic of 4.7 mmHg.	Good evaluation of weight management programme was reported at two points; 3 and 6 months. It had a higher percentage of women (77%). It did not compare the results based on social differences (e.g. employability and deprivation) and smoking status.
Krska and Mackridge. Involving the public and other stakeholders in development and evaluation of a community pharmacy alcohol screening and brief advice service (2014)	To determine the views of CP staff, the general public and other stakeholders towards alcohol screening and advice service. To design an acceptable and feasible pharmacy based alcohol screening and advice service based on stakeholder views. To evaluate a pilot service from the user perspective.	Telephone interviews with stakeholders, street survey with public, work group with stakeholders and telephone interviews with service users.	Sefton PCT, England	All stakeholder groups viewed pharmacy-based alcohol screening services as acceptable and feasible with the potential for integration and/or combination with existing public health services. Privacy was the main barrier and drinkers of more deprived areas were more willing to use the service. Posters were considered as the main venue to inform users.	The study was well-conducted using triangulation (interviews and survey). It identified views of stakeholders and public.

Table 1.3: Published studies related to sexual health services through CPs

Author (s)/ Title (year)	Aims/ Objectives	Method	Setting, and number participating	Key findings	Comments
Folkes *et al.* A qualitative study of the views of women aged 18-29 on over the counter availability of hormonal emergency contraception (2001)	To investigate the women's perceptions regarding deregulation of EHC prior to its deregulation on January 1st 2001.	Qualitative study using face to face and semi-structured interviews.	A NHS family planning clinic and a general practice in South West of England. 27 women aged between 18 and 29 were interviewed	Women showed positive views regarding deregulation as it would bring a fast, convenient and anonymous delivery. Concerns were raised regarding misuse and costs. CP was their preferred choice obtaining EHC	The study was well conducted. However, there was no justification for approaching only women without male partners.
Seston *et al.* Emergency hormonal contraception: The community pharmacy Perspective (2001)	To explore the CPs' views regarding the deregulation of EHC into pharmacy medicine.	Two focus groups	14 CPs in North West England.	There was a lack of knowledge about how the EHC works among number of CPs. CPs felt that the new method of supply has some risks and might be abused.	The study was amongst the first studies to identify pharmacists' views towards deregulation of EHC. However, it was limited to one region of the UK.
McAllister *et al.* Evaluation of a young person's sexual health service in a commercial setting (2002)	To investigate how young people are accepting are accessing sexual health service in a city centre pharmacy.	A qualitative survey and semi-structured interviews	One community pharmacy in Scotland	98 attended the service and 53 out of them attended the service for EHC, 26 for hormonal contraception. A 93% of clients were satisfied/ very satisfied with the opening times and all with pharmacy location.	Despite that the study reached only 98 persons, the majority were sexually active and came from different areas of the city, which could be representative to the rest of population.

Continued- Table 1.3: Published studies related to sexual health services through CPs

Author (s)/ Title (year)	Aims/ Objectives	Method	Setting, and number participating	Key findings	Comments
Bacon *et al.* Training and supporting pharmacists to supply progestogen-only emergency contraception (2003)	To describe and evaluate the training received by CPs to provide EHC under PGD in Lambeth, Lewisham and Southwark, London.	A systematic analysis of written and oral data from pharmacists pre, post and during training , followed by analysis of training	Lambeth, Lewisham and Southwark, London. 20/22 CPs in the training cohort and 6/23 who applied but were not accepted.	The training course was effective in informing pharmacist about how to deal with EHC.	The study tested the community pharmacists' knowledge for a short and long term. However, it only covered pharmacists in socially deprived cities.
Bissell and Anderson. Supplying emergency contraception via community pharmacies in the UK: reflections on the experiences of users and providers (2003)	To explore the pharmacists and the users regarding supplying of EHC.	Interviews with pharmacists. Focus group with service users	North- West England. Interviews with 24 pharmacists. 540 were invited to participate.	47 (8.7%) users participated. Two focus groups were conducted; 5 women (group 1) ,6 women (group 2) Positive views were seen from pharmacists and users. The benefits included enhanced free access to EHC when it is mostly needed, absence of judgmental attitudes and improve profession. The concerns included misuse, changes in contraceptive behaviour and fear of STIs.	The study covered both pharmacists and users perceptions. However, 75% of interviewed pharmacists were female.
Killick and Irving. A national study examining the effect of making emergency hormonal contraception available without prescription (2004).	To identify women's views regarding the access and uptake of EHC	Self-completed questionnaire to women requesting EHC	CPs of one large chain in the UK.	419 women returned the questionnaire. A greater proportion of women reported that they were able to obtain EHC within 24 hours through pharmacies versus than through prescriptions from doctors (64% versus 46%; P= 0.029). Women preferred obtaining EHC through pharmacies but reported its cost as an issue.	The study could not identify the response rate. The study identified the post codes of users; however, it did not make any use of this to compare the use of service through different localities.

Continued- Table 1.3: Published studies related to sexual health services through CPs

Author (s)/ Title (year)	Aims/ Objectives	Method	Setting, and number participating	Key findings	Comments
Lloyd and Gale. Provision of emergency hormonal contraception through community pharmacies in a rural area (2005).	To assess how the EHC service success in reaching the target group and why the people use it and how it was accessed.	Descriptive study	Hambleton and Richmondshire PCT, UK.	1412 pharmacy consultations for EHC were conducted between 1 January 2000 and 31 December 2003. A shift in venues to obtain EHC, by December 2003, CPs was the first place to provide.	Pharmacy posters and word of mouth were amongst the most source of information for knowing about the EHC through PGDs.
Lewington and Marshall. Access to emergency hormonal contraception from community pharmacies and family planning clinics (2006)	To evaluate differences in the time taken to access EHC by young women from family planning or CP settings.	An observational study of women requesting EHC.	South-West Kent PCT, England. 203 women who accessed EHC from family planning and CPs.	Women who were able to obtain EHC from CP was significantly faster than from family planning clinics (16 h versus 41 h, $P < 0.001$). Older teenagers tended to seek EHC more quickly and were more likely to have had a contraceptive failure rather than have used no contraception at all	The study did not identify any difference between the two groups in terms of surrounding CPs with EHC service, walking distance to CPs and family clinics and occupation of the users.
Bissell *et al.* A qualitative study of pharmacists' perspectives on the supply of emergency hormonal contraception via patient group direction in the UK (2006)	To investigate pharmacists' views and experiences of supplying (EHC) via a group prescribing protocol in CPs	Qualitative study using depth interviews.	44 CPs in health action zones across the UK.	Positive views were reported. The confidential nature was advantage as well as the scope for referral to other service providers. Improvement in profession was an advantage. Concerns raised about the extent of repeated use of EHC, the possible impact on contraceptive behaviours and STIs and its impact on male coercive	The study covered pharmacist from different cities across England. However, all the cities were considered as deprived cities.

Continued- Table 1.3: Published studies related to sexual health services through CPs

Author (s)/ Title (year)	Aims/ Objectives	Method	Setting, and number participating	Key findings	Comments
Baraitser *et al.* Chlamydia testing in community pharmacies: evaluation of a feasibility pilot in south east London (2007)	To investigate the feasibility and acceptability to users and pharmacists of chlamydia testing service	Survey of users. Indepth semi-structure interviews with pharmacists and users. Structured evaluation reports completed by professional patients paid to visit CPs.	3 CPs in Lambeth and Southwark, London, England.	83 tests were conducted, 8 out of them (9.5%) tested positive infection. The majority were women 73 (95%) and from ethnic minorities 56 (71%). 80 users completed the survey questionnaire and 24 were interviewed. Pharmacists were the main venue to inform users about the service. Users reported the speed, the convenience and the non-judgmental of pharmacist as advantages.	71% of those tested were from ethnic minorities (reflection of the population in Lambeth and Southwark). The study mentioned that those who were tested know about the service through pharmacist, but did identify any other source of information.
Cameron *et al.* Willingness of gynaecologists, doctors in family planning, GPs, practice nurses and pharmacists to adopt novel interventions for treating sexual partners of women with chlamydia (2007).	To determine willingness of health professionals to adopt new interventions for treating sexual partners of women with chlamydia.	Self-administrated questionnaire.	UK clinical meetings and CPs in Lothian, Scotland. 308 questionnaires to doctors, 94 to nurses and 140 to CPs.	Response rate was 69% (211), 78% (73) and 36% (50) for the doctors, nurses and CPs, respectively. The most popular choice among doctors (30%) and nurses (23%) was to combine posting test kit with a provision of medication to partner. Most pharmacists were willing to provide free test kit (98%), offering testing (75%) and treatment (100%) and 80% to partner	It tested different healthcare professionals and had a good response rate in terms of doctors (69%) and nurses (75%), but not in terms of pharmacists (36%).
Seston *et al.* Women's preferences for the provision of emergency hormonal contraception services (2007)	To determine the women's preferences in obtaining EHC	Self-completed questionnaire of women who attended sexual health services	269 women who attended sexual health clinics in North West England	Opening hours, medical staff seen, cost, wait to be seen, privacy of consultation and attitude of staff were the factors that significantly influence the preferences of women choice to obtain EHC	The study only investigated those who pay for the service not those who could get it free under PGDs.

Continued- Table 1.3: Published studies related to sexual health services through CPs

Author (s)/ Title (year)	Aims/ Objectives	Method	Setting, and number participating	Key findings	Comments
Black *et al.* Provision of emergency contraception: a pilot study comparing access through pharmacies and clinical settings (2008).	To compare the provision of EHC through CPs versus clinical services	A pilot observational study.	133 women in South London were recruited (50 women accessed EHC service through CPs and 83 through clinical services)	Faster provision of EHC through CPs (70% versus 43.9% through clinical services; P= 0.004). More comfortable, better informed about EHC and future contraceptive through clinics than through pharmacies, with P = 0.007, 0.015 and < 0.001, respectively.	The researcher met with service users after 4 months of obtaining the EHC, which could have influenced the accuracy of answers.
Cooper *et al.* Ethical, religious and factual beliefs about the supply of emergency hormonal contraception by UK community pharmacists (2008b)	To explore pharmacists' views and their ethical concern regarding the sale of EHC through CP	Semi-structured qualitative interviews	With 23 CPs in the UK.	Three types of pharmacists were identified; those who sold EHC welcomed the idea but concerned with the consequences of limit stock. Contingently ones who felt that GP should be the first choice. Not-selling ones who considered EHC as an abortion method and had ethical issues with selling.	The study did not identify any training the pharmacists received for selling EHC and did not test any difference in terms of gender and experience of pharmacists.
Brabin *et al.* Delivery of chlamydia screening to young women requesting emergency hormonal contraception at pharmacies in Manchester, UK: a prospective study (2009)	To assess the uptake of free postal chlamydia screening by women under 25 years who requested EHC at CPs	Audit data on EHC coverage was obtained from PCTs to assess the eligibility for screening and to verify the uptake.	33 CPs within Manchester, UK.	24.8% (675/2718) of women who received EHC were also offered chlamydia screening, representing 46.4% (1348/2904) of total who were offered a kit. 17.6% (264) of those who accepted the kit returned a sample, with whom 9.1% were chlamydia positive. Chlamydia positivity increased with age.	The study had a low percentage of those who returned the kits (17.6%) and no information about whether the rest of those who received kits were tested somewhere else.

Continued- Table 1.3: Published studies related to sexual health services through CPs

Author (s)/ Title (year)	Aims/ Objectives	Method	Setting, and number participating	Key findings	Comments
Glasier *et al.* Community pharmacists providing emergency contraception give little advice about future contraceptive use: a mystery shopper study (2010)	To investigate the quality of EHC provision in CPs and to identify what advice related to contraception after EHC use.	Mystery shopper study.	8 CPs were visited in the pilot study and 40 CPs in the main study. All CPs were in contract with the NHS and located in Lothian, Scotland.	The EHC was unavailable in 5 (12.5%), was refused to be given in 7 (17.5%) because of contraindication, and was provided in 28 (70%). No provision of EHC after 72 h of sexual intercourse was seen and EHC was provided when the date of last menstrual period was uncertain. Advice about future contraception was given through 32.5% of all CPs and 43% of those issuing EHC.	The study focused on CPs of the most deprived areas. There was no information about the time of each visit (especially weekends and evenings) and whether it had an effect on obtaining EHC.
Thomas *et al.* A qualitative study of pharmacists' views on offering chlamydia screening to women requesting emergency hormonal contraception (2010b).	To explore pharmacists' views on chlamydia screening, its perceived relevance to clients and whether these perceptions had affected their willingness to offer chlamydia screening.	A qualitative study, exit interviews followed by semi-structured depth interviews.	26 CPs in Manchester, England.	26 completed the exit interview and 12 agreed to do the depth interview. Pharmacist feared to provide chalmydia screening to married or long-relationship women. The criteria for choosing women were based on age, education and ethnicity.	
Weiss *et al.* Use of simulated patients to assess the clinical and communication skills of community pharmacists (2010)	To investigate the quality and appropriateness of (EHC) supply from CPs	Two mystery shoppers scenarios to each participant CPs; scenario 1 (appropriate supply) and scenario 2 (inappropriate) Focus groups evaluated the findings.	CPs in South West of England	40 CP visits were completed: 21 scenarios 1 and 19 for scenario 2, with 18 were visited twice. Five pharmacists supplied EHC in case of scenario 2 where EHC was a contraindication. Communication skills of pharmacists were rated highly.	The study was limited to CPs in one city and findings cannot be generated. Both scenarios were represented by students who lack the potential to be convenient.

Continued- Table 1.3: Published studies related to sexual health services through CPs

Author (s)/ Title (year)	Aims/ Objectives	Method	Setting, and number participating	Key findings	Comments
Anderson and Thornley. A pharmacy-based private chlamydia screening programme: results from the first 2 years of screening and treatment (2011).	To analyse the data from private provider of chlamydia services. To identify the correlation between positivity results and users characteristics. To identify the feasibility of reaching unreached public through other settings	Cross-sectional study. Data was collected from the private provider database.	CPs in the UK	A total of 14,378 screening tests were performed in CPs over 2 year period. Positivity was higher in male than female (9.8% versus 6.8%) and in 15-24 years old than in 25 and above. 47% of those who tested positive paid for treatment and 25% of their partners accessed the treatment.	The study was well-conducted covering data for the first two years of launching chlamydia services.
Dabrera *et al.* Chlamydia screening by community pharmacists: a qualitative study (2011)	To identify pharmacists' perceptions towards the provision of chlamydia screening through CPs.	Semi-structured interviews	10 community pharmacists in London and Greenwich, England.	Pharmacists had a good knowledge about importance of chlamyida infection and need for screening. Concerns were raised about how to approach young people and those who attends the CP for non-sexual health services. Opportunities were seen in case of offering screening for those who attend for EHC.	The study was limited to 10 CPs in one city of London and findings cannot be generated.
Gale and Watson. The provision of current and future sexual health services from community pharmacies in Grampian, Scotland (2011)	To identify CPs' activities and attitudes towards the provision of sexual health services	A cross-sectional questionnaire survey.	128 CPs in Scotland.	37% as a response rate. The average number of services provided per CP per month was 6. Respondents welcomed current and future provision of service but they identified inadequate training. Barriers included workload, lack of training and need of payment for additional services.	The study had a good response rate (74%) and covered pharmacists from different types of CPs and only 1% of respondents were locum pharmacist. The study was limited to one city and the findings cannot be generated.

Continued- Table 1.3 Published studies related to sexual health services through CPs

Author (s)/ Title (year)	Aims/ Objectives	Method	Setting, and number participating	Key findings	Comments
Cameron *et al*. The effect on use of making emergency contraception available free of charge (2012)	To evaluate the women knowledge about availability of free EC from pharmacies, and its use to prevent the index pregnancy	A questionnaire survey.	204 women attending clinics for abortion in Edinburgh, Scotland.	143/204 respondents knew that EC was available free from CPs and only 22 (11%) had used it in the cycle in which conception occurred. Knowledge of EHC availability free of charge did not affect use of it. Women from affluent areas were significantly more likely to have used EC to try to prevent the pregnancy than compared to women from less affluent areas (p=.041).	The study focused on those who came for induced abortion. However, it did not compare the findings with those who used EHC and actually worked with them.
Parsons *et al*. Evaluation of a community pharmacy delivered oral contraception service (2013)	To evaluate the oral contraceptive service delivered by CPs	Observational study	5 CPs in Southwark and Lambeth, London, England	741 consultations occurring following supply of EHC. The mean consultation time was 19 minutes. Combined OC was most commonly supplied with nearly half (46.1%) of initial supplies to first-time pill users. Most consultations (92.2%) were with women aged under 30 years, with 22.5% aged under 20. Most consultations were with black or black British clients. Of the 99 women who completed the satisfaction questionnaires, most clients were very satisfied or satisfied with the service and felt comfortable talking to the pharmacist about contraception	The study focused on two boroughs in London; however, the respondents were overrepresented for Black and Black Caribbean women and underrepresented for white and Irish women.

1.9 Vascular and sexual health pharmacy services in developed countries

A similar literature search was conducted to identify the experience and outcome of vascular and sexual health services offered in other developed countries. An overview of these studies is presented below. Bock and co-workers (2010) found that using a tailored software system was helpful in increasing delivery of smoking cessation, quit attempts and quit rates through American community pharmacists. The software is located in a small room, where patients who are waiting for their prescriptions can use (Bock *et al.*, 2010). The software can test patients' conditions through entering data and provides printed results of four pages that can identify barriers and opportunities for smoker to help quit smoking (Bock *et al.*, 2010). Dent and co-workers (2009) found in their RCT that participants who received 3-sessions of face to face programme with pharmacists were more likely to quit smoking than participants who received 5-10 minutes standard care from pharmacists over the telephone (with free medication in both cases), 28% and 11.8% quit rate at 6 months follow up, respectively. In another study, Corelli and co-workers (2013) found a solution to utilize USA pharmacists in delivering smoking cessation service, by referring patients to the quit line service. In another study which was conducted in Canada, Costello and co-workers (2011) identified that increasing the frequency of face-to-face meeting with smokers from 1-session to 3-sessions will improve the quit rate from 18% to 27.7%. Horsfield and co-workers (2014) found that 25.4% of respondent pharmacists in New Zealand were offering quit smoking consultation service. In Australia, community pharmacists are extending their role to meet their local needs (Berbatis *et al.*, 2007). The type of services offered seems to be similar to that in the UK. These include smoking cessation, weight management, diabetes care and hypertension care (Berbatis *et al.*, 2007). However, for smoking cessation, diabetes care and hypertension care there was a decrease in percentages of CPs offering the service between 2002 and 2006, while the only increase was in case of weight management (Wibowo *et al.*, 2010). A pharmacist might charge a fee upon provision of those services or offer them free of charge, and in case of weight management 23.3% of respondent pharmacists charged a fee in 2006 (Wibowo *et al.*, 2010). Australian pharmacists were satisfied that they can offer weight management service, but they suggested co-ordination with other healthcare professionals. In addition, they considered low remuneration and lack of demand as barriers towards provision of weight management (Um *et al.*, 2010). Furthermore, previous users of weight management service through CPs were willing to pay in the future to get help and support from pharmacist in weight management, while respondents (previous users and those who have not used a service) raised

concerns about pharmacist's experience and available time (Um *et al.*, 2012). Pharmacists can offer more than just medication to help in weight management as it was found by Ahrens and co-workers (2003). They can offer advice on meal replacement or conventional reduced-calorie diet and both of these programmes were found to be effective in decreasing waist circumference and lowering systolic and diastolic blood pressure and triglyceride levels (Ahrens *et al.*, 2003). USA pharmacists identified three barriers in terms of provision of weight management through CPs; lack of time, lack of demand and lack of remuneration (O'Donnell *et al.*, 2006).

In terms of sexual health services, Gudka and co-workers (2013) found that chlamydia screening uptake in Australian CPs can be improved if kits are offered to individuals who ask for EHC.

1.10 Vascular and sexual health pharmacy services in developing countries

Similarly, studies outlining the provision of vascular and sexual health services from CPs in developing countries were investigated. The situation in developing countries differs between one country and another, however some of the vascular health services offered in a number of developing countries. Services such as brief intervention for smoking cessation and weight management were identified in the United Arab Emirates (Hasan *et al.*, 2012). Obesity management was also seen through CPs in Kuwait (Awad and Waheedi, 2012). In Iran, Sarayani and co-workers (2012) implemented the effectiveness of continues education of pharmacists to deliver weight management service through a basic lecture, a lecture with case studies and a lecture with small group training. The three methods of teaching helped in improving pharmacists' knowledge and self-confidence to deliver weight management services. In Nigeria, the pharmaceutical care intervention was effective in reducing blood pressure (Smith, 2009).

1.11 Rational of the study

As the new plan for NHS was introduced following the new Government in 2010, with an intention to abolish the PCTs and create a new system for delivering enhanced pharmacy services. It was necessary to conduct this research to identify how the enhanced pharmacy services were contributing to bridge the gaps in health inequalities on a national level. The Pharmaceutical Needs Assessment (PNA) reports that each PCT was required to publish by February 2011 were the pivot on which the research was based to determine the provision of vascular and sexual health pharmacy service through all PCTs in England. However, the uptake of

services in detail was not provided in the PNA reports and it was required to survey the PCTs to obtain data regarding uptake and cost attributed to the provision of services to identify the cost-effectiveness of those services on a national level. A primary investigation of the PNA reports regarding the provision of NHS health check service found that only 42 PCTs started providing NHS health check service in 2009/2010 through CPs out of total 151, representing 27.82%. Furthermore, the provision was in its pilot phase and only 389 CPs provided the service out of total 10 845 CPs in England, representing 3.59%. The PNA reports also indicated lack of uptake of NHS health check service through CPs. Therefore, the study focused only on evaluating the provision and uptake of SSS as a vascular health service. It also investigated the provision and uptake of EHC and chlamydia screening as sexual health services. Later in (2012) when the HLP scheme was rolled out, it was necessary to identify how the new scheme changed the provision and uptake of those services. The literature review conducted has shown that none of the previous studies compared the provision and uptake of vascular and sexual health services between different PCTs.

Therefore, the aim of this project is to identify the provision and success of vascular and sexual health pharmacy services and how the uptake and success matched with the local needs and deprivation. The research investigated this on two levels; PCT level and CP level. The project also aimed to investigate the cost-effectiveness of SSS and EHC services through CPs. It also aimed to identify how the services changed following the introduction of the HLP scheme and how the services can be improved. Finally, it aimed to identify pharmacists' perceptions about how to improve the uptake and success of vascular and sexual health services using SSS as a model case.

Chapter Two: Needs, provision and uptake of stop smoking service

2.1 Introduction

In 1999, England established its unprecedented network for Stop Smoking Service (SSS), following the introduction of the white paper “smoking kills”. The white paper set a target to reduce prevalence of adult smoking from 28% to 24% or less by 2010 and to reduce the gap in smoking prevalence between different socioeconomic status (SES) groups (DH,1998). In 2000, an update to the smoking cessation guidelines was published. It summarised the roles of each health care professional to help a smoker to quit smoking. It highlighted that General Practitioners (GPs) should give advice and prescribes effective medication to a smoker during routine consultation. It also emphasised the role of behavioural support for a smoker (in groups or individually). It encouraged other health care professionals (such as pharmacists, dentists, health visitors and nurses) to give advice to a smoker whether he was seeking help with stopping or not (West *et al.*, 2000). In 2005, the prevalence of smoking adults fell to 26% (HSCIC, 2007) and in 2010, to 20% (HSCIC, 2012b) which overrode the targets set in 1998 by the white paper “smoking kills” (DH, 1998). The SSS guidance published in 2011 recommended that PCTs and SHAs should aim to treat at least 5% of their estimated local population who smoke or use any form of tobacco each year (DH, 2011a). It also recommended a success rate of at least 35% at 4 weeks, validated by carbon monoxide (CO) monitoring (DH, 2011a). The geographical distribution of SSS was not intended to be equal and priority should be given to areas with lower SES and higher percentages of Black and Minority Ethnicities (BME) (DH, 2011a).

Although the NHS SSS was aimed to target areas with lower SES (DH, 2011a), a recently published report showed that, in fact, there is a link between deprivation and smoking (Wise, 2014). An overview of how deprivation is measured gives an idea of why deprivation is connected with smoking. The deprivation is measured based on seven domains. These are income; employment; health deprivation and disability; education, skills and training; barriers to housing and services; crime and living environment (Department for Communities and Local Government, 2011). The association between smoking prevalence and the first domain (income) in developed countries is arguable. While one study found a strong association between low income and smoking prevalence in men and women (Fukuda *et al.*, 2005), another study found that it was only associated with smoking prevalence in men (Huisman *et al.*, 2005). Another study found no significant association at all

(Wilkins *et al.*, 2007). The lack of a significant association observed can be attributed to the increased tax prices for cigarettes as a venue to reduce the smoking prevalence, which seemed to have a slight effect on smoking prevalence (Callinson and Kaestner, 2014). In contrast, the high income had a negative effect on smoking prevalence among teenagers (Ben Lakhdar, 2012). The employment situation (the second domain in deprivation) seemed to be more associated with smoking prevalence, as those who were unemployed were more likely to smoke than those who were employed (De Vogli and Santinello, 2005, Schunk and Rogge , 2012). The intensity in smoking among unemployed was arguable, while Schunk and Rogge, 2012 found no association with unemployment, Bolton and Rodrigues, (2009) found a slight increase in intensity among the unemployed who did not receive any compensation. The effect of psychological factors such as the inability to control one's life and emotional isolation might be a predictor to the association between unemployment and smoking (De Vogli and Santinello, 2005). For the third domain (health deprivation), smoking habits were responsible to cause several types of health problems such as cardiovascular disease, lung cancer and asthma (Jha *et al.*, 2013), which result in health deprivation. The fifth domain (education, training and skills) is one of the most important measures for smoking prevalence. Educated people were found to be less likely to smoke than uneducated ones (Huisman *et al.*, 2005, Gilman *et al.*, 2008). This is one of the reasons to establish more than one setting to reach smokers and provide them with missing or unrecognised information about hazards of smoking and benefits of quitting. The introduction of housing improvement to deprived areas encouraged smokers to think about quit smoking, but failed to reduce smoking prevalence (Bond *et al.*, 2012).

Although, the additional expenses caused by smoking can act as a motivator to quit smoking among lower SES smokers (Pisinger *et al.*, 2010), smokers who live in lower SES areas are less likely to quit smoking than those who live in higher SES areas (Giskes *et al.*, 2006). In fact when looking at the short term quit smoking at 4 weeks, SES was significantly associated with quit smoking relapse in direct and indirect association (Businelle *et al.*, 2010). The main reasons among lower SES groups to relapse could be attributed to stress, depression and lack of social support (Busineel *et al.*, 2010 and Pisinger *et al.*, 2010). However, when looking at the longer time of quit beyond one year, no direct association between SES status and relapse was identified. The real association was with nicotine dependence, craving, withdrawal symptoms and lack of smoking cessation aids (Zhou *et al.*,

2009). Sindelar and O`Malley (2014) suggested that the focus on the financial benefit of quit smoking might provide better results than the focus on health benefits.

In 2009/2010, after 10 years of the NHS SSS establishment, SSS was available through primary care (GPs and other health care professionals such as; practice nurses, midwives and health visitors), dental practice, pharmacy, hospital wards, and military bases. The smokers could go through different types of interventions such as; closed groups, telephone support, couple/family, open group, one-to-one support and drop in sessions (HSCIC, 2010).

CPs are well placed in the heart of the community to provide services that promote health and help in reducing health inequalities (DH, 2003a, DH, 2008a). A recent study by Todd and co-workers (2014) found that 89.2% of England population can access CPs within 20 minutes walk (98.3% in urban areas, 79.9% in town and fringe and 18.9% in rural areas). However, the access is better in most deprived areas (99.8% of population have access in 20 minutes) when compared to the least deprived ones (90.2%) (Todd *et al.*, 2014). The provision of SSS through CPs was considered to be effective (Maguire *et al.*, 2001 and Sinclair *et al.*, 2004) and cost-effective (Bauld *et al.*, 2009b). For an intervention to be considered as cost-effective, ICER per QALY gained should be less than £20 000 (National Institute for Health and Care Excellence (NICE), 2012). In 2009/2010, more than half of English CPs did provide SSS. In addition, almost 140 000 smokers set a quit date through pharmacies which represented 18% of all smokers who set a quit date through all providers (HSCIC, 2010).

The aim of SSS though CPs is to improve access and widen choices for a smoker who wishes to quit. However, to be eligible to provide SSS, pharmacists and other staff should be trained to ensure proper and safe use of the service. The service includes initial assessment, through which the CP can test the smoker's readiness and willingness to quit smoking. At this initial consultation, a thorough description of the risks of smoking, benefits of quit smoking, available medications to help quit smoking and withdrawal symptoms should be explained. Having decided to quit smoking, the NRT will be provided and a 4-week follow up will be done to test the results of using the SSS (PSNC, 2014). At 4-week follow up, the smoker is considered as quitter, if he/she never smoked from two weeks after the agreed set date for quit smoking (HSCIC, 2010). However, the self assessment for quitting smoking should be validated by CO validation method which should be lower than

10 part per million (ppm) (DH, 2011a). Each PCT has its criteria for supplying NRT and follow up. In most cases, an initial supply of NRT to cover two weeks is done, followed by two weeks supply when the smoker shows commitment and willingness to quit smoking to cut the drug waste followed by a further supply of NRT for up to 12 weeks ((Kent PCT, Mid Essex PCT, Devon PCT, Kirklees PCT and Peterborough PCT (Appendix 1). In summary, the supply of NRT will be at 2 weeks, 2 weeks (to guarantee his commitment to quit smoking), 4 weeks and 4 weeks for a smoker who succeeded in quit smoking at 4-week and still needed help. The prescription charges also differ between the PCTs. For those who are not exempted from prescription charges, they have to pay the prescription charges every 5 weeks in case of Peterborough PCT and every 4 weeks in case of Devon PCT and per every item dispensed (to cover one week) in case of Kirklees PCT, Cumbria PCT, Mid Essex PCT and Kent PCT. In order for pharmacy to be reimbursed for the dispensed NRT, a form should be filled and submitted to the PCT.

2.2 Aims and objectives

This research aimed to determine how the provision and uptake of SSS matched the prevalence of smoking adults (needs) at PCT level and whether it reduced health inequalities between different PCTs with different needs. It also aimed to investigate if the provision of SSS through CPs (based on uptake and costs attributed) was cost effective or not based on NICE cost-effectiveness threshold (£20 000).

The specific objectives of this phase of the project were:

1. To assess how the prevalence of smoking adults (needs) differ across different PCTs in England and which of the PCTs' demographic characteristics (deprivation, gender and ethnicity) is correlated with higher needs.
2. To determine the PCTs' success in meeting NICE guidelines; treat at least 5% of their estimated number of smokers and achieve a quit rate at 4-weeks of 35% or more as validated by CO measurement.
3. To identify the factors that are associated with higher uptake of SSS through all providers.
4. To assess the role of CPs in delivering SSS and whether it meets the needs of the local population and helps reduce health inequalities.

5. To identify the costs attributed to the provision of SSS and investigate whether the provision of SSS through CPs is cost-effective.

2.3 Method

To meet the above described aims, published data was used to compare the needs and uptake of SSS through all providers. In case of CPs, the provision of SSS was identified through PNA reports. The uptake and cost attributed for SSS were identified through a cross-sectional survey of PCTs. Prior to their demolition, PCTs were required to prepare and publish reports about pharmaceutical needs in their areas and to publish those reports called PNA reports) by 1st February 2011 under the Health Act (2009) regulations (Legislation.gov.uk, 2009). The PNA reports were the main resource to obtain data regarding the provision of pharmaceutical services from CPs. Those reports provided data related to the financial year 2009/2010 (starting on 01/04/2009 and ending on 31/03/2010). Consequently, the focus was on data related to the financial year 2009/2010 only.

2.3.1 Measures and definitions

The measures are divided into outcome measures which are tested against explanatory measures.

2.3.1.1 The outcome measures

- Total reach out of needs: is the percentage of NHS SSS setters out of total number of smokers within a PCT.
- Total success out of needs: is the percentage of NHS SSS quitters (at 4-weeks follow up, self-reported and CO validated) out of total number of smokers within a PCT.
- Quit rate: is the percentage of NHS SSS quitters at 4 weeks follow up out of NHS SSS setters.
- Pharmacy reach out of needs: is the percentage of NHS SSS setters through CPs only out of total number of smokers within a PCT.
- Pharmacy success out of needs: is the percentage NHS SSS quitters (at 4-weeks follow up, self-reported and CO validated) through CPs only out of total number of smokers within a PCT.
- Pharmacy quit rate: is the percentage of NHS SSS quitters through CPs only at 4 weeks follow up out of NHS SSS setters through CPs.

- Pharmacy share in reach: is the percentage of NHS SSS setters through CPs out of total NHS SSS setters through all providers.
- Pharmacy share in success: : is the percentage of NHS SSS quitters through CPs out of total NHS SSS quitters through all providers.
- Setters per pharmacy per year: is the number of smokers who set a quit date per pharmacy during the financial year 2009/2010.
- Quitters per pharmacy per year: is the number of smokers who set a quit date at CPs and proved to be non-smokers at 4 weeks follow up during the financial year 2009/2010.

2.3.1.2 The explanatory variables

A- Demographic variables:

- PCT deprivation (Index of Multiple Deprivation (IMD) score) (2010): is a population weighted average of the combined scores for the Lower Layer Super Output Areas (LSOAs) in a PCT. LSOAs are homogenous small areas with small population size (around 1 500 people) of which there are 32 482 in England and the LSOA with the rank 32 482 is the most deprived. The LSOA deprivation represents seven main domains, which were described in Section 2.1.
- Ethnicity minority proportion: is the percentage of minor ethnicities (Asians, Blacks and Chinese and other ethnicity) out of total adults in a PCT.
- Adult male proportion: is the percentage of adult males out of total number of adults in a PCT.

B- Pharmacy provision variables:

- Weighted number of CPs: is the number of CPs per 25 000 people within a PCT.
- Weighted pharmacy provision of SSS against population: is the number of CPs providing SSS per 25 000 people within a PCT.
- Weighted pharmacy provision of SSS against number of CPs: is the percentage of CPs providing SSS out of total CPs within a PCT.

2.3.2 Data Collection

The study used published data from several resources which were used previously in other studies. The resources used included the Health and Social Care Information Centre (HSCIC), which was used by West and co-workers (2013) in an evaluation of the performance of NHS SSS over ten years. The Office for National Statistics (ONS) used for demographic characteristics and was used by Artac and co-workers (2013b) for evaluation of NHS health check service. To assess the uptake and cost effectiveness of SSS, the study used a postal questionnaire, which was found by Bowling (2005) to provide high coverage of sampling, if the addresses and details of the proposed sample were up to date.

2.3.2.1 Published resources

The prevalence of smoking adults (which reflects the needs) in each PCT was obtained from the health profiles for each PCT (Public Health England, 2010). In few cases the health profile for the PCT was not available. As a result, health profiles for each locality within that PCT were considered. A population-weighted value was calculated to represent the whole PCT as in the case of Mid Essex PCT, where the calculated percentage of smoking adults was 19.77% as shown in Table 2.1.

Table 2.1: An example of calculation of weighted values for localities against population to represent the whole PCT

Mid Essex PCT (localities) [1]	Population Mid-year	Percentages of smoking adults	Total adult smokers [2]	Weighted value (%) [3]
Braintree	142 100	22.10	31 404	
Maldon	63 100	17.64	11 131	
Chelsford	167 100	18.59	31 064	
Total	372 300		73 601	**19.77**

1- Mid Essex PCT consists of three localities; Braintree, Maldon and Chelsford.

2- Total adult smokers: equals to (population (column 2) × percentages of smoking adults (column three).

3- Weighted value (%): equals to (total adult smokers (73 601) / total population (372 300) × 100) .

The number of smokers in each PCT was calculated by multiplying the prevalence of smoking adults with the number of estimated adult population mid-year 2009 as imported from the Office for National Statistics (ONS) (ONS, 2011). The number of smokers who set a quit date through all providers and the number of smokers who

proved to be non-smokers at 4 weeks follow up were obtained from the Health and Social Care Information Centre website (HSCIC, 2011b).

The ONS website was used to collect data regarding each PCT demographics (population, proportion of adult males and proportion of BME) (ONS, 2011). The PNA reports were investigated to assess the number of CPs in each PCT, the number of CPs which were providing SSS and any data regarding the number of smokers who set a quit date or quit smoking after 4 weeks follow up through CPs.

2.3.2.2 Survey

As mentioned above, a cross-sectional survey of PCTs was required to obtain the data regarding the uptake of SSS through CPs and the costs attributed to the provision of SSS through CPs.

2.3.2.2a Questionnaire design

Questionnaire design took into account the specified aims of this Chapter. Part A of the questionnaire was concerned with the uptake and costs of SSS for the financial year 2009/2010. Question 1 asked about the year the service was initially commissioned in a PCT. Question 2 asked about CP's payment for provision of SSS. Question 3 asked about overhead costs (training, advertising and equipment). Question 4 asked about number of setters and question 5 asked about number of quitters at 4 weeks follow up for the financial year 2009/2010 and question 6 asked about the method used to validate the quit smoking. Part B asked about the provision of SSS in 2012 and how the uptake and the payment changed since 2009/2010. The final questionnaire and the invitation letter are available in Appendix 2.

2.3.2.2b Ethical approval

The questionnaire was submitted to the Science, Engineering and Computing Ethics Committee at Kingston University in June 2012 to obtain ethical approval to conduct the survey. The Ethics Committee approved the study in July 2012.

2.3.2.2c Sample population

The questionnaire was posted to the public health leads of SSS in each PCT. The questionnaire asked direct information about costs and provision of SSS and did not ask for perceptions. Therefore, it was not required to validate the questionnaire.

2.3.3 Data analysis

The collected data from the survey and the PNA reports were coded and carefully entered into SPSS version 17 for data management and analysis. Appropriate statistical tests were applied to meet the set objectives, as described below.

2.3.3.1 Data analysis for all PCTs

Descriptive statistical measures were done to the explanatory variables and outcome measures, such as median, lower quartile, upper quartile and range. The normality of distribution was tested using Shapiro-Wilk test. Univariable correlation between two variables was tested using Spearman's correlation coefficient in case of non-normal distribution and Pearson's correlation coefficient in case of normal distribution at 95% confidence level. A significant correlation between two variables was identified where the P-value was less than 0.05. The strength of significant correlation was identified by the value of correlation coefficient (R) in case of Pearson's test and Spearman's rank correlation coefficient (rho) in case of Spearman's test. A value of (R) or (rho) between 0.1 and 0.3 indicates a weak correlation. A value of (R) or (rho) between 0.4 and 0.6 indicates a moderate correlation. A value between 0.7 and 0.9 indicates that there is a strong correlation and the correlation is perfect when the value of (R) or (rho) is 1 (Dancey and Reidy, 2011).

2.3.3.2 Data analysis for the sample

In order to see if the responding sample of PCTs is representative to the rest of PCTs, the above mentioned outcome measures (Section 2.3.1.1) and the explanatory variables (Section 2.3.1.2) were compared between the sample and the rest of PCTs. The normal distribution of each variable in each group (the sample and the rest of PCTs) was initially tested using Shapiro-Wilk test. Mann-Whitney U test was used in case of non-normal distribution and T-test of two independent samples was used in case of normal distribution.

2.3.3.3 Cost effective analysis for SSS through CPs

2.3.3.3a Data analysis

Descriptive statistical measures were done to the sample outcome measures, such as median, lower quartile, upper quartile and range. To perform the analysis the percentage of quitters who were CO-validated was necessary. In case of using both methods for validation and there was no definition of the percentages of smokers who used each method, the relevant percentages of smokers who were CO-

validated through all providers together were used to estimate the number of CO-validated through CPs.

2.3.3.3b Calculating costs

No costs were attributed to self-quit as the study was undertaken from the NHS perspective. Three types of costs were attributed to the provision of SSS through CPs; the overhead costs, the NRT reimbursement, and the payments to pharmacist. The overhead costs include costs of training, equipment, materials and advertising. They were assessed through direct questions to PCTs. The average overhead cost from responses was used as overhead cost for the rest of PCTs. For the cost of NRT, this was determined in two ways. If the smoker is exempted from paying the prescription charges the total cost of NRT is considered. If the smoker is not exempted from paying the prescription charges, the prescription fee (£7.20 for the financial year 2009/2010) was used to estimate the costs of NRT. In 2009/2010, 50.3% (of total setters) were eligible for free prescription and 49.7% were not eligible. In addition, 48% (of total quitters) were eligible for free prescription and 52% were not eligible (HSCIC, 2010). The average cost of different forms of NRT per week was estimated at £9.98 (British National Formulary 2009). The reimbursed costs for NRT were estimated as shown in Table 2.2. Each PCT has its criteria to supply NRT. They all agree with an initial supply of NRT to cover two weeks, then a supply of an extra two weeks only if the smoker shows commitment and willingness to quit smoking, as described in Section 2.1. An additional supply of NRT to cover 4 weeks will be provided and a final 4 weeks supply if the smoker still needs help. Three outcomes could be identified at 4 weeks follow up; firstly, the smoker quit smoking, secondly, the smoker failed to quit but the CP was able to follow him, and finally, the smoker's situation is unknown or lost to follow up. Table 2.2 summarises the assumptions that have been made to calculate the costs attributed to the supply of NRT.

Table 2.2: Explanation of the method used to calculate costs for NRT reimbursement

Eligibility for exemption	NRT reimbursement cost £ (Unknown or lost to follow up)	NRT reimbursement cost £ (Fails to quit but was able to be followed)	NRT reimbursement cost £ (Succeeds in quit)
Eligible	2 × 9.98	4 × 9.98	12 × 9.98
Not-eligible	2 × (9.98-7.20)	4 × (9.98-7.20)	12 × (9.98- 7.20)

If the smoker's situation at 4 weeks was unknown or he was lost to follow up (48% of total non-quitters were unknown or lost to follow up in 2009/2010, (HSCIC, 2010)), it is assumed that they set a quit date and obtained an initial NRT supply to cover two weeks, then they were lost to follow up. As a result, the NHS will incur the costs of two weeks supply of NRT as in column one (Table 2.2). If the smoker failed to quit at 4 weeks follow up, it is assumed that they received a 4 weeks supply of NRT (one per first two weeks and the later per second two weeks), as in column two (Table 2.2). If the smoker at 4 weeks follow up was found to be abstinent from smoking from 2 weeks following the quit data and so on, it is assumed that they will need up to 12 weeks of NRT as in column 3 (Table 2.2). To predict the percentages of eligible and non-eligible for free prescription among non-quitters at 4 weeks follow up and those who were unknown or lost to follow up, the percentages of setters who were eligible (50.3%) and who were not eligible (49.7%) were used (HSCIC, 2010).

Two types of pharmacy payment were identified; fixed (irrelevant to the uptake or results), and non-fixed based on either uptake, success or both. For the fixed type, the payments to pharmacy were calculated based on the annual fee per pharmacy divided by the number of smokers who set a quit date. For the non-fixed type, the payments to pharmacy equals to (the payment for recruitment of smoker plus (the payment for success in quit smoking × quit rate). Therefore, the total cost per client was calculated as in Equation 2.1.

$$\text{The total cost per client } = \text{Cost } 1 \ + \text{Cost } 2 \ + \text{Cost } 3 \qquad \text{(Equation 2.1)}$$

Cost 1 is the payments to pharmacy, cost 2 is the overhead costs per client and cost 3 is the costs of NRT reimbursement.

2.3.3.3c Calculating incremental cost per quitter and Quality Adjusted Life Years (QALYs)

To calculate the incremental cost per quitter and QALYs, the method used by Boyd and co-workers (2009) was adopted. The method used a simple model to compare the quit smoking through CPs with self-quitting (no-additional help). An assumption of 10% self-quit CO-validated was assumed at 4 weeks. The incremental cost per quitter was calculated using Equation 2.2

$$\text{Incremental cost per quitter} = \frac{\text{Total cost per client } - \quad \text{Cost for (self quit) } (0)}{\text{Quit rate CO}-\text{validated } \ - \ \text{Self quit rate } (0.10)} \qquad \text{(Equation 2.2)}$$

At the beginning, the incremental cost per quitter was calculated based on a 4-week period. Then an assumption of 75% relapse rate was applied between 4-weeks and 52 weeks for both intervened quit and self-quit (Ferguson *et al.*, 2005, Stapleton, 1998). Bauld and co-workers (2012) found that the relapse rate between 4 weeks and 52 weeks was 78.2%, but in their study the majority (68%) lived in deprived areas. Furthermore, Bauld and co-workers (2009a) in their systematic review of effectiveness of NHS SSS, found a relapse rate of 72% between 4-weeks and 52-weeks for CO-validated quitters. This resulted in a self-quit rate of 2.5% at 52 weeks, this value agreed with previous studies (Cornuz *et al.*, 2006 and Maguire *et al.*, 2001). An additional 35% relapse rate was applied between 52 weeks and lifetime (Stapleton *et al.*, 1998, Woolacott, 2002). Previous studies reported the value of discounted QALYs per lifetime quitter as 1.98 (Fiscella and Franks, 1996) and as 1.98 for female and 1.97 for male (Cromwell *et al.*, 1997). The two values for females and males were weighted against proportion of adult males (52.5%) and proportion of adult females (47.5%) in the 138 PCTs, the resulted value was 1.975. As a result, the 1.98 was applied in this research. The costs per QALY gained for lifetime quitter was calculated as shown in Equation 2.3.

$$\text{The costs per QALY gained} = \frac{\text{Incremental cost per lifetime quitter}}{\text{QALYs gained for lifetime quitter (1.98)}} \qquad \text{(Equation 2.3)}$$

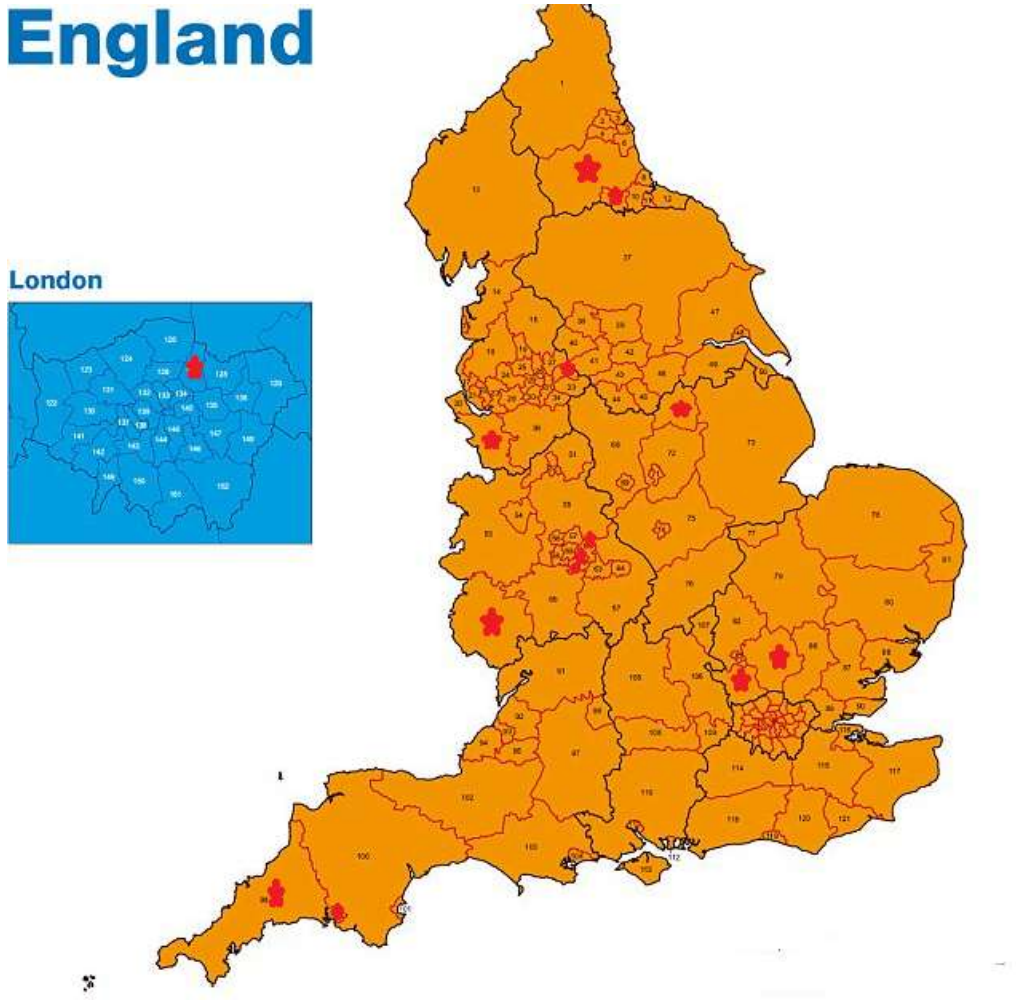
2.3.3.3d Sensitivity analysis

The above mentioned analysis which was used to calculate the costs per QALY gained was based on assumptions. To test the uncertainty made through this analysis, it was necessary to conduct sensitivity analysis. For each of the outcome measures where assumptions have been made, a lower value and upper value were applied to test the uncertainty. Five different scenarios were tested to test uncertainty. The first two scenarios dealt with the CO-validated quit rate, where in the first scenario, it was assumed that it went down from 10% to 5%, while in the second scenario; it was assumed that it went up to 15%. The third scenario dealt with the self-reported validation results, which was ignored in the main analysis. The fourth scenario assumed a supply of NRT for 8 weeks for smoker who succeeded in quit smoking after 4-weeks follow up, as in case of Cumbria PCT (Appendix 1). The fifth scenario assumed the 4 weeks supply of NRT for a smoker who was lost to follow up. 2.4. Results

2.4.1 All PCTs

Out of 151 PCTs (total PCTs in England in 2009/2010), 138 PCTs were included in this part of the study. The prevalence of smoking adults could not be identified for 5 PCTs and the number of CPs which were providing SSS could not be identified for 8 PCTs. The excluded PCTs are marked with red stars (Figure 2.1).

Figure 2.1 PCTs excluded from the survey



2.4.1.1 Descriptive analysis of SSS uptake through all providers

NICE guidelines require PCTs to treat 5% of their local smokers and to achieve at least 35% quit rate which is confirmed by CO-validation method (DH, 2011a). The prevalence of smoking adults varied across the different PCTs (Table 2.3). This means that in order for SSS in PCTs with higher needs to meet NICE guidelines, more efforts should be placed to reach higher number of smokers to help them quit smoking. In general, the median PCT's total reach out of needs was 7.9% (higher than 5%), ranging from 2.5% to 33.9% (Table 2.3 and Figure 2.3a). Three PCTs achieved total reach smaller than the lower quartile; those PCTs belonged to East Midlands North West and South West of England. They belonged to three different stratum of deprivation, one of the most deprived, one in the middle and the last was one of the most affluent PCTs. Thirty three PCTs achieved total reach higher than the higher quartile. Three outliers were identified (achieved total reach of 22.2% and above). These belonged to the most third affluent PCTs. When looking at the total success out of needs, the median was 3.9% (lower than 5% which was recommended by NICE guidelines), ranging from 1.2% to 17.1% (Table 2.3 and Figure 2.2b). Thirty four PCTs achieved total success out of needs smaller than the lower quartile (3.4%). Nothing was common among those PCTs; they belonged to different locations across England and had different deprivation scores. Twenty eight PCTs achieved total success out of needs higher than the higher quartile. Four outliers were identified (achieved total success of 10.1% and above). These belonged to the most affluent PCTs in England. The outliers in reach were the same as the outliers in success, with an addition to one outlier. The mean self-reported quit rate was 49.9% (Table 2.3 and Figure 2.3a) and it decreased to 34.2% when it was validated by CO-validation method (Table 2.3 and Figure 2.3b). Sixty-one PCTs achieved lower than 35% CO-validated quit rate (Figure 2.3). No outliers were identified in case of quit rate. In addition to the wide variations in terms of uptake and success of SSS, there was wide variations in terms of PCTs' demographic factors such as, deprivation scores which ranged from 8.8 to 43.5 with a median of 23. Also, the pharmacy provision of SSS varied across the PCTs, while only 8% of CPs in one PCT offered SSS, all CPs were offering the SSS in another. The median pharmacy provision (as percentages out of all CPs) was 69.2% (Table 2.3).

Table 2.3: SSS uptake and demographic and pharmacy factors

Variable	Median/Mean[7]	LQ[8]	UQ[9]	Min - Max
Prevalence of smoking adults (%)	22.4	19.3	26.7	12 - 35
SSS uptake				
Total reach out of needs (%)[1]	7.9	6.7	9.7	2.5 - 33.9
Total success out of needs (%)[2]	3.9	3.4	4.8	1.2 - 17.1
Self reported quit rate (%)[3]	49.9*	44.1	56.8	31.1 - 69.8
CO-validated quit rate (%)	34.2*	28.2	40.8	2.7- 58.3
Demographic factors				
Deprivation score (IMD)[4]	23.0	16.4	29.3	8.8 - 43.5
Ethnicity minority proportion (%)	9.1	5.4	16.2	2 - 52.3
Male proportion (%)	52.5	52.1	53.0	49.8 - 53.9
CP factors				
Weighted provision of SSS (%)[5]	62.9	39.1	76.8	8 - 100
Weighted provision of SSS (N)[6]	3.2	2.1	4.3	0 - 7

1- Total reach out of needs (%): Percentages of smokers who set a quit date through all providers out of total smokers within a PCT.

2- Total success out of needs (%): Percentages of smokers who quit smoking after 4-weeks follow up out of total smokers within a PCT.

3- Total quit rate (%): Percentages of smokers who quit smoking after 4 weeks follow up out of total smokers who set a quit date.

4- IMD stands for Index for Multiple Deprivation.

5- Weighted provision of SSS (%): Percentages of CPs which were offering SSS out of total CPs within PCT.

6- Weighted provision of SSS (N): Number of CPs which were offering SSS per 25 000 population.

7- Mean was used in case of self-reported and CO-validated quit rates, while median was used in other cases.

8- LQ stands for Lower Quartile, 9- UQ stands for Upper Quartile.

Figure 2.2: Total reach (%) and total success (%) histograms for the 138 PCTs

Figure 2.2a

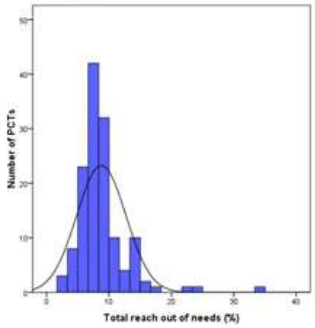


Figure 2.2b

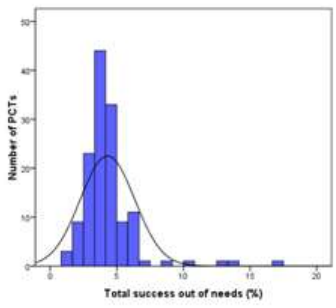
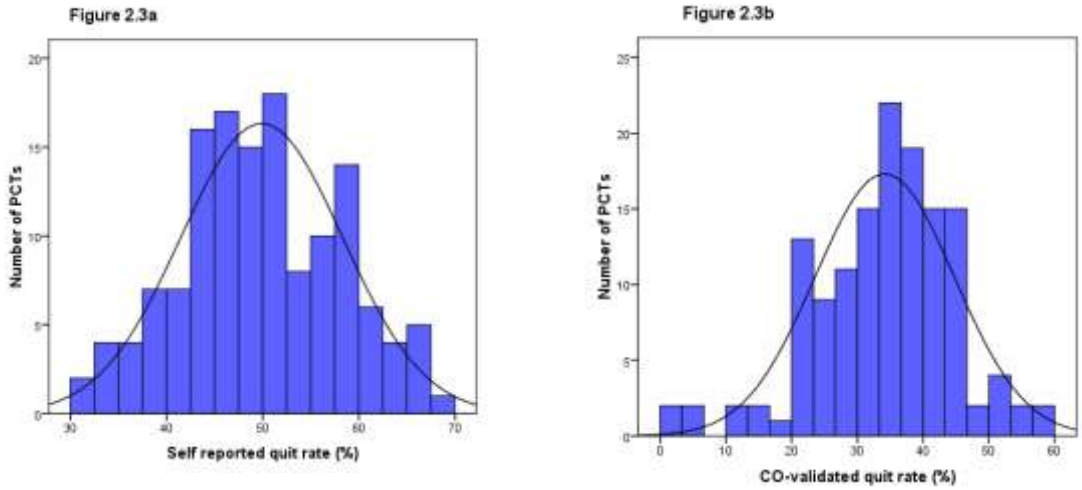


Figure 2.3: Quit rate self reported (%) and CO-validated quit rate (%) histograms



2.4.1.2 Association between prevalence of smoking adults and PCTs' demographic factors and CP SSS provision

In terms of demographic factors, smoking prevalence did not correlate with either male proportion or ethnicity proportion, as the P-value for Spearman's coefficient test was bigger than 0.05 (Table 2.4). This agreed with the fact that the higher prevalence of smoking among men which was seen in 1980 (42% of men smoked and 36% of women) was diminished in 2010 as 20% of men smoked in comparison to 19% of women (HSCIC, 2012b). In 2004, the self-reported prevalence of smoking varied across different ethnicities, the highest prevalence among men was 40% for Bangladeshi, followed by 29% for Pakistani, 25% for Black Caribbean, 21% for Black African and for Chinese and 20% for Indian, in comparison to 24% for the general population (HSCIC, 2006). When adjustment has been made for age, the Bangladeshi men were more likely to smoke than the general population and the Indian men were less likely to smoke (HSCIC, 2006). The situation in women was different as the prevalence of smoking was higher in general population than among minor ethnicities apart from Black Caribbean which was higher (HSCIC, 2006). This supports the findings that when minor ethnicities are combined (as in this research) a direct correlation between ethnicity and smoking prevalence could not be identified as smoking prevalence is only correlated with certain type of ethnicities and for specific gender. The most considerable correlation in relation to smoking prevalence was with deprivation. As higher prevalence of smoking adults was seen in higher deprivation score PCTs, Spearman's rank coefficient (rho = 0.76) and (P-value < 0.001) (Table 2.4). This means that the gap in smoking

prevalence between areas with different SES which the NHS SSS aimed to bridge upon its introduction in 1999, is still there. Although CPs can offer convenient access to SSS, there was no correlation between prevalence of smoking and CPs SSS provision, as P-value was 0.67 and 0.22 in case of provision as percentages and provision as numbers, respectively (Table 2.4). This suggests that the higher needs in some PCTs were not met by higher provision of SSS through CPs.

Table 2.4: Correlations between prevalence of smoking adults and demographic and CP factors

	Prevalence of smoking adults (%) Rho (P-value)
Demographic factors	
Deprivation score (IMD)[1]	**0.76 (< 0.001)**
Ethnicity minority proportion (%)	- 0.02 (0.8)
Male proportion (%)	- 0.07 (0.45)
CP factors	
Weighted provision of SSS (%)[2]	- 0.04 (0.67)
Weighted provision of SSS (N)[3]	- 0.02 (0.22)

1- IMD stands for Index for Multiple Deprivation.

2- Weighted provision of SSS (%): The percentages of CPs which were offering SSS out of total CPs within PCT.

3- Weighted provision of SSS (N): The number of CPs which were offering SSS per 25 000 population.

4- Significant correlations are shown in **bold**.

2.4.1.3 Association between pharmacy provision factors and population demographics

Higher concentrations of CPs were seen in more deprived PCTs and in PCTs with higher prevalence of smoking adults, where rho was 0.63 and 0.34, respectively and $P < 0.001$ in both cases (Table 2.5). Slightly higher concentrations of CPs were more likely to be seen in PCTs with higher ethnic minority proportion with rho of 0.18 and P of 0.034 and less likely to be seen in PCTs with higher male proportion with rho of -0.23 and P of 0.006 (Table 2.5). In comparison with CP SSS provision, there was no significant correlation between the needs (prevalence of smoking adults) and the provision in terms of numbers or percentages. However, due to higher concentrations of CPs in more deprived PCTs, there was a slightly higher number of CPs per 25 000 population which offered SSS with rho of 0.27 and P of 0.001 (Table 2.5). Moreover, the CP SSS provision was higher in PCTs with a

higher ethnic minority proportion (rho = 0.36) in case of CP SSS provision as percentage and (rho =0.33) in case of provision per 25 000 population with P < 0.001 in both cases (Table 2.5).

Table 2.5: Correlations between pharmacy factor and other explanatory variables

	CPs per 25 000 rho (P-value)[3]	**Weighted provision (1)[1] rho (P-value)**	**Weighted provision (2)[2] rho (P-value)**
Prevalence of smoking adults (%)	**0.34 (0.000)**	0.06 (0.47)	- 0.037 (0.69)
Deprivation score	**0.63 (0.000)**	**0.27 (0.001)**	0.09 (0.3)
Ethnic minority proportion (%)	**0.18 (0.034)**	**0.36 (<0.001)**	**0.33 (<0.001)**
Adult male proportion (%)	**- 0.23 (0.006)**	- 0.12 (0.15)	- 0.07 (0.44)

1- Weighted provision (1): The number of CPs which were offering SSS per 25 000 population.

2- Weighted provision (2): The percentage of CPs offering SSS out of total CPs.

3- Significant correlations are shown in **bold**.

2.4.1.4 Association between SSS uptake factors and demographic factors

Table 2.6 presents the univariable correlations between SSS uptake (total reach out of needs, total success out of needs and total quit rate) and demographic and pharmacy factors. There was a significant positive correlation between total reach and deprivation ((rho) = 0.21, P = 0.013), which means that when moving from an affluent PCT into a deprived one, there is an increase in the percentage of smokers who set a quit date out of total smokers within a PCT. Unfortunately, no significant correlation was identified between deprivation and total success (P = 0.95). A negative significant correlation was identified between the total quit rate and deprivation ((rho) = - 0.4, P < 0.001). This suggests that for two PCTs; deprived and affluent, where the total success is equalled, the total reach and quit rate for the two PCTs follow Equation 2.4. The good results of the total reach in a deprived PCT are worsening by the lower quit rate and the bad results of the total reach in an affluent PCT are improved by the higher quit rate.

$$\text{The total success (deprived PCT)} = \text{The total success (affluent PCT)} \qquad \text{(Equation 2.4)}$$

$$\text{The total reach} \times \text{Quit rate (deprived PCT)} = \text{The total reach} \times \text{Quit rate (affluent PCT)}$$

According to the results, CP SSS provision factors did not correlate with total reach and total success. It must be noted that in 2010, only 18% of total setters were through CPs and 17% of total quitters were through CPs (HSCIC, 2010). However there was a weak negative correlation between the number of CPs which were offering SSS per 25 000 population and the total quit rate, with rho of - 0.19 and P of 0.028 (Table 2.6). This agreed with the fact that the total quit rate through all NHS SSS providers together was 49% including CPs and 50.4% excluding CPs and for CPs only was 45% (HSCIC, 2010).

Table 2.6: Correlations between SSS uptake and demographic and pharmacy factors

Predictor variables	Total reach % rho (P-value)[4]	Total success % rho (P-value)	Quit rate % rho (P-value)
Demographic factors			
Deprivation score (IMD)[1]	**0.21 (0.01)**	- 0.01 (0.95)	**- 0.4 (<0.000)**
Ethnic minority proportion %	- 0.01 (0.89)	- 0.15 (0.07)	- 0.14 (0.1)
Adult male proportion (%)	- 0.03 (0.65)	0.03 (0.7)	0.14 (0.11)
Pharmacy factors			
Weighted provision of SSS (%)[2]	0.15 (0.08)	0.11 (0.21)	-0.08 (0.352)
Weighted provision of SSS (N)[3]	0.13 (0.12)	0.03 (0.7)	**- 0.19 (0.028)**

1- IMD stands for Index for Multiple Deprivations.

2- Weighted provision of SSS (%): The percentages of CPs which were offering SSS out of total CPs within PCT.

3- Weighted provision of SSS (N): The number of CPs which were offering SSS per 25 000 population.

4- Significant correlations are shown in **bold**.

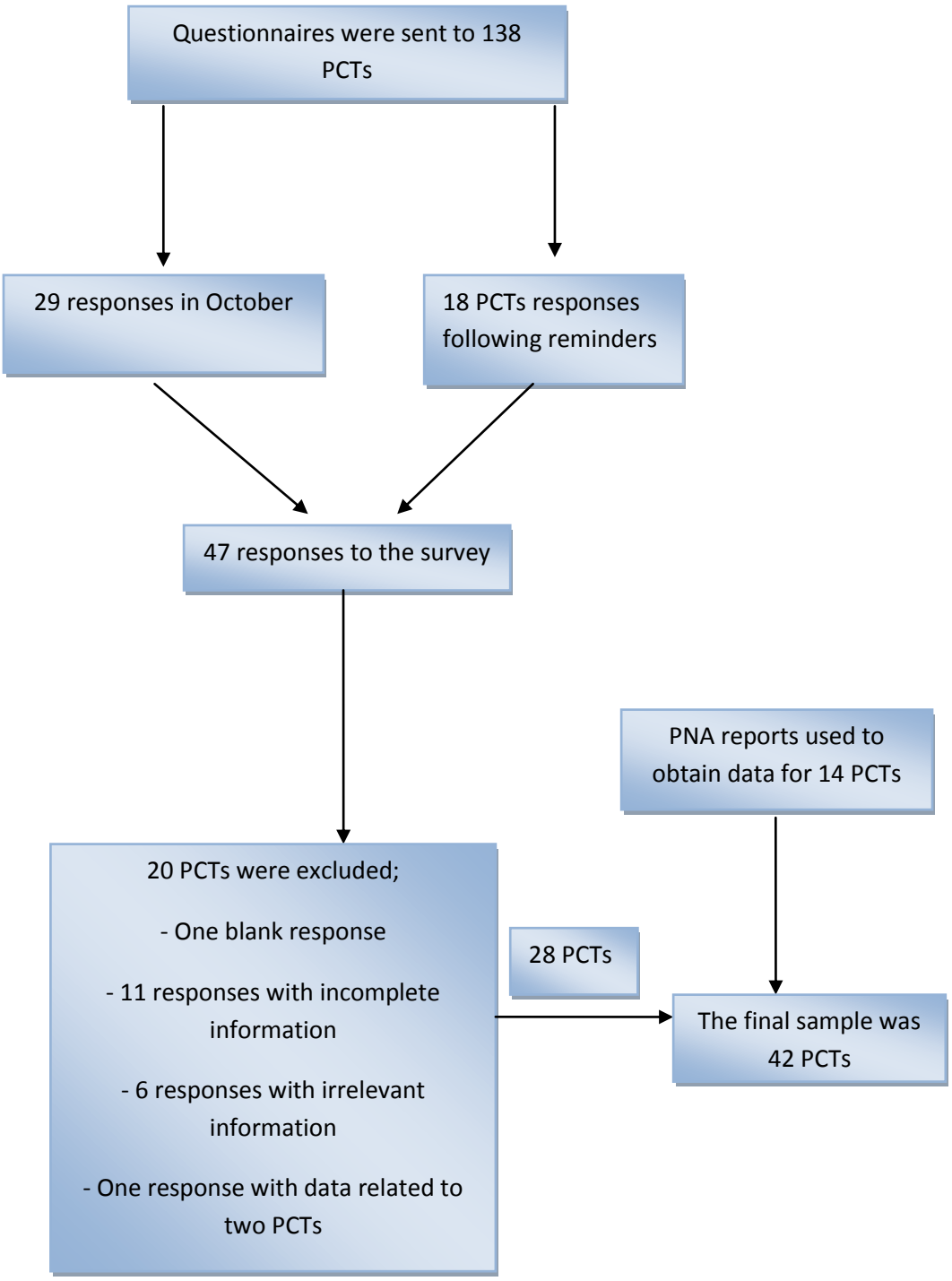
2.4.2 Sample results

2.4.2.1 Response rate

Out of the 138 questionnaires sent to the public health leads of SSS within the PCTs in England, 29 responses were received. Following the reminders, extra 18 responses were received, thus a total of 47 PCTs responded representing a 34% response rate. One response was with blank answers, 11 responses missed information about either the number of smokers who set a quit date or the number of smokers who quit or both, hence, and they were excluded from the analysis. Six responses provided information irrelevant to the financial year 2009/2010. One response came from two PCTs, where it was difficult to distinguish between data related to each PCT. The PNA reports were used to obtain data for an extra 14

PCTs. The final sample was thus 42 PCTs, which represented 30% of the target 138 PCTs (Figure 2.4).

Figure 2.4: Responses to the survey and the final sample



2.4.2.2 Sample PCTs versus non-respondent PCTs

The results of normality distribution for each variable for the two groups (sample and non-respondent PCTs) showed that the prevalence of smoking adults, total quit rate and the weighted CP provision of SSS per 25 000 population were normally distributed. Hence, the two independent sample T-test was applied to test the difference between the two groups. The prevalence of smoking adults did not significantly differ between the two groups (mean = 23.26% for sample versus mean = 22.8% for the non-respondent PCTs, P= 0.6). The total quit rate did not significantly differ (mean = 49.3% for sample versus mean = 50.2% for the non-respondent PCTs, P = 0.59). However, the CP provision of SSS per 25 000 population was lower in case of the sample (mean = 2.7) compared to the non-respondent PCTs (mean = 3.4) (P = 0.005). Mann-Whitney test was applied to the rest of variables (not normally distributed). The deprivation score did not significantly differ between the two groups (median = 23.2 for sample versus median = 22.5 for the non-respondent PCTs, P = 0.8). Similarly, no significant differences were identified in case of; total reach (median = 8.3% for sample versus median = 7.9% for the non-respondent PCTs, P = 0.37), total success (median = 4.03% versus median = 3.8%, P = 0.29), ethnic minority proportion (median = 7.7% versus median = 10.3%, P = 0.1) and adult males (median = 52.5% for sample versus median = 52.5% for the non-respondent PCTs, P = 0.97). However, the CP provision of SSS as percentage was significantly lower in case of the sample (median = 55.1%) when compared to the non-respondent PCTs (median = 67.5%) (P = 0.049). As a result, the differences between the two groups were only related to the CP provision of SSS (per 25 000 population and as percentage). As a result, the sample was found to be representative of the non- respondent PCTs in terms of prevalence of smoking, deprivation, ethnic minority proportion, adult male proportion, total reach, and total success and quit rate. However, it was not a representative in terms of pharmacy provision of SSS (per 25 000 population and as percentages). This suggests that any finding from the sample analysis should consider this, as any outcome measure that is positively correlated with CP provision of SSS is expected to be higher in non-respondent PCTs than in the sample, and vice versa.

2.4.2.3 Descriptive analysis of uptake of SSS for the sample

The sample analysis showed wide variations in terms of pharmacy reach out of needs, pharmacy share in reach, pharmacy success out of needs and pharmacy share in success (Table 2.7 and Figures 2.5 & 2.6). The median pharmacy reach

was 1.3% with a range from 0.1 to 6.7% (Table 2.7 and Figure 2.5a). In 5 PCTs the pharmacy reach was 5% and above, those PCTs belonged to different location across England; East England, South East Coast, North West and North East. However, in two PCTs out of 5, 97% and above of CPs were offering SSS. While 23%, 46% and 67% of CPs were offering SSS in the rest of PCTs. The median pharmacy share in reach was 12% with a range from 0.6 to 53.3% (Table 2.7 and Figure 2.5b). Between 40 to 45% of setters set quit date through CPs in three PCTs, between 45 to 50% in one PCT and between 50 to 55% in another PCT (Figure 2.5b). Those five PCTs had deprivation scores with a range from 14.98 to 25.63, this means that none of those PCTs belonged to the most third deprived PCTs across England. The median pharmacy success out of needs was 0.4% with a range from 0.03 to 2.9% (Table 2.7 and Figure 2.6), while it was over than 2% in case of 4 PCTs (Figure 2.6).Two out of those PCTs belonged to the most deprived PCTs and the other two belonged to the most affluent PCTs. The median pharmacy share in success was 9.8% (Table 2.7, Figure 2.6). Ten PCTs share in success out of needs was less than lower quartile (3.4%) and ten PCTs share in success was higher than upper quartile (24.9%) (Table 2.7 and Figure 2.6). In terms of number of setters per each pharmacy per year, the median number was 15 setters with a range from 2 setters to 116 setters and the median of quitters was 6 with a range from 1 quitter to 42 quitters (Table 2.7 and Figure 2.7). The pharmacy quit rate was normally distributed (Figure 2.8) with mean of 44.5% (Table 2.7). This quit rate agreed with the total quit rate through CPs across the 151 PCTs in England which was 45% (HSCIC, 2010). In addition to the variations in SSS uptake, there were wide variations in terms of demographic and pharmacy factors (Table 2.7).

Figure 2.5: Pharmacy reach out of needs and pharmacy share in reach histogram

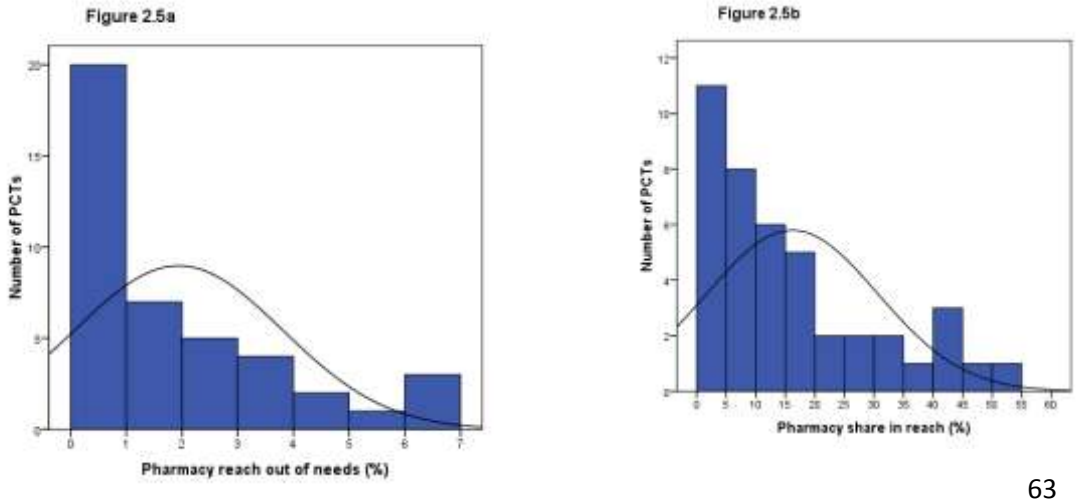


Table 2.7: SSS uptake and demographic and pharmacy factors for the sample

Variable	Median/Mean	LQ[10]	UQ[11]	Min- Max
Prevalence of smoking adults (%)	22.7	19.3	26.9	14.9 - 35.2
Demographic factors				
Deprivation score (IMD)[1]	23.3	15.3	28.8	8.8 - 43.5
Ethnic minority proportion (%)	7.7	5	11	2- 38.6
Adult male proportion (%)	52.5	52	53.1	49.8 - 53.5
SSS uptake all providers				
Total reach out of needs(%)[2]	8.3	6.9	10.7	4 -16
Total success out of needs (%)[3]	4.0	3.5	5	2 - 7
Total Quit rates (%)[4]	49.2[*]	43.7	54.1	33.1 - 67
SSS uptake CPs only				
Pharmacy reach out of needs (%)[5]	1.3	0.5	2.9	0.1 – 6.7
Pharmacy share in reach (%)[5]	12	3.5	23.2	0.6 – 53.3
Pharmacy success out of needs (%)[6]	0.4	0.2	1.4	0.03 – 2.9
Pharmacy share in success (%)[6]	9.8	3.4	24.9	0.7 – 49.2
Pharmacy quit rate (%)	44.5[*]	39.4	49.4	30.7 – 64.5
Setters per pharmacy/ year (N)	15	8	43	2 – 116
Quitters per pharmacy/ year (N)	6	3	18	1 – 42
Pharmacy provision factors				
Weighted provision of SSS (%)[7]	55.1	35.4	70.6	14.8 - 100
Weighted provision of SSS (N)[8]	2.7	1.8	3.4	1 - 5

1- IMD stands for Index for Multiple Deprivation.

2- Total reach out of needs (%): The percentage of setters through all providers out of total smokers in a PCT.

3- Total success out of needs (%): The percentage of quitters through al providers out of total smokers in a PCT.

4- Total quit rate (%): The percentage of quitters out of setters through all providers.

5- Pharmacy reach out of needs: The percentage of setters through CPs out of total smokers in a PCT

6- Pharmacy success out of needs: The percentage of quitters through CPs out of total smokers in a PCT.

7- Weighted provision of SSS (%): The percentages of CPs which were offering SSS out of total CPs within PCT.

8- Weighted provision of SSS (N): The number of CPs which were offering SSS per 25 000 population.

9- Mean was in case of total quit rate and pharmacy quit rate, while median was in all other cases.

10- LQ stands for Lower Quartile, 11- UQ stands for Upper Quartile.

Figure 2.6: Pharmacy success out of needs and pharmacy share in success histograms

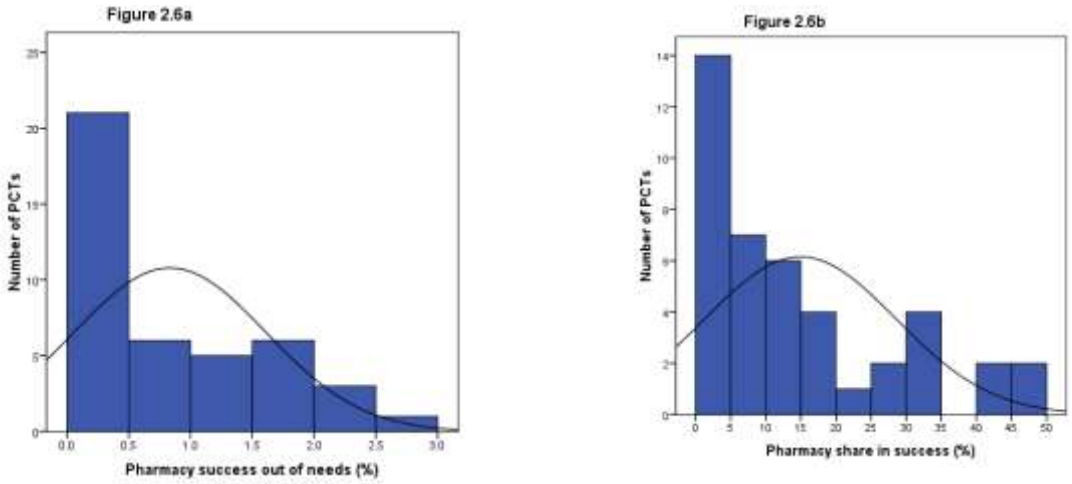


Figure 2.7: Number of setters and quitters per pharmacy per year histogram

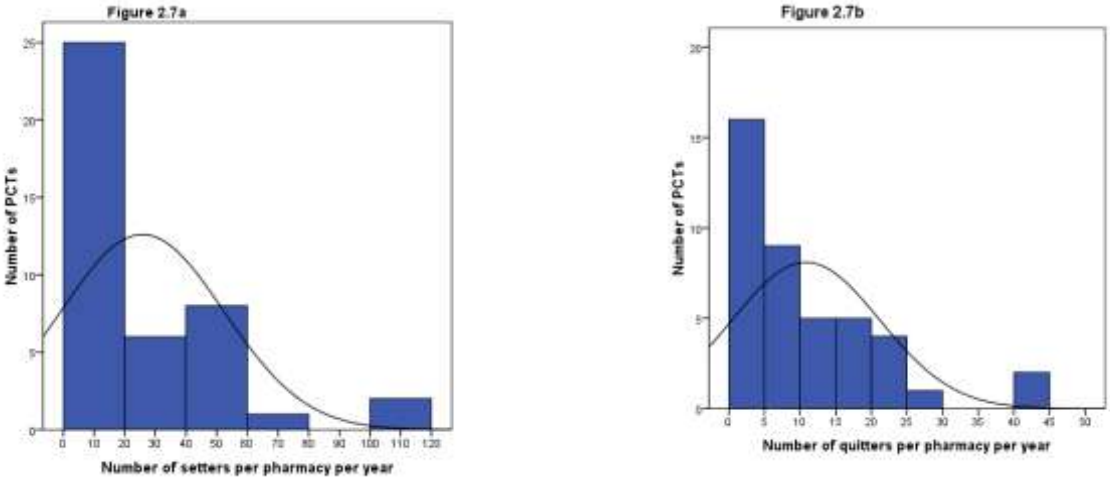
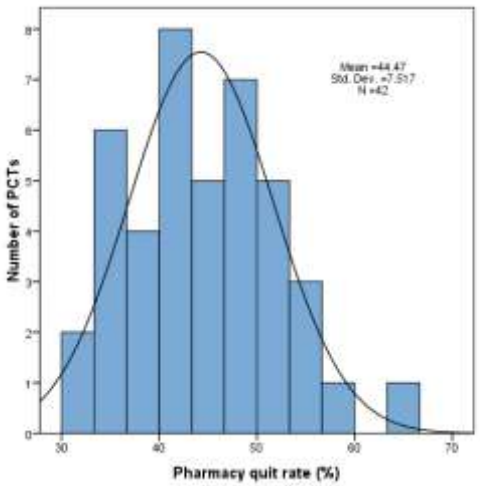


Figure 2.8: Pharmacy self-reported quit rate histogram



2.4.2.4 Association between SSS pharmacy uptake outcomes and demographic and pharmacy factors

The CP uptake outcomes (reach out of needs, share in reach, success out of needs, share in success, setters per pharmacy and quitters per pharmacy) were not normally distributed (Figures 2.5. 2.6 and 2.7). As a result, Spearman's rank correlation test was used to test correlations between SSS pharmacy uptake and other factors (Table 2.8). The CP uptake measures did not significantly correlate with the prevalence of smoking, the deprivation, the ethnicity or the gender factors. However, the prevalence of smoking adults was responsible for 40% of the number of setters per pharmacy per year and it was responsible for 31% of the number of quitters per pharmacy per year, with P of 0.01 and 0.046 respectively. This means that in PCTs with higher needs (higher prevalence of smoking adults), there is a higher numbers of smokers who set a quit date per pharmacy and higher numbers of smokers who quit smoking per pharmacy. On the other hand, the CP provision of SSS (per 25 000 population and as percentage) was responsible for 48% and 50% of reach respectively, with P = 0.01 in both cases. The CP provision was responsible for 47% and 51% of pharmacy success of quit smoking in case of provision per 25 000 population and percentage provision respectively, with P = 0.01. The CP SSS provision was responsible for 53% of pharmacy share in reach and in success and for 48% of pharmacy share in reach and success in case of provision as percentage and per 25 000 population respectively, with P of 0.01 in all cases (Table 2.8). This means that any increase in CPs' provision of SSS will encounter an increase in uptake of SSS and this will be reflected in quit smoking success.

In case of pharmacy quit rate, this was normally distributed (Figure 2.8 above), consequently, the association between pharmacy quit rate and demographic factors were assessed using Pearson’s (P) correlation coefficient. The higher the prevalence of smoking adults and the higher the deprivation scores, the lower the quit rate (R= - 0.61) and (R = -0.58) respectively, with P < 0.001 in both cases. On the other hand, no significant correlations were identified between the pharmacies quit rate and any other demographic factors. This suggests that the quit rate through CPs curve was similar to the total quit rate through all providers which was negatively correlated with deprivation (Section 2.4.1.4) and this indicates that to improve the SSS through either CPs or other providers, factors that force setters to resume smoking in more deprived PCTs should be identified and work should be done to overcome those factors.

Table 2.8: Correlations between uptake of SSS through CPs and demographic and pharmacy factors

Predictor variables	Reach[6] Rho, P-value	Share 1[7] Rho, P-value	Success[8] Rho, P-value)	Share 2[9] Rho (P-value)	Setters[10] Rho (P-value)	Quitters[11] Rho (P-value)
Needs[1]	0.24, 0.13	0.14, 0.37	0.16, 0.31	0.11, 0.47	0.4, **0.01**	0.31, **0.046**
Demographic factors						
Deprivation	0.16, 0.3	0.06, 0.7	0.08, 0.62	0.02, 0.88	0.29, 0.06	0.18, 0.25
EMP (%)[2]	0.12, 0.43	0.23, 0.14	0.12, 0.44	0.21, 0.19	0.02, 0.9	0.05, 0.78
Male (%)[3]	- 0.06, 0.71	- 0.02, 0.9	- 0.03, 0.85	- 0.03, 0.87	- 0.13, 0.4	- 0.09, 0.58
Pharmacy factors						
Provision 1[4]	0.5, **0.01**	0.53, **0.01**	0.51, **0.01**	0.53, **0.01**	0.21, 0.19	0.24, 0.13
Provision 2[5]	0.48, **0.01**	0.48, **0.01**	0.47, **0.01**	0.48, **0.01**	0.2, 0.21	0.20, 0.20

1- Needs: The prevalence of smoking adults (%).

2- EMP: stands for Ethnic Minority Proportion.

3- Male (%): The percentage of adult males within PCT.

4- Provision 1: (%): The percentage of CPs which were offering SSS out of total CPs within PCT.

5- Provision 2: The number of CPs which were offering SSS per 25 000 population.

6- Reach: The percentage of setters through CPs out of total smokers in a PCT.

7- Share 1: CPs' share in total reach out of needs

8- Success: The percentage of quitters through CPs out of total smokers in a PCT.

9- Share 2: CPs' share in total success out of needs

10- Setters: The number of smokers who set a quit date per pharmacy per year.

11- Quitters: The number of smokers who quit smoking after 4-weeks follow up per pharmacy per year.

10- The significant P-value for Spearman's correlation coefficient was shown in **bold**.

2.4.3 Cost effective analysis of SSS through CPs

2.4.3.1 Sample description

Two responses out of the 28 complete responses in Figure 2.3 did not provide information about payments to pharmacy for provision of SSS. As a result the final sample was 26 PCTs, 3 responses mentioned that they use only self-method to validate quit smoking. The results of those 3 responses were included only in case

of sensitivity analysis. As a result, the final sample was 23 responses (17% of the targeted PCTs).

As PCTs had their own choice to allocate their funds between services as appropriate, the payments to CPs for providing SSS varied across the different PCTs (Table 2.9). Hence, the median cost per quitter excluding NRT reimbursement was £71.3 with a range from £23.8 to £602.5. Upon consideration of NRT reimbursement, the median cost per quitter was £116.7 with a range from £65.2 to £649.2. Five PCTs had a total cost per quitter including NRT reimbursement lower than lower quartile (£83.4), two PCTs out of them belonged to East England, two PCTs belonged to South East Coast and one to London. Five PCTs had a total cost per quitter higher than higher quartile (£188.8). Two belonged to South West England, two belonged to East England and one belonged to Yorkshire and the Humber.

Table 2.9: Summary description of the SSS uptake, payments and costs

Variable	Median	LQ[7]	UQ[8]	Min-Max
Setters per PCT (N)[1]	532	180	984	31 - 5270
Quitters per PCT (N)[2]	235	90	503	20 - 2573
Quit rate %	47.9	39.9	53	34 - 76
Payment for recruitment (£)[3]	17.50	6.4	26.3	0 - 57
Payment for success (£)[4]	31.6	6	50.5	0 - 60
Total cost per quitter 1 (£)[5]	71.3	37.9	143.8	23.8 - 602.5
Total cost per quitter 2 (£)[6]	116.7	83.4	188.8	65.2 - 649.2

1- Setters per PCT: is the number of smokers who set a quit date through CPs for the financial year 2009/2010.

2- Quitters per PCT: is the number of quitters who achieved quit smoking through CPs following 4-weeks follow up.

3- Payment for recruitment: Are the payments to CPs for recruitment of smokers who set up a quit date.

4- Payment for success: is the payment to CPs who help smokers who set up a quit date in achievement of quit smoking after 4-weeks follow up.

5- Total cost per quitter 1: is the cost for provision of SSS from CPs excluding NRT reimbursement.

6- Total cost per quitter 2: is the cost for provision of SSS from CPs including NRT reimbursement.

7- LQ stands for Lower Quartile, 8- UQ stands for Upper Quartile.

2.4.3.2 Association between costs per quitter and demographic and pharmacy factors

No significant correlation could be identified between costs per quitter and any of the demographic factors (deprivation, ethnicity and gender) or pharmacy factors (Appendix 3)

2.4.3.3 Incremental cost per quitter

The incremental cost per quitter at 4-weeks was calculated using Equation 2.1. As explained previously, two assumptions regarding self-quit were made; firstly, the CO-validated quit rate was assumed to be10% and secondly, no costs were attributed to the self-quit as it was taken from the NHS perspective. The median incremental cost per quitter at 4 weeks was £486.4 (Table 2.10) with a range from £220.2 to £2 517.5. One outlier was identified with an incremental cost of £2 517.5. This PCT had only 41% of those who reported self-quit being tested through CO-validation method and this was the lowest percentage among the 22 PCTs. For calculations of incremental cost per quitter at 52 weeks, an assumption of 75% relapse rate was applied to the quitter through CPs and to the self-quit. The median incremental cost at 52 weeks was £1 945.4 (Table 2.10). For calculations of incremental cost per quitter at lifetime, an assumption of relapse rate of 35% beyond 52 weeks was applied. As a result, the median incremental cost at lifetime quit was £2 993.

Table 2.10: Results of incremental costs per quitter at 4 weeks, 52 weeks and lifetime quit

Incremental cost per quitter	Median	LQ	UQ	Min-Max
At 4 weeks (£)	486.4	298.6	486.4	220.2 - 2517.5
At 52 weeks (£)	1 945.4	1 835.4	5 173.5	889.7 - 9 189.1
At lifetime (£)	2 993	1 193	3 362.7	1 355 - 15 492

2.4.3.4 Sensitivity analysis

As stated above, the baseline median incremental cost per quitter at 4 weeks was £486.4 (Table 2.10). In scenario 1 where the self-quit CO-validated rate at 4 weeks was reduced from 10% (original scenario) to 5%, the median incremental cost was decreased by 17% to £402.5. In contrast, when the self-quit CO-validated rate was increased to 15% in scenario 2, the median incremental cost per quitter was increased by 26% to £614.4 (Table 2.11). When the self-reported results were

considered (in original scenario only CO-validated quit rate was used) the incremental cost per quitter was reduced to £310 (scenario 3). The supply of NRT was assumed to be given at a maximum period of treatment (12 weeks in original scenario), when an assumption of supply of 8 weeks is made the incremental cost per quitter will decrease to, £433.6. The last scenario, it is assumed that the smoker who lost to follow at 4-weeks follow up will get NRT supply to cover 4 weeks, the incremental cost per quitter will thus increase to £499 (Table 2.11).

Table 2.11: Results of use different scenarios to reduce uncertainty

Scenarios	Median incremental cost per quitter at 4-weeks (£)
(Scenario 1) 5% self-quit	402.5
(scenario 2) 15% self-quit	614.4
(scenario 3) Self-reported validation considered	310
(scenario 4) supply of NRT for 8 weeks	433.6
(scenario 5) supply of NRT for 4 weeks for who lost to follow	499

2.4.3.5 Costs of QALYs gained for lifetime quitter

As explained earlier (Section 2.3.3.3c), the discounted QALYs gained for lifetime quitter, which equalled to 1.98, was used to calculate the cost per QALY gained, using the previously identified Equation 2.3:

$$\text{Costs per QALY gained} = \frac{\text{Incremental cost per lifetime quitter}}{\text{QALYs gained for lifetime quitter } (1.98)}$$

The median cost per QALY gained for lifetime quitter was £1 511, which is less than £20 000 recommended by NICE to be cost effective (NICE, 2012), with a range from £684.3 to £7 824.3. Even with the maximum value the commission of service is still cost effective.

2.5 Discussion

2.5.1 Needs, provision and uptake of SSS through all providers

The study is among the first to test the success of NHS SSS through all providers with focus on CPs provision. Despite the fact that there is high intention to quit smoking among UK smokers (77% among UK smokers intend to quit smoking (Lader, 2007)), NHS SSS was able to reach only 7.9% of the total smokers (Section 2.4.1.1). This can be explained by the fact that more than half of UK smokers try to

quit smoking without using any treatment and only 6% out of those who tried to quit smoking used NHS SSS (Kotz and West, 2009). However, the study finds that the NHS SSS in total failed to help 5% or more of UK smokers to quit smoking. As the median success out of needs was only 3.9% (Section 2.4.1.1). Of those who set a quit date, 49.9% self-reported quit smoking and 68.5% out of them were tested through CO-validation method (34.2% out of total setters), which is lower than the 35% CO-validated quit rate that was recommended by the Government (DH, 2011a). When NHS SSS was first established in 1999/2000, it was piloted in hard to reach areas of deprivation (Health Action Zones (HAZs)) with intentions to reach more deprived smokers (Bauld *et al.*, 2007). As the service was rolled out across the country in the following years, the NHS SSS uptake and success varied across the different PCTs and it seemed to correlate with PCTs' deprivation. In 2009/2010 SSS reached more smokers in more deprived PCTs (Section 2.4.1.4). This was the case for NHS SSS over ten years between 2001/2002 and 2010/2011 (West *et al.,* 2013). This suggests that smokers of lower SES areas were more willing to try to quit smoking, which can be explained by tobacco expenses, which in turn push them to quit smoking (Lowey *et al.*, 2003, Bauld *et al.*, 2006, Pisinger *et al.*, 2010). This finding contraindicated the old idea that smokers with lower SES were less willing to access SSS (Wiltshire *et al.*, 2001) and proved that the lack of knowledge about NHS SSS among lower SES smokers suggested by Roddy and colleagues (2006) has improved. However, smokers with lower SES achieved lower quit rate than smokers with higher SES (Section 2.4.1.4), which agreed with the results from previous studies (Giskes *et al.*, 2006 and Businelle *et al.*, 2010). Low and co-workers (2007) suggested four scenarios in relation to SSS. They assumed that quit rate among lower SES is lower than among higher SES, which agreed with the study's findings (quit rate was negatively associated with deprivation with rho of -0.4 and $P < 0.001$ (Section 2.4.1.4). The first scenario assumes that the proportion of smokers who set quit date for smoking through NHS SSS is higher among higher SES smokers than among lower ones. This will result in maximization of health improvement, as it is expected to have higher proportion of quitters in total (higher SES smokers are more likely to quit). The second scenario assumes same proportion of access for lower and higher SES smokers (equity of access). This scenario will still widen the gap between the two groups (higher and lower SES).In their third scenario ”equity of outcome“, the proportion of smokers who set a quit date was higher among lower SES than among higher SES and the proportion of quitters were not different, which agreed with our findings that total reach out of needs was positively correlated with deprivation with rho of 0.21 and P of 0.01 and

total success out of needs did not significantly correlate with deprivation (Section 2.4.1.4). Based on this scenario, the NHS SSS is not widening the gap in health inequalities or narrowing it, and its effect is neutral (Low *et al.*, 2007). In the fourth scenario, the proportion of smokers who set a quit date is higher among lower SES smokers than among higher ones, and this difference is capable of making a change to reduce the gap in health between the two groups (Low *et al.*, 2007). This scenario is the optimal scenario and is the one that the service commissioners should follow. However, Bauld and co-workers (2006) found only a modest improvement in reducing health inequalities based on success of NHS SSS in case of Glasgow.

2.5.2 Needs, provision and uptake of SSS through CPs

CPs are in the heart of community, thus they are ideal to reach hard to reach patients. This was highlighted in the Government document "A vision for pharmacy in the new NHS" and "Pharmacy in England: building on strengths- delivering the future" (DH, 2003a and DH, 2008a). As mentioned previously, a recent study by Todd and co-workers (2014) found that the majority of English population are able to access CP within 20 minutes walk. When SSS was firstly introduced, CPs identified a number of barriers for provision, such as lack of time, lack of training skills, premises barriers and financial concerns (Sinclair *et al.*, 2004). Most of those barriers were overcome, as for a pharmacist to be able to provide SSS; they are required to attend local training (PSNC, 2014). Furthermore, most CPs has counselling rooms and the service is funded by local providers. The importance of CPs in the community was translated into higher concentration of CPs per 25 000 population in more deprived PCTs where smoking is more prevalent and higher concentration of CPs in PCTs with a higher ethnic minority proportion (Section 2.4.1.3). Furthermore, it was translated into a higher provision of SSS through CPs in PCTs with higher ethnic minority proportion (Section 2.4.1.3). However, the prevalence of smoking is not significantly correlated with ethnic minority proportion (Section 2.4.1.2, Table 2.4), as it is higher among certain ethnicities (Bangladeshi men and Black Caribbean women) (HSCIC, 2006). To make the best use of this higher provision of SSS among PCTs with higher minor ethnicities, language barriers for many of those ethnicities should be overcome. Overall, CP SSS provision per 25 000 population correlated significantly with deprivation and ethnic minority proportion and it did not correlate with prevalence of smoking adults (needs) (Section 2.4.1.3; Table 2.5). Therefore, CPs in PCTs with higher needs had to deal with a higher number of smokers who set a quit date per year (rho = 0.4)

(Section 2.4.2.4). Although quit rate for smokers who set a quit date through CPs was negatively correlated with the needs, CPs in PCTs with a higher needs achieved higher number of quitters per pharmacy per year with rho of 0.31and P of 0.046 (Section 2.4.2.4). Thus, an increase in pharmacy provision of SSS will result in higher reach of SSS and in higher success of SSS out of needs (Section 2.4.2.4, Table 2.8). This suggests that to improve the uptake of SSS and avoid the increase in workload related to SSS for CPs in PCTs with higher needs, an increase in SSS provision through CPs is necessary. Otherwise, if the workload related to SSS overrides certain limits which CPs cannot tolerate, this will result in increased stress and decreased job satisfaction (Gidman, 2011 and Lea *et al.*, 2012). This in turn might reflect on pharmacist's routine work and affect patient safety (Gidman, 2011). When sample PCTs were compared to the non-respondent PCTs, it was found that the CP SSS provision was higher in case of non-respondent PCTs, with median of 67.5% for the non-respondent and 55.1% for the sample (Section 2.4.2.2). An increase in 22.5% should result in higher SSS reach of 11.25% of their smokers in non-respondent PCTs when compared to the sample PCTs (50% of the SSS reach through CPs was attributed to CP SSS provision (Section 2.4.2.4).

2.5.3 Cost effective analysis of CP SSS

The median cost per participant was £116.7 (Section 2.4.3.1,Table 2.9), which resulted in £486.4 as median incremental cost per quitter at 4 weeks (Table 2.10). A previous study which was done in Glasgow, reported a £53.31 as cost per participant and £772 as incremental cost per quitter at 4 weeks for the pharmacy intervention (costs calculated at 2007 prices) (Boyd and Briggs, 2009). Despite that the cost per participant was lower in case of Boyd's study. The CO-validated quit rate was almost twice in case of this study than the one which was identified in Boyd's study (Boyd and Briggs, 2009). Another study reported £300 as incremental cost per quitter when using an intensive pharmacy intervention rather than standard help (Sinclair *et al.*, 1999). This study was taken from the social perspective and the quit rate was identified at 9 months following the quit date. A Scottish study reported £524.45 as cost per quitter and the self-reported quit rate at 4 weeks was 44.6% (Cramp *et al.*, 2007). The median incremental cost per quitter at 4 week in our study was £486.4 which is very close to Cramp and co-workers (2007) findings. When looking at the cost per QALYs gained, the median cost was £1539 with a range from £695 to £7 891. The costs per QALYs gained for intensive counselling and NRT was €4 900 (£3 062.5) based on 2000 prices and for 75 years (Feenestra *et al.*, 2007). Even in the PCTs with higher costs per QALYs (£7 824.3 (Section

2.4.3.5)), the intervention is still below £20 000 (reported by NICE to be cost effective), which means that the provision of SSS through CPs is cost effective.

2.6 Limitations of the study

The study had a low response rate of 34%. However, to overcome this low response rate the sample was weighted against the non-respondent PCTs as it was recommended by Brick and Kalton (Finchman, 2008). In case of the cost-effective analysis, several measures were not given by the respondent PCTs exactly. Thus a sensitivity analysis was conducted to overcome this problem.

2.7 Conclusions

After 10 years of introducing NHS SSS, smoking prevalence is still highly correlated with deprivation. However, the NHS SSS, based on the findings, is helping in not widening the gaps in terms of smoking prevalence between PCTs with different SES. The CP SSS provision (as percentage) did not match with the needs, despite the fact that there was a higher concentration of CPs in more deprived areas. CPs share is less than fifth of NHS SSS through all providers. If the CP SSS provision increases, the total reach and total success of SSS through CPs will increase. Even though CP SSS quit rate was lower than other providers, it is still cost-effective and it will provide smokers who wish to quit smoking with a convenient and accessible place to help them to quit smoking.

2.8 Future of SSS

Electronic cigarettes which became available recently in the market are to be regulated to quit smoking in the UK from 2016 (Torjesen, 2013). Electronic cigarettes have less hazards when compared to regular cigarettes (Henkler and Luch, 2014). However, there is a hazard from components which are used in electronic cigarettes such as solvent, flavour, additives and contaminants (Hutzler *et al.*, 2014). Few clinical trials found that electronic cigarettes can help stop smoking as the speed that the nicotine reaches the central nervous system is comparable to that of some of the NRTs (Nowak *et al.*, 2014). However, there is still no clear idea about the benefits and risks of electronic cigarettes in stop smoking and further clinical studies should be conducted to estimate the risks and benefits. As SSS was cost-effective based on the model used in 2009/2010, hence a payment by result method might encourage CPs to reach more smokers in their locality and improve the effectiveness of CPs. In April 2010, a new system for payment by results for SSS was introduced (Wyatt, 2012). However, West (2011)

suggested that providers might chase ‘cherry-pick easy cases’ and ignore the cases that are related to health inequalities.

Chapter Three: Needs, provision and uptake of sexual health pharmacy services

3.1 Introduction

3.1.1 EHC

In 1999, the Government assessed the situation of teenage pregnancy in the UK. It analysed how other European countries which had similar teenage pregnancy rates to the UK in 1970, succeeded in reducing the rates while the UK failed (Social Exclusion Unit, 1999). Thus, it set out a plan to halve teenage pregnancy by 2010 through improvements in teenage knowledge about sex, relationships and contraception and to improve the quality of life for young parents by supporting education, training and employment (Social Exclusion Unit, 1999). Despite the teenage pregnancy rate being reduced by 10% between 1999 and 2010, teenage pregnancy was found to be highly connected with deprivation (Conrad, 2012). This suggests that despite a reduction in the overall problem, health inequalities caused by teenage pregnancy have not been solved (Conrad, 2012).

The probability of getting pregnant following unprotected sexual intercourse depends mainly on the day of intercourse in relation to the menstrual cycle (Wilcox *et al.*, 2001). Wilcox and co-workers (2001) found that the mean probability of getting pregnant following one act of unprotected intercourse during any day of the cycle is 3.1%. One of the effective methods in preventing unintended pregnancy is EHC (Marciante *et al.*, 2001). Prior to 2000, the EHC contained both estrogen and progestogen (Yuzpe®) and the side effects kept it as a POM (Anderson and Blenkinsopp, 2006). In 2000, a new progestogen-only EHC was introduced (Levonelle-2®; containing levonorgestrel), the new EHC was more effective and safer than the old one. Its success rate ranged from 95% if the dose is taken within the first 24 hours after intercourse to 58% if it is postponed to 48-72 hours (Killick and Irving, 2004). In 2003, the dose of levonelle was changed from taking two tablets each containing 750 µg 12-hours apart to a single dose of 1500 µg , as it was noticed that many women failed to take the second tablet (MHRA, 2003). The effectiveness of two doses of 750 µg and one single dose of 1500 µg was similar (Hertzen *et al.*, 2002). Grimes and co-workers (1998) found that taking two doses of levonorgestrel 12 hours apart within 72 hours following a single act of unprotected sexual intercourse is effective in preventing 75% of unintended pregnancies. Creinin and co-workers (2006) found that taking two doses of levonorgestrel 750 µg within 72 hours following one act or more of sexual intercourse to be effective in

preventing 69% of unintended pregnancies. Glasier and co-workers (2010b) found that taking one dose of levonorgestrel 1500 µg within 120 hours following one or more act of unprotected intercourse to be effective in preventing 52% of unintended pregnancies. Hertzen and co-workers (2002) found that the single dose is effective in preventing 84% of unintended pregnancies if it is taken within 72 hours following a single act of sexual intercourse and is effective in preventing 63% of pregnancies if it is taken between 72 and 120 hours following the intercourse. The mean age of women in each of the four studies was different with 23.6 years (Glasier *et al.*, 2010b), 24.3 (Creinin *et al.*, 2006), 27.1 (Hertzen *et al.*, 2002) and 27.3 (Grimes *et al.*, 1998). Furthermore, there were differences in terms of BMI and ethnicity.

In 2001, EHC was deregulated from POM status into P status (MHRA, 2013a). This allowed women (aged 16 and above) to buy EHC from CPs at £19.99 cost in 2001 (in 2009/2010, price was around £25, varied between sellers (Hinchliffe, 2010)). In addition EHC can be obtained free through a prescription provided by GPs, family planning clinics and walk in centres (Harrison-Woolrych *et al.*, 2001). The advantages and disadvantages of EHC deregulation were arguable. The direct link between improving access to EHC and total unintended pregnancy and abortion rates was unclearly defined. Glasier (2006, 2013) found that there is no direct link between the increase uptake of EHC and lower total unintended pregnancy rates and abortion rates. On the other hand, Oza (2009) found that the improved access to EHC in USA through pharmacies decreased the abortion rates among 15-29 years old by 37.2%. The situation in the UK was different, as the hope that increased access to EHC would lead to a decrease in unwanted pregnancies as suggested by Harrison-Woolrych and workers (2001) did not occur, and there was no increase in use or changes in the patterns of use (Martson *et al*., 2005). However, there was a shift in venues where women obtained their EHC, as they tended to buy EHC from pharmacies in comparison to other venues (Martson *et al*., 2005). The women from higher SES areas would use EHC more often than women in lower SES ones (Cameron *et al.*, 2012). This contraindicated the aim to lower the gap in SES in terms of unintended pregnancies between higher and lower SES areas.

Many researchers found no evidence to support the suggestion that improving access to EHC might direct the women to abandon other methods for birth control and might increase the incidence of Sexually Transmitted Infections (STIs) (Camp *et al.*, 2003; Jackson *et al.*, 2003; Black *et al.*, 2006). Only one study which investigated the effect of improving access of EHC through pharmacies on a large

sample size (n= 440 038), found that this improvement was responsible for 17.8% increase in STIs among 15-29 year old women (Oza, 2009).

Pharmacists welcomed the EHC scheme, as they thought it would help women in obtaining EHC and it would improve their profession (Bissell *et al.*, 2006). However, both pharmacists and users raised concerns about its misuse and its impact on changing contraceptive behaviour and increasing STIs (Seston *et al.*, 2001; Bissell *et al.*, 2006). As timing is very important for the effectiveness of EHC, the availability of EHC through CPs, gives a chance to get it within 24 hours following sexual intercourse, where it is most effective (Killick and Irving, 2004; Lewington and Marshall, 2006). Marciante and co-workers (2001) found that obtaining the EHC form pharmacists after unprotected sex was cost-saving from both payer and private perspective in comparison to health clinics.

The enhanced service (currently known as local commissioned service) of EHC include the supply of EHC to women through specific written instructions which are called PGDs. The supply will be free of charge to women who met the PGD criteria (PSNC, 2014). Each PCT had its own criteria of inclusion in terms of age of client and most of them include only teenagers (under 16 years old). However some exceptions were seen in case of the service in Ashton, Leigh and Wigan PCT where the service was free to all ages (NHS Ashton, Leigh and Wigan, 2011) and in Berkshire West PCT, where it was free to ages between 13 and 19 under PGD with those who are 20 years and over having to buy it over the counter (Berkshire Local Pharmaceutical Committee, 2011).

3.1.2 Chlamydia screening

The second sexual pharmacy health service examined in this Chapter deals with Chlamydia. *Chlamydia trachomatis* is the most common sexually-transmitted infection in the UK, affecting both men and women, even those that are less sexually active (National Chlamydia Screening Programme (NCSP), 2010a). It is more common in young people aged under 25 years old than older ones (Adams *et al.*, 2004). Chlamydia infections are largely asymptomatic and if untreated they can lead to severe complications to the woman's reproductive system, which will result in infertility or ectopic pregnancy (Balfe *et al.*, 2010). Fortunately, a urine test can detect chlamydia infection and a single dose of antibiotics can treat the infection (Peipert, 2003). In 2003, the DH established a network to offer free screening and treatment and partner notification to those under 25 years old. The target for 2009/2010 was to test 25% of men and women aged 15-24 in healthcare settings

and non-healthcare settings; genitourinary medicine (GUM) activity apart. Community pharmacists can participate in offering kits only, offering screening in site, or providing treatment and partner notification for sexually active people under 25 years old (NCSP, 2013). For those who offer only kits, they should inform the client about how to utilise the kit, how to return it for testing, the process following the completion of test and how they will be informed of the results. For those who offer chlamydia screening at site, they should inform the client about the benefits of chlamydia screening, specimen collection, procedures followed to manage the results and free treatment. In case of positive results, CPs will refer the client into other sexual health services to obtain treatment (if the CP is offering screening only). A record of the client details and a signed consent form should be prepared prior to screening. For those who offer treatment at site, they can provide antibiotic under PGDs (PSNC, 2014). CPs showed willingness to provide chlamydia services (kits, screening, treatment and partner notification) (Cameron *et al.*, 2007). Public perceptions towards using chlamydia screening through CPs were arguable. The public welcomed the service and stated how it was convenient and accessible in a study in South East London (Baraitser *et al.*, 2007). On the other hand, the majority of young adults who were surveyed in Ireland stated that they would prefer to be screened by a doctor or nurse and the majority did not want to be screened by a pharmacist (Brugha *et al.*, 2011). The results of the first two years of chlamydia screening through CPs indicated that the service was feasible and accessible as there was a number of people who accessed the service (Anderson and Thornley, 2011). Providing chlamydia services alongside EHC service seemed to improve the number of clients who were screened through CPs (Brabin *et al.,* 2009; Gudka *et al.*, 2013; Gudka *et al.*, 2014).

3.2 Aims and objectives

The aim of this Chapter is to identify the needs for both sexual health services across different PCTs and to assess whether the provision and uptake of services through CPs match with the needs.

The specific objectives are:

1. To identify the needs for EHC as an enhanced service (under PGD) and chlamydia service on PCT level for all PCTs in England and to identify what are the factors that are associated with higher needs.
2. To investigate whether the provision of services through CPs matches with the needs.

3. To assess whether the uptake level of each service matches with the level of provision and in turn with the level of needs.
4. To calculate the incremental cost-effectiveness ratio ICER for EHC intervention in comparison to no intervention at all.

3.3 Method

In order to meet the aims of this Chapter, the PNA reports were used to collect information regarding the CP provision of EHC and chlamydia screening service. A short survey was conducted to obtain the missing data regarding the uptake and costs of both services to perform the required analysis. All collected data were related to the financial year 2009/2010, which started in 01/04/2009 and ended in 31/03/2010.

3.3.1 Measures, definitions

The measures and definitions are divided into;

3.3.1.1 Measures and definitions that are related to EHC service

- Need for EHC: the conception rate per 1000 females (15-17 year olds only), as the service aimed mainly to reduce teenage pregnancy and this is how the teenage pregnancy rates were presented in health profiles (Public and Health Observatories website, 2010).
- Provision of EHC through CPs: the percentage of CPs providing EHC under PGD within a PCT.
- Weighted provision of EHC: the number of CPs providing EHC per 10 000 females under 60 years old, as two details of the population per PCT were available; under 16 years old and 16-59 years old.
- Number of teenagers accessing EHC per month during 2009/2010
- Number of teenagers provided with EHC per pharmacy during 2009/2010.
- Ethnic minority female percentage: percentage of women who are of an ethnic minority

3.3.1.2 Measures and definitions that are related to chlamydia service

- Need for chlamydia services: the percentage of 15-24 year-olds who tested positive chlamydia out of the total tested.
- Reach of chlamydia services: the percentage of 15-24 year-olds tested for chlamydia infection out of all 15-24 year-olds.
- CP provision of chlamydia screening: the number of CPs offering chlamydia screening services out of the total in a PCT.

- Weighted CP provision of chlamydia screening service: the number of CPs which offer the service per 10 000 15-24 year-olds.

3.3.1.3 Measures and definitions that are related to both services

- PCT deprivation (Index of Multiple Deprivation (IMD) score) (2010): (see section 2.3.1.2).

3.3.2 Data collection

3.3.2.1 The published resources

Teenage pregnancy rates were imported from the health profiles (published 2010) for each PCT (Public Health England, 2010). As in Chapter 2, where the health profile was not available for a given PCT, a weighted mean (based on population size) was calculated using values from the localities within that PCT. The prevalence of chlamydia was imported from the national chlamydia screening website (2010b). The number of CPs within each PCT and number of CPs which were providing an EHC service, chlamydia service or both were obtained from the PNA reports. Demographic characteristics were imported from the office for national statistics (ONS, 2011).

3.3.2.2 The survey

3.3.2.2a Questionnaire design

As in Chapter 2, a questionnaire was designed to collect the data regarding the uptake and the costs of EHC and chlamydia services. The final version is available in Appendix 3. The questionnaire had two sections; section one was related to the EHC service and section two was related to the chlamydia services. The questionnaire asked about the uptake of each service during the financial year 2009/2010 and the costs attributed to the provision of each service; pharmacy payment, overhead costs and medication costs.

3.3.2.2b Ethical approval

The final draft was submitted to the Science, Engineering and Computing Ethics Committee at Kingston University to obtain ethical approval. The Committee met on 21/06/2012, approved the questionnaire and recommended to use the term sexual health services rather than sexual services. The questionnaire was posted to the public health leads of sexual health services in each of the targeted PCTs in November 2012, followed by reminders in December 2012.

3.3.2.2c Validation of the questionnaire

The questionnaire was chosen to ask direct questions about the uptake and costs of EHC service and chlamydia service (Appendix 3). However, to make sure that the questionnaire provide exact data, a comparison between the costs identified from responses was made with the costs found through the PCT investigation 2011 that covered the financial year 2010/2011 (Chemist and Druggist, 2011). No differences were identified and hence the responses from the survey were validated.

3.3.3 Data Analysis

The collected data were coded and entered into SPSS version 17 for analysis.

3.3.3.1 Data analysis for all PCTs

Descriptive analysis was performed on all measures to identify the mean, median and range. Normality distribution was tested for all measures using Shapiro-Wilk test. Correlations between the needs and other factors were tested using Spearman's rank test in case of non-normal distribution and Pearson's coefficient test in case of normal distribution with 95% confidence level in all cases.

3.3.3.2 Data analysis for the sample

3.3.3.2a Comparison between respondent PCTs and non-respondent PCTs

PCTs that responded to the questionnaire were separated from the non-respondents (the rest of PCTs). A comparison between these two groups in terms of all measures identified above was performed using the Mann-Whitney test in case of non-normal distribution and a T-test between two independent samples where a normal distribution was seen (95% confidence level).

3.3.3.2b Sample added measures

This included the two services uptake measures;

A- for the EHC service

- Number of clients who accessed the EHC per month: the number of CP clients who asked for EHC under PGD per calendar month.
- Number of clients who were issued with EHC medication per month: the number of CP clients who accessed CP EHC service and were provided with EHC. In case this number was absent for PCT, the average rate of supply for all PCTs was used.

- Number of clients who accessed the EHC per month per pharmacy: this was calculated by dividing the number of clients who accessed the EHC per month by the number of CPs which were providing EHC.
- Number of clients who were issued with EHC per month per pharmacy: this was calculated by dividing the number of clients who received EHC per month by the number of CPs which were providing EHC.

B- for chlamydia service

- Pharmacy reach of chlamydia screening: the percentage of 15-24 years old in a given PCT who were screened through CPs out of the total population of 14-25 years old.
- Pharmacy share in chlamydia screening: the percentage of 15-24 years old who were screened through CPs out of the total screened through all venues.
- Chlamydia screen per pharmacy (2009/2010): the number of 15-24 years old who were screened per CP during the financial year 2009/2010.

3.3.3.2c Applied statistical tests

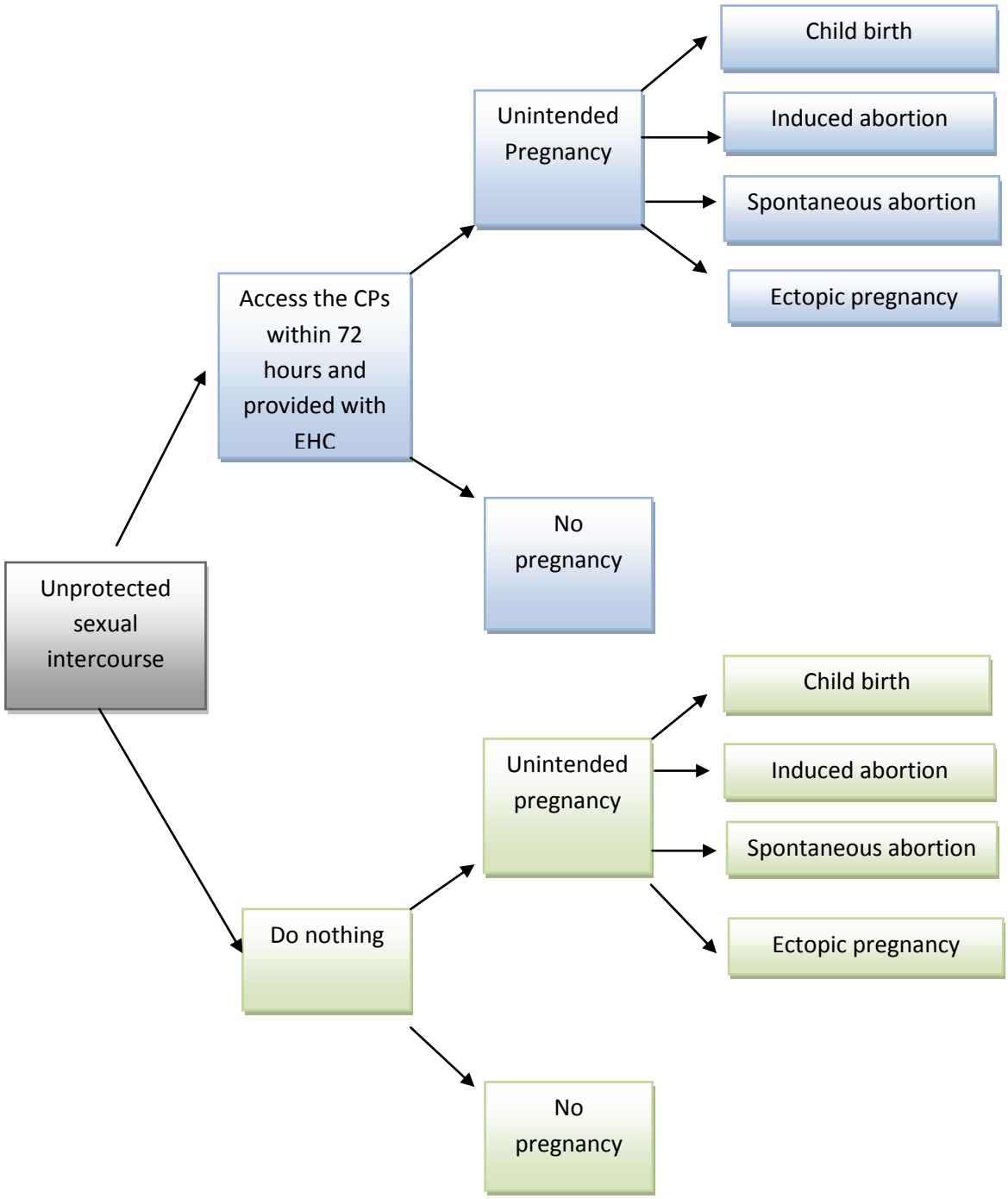
Descriptive analysis (mean, median, range... etc.) was performed on all measures of the sample PCTs as it was performed on all PCTs. In the case of EHC, Pearson's coefficient test was used to identify the correlation between needs and deprivation on one side, and uptake of EHC through CPs on the other. The uptake measures (the number of clients who accessed the EHC service and those who were issued with EHC medication) were $\log_{10}$ transformed to make them closer to normal distribution. Spearman's Rank test was used to investigate the association between uptake and demographic factors (age and ethnicity). In case of chlamydia service, $\log_{10}$ transformed values for chlamydia uptake through CPs were used and Pearson's coefficient test was used to compare the log transformed values with needs and provision. A 95% confidence level was used in all cases.

3.3.3.2d Cost-effectiveness analysis of EHC intervention

A simple cost-effective analysis model was used to compare EHC intervention with no intervention, as described in a Figure 3.1. The analysis was taken from the NHS perspective. The costs of intervention (EHC through CPs) included costs of consultation (payment to CPs), costs of medication and costs of unintended pregnancy. Both of consultation costs and medication costs were calculated based on answers from questionnaires sent to PCTs (Appendix 3). For any missing cost,

the median cost for the rest of PCTs within the sample was calculated and used as a replacement. No costs for medication and consultation were attributed to no-intervention, as it was taken from the NHS perspective.

Figure 3.1: Decision tree following unprotected sexual intercourse



To define the effectiveness of EHC, a meta-analysis of Randomised Control Trial (RCT) studies (which are described in Table 3.1) was conducted. The criteria for

choosing those studies was based on RCT studies that test the observed pregnancy rates for women who used levonorgestrel (one dose 1.5 mg or two doses 0.75 mg12-h apart) within 120 hours of the unprotected sexual intercourse. Creinin and co-workers (2006) calculated the expected pregnancy rates based on Wilcox's method (Wilcox *et al.*, 2001). While the rest of the studies calculated the expected pregnancy rates based on Trussell's method. A meta-analysis of the four RCT studies found that the taking of levonorgestrel following unprotected intercourse one dose or two doses (12 hours apart) was resulted in 93/5 420 (1.72%) as observed pregnancies versus 386/5 420 (7.1%) as expected pregnancies for no intervention (Figure 3.1). The costs of one case of unintended pregnancy (£ 1016) were obtained from Montouchet and Trussell (2013). The costs were related to the costs of unintended pregnancy in England to the NHS in 2010, which agreed with the period of time the collected data was related to (financial year 2009/2010). Thomas and co-workers (2010a) found that the cost of unintended pregnancy was £948 to the NHS in 2007-2008, as it was not related to the financial year 2009/2010, the value was not used. The total costs of an unintended pregnancy equalled to the costs of each event (child birth, induced abortion, ectopic pregnancy and spontaneous abortion) multiplied by its probability (Table 3.2) in the page below.

Table 3.1: Summary of the four RCT which was used in meta-analysis

Study	**Methods**	**Location**	**Time UI (frequency of UI)**	**Results (N. Pregnancies)**	
				Intervention (Observed)	No intervention (Expected)
Glasier *et al.,2010*	RCT. One dose 1.5 mg levonorgestrel	UK, Ireland and USA	Within 120-h (one or more)	25/958	52/958
Creinin *et al.,*2006	RCT. Two doses of levonorgestrel 0.75 mg 12 hours apart	USA	Within 72-h (one or more)	13/774	42/774
Hertzen *et al.*, 2002	RCT. a- One dose 1.5 mg levonorgestre. b- Two doses of levonorgestrel 0.75 mg, 12 hours apart	10 countries	Within 120-h (one)	20/1356 24/1356	111/1356 106/1356
Grimes *et al.*, 1998	RCT. Two doses of levonorgestrel 0.75 mg, 12 hours apart	21 countries	Within 72-h (one)	11/976	75/976

UI: Unprotected intercourse.

Figure 3.2: Forest plot of observed pregnancies using levonorgestrel versus expected pregnancies with no intervention

Study	Levonorgestrel	No intervention	Relative risk (95% CI)
Glasier, 2010	25/958	52/958	0.48 (0.30 - 0.77)
Creinin, 2006	13/774	42/774	0.31 (0.17- 0.57)
Hertzen, 2002a	20/1356	111/1356	0.18 (0.11- 0.29)
Hertzen, 2002b	24/1356	106/1356	0.23 (0.15- 0.35)
Grimes, 1998	11/976	75/976	0.15 (0.08- 0.27)
Total (fixed effects)	93/5420	386/5420	0.24 (0.19- 0.30)
Total (random effects)	93/5420	386/5420	0.25 (0.16- 0.38)

Heterogeneity: Q= 12.95, df= 4, P= 0.012, I^2 = 69.11%
Test for overall effects: Z= - 12.48, P < 0.001.

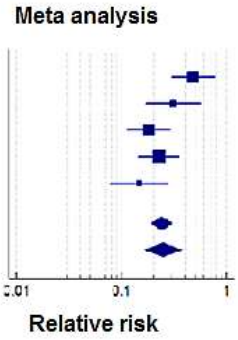


Table 3.2: Costs and probability of pregnancy outcomes

Pregnancy outcome	Probability[1]	Cost[2]	Probability x Cost[3]
Child birth	0.14	£1579	£221
Induced abortion	0.83	£919	£763
Spontaneous abortion	0.02	£375	£8
Ectopic pregnancy	0.01	£2462	£24
Unintended pregnancy[4]	1		£1016

1- Probability of each event was obtained from (Montouchet and Trussell, 2013) for the unintended pregnancies for girls aged 15-24 years old n England for 2010.

2- The costs of each event were derived from (Montouchet and Trussell, 2013).

3- The fourth column is resulted from multiplying probability with cost of each event.

4- Total cost of unintended pregnancy equals to the total costs.

The incremental cost-effectiveness ratio (ICER) of using EHC intervention through CPs versus no intervention was calculated using (Equation 3.1).

$$\text{ICER} = \frac{\text{Costs 1} - \text{Costs 2}}{\text{Probabilty 1} - \text{Probabilty 2}} \qquad \text{(Equation 3.1)}$$

1- Costs 1: costs attributed to EHC intervention = (Costs of consultation per client + cost of medication per client) + (probability of unintended pregnancy (1.7%) × costs of unintended pregnancy (£1 016).

2- Costs 2: costs attributed to no intervention = probability of unintended pregnancy (7.1%) × costs of unintended pregnancy (£1 016).

3- Probability 1: the probability of not getting pregnant using EHC= 100- 1.7 (%)

4- Probability 2: the probability of not getting pregnant with no intervention = 100-7.1 (%).

3.3.3.2e Sensitivity analysis

In order to overcome uncertainty in calculating the incremental cost-effectiveness ratio, a sensitivity analysis was applied to the costs and benefits of EHC intervention in comparison to no intervention. As the costs of intervention (consultation and medication) varied across different PCTs, and the median was used to calculate the incremental cost, the lowest costs of intervention were used in the first scenario and the highest costs were used in the second scenario. The third and fourth scenario were related to the probability of getting pregnant using EHC versus no intervention. The third scenario used the results of Glasier and co-workers (2010) which had the highest risk relative ratio (0.48) in Figure 3.2. The fourth scenario used the results of Grimes and co-workers (1998) which had the lowest risk relative ratio (0.15) in Figure 3.2.

3.4 Results

3.4.1 EHC

Out of the 151 PCTs which were available in 2009/2010, teenage pregnancy rates could not be identified for 5 PCTs and provision of EHC through CPs could not be identified for 7 PCTs. As a result, 139 PCTs were included.

3.4.1.1 Descriptive analysis for the 139 PCTs

The PCTs displayed a wide variation in needs (Figure 3.3), demographic factors (Figure 3.4), and CP provision of EHC (Figure 3.5). The teenage pregnancy rates ranged from 22.1 to 74.8 per 1000 with a median of 43.2 (Table 3.3). Thirty four PCTs had teenage pregnancy rates lower than the lower quartile (34.1) and they belonged to the most affluent PCTs in England and thirty four PCTs had rates higher than the higher quartile (52.4) and they belonged to the most deprived PCTs in England. The deprivation scores also varied across the PCTs from 8.8 to 43.5 with a median of 23.2 (Table 3.3 and Figure 3.3). Thirty three PCTs had a deprivation score lower than the lower quartile (16.4) and 26 out of them were in common with those of teenage pregnancy rates lower than the lower quartile. Thirty four PCTs had a deprivation score higher than the higher quartile (29.5) and 23 out of them were in common with those who had teenage pregnancy rates higher than the higher quartile. In terms of ethnicity, the median proportion of females aged under 60 years old of BME was 8.9% with a range from 1.8 to 53.8% (Table 3.3). The highest 5 PCTs of proportion of BME females (under 60 years old) belonged to London, two out of them belonged to the most affluent PCTs and three belonged to the most deprived PCTs. The CPs provision of EHC varied across the different

PCTs with a median of 52.3% and a range from 5.3 to 90% (Table 3.3 and Figure 3.5). Thirty three PCTs had a CP EHC provision higher than the upper quartile (65.1%), the highest four had a moderate (neither high nor low) teenage pregnancy rates. No outliers were identified in terms of needs, demographic factors or CP provision factors.

Table 3.3: Description of the 139 PCTs

Variable	Median	LQ	UQ	Min- Max
Needs				
Teenage pregnancy rate[1]	43.2	34.1	52.4	22.1- 74.8
Demographic factors				
Deprivation score (IMD)[2]	23.2	16.4	29.5	8.8- 43.5
Female under 16 years (%)[3]	24.1	22.9	24.8	15.1- 29.2
Female under 60 as BME (%)[4]	8.9	4.9	18.8	1.8- 53.8
Female under 16 years as BME(%)[4]	7.8	4.2	18.6	1.4- 56
Female (16-59) as BME %[4]	9	4.9	19.2	1.9- 52.9
Pharmacy provision factors				
CPs per 10 000 female under 60	5.5	4.9	6.2	3.7- 12.5
CPs providing EHC per 10 000	2.8	1.9	3.5	0.3- 5.7
CPs providing EHC (%)	52.3	34.5	65.1	5.3- 90

1- Teenage pregnancy rate: The conception rate per 1000 females (15-17 year olds only).

2- IMD: Index of Multiple deprivations.

3- Female under 16 years (%): The percentage of females under 16 years old out of total females under 60 years old.

4- BME (Black and Minority Ethnic) %: The percentage of Asians, Blacks and Chinese or other ethnicities out of total population.

Figure 3.3: Teenage pregnancy rates histogram

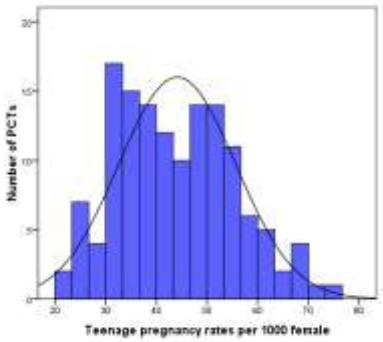


Figure 3.4: Deprivation score histogram

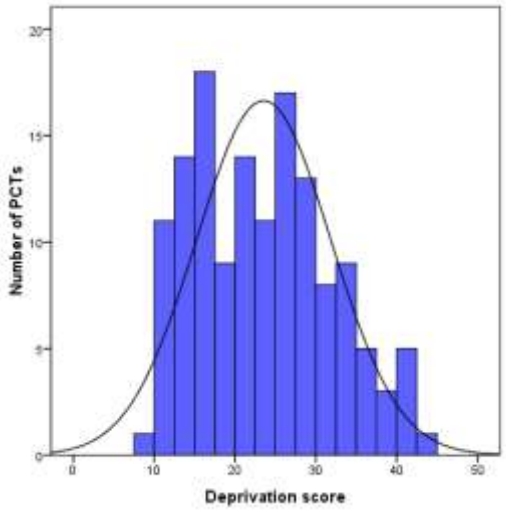
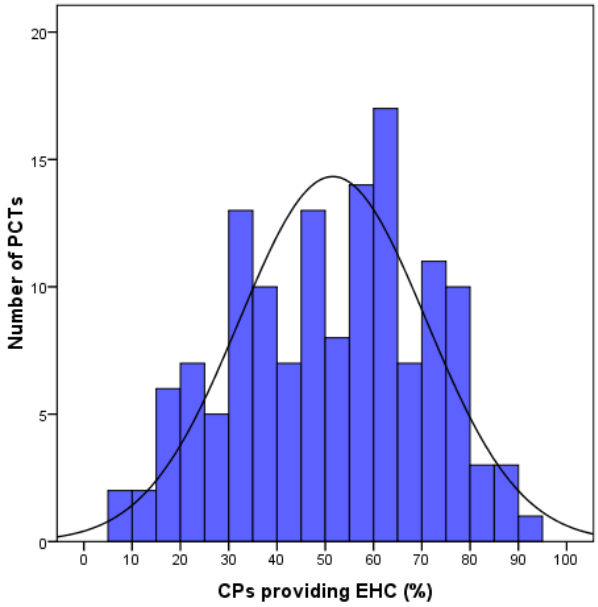


Figure 3.5: CPs providing EHC (%) histogram



3.4.1.2 Association between teenage pregnancy rates (needs) and other factors

Despite the progress that had been made between 1999 and 2009 in reducing teenage pregnancy rates, higher rates were still found to be strongly correlated with deprivation (rho = 0.83, P < 0.001). There was only a weak correlation between teenage pregnancy rate and the ethnic make-up of a PCT (rho = 0.2, P= 0.018). Although there was a greater concentration of CPs in PCTs with greater needs (rho = 0.4, P < 0.001), this did not translate into an improved provision of EHC through

CPs either as a percentage of CPs, or per 10 000 females and as no significant correlation could be identified (Table 3.4).

Table 3.4: Association between needs and other factors

	Rates of teenage pregnancy Rho (P-value)
Demographic factors	
Deprivation score (IMD)[1]	**0.83 (< 0.001)**
Female under 16 years (%)[2]	- 0.145 (0.08)
Female under 60 as BME (%)[3]	0.161 (0.06)
Female under 16 years as BME(%)[3]	0.2 (0.02)
Female (16-59) as BME %[3]	0.145 (0.09)
Pharmacy provision factors	
CPs per 10 000 female under 60	**0.4 (< 0.001)**
CPs providing EHC per 10 000	0.14 (0.1)
CPs providing EHC (%)	0.002 (0.99)

1- IMD: Index of Multiple deprivations.

2- Female under 16 years (%): The percentage of females under 16 years old out of total females under 60 years old.

3- BME (Black and Minority Ethnic) %: The percentage of Asians, Blacks and Chinese or other ethnicities out of total population.

4- Significant correlations were shown in **bold**.

3.4.1.3 Sample PCTs

3.4.1.3a Response rate

15 PCTs responded to the questionnaire which were sent in November 2012 a further 5 PCTs responded to the reminders which were sent in December 2012. The questionnaire asked for the uptake of EHC through CPs. One of the respondents did not provide uptake information so was excluded. As a result, the respondent sample consisted of 19 PCTs. An investigation through the PNA reports provided uptake results for a further 23 PCTs, where the uptake information was related to the financial year 2009/2010. The final sample was 42 PCTs out of 139 PCTs (30% response rate; Figure 3.6). The majority of respondent PCTs belonged to North East, North West and South East of England (Figure 3.7)

Figure 3.6: Explains the process in getting the final sample

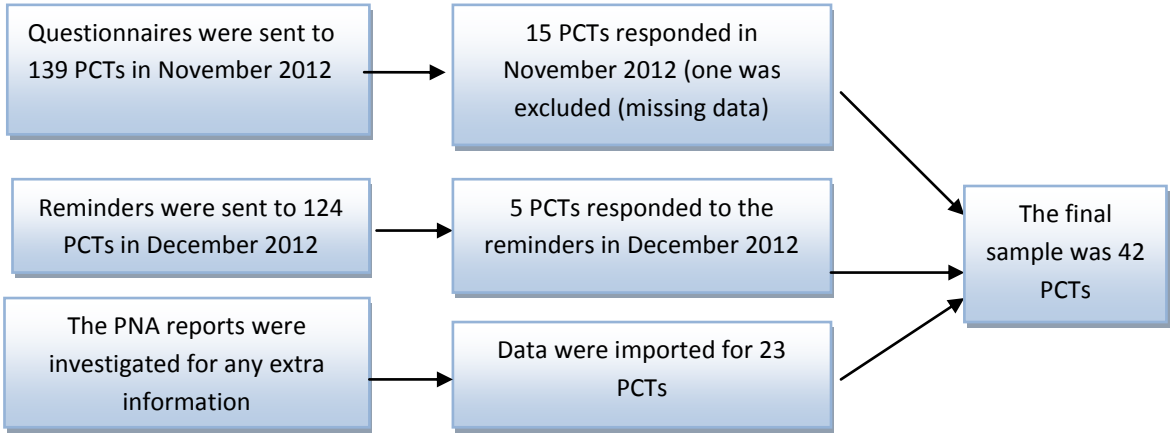


Figure 3.7: Map of PCTs which responded to EHC survey

3.4.1.3b Comparison between respondent and non-respondent PCTs

The results of Mann-Whitney tests between the sample and the rest of PCTs (Table 3.5) showed that median teenage pregnancy rate and median deprivation score were higher in the sample than the rest of PCTs. The median rate of teenage pregnancy per 10 000 was 48.5 for the sample and 41.02 for the rest of the PCTs (P = 0.035). The median deprivation score was 26.00 for the sample and 20.54 for the rest of the PCTs (P = 0.002). However, there was no significant difference in any of the other variables. This indicates that even though there was a higher need

for EHC service in the sample when compared to the rest of PCTs, there was no significant difference in terms of CPs EHC provision.

Table 3.5: Comparison of variables between respondent PCTs (sample) and non-respondents

Variable	Sample Median	Rest of PCTs Median	P-value
Needs			
Teenage pregnancy rate[1]	48.5	41.02	**0.035**
Demographic factors			
Deprivation (IMD)[2]	26.00	20.54	**0.002**
Female under 16 years (%)[3]	24.18	24.03	0.66
Female under 60 as BME (%)[4]	8.04	8.94	0.88
Female under 16 years as BME(%)[4]	7.27	8.28	0.903
Female (16-59) as BME %[4]	8.44	9.38	0.916
Pharmacy provision factors			
CPs per 10 000 female under 60	5.61	5.48	0.499
CPs providing EHC per 10 000[5]	3.04	2.73	0.157
CPs providing EHC (%)[5]	54.15	49.00	0.151

1- Teenage pregnancy rate: The conception rate per 1000 females (15-17 year olds only).

2- IMD: Index of Multiple deprivations.

3- Female under 16 years (%): The percentage of females under 16 years old out of total females under 60 years old.

4- BME (Black and Minority Ethnic) %: The percentage of Asians, Blacks and Chinese or other ethnicities out of total population.

5- For CPs providing EHC per 10 000 female (<60) and the percentage of CPs providing EHC, the mean was used as they were normally distributed, while the median was used for the rest of variables as they were not normally distributed.

3.4.1.3c Descriptive analysis of the sample

Table 3.4 summarises the descriptive results for the sample. There was a wide variation in uptake of EHC through different PCTs. For instance, one PCT only had 10 clients that accessed EHC via CPs per month, while in another PCT 833 accessed the service with a median of 159 clients per month (Table 3.6). Fifteen of the respondent PCTs (36%) dealt with less than 100 clients per month (ten out of them were lower than the lower quartile (66)) and ten PCTs (24%) dealt with more than 300 clients per month (all of them were higher than the upper quartile (303) (Figure 3.8). When the uptake per month was divided by number of CPs within a

PCT, the median number of clients per month per CP was 5 clients with a range from 1 to 86 (Table 3.6 and Figure 3.9). Twenty two PCTs (52.4%) of the respondent PCTs dealt with less than 5 clients per month per CP (Figure 3.9). On the other hand, when the uptake per month was divided by number of females aged between 15 and 24 years old, the median number of clients was 9 with a range from 1 to 45 (Table 3.6 and Figure 3.10). Thirteen PCTs had a number of clients per month per female less than the lower quartile (4) and ten PCTs had a number higher than the upper quartile (14) and nothing was in common within each group.

Figure 3.8: Number of clients who accessed EHC per month histogram

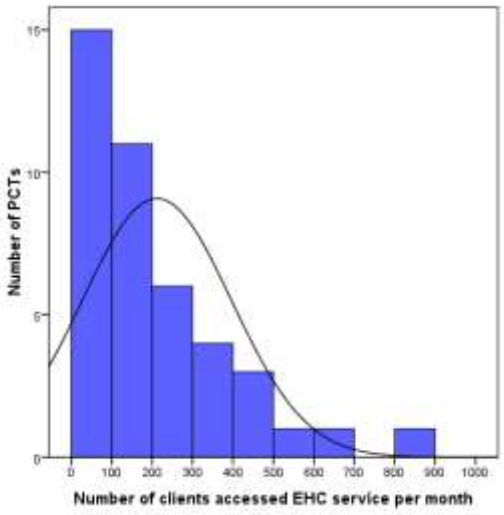


Figure 3.9: Number of clients who accessed the EHC service during calendar month per CPs (3.9a) and per female aged 15-24 years old (3.9b)

Figure 3.9a

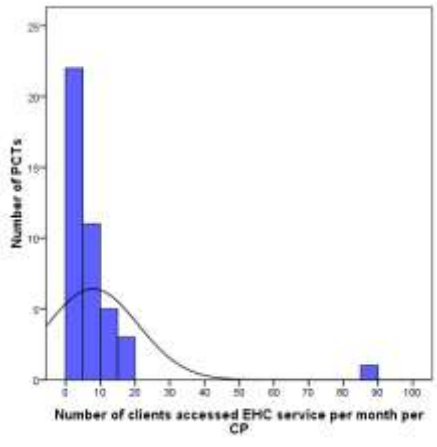


Figure 3.9b

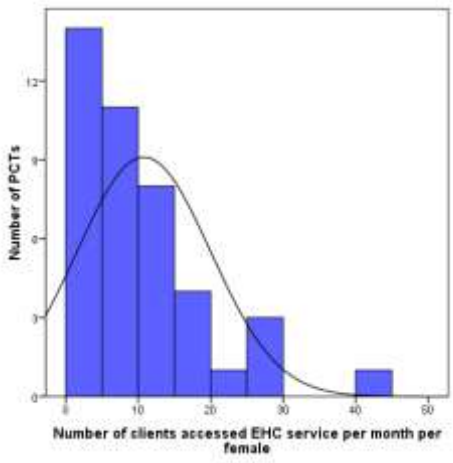


Table 3.6: Description of sample measures

Variable	Median	LQ[10]	UQ[11]	Min- Max
Needs				
Teenage pregnancy rate[1]	48.5	38.5	53.9	25.4- 68.5
Demographic factors				
Deprivation (IMD)[2]	26.0	21.1	33.9	11.3- 43.5
Female under 16 years (%)[3]	24.2	23	24.8	19.4- 29.2
Female under 60 as BME (%)[4]	8.0	4.5	23.3	2.5- 46.4
Female under 16 years as BME(%)[4]	7.3	4.2	21.8	2.2- 55.3
Female (16-59) as BME %[4]	8.4	4.5	23	2.4- 46.1
CP provision factors				
Clients accessed EHC/M[5]	159	66	303	10- 833
Clients issued with medication/M[6]	155	62	291	10- 803
Clients accessed the EHC/M/CP[7]	5	3	8	1- 86
Clients issued with EHC/M/CP[8]	5	3	7	1- 84
Clients accessed EHC/M/F[9]	9	4	14	1-45

1- Teenage pregnancy rate: The conception rate per 1000 females (15-17 year olds only).

2- IMD: Index of Multiple deprivations.

3- Female under 16 years (%): The percentage of females under 16 years old out of total females under 60 years old.

4- BME (Black and Minority Ethnic) %: The percentage of Asians, Blacks and Chinese or other ethnicities out of total population.

5- Clients accessed EHC/M: The number of clients who accessed EHC service during 2009/2010 per calendar month, M stands for Month.

6- Clients issued with medication/M: The number of clients who were issued with EHC medication during 2009/2010 per calendar month.

7- Clients accessed the EHC/M/CP: The number of clients who accessed the EHC/Month per CPs which were offering the EHC.

8- Clients issued with EHC/M/CP: The number of clients who were issued with EHC medication/Month per CPs which were offering the EHC.

9- Clients accessed EHC/M/F: The number of clients who accessed EHC per calendar month per female aged 15-24 years old.

10, 11- LQ stands for Lower Quartile, UQ stand for Upper Quartile.

3.4.1.3d Association between uptake and other variables

All the uptake variables were $\log_{10}$ transformed to make them closer to normal distribution. The uptake factors were measured on three levels; uptake per calendar month, uptake per calendar month per CP and uptake per calendar month per female aged 15-24 years old (it was not possible to get data regarding female 15-17 years old). There was no significant correlation between needs (teenage pregnancy

rates) and uptake per calendar month (Table 3.7). This finding is not surprising as each PCT has different number of population (female under 16 years old). When the uptake was weighted against number of CPs which were offering EHC service, the needs were significantly correlated with the uptake with R of 0.36 and P of 0.02 (Table 3.7). This suggests that CPs in PCTs with higher needs had to deal with higher number of clients per months to meet their local needs as the CPs EHC provision did not match the needs. When the uptake was weighted against number of females aged 15-24 years old, no significant correlation was identified between needs and uptake (Table 3.7). The deprivation did not correlate with any of the uptake factors (Table 3.7). An increase in CPs EHC provision should be accompanied with higher uptake. When this was tested against the uptake per calendar month, it was very close to significantly correlate with the uptake, as P was 0.05 (Table 3.7). However, when the uptake was weighted against the female population aged 15-25, a strong correlation was found with R of 0.51 and P of 0.001 (Table 3.7)

Table 3.7: Associations between uptake and needs and deprivation

Uptake factors	Teenage pregnancy rate R (P-value)	Deprivation (IMD) R (P-value)	CPs providing EHC (%) R (P-value)
Clients accessed EHC/M[1]	0.05 (0.75)	- 0.05 (0.76)	0.3 (0.05)
Clients issued with medication/M[2]	0.06 (0.72)	- 0.05 (0.76)	0.3 (0.05)
Clients accessed the EHC/M/CP[3]	**0.36 (0.02)**	0.29 (0.06)	-0.09 (0.58)
Clients issued with EHC/M/CP[4]	**0.36 (0.02)**	0.29 (0.06)	- 0.09 (0.59)
Clients accessed EHC/M/F[5]	0.21 (0.18)	0.17 (0.29)	**0.51 (0.001)**

1- Clients accessed EHC/M: The number of clients who accessed EHC service during 2009/2010 per calendar month.

2- Clients issued with medication/M: The number of clients who were issued with EHC medication during 2009/2010 per calendar month.

3- Clients accessed the EHC/M/CP: The number of clients who accessed the EHC/Month per CPs which were offering the EHC

4- Clients issued with EHC/M/CP: The number of clients who were issued with EHC medication/Month per CPs which were offering the EHC.

5- Clients accessed EHC/M/F: The number of clients who accessed EHC per calendar month per female aged 15-24 years old.

As both of the uptake and age and ethnicity factors were non-normally distributed, Spearman's rank coefficient was used to test the correlations between the uptake and other factors. No significant correlation was identified between uptake and

ethnicity factors (Table 3.8). The EHC service under PGD was designated to female 16 years old and under, which means that the higher percentages of female 16 years old and under in a PCT, the higher the uptake will be. However, as the age percentages here was for under 16 years old (16 years old not included), no exact conclusion can be withdrawn, as the uptake of EHC was negatively associated with the percentages of females under 16 years old (rho = - 0.38, P = 0.01) in case of clients who accessed EHC per calendar month.

Table 3.8: Association between EHC uptake and age and ethnicity

	Access/M[3] Rho (P-value)	**Treated/M[4] Rho (P-value)**	**Access/M/CP[5] Rho (P-value)**	**Treated/M/CP[6] Rho (P-value)**
Female under 16 years (%)[1]	**- 0.38, 0.01**	**- 0.37, 0.02**	**-0.46, 0.002**	**- 0.47, 0.002**
Female under 60 BME (%)[2]	0.08, 0.61	0.07, 0.64	0.17, 0.28	0.16, 0.32
Female under 16 BME(%)[2]	0.06, 0.69	0.06, 0.73	0.15, 0.34	0.14, 0.38
Female (16-59) BME %[2]	0.08, 0.63	0.07, 0.67	0.17, 0.29	0.16, 0.32

1- Female under 16 years (%): The percentage of females under 16 years old out of total females under 60 years old.

2- BME (Black and Minority Ethnic) %: The percentage of Asians, Blacks and Chinese or other ethnicities out of total population.

3- Access/M: The number of clients who accessed EHC service during 2009/2010 per calendar month.

4- Treated/M: The number of clients who were issued with EHC medication during 2009/2010 per calendar month.

5- Access/M/CP: The number of clients who accessed the EHC/Month per CPs which were offering the EHC.

6- Treated/M/CP: The number of clients who were issued with EHC medication/Month per CPs which were offering the EHC.

7- Significant correlations are shown in **bold**.

3.4.1.3e Cost effective analysis

Cost-effective analysis was performed on the sample set of 42 PCTs (Section 3.4.1.3a). The responses from the questionnaire were used to obtain the cost of consultation and the cost of medication. The cost of consultation was available for 15 PCTs and ranged from £10 to £15.5 with a median of £12.50. The cost of medication ranged from £5.2 to £6 with a median of £5.37. The median cost of consultation and the median cost of medication were used in case of missing values (blank answer from PCT).

The total cost of providing EHC in each PCT includes the total cost of consultations and total cost of medications, where;

$$\text{Total cost of consultation} = \text{cost per consultation} \times \text{number accessed EHC} \quad \text{(Equation 3.2)}$$

$$\text{Total cost of medication} = \text{cost per medication} \times \text{number recieved EHC} \quad \text{(Equation 3.3)}$$

$$\text{The cost per client} = \frac{\text{Total cost of consultation+total cost of medication}}{\text{Number of clients who accessed EHC service}} \quad \text{(Equation 3.4)}$$

The median cost per client was £17.68 ranging from £15.78 to £20.57. The ICER for EHC intervention in comparison to no intervention had a negative value of 688.7. This means that the provision of EHC is cost effective.

Table 3.9: Explains how the ICER was calculated

	EHC intervention	**No intervention**
Costs of consultation and medication	£17.68	No costs
Costs of unintended pregnancy[1]	£17.27	£72.14
Total costs[2]	£34.95	£72.14
Difference in pregnancy rate[3]	5.4%	
ICER[4]	- 688.7	

1- Cost of unintended pregnancy is probability of getting pregnant × cost of unintended pregnancy (£1016) (mentioned in (Montouchet and Trussell, 2013), (1.7% × 1 016) in case of EHC intervention and (7.1% × 1 016) in case of no intervention.

2- Total costs equal to costs of consultation and medication + costs of unintended pregnancy.

3- Difference in pregnancy rate equals to probability of not-getting pregnant using EHC (100- 1.7= 98.3%) minus probability of not-getting pregnant with no intervention (100-7.1= 92.9%).

4- ICER: Incremental cost-effectiveness ratio of EHC in comparison to no intervention.

3.4.1.3f Sensitivity analysis

Table 3.10 presents the results of the conducted sensitivity analysis. In first scenario, when the minimum cost of EHC intervention was used instead of the median, the EHC intervention found to be more cost effective. In the second scenario, when the maximum cost of intervention was used instead of median cost, the EHC intervention was still cost effective. This means that the provision of EHC across all the respondent PCTs was cost effective. The third scenario used an alteration in the probability of getting pregnant with EHC intervention (2.6% rather than 1.7 %) versus the base probability of becoming pregnant (5.4% rather than

7.1%; Glasier *et al.*, 2010). The fourth scenario used an alteration in the probability of getting pregnant with EHC intervention (1.13% rather than 1.7 %) versus the base probability of becoming pregnant (7.68% rather than 7.1%; Hertzen *et al.*, 1998). In all the scenarios, provision of EHC through CPs as an enhanced service was cost effective and it would save at least £384.29 to the NHS.

Table 3.10: Summary of the results of different scenarios used in sensitivity analysis

Scenarios	EHC intervention	No intervention	Difference[6]	ICER
First scenario[1]				
Costs of intervention[3]	£15.78	No costs		
Costs of unintended pregnancy	£17.27	£72.14	5.4%	- 723.89
Total costs	£33.05	£72.14		
Second scenario[2]				
Costs of intervention[3]	£20.57	No costs		
Costs of unintended pregnancy	£17.27	£72.14	5.4%	- 635.19
Total costs	£37.84	£72.14		
Third scenario[4]				
Costs of intervention	17.68	No costs		
Costs of unintended pregnancy	26.42	54.86	2.8%	-384.29
Total costs	44.1	54.86		
Fourth scenario[5]				
Costs of intervention	17.68	No costs		
Costs of unintended pregnancy	11.48	78.03	6.55%	-746.11
Total costs	29.16	78.03		

1- First scenario: Costs of intervention was £15.78.

2- Second scenario: Costs of intervention was £20.57

3- Costs of intervention equal to cost of consultation in addition to cost of medication.

4- The probability of getting pregnant using EHC in third scenario is 2.6% versus 5.4% for no intervention.

5- The probability of getting pregnant using EHC in fourth scenario is 1.13% versus 7.68% for no intervention.

6- Difference: is the difference in pregnancy rates between intervention and no intervention.

3.4.2 Chlamydia services

Based on the PNA reports, there were 111 PCTs out of 151 PCTs providing a chlamydia screening service in the financial year 2009/2010. As a result, this analysis is concerned with those 111 PCTs.

3.4.2.1 Description of the 111 PCTs

The need for chlamydia services (prevalence of 15-24 year-olds testing positive for chlamydia), varied widely across the different PCTs from 2.37% to 13.2% with a median of 6% (Table 3.11 and Figure 3.10). Twenty nine PCTs had a prevalence lower than the lower quartile (4.9), the lowest 12 out of them belonged to London and twenty seven PCTs had a prevalence higher than the upper quartile (7) with one outlier identified with a prevalence of 13.2 (Table 3.11 and Figure 3.10). CPs chlamydia provision as percentage had a mean of 42.4% with a range from 1.1 to 100% (Table 3.11 and Figure 3.11a). When CPs chlamydia provision was weighted against population aged 15-24 years old, the median provision was 6.4 with a range from 0.2 to 19.3 (Table 3.11 and Figure 3.11b). Four out of the highest PCTs in terms of CPs chalmydia provision (as percentage or per 10 000 populations) had a prevalence of chlamydia higher than the upper quartile (7). The total chlamydia service reach also varied across the 111 PCTs with a range from 10.1% to 40.8% and a median of 22.6% (Table 3.11 and Figure 3.12). Seven PCTs which had the highest reach 30% and above belonged to London, 3 out of them had lower needs, two in the middle and 2 had the highest needs among the 111 PCTs

Table 3.11: Description of the chlamydia variables across different PCTs

Variable	Median	LQ	UQ	Min- Max
Prevalence of chlamydia[1]	6.0	4.9	7.0	2.4- 13.2
Deprivation score (IMD)	21.8	16.4	27.8	8.8- 43.5
CP provision % [2]	42.4	20.4	62.2	1.1- 100
Weighted CP provision[3]	6.4	3.4	9.9	0.2- 19.3
Total chlamydia reach %[4]	22.6	19.8	26.3	10.1- 40.8

1- Prevalence of chlamydia: The percentage of 15-24 year-olds tested for chlamydia that tested positive.

2- Pharmacy provision: The percentage of CPs in a PCT offering chlamydia screening.

3- Weighted pharmacy provision: The number of CPs offering chlamydia screening per 10 000 people aged 15-24 year-olds

4- Total chlamydia reach: The percentage of 15-24 year-olds in a PCT that were tested for chlamydia.

Figure 3.10: Chlamydia prevalence among the 111 PCTs

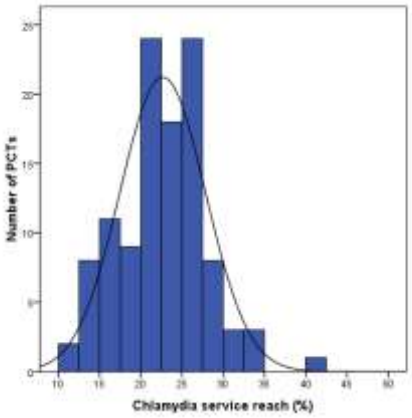


Figure 3.11: CPs chlamydia service provision (3.11a) as percentage and (3.11b) as per 10 000 population

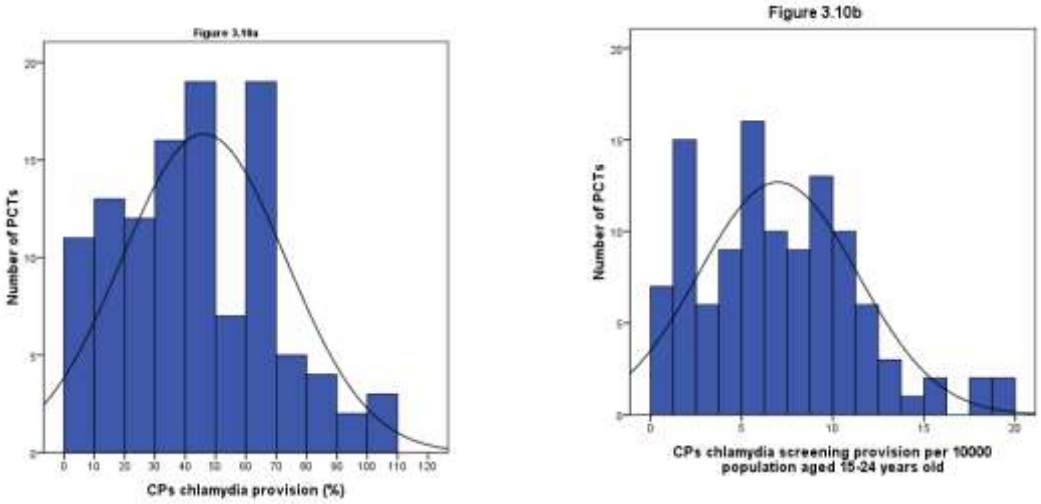
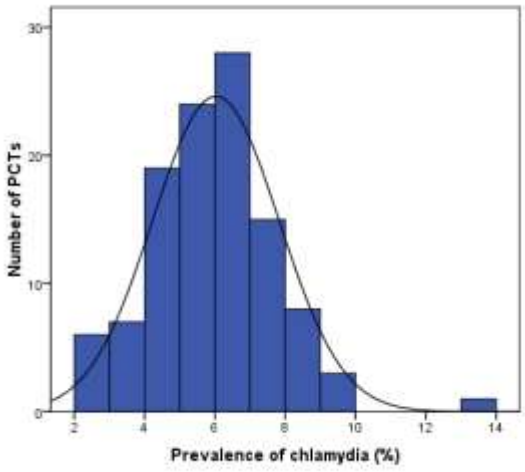


Figure 3.12: Chlamydia service reach out of population aged 15-24 years old



3.4.2.2 Association between need and other factors

The needs for chlamydia service seemed to be slightly correlated with deprivation with rho of 0.25 and P of 0.009. Unlike needs for SSS which had rho of 0.76 (Section 2.4.1.2) and for EHC service which had rho of 0.83 (Section 3.4.1.2). However, the total reach of chlamydia service was significantly correlated with needs with rho of 0.3 and P of 0.001 (Table 3.12). The CP provision of chlamydia services did not correlate with need as either an absolute percentage (P= 0.56), or for weighted pharmacy provision (P = 0.58; Table 3.12).

Table 3.12: Association between needs and other factors

	Prevalence of chlamydia Rho (P-value)
IMD	0.25 (0.009)
Total reach %	0.3 (0.001)
Pharmacy provision factors	
Pharmacy provision %[1]	0.06 (0.51)
Weighted pharmacy provision[2]	0.06 (0.58)

1- Pharmacy provision %: The percentage of CPs which were offering chlamydia screen services out of total CPs within a PCT.

2- Weighted pharmacy provision: The number of CPs which are offering chlamydia screening service to 10 000 people aged 15-24 years old.

3.4.2.3 Sample PCTs

3.4.2.3a Response rate

Questionnaires (Section 3.3.2.2) were sent to 111 PCTs. 12 PCTs responded to the main survey or to a reminder. Data provided was incomplete for 2 PCTs, consequently they were excluded. The PNA reports were used to obtain data for a further 11 PCTs. The final sample was 21 PCTs which represents19% of the total.

3.4.2.3b Comparison between respondent PCTs and non-respondent PCTs

Either a Mann-Whitney test (non-normally distribution) (all variables apart from total reach) or a T-test (normally distribution) (total reach only) was used to compare between the variables for the respondent PCTs and the non-respondents. No significant differences were found between the two groups (Table 3.13). As a result, the sample of respondent PCTs can be used as a representative to the rest of non-respondent PCTs.

Table 3.13: Comparison between respondent PCTs and non-respondent ones

Variable	**Sample Median/Mean[1]**	**Rest of PCTs Median/Mean[1]**	**P-value**
Prevalence of chlamydia	5.58	6.11	0.087
IMD	24.98	21.64	0.324
Total reach (%)[1]	22.61	22.67	0.96
Pharmacy provision factors			
Pharmacy provision (%)[2]	45.92	40.8	0.5
Weighted pharmacy provision[3]	7.05	6.34	0.378

1- Total reach (%): The percentage of 15-24 year-olds who were tested for chlamydia.

2- Pharmacy provision %: The percentage of CPs which were offering chlamydia screen services out of total CPs within a PCT.

3- Weighted pharmacy provision: The number of CPs which are offering chlamydia screening service to 10 000 people aged 15-24 years old.

3.4.2.3c Sample description

Unlike the CP SSS which could reach 6.7% out of total smokers in one PCT (Section 2.4.2.3), CP chlamydia service could not reach more than 0.9% of 15-24 year-olds in any of sample PCTs with a median reach of 0.3% (Table 3.14 and Figure 3.13). CP chlamydia service had a median share in total reach of 1.2% with a range from 0.2 to 6.3% (Table 3.14 and Figure 3.14), while CP SSS had a median reach of 12% with a range from 0.6 to 53.3% (Section 2.4.2.3). The uptake per CP was poor, as in its best result, CPs had not to deal with more than 21 persons per year (Table 3.14). Two PCTs had a number of clients screened per CP lower than the lower quartile (2) and they belonged to the North West of England and four PCTs screened a number of clients higher than the upper quartile (8) and they belonged to London, Yorkshire and the Humber, West Midlands and South East Cost of England (Table 3.14).

Figure 3.13: Pharmacy reach of young people across different PCTs

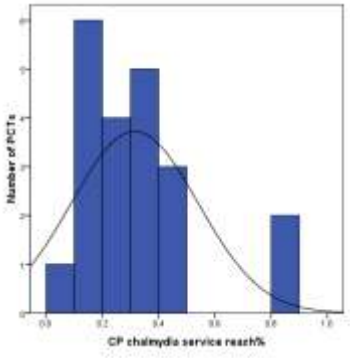


Figure 3.14: Pharmacy share in reach of their young people across different PCTs

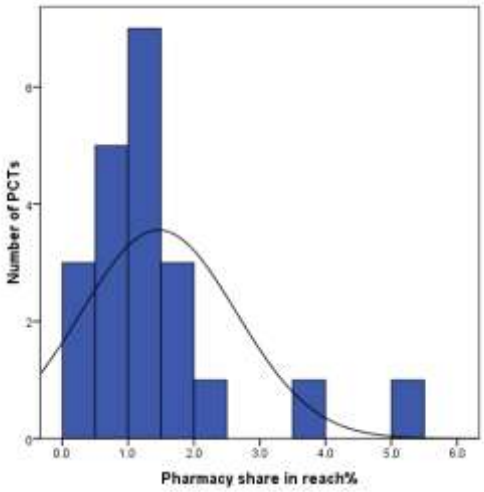


Table 3.14: Description of sample needs, provision and uptake

Variable	Median	LQ[6]	UQ[7]	Min- Max
Prevalence of chlamydia	5.6	4.3	6.5	3.2- 7.0
Deprivation score (IMD)	25	16.5	34.0	8.8- 41.0
Total reach %	23.7	21.6	26	10.1- 29.5
Pharmacy provision%[1]	45.9	31.8	31.9	5.3- 95.4
Weighted pharmacy provision[2]	7.1	5.3	10.2	0.6- 19.4
Pharmacy reach%[3]	0.3	0.1	0.4	0.1- 0.9
Pharmacy share%[4]	1.2	0.8	1.7	0.2- 6.3
Screen per pharmacy[5]	4	2	8	0.4- 21.3

1- Pharmacy provision: percentage of CPs in a PCT offering chlamydia screening.

2- Weighted pharmacy provision: number of CPs offering chlamydia screening per 10 000 15-24 year-olds

3- Pharmacy reach: percentage of 15-24 year-olds screened through CPs.

4- Pharmacy share: percentage of 15-24 year-olds screened through CPs out of all venues.

5- Screen per pharmacy: average number of young people in a PCT screened per CP.

6- LQ: stands for Lower Quartile.

7- UQ: stands for Upper Quartile.

3.4.2.3d Association between need, provision and uptake

The pharmacy uptake variables were log $_{(10)}$ transformed to approach normal distribution. The uptake through pharmacies did not match with needs or deprivation, as no significant correlation could be identified. Unlike SSS and EHC services, where the increase in pharmacy provision resulted in higher uptake (Sections 2.4.2.4 and 3.4.1.3d), the increase in CP chlamydia service provision did not improve the uptake (Table 3.15). Contrary, the increase in provision resulted in lower screen per pharmacy (R= - 0.59, P = 0.005) in case of pharmacy provision as percentage and (R= - 0.57, P = 0.007) in case of pharmacy provision per 10000 population (Table 3.15).

Table 3.15: Association between needs, provision and uptake

	Pharmacy reach[3] R (P-value)	**Pharmacy share[4] R (P-value)**	**Screen per pharmacy[5] (P-value)**
Prevalence of chlamydia	-0.11 (0.65)	-0.1 (0.68)	- 0.11 (0.64)
Deprivation score (IMD)	- 0.05 (0.83)	- 0.23 (0.32)	0.23 (0.32)
Pharmacy provision			
Pharmacy provision (%)[1]	0.14 (0.54)	0.11(0.63)	- 0.59 (0.005)
Weighted pharmacy provision[2]	0.24 (0.31)	0.20 (0.38)	- 0.57 (0.007)

1- Pharmacy provision: percentage of CPs in a PCT offering chlamydia screening.

2- Weighted pharmacy provision: number of CPs offering chlamydia screening per 10 000 15-24 year-olds

3- Pharmacy reach: percentage of 15-24 year-olds screened through CPs.

4- Pharmacy share: percentage of 15-24 year-olds screened through CPs out of all venues.

5- Screen per pharmacy: average number of young people in a PCT screened per CP.

3.5 Discussion

3.5.1 Needs, provision and uptake of EHC

Despite all the progress that has been made in reducing teenage pregnancy rates in England, following the Government plan which was set in 1999, rates of teenage pregnancies are still highly associated with deprivation at PCT level, which agrees with Conrad's findings (2012). In 1998, prior to the deregulation of EHC, women said that they did not use EHC because it was hard to get (Galsier and Baird, 1998). However, the deregulation and hence the availability through CPs provided more rapid access when compared to sexual health clinics (Black *et al.*, 2008;

Anderson and Blenkinsopp, 2006). The role of CPs in delivering EHC service is underutilised. Despite the fact that there is a higher concentration of CPs in PCTs with higher rates of teenage pregnancies, this was not translated into a higher number of CPs which were offering EHC service under PGDs (Section 3.4.1.2). This contradicts the action plan which was set by the Government in its white paper "pharmacy in England- building on strengths- delivering the future" to improve access to contraceptive services through CPs (DH, 2008a). As there was no increase in provision of EHC (as percentages), pharmacists in PCTs with higher rates of teenage pregnancies had to deal with higher number of teenagers when compared to PCTs with lower rates with R of 0.36 and P of 0.02 (Section 3.4.1.3d). Unfortunately, even this high uptake per CP of EHC in PCTs with higher needs did not reach a level to make the total uptake of EHC through all CPs in deprived PCTs significantly high. In other words, as the provision of EHC did not match the needs, whereas the overall uptake of EHC is correlated with the provision (R=0.51), this meant that the uptake is not correlated with needs despite the efforts of pharmacists. The effect of this uncorrelated needs and uptake is arguable, as many studies found that improving accessibility of EHC led to a higher uptake and earlier use (Black *et al.*, 2008; Oza, 2009), but the direct link between uptake of EHC and public unintended pregnancy rates and abortion rates is still undefined (Glasier, 2013; Gross *et al.*, 2014) as unintended pregnancy rates is connected with different social, economic and cultural factors (Glasier, 2013).

3.5.2 Needs, provision and uptake of chlamydia

Chlamyida prevalence was not highly connected with deprivation as in case of smoking prevalence (Section 2.4.1.2) and teenage pregnancy rates (Section 3.4.1.2). Consequently, the provision of chlamydia services should mainly match with needs (chlamydia prevalence) and partially with deprivation. Despite chlamydia services in general (through all providers) being able to reach more young people in PCTs with higher needs with rho of 0.3 and P of 0.001, this significant increase is still weak and need to be improved (Section 3.4.2.2). The role of CPs in delivering chlamydia services was still restricted, as the study did not identify a correlation between the needs and the provision of chlamydia services through CPs (Section 3.4.2.2). Furthermore, the increase in provision of chlamyida services through CPs was not associated with higher uptake (Section 3.4.2.3d). This agreed somehow with previous studies which found that despite the service being feasible and accessible (Anderson and Thornley, 2011) and that a good percentage use CPs for picking up testing kits and giving a specimen, the number of tests that were

conducted through CPs were limited (Saunders *et al.*, 2012) and CPs were among the last choice for performing the tests (Brugha *et al.*, 2011). Targeting the clients who accessed EHC for chlamydia screening through CPs was an effective option to increasing the uptake of chlamydia services (Brabin *et al.,* 2009; Gudka *et al.*, 2013; Gudka *et al.*, 2014). However, an improvement in CPs premises might improve the uptake, especially the toilets facilities that are necessary to provide the screening in CPs and hence guarantee that the kits provided will be used and the specimen will be given to be tested. Training of other members of the pharmacy team to provide the chlamydia services in addition to the pharmacist can free the pharmacist's time and increase the uptake (Duggan *et al*., 2013).

3.5.3 Cost-effectiveness of CP EHC service provision

The findings from the cost-effectiveness analysis showed that the EHC service was cost-effective when compared to no intervention based on using median costs of intervention and mean of meta-analysis of effectiveness of EHC versus no intervention (Section 3.4.1.3e). Furthermore, the sensitivity analysis showed that the EHC service was still cost effective, even if the higher cost of intervention which was found through PCTs' responses was used (Section 3.4.1.3f). The service is still cost effective when the difference in probability in getting pregnant following unprotected sexual intercourse of EHC versus no intervention (2.6% versus 5.4% for no intervention; Glasier *et al.*, 2010) was used (Section 3.4.1.3f).The incremental cost per QALYs gained could not been identified as unintended pregnancy is accompanied with life and life had a value of 1 and death has a value of 0 in terms of QALYs .Marciante and co-workers (2001) found that the ICER for obtaining EHC from pharmacies over other venues was $48 (£33) from public payer perspective and $158 (£109) from private payer perspective over a period of 9 months. On the other hand, Trussell and co-workers (2009) found that the ICER of levenorgestrel intrauterine system is $930 when compared to no method. The study identified that the ICER per one prevented unintended pregnancy is £688.7 (Section 3.4.1.3e).

3.6 Limitation of the study

The study had a low response rate (30%) in case of EHC service and (19%) in case of chlamydia service. The costs for providing EHC service were not identified for some PCTs. The needs for teenage pregnancies were identified based on rates of teenage pregnancies per 1000 female aged between 15-17 years old. The service is mainly aimed to target 16 years and younger females. As it was not possible to

obtain data regarding the 16 years and younger female, this suggests that results should be interpreted with caution.

3.7 Conclusions

The analysis through all targeted PCTs (139) in case of EHC service and (111) in case of chlamydia service, identified that there is a strong correlation between needs and deprivation in case of EHC service and a weak correlation in case of chlamydia service. The provision of each service through CPs did not match with the needs. However, The higher concentration of CPs in case of higher needs for EHC service might compensate this shortness. Chlamydia service uptake through all providers (including CPs which did not participate in more than 1.2% of total uptake) was able to meet the needs. An increase in CP EHC provision would result in higher uptake of the service. Contrary, the increase in CP chlamydia provision may not necessary result in an increase in uptake of the service. Finally, the CP EHC provision was cost-effective from the NHS perspective.

3.8 Future of EHC

Ulipristal the second pill which requires a prescription to be dispensed in case of unprotected sexual intercourse could be the future of EHC (NHS Choices, 2013). Ulipristal is more effective than levonorgestrel (EHC), with 1.8% as failure probability for ulipristal versus 2.6% for levonorgestrel (Galsier *et al.*, 2010). Thomas and co-workers (2010a) found that using ulipristal rather than levenorgestrel within 120 hours following unprotected intercourse would save the NHS £311 in terms of preventing one intended pregnancy. Bayer and co-workers (2013) found that using ulipristal versus levonorgestrel could save $116.3 million annually in USA from a societal perspective.

Chapter Four: Vascular and sexual health pharmacy services and Healthy Living Pharmacies (HLPs)

4.1 Introduction

The role of CPs as centres to promote healthy living was emphasised during the introduction of the new NHS in 2000 and through two published white paper documents (DH, 2000a; DH, 2003a). In April 2008, the DH in England published its document "Putting prevention first- Vascular checks: risk assessment and management" (DH, 2008b). The document provided a plan for a vascular risk assessment programme for people aged between 40 and 74 years old. Few days after this publication the DH published its white paper "Pharmacy in England- building on strengths, delivering the future" (DH, 2008a). The white paper implemented how pharmacist should participate in delivering vascular risk assessment programme (called as NHS health check) alongside other services that promote healthy living such as SSS, EHC and chalmydia services (DH, 2008a). There was good evidence to support the effectiveness of commissioning those services through CPs, especially the case of SSS and NHS health check (defined in Section 1.5.2) (Brown *et al.*, 2012). Eades and co-workers (2011) found in their review that pharmacists considered public health services as important and part of their role, in addition to their roles in medicines management. The barriers identified in their review included lack of time, lack of counselling room, low demand and lack of training. However, in England most CPs has a consultation room to conduct a private consultation with the patient (Merks *et al.*, 2014). With regards to training, pharmacists had to take special training to provide vascular and sexual health pharmacy services (Noyce, 2007). Pharmacists seemed to be able to provide health services that are comparable to that provided by doctors in terms of health care (Tinelli *et al.*, 2013). In 2009, Portsmouth City PCT developed a model to turn a pharmacy into a healthy living centre. In this model, pharmacist should promote health and wellbeing by consistent delivering of pharmacy services. The services include delivering targeted respiratory medicines use reviews and delivering enhanced services including at least one of EHC, chlamydia screening, alcohol service and weight management in addition to SSS. The DH supported this model and commissioned Portsmouth City PCT (on behalf of South Central SHA) to develop a national framework for HLPs, based on Portsmouth model (Duggan *et al.*, 2013). The HLP framework is a tiered framework aimed to deliver health services that meet local needs, promote the health and wellbeing of local population and help reduce health inequalities, through achievement of consistent delivery of

those services (Duggan *et al.*, 2013). An HLP requires special development in terms of the workforce team, premises and relationship with the local community and other health care professionals (especially GPs). In case of the workforce team, the pharmacy should have a HLC (a special trained person in the pharmacy team, not a pharmacist, who shows an interest in the HLP scheme and is ready to be the main contact point to deliver HLP services, answer clients' enquiries and be a role model for other staff. The premises should have facilities that are appropriate to provide the HLP services. The HLP should achieve and maintain high quality delivery of HLP services (Duggan *et al.*, 2013). Findings from the Portsmouth case showed a significant increase in the uptake of vascular and sexual health services in HLPs; especially SSS and respiratory medicine review, while the uptake of EHC was comparable (Brown *et al.*, 2014). The HLP scheme was expanded to 30 PCTs (known as HLP pathfinders).The results of HLP pathfinders, showed an increase in the number of smokers who set a quit date in 7 PCTs out of 9, an increase in number of smokers who quit smoking in 7 PCTs out of 9 and an increase in quit rates in 4 PCTs out of 9. In case of EHC, 3 PCTs out of 6 showed an increase in the number of consultations (Duggan *et al.*, 2013). Pharmacists were the focal points in delivering EHC and chlamydia, while the pharmacy team other than pharmacist were the focal points in more than half of SSS provision in an HLP (Duggan *et al.*, 2013). Lack of time was a major barrier in regards to provision of SSS (Kissiwaa *et al.*, 2012; Thomas *et al.*, 2013).This suggests that if the pharmacy team participated in delivering SSS, the uptake of SSS might increase (Duggan *et al.*, 2013).

4.2 Aims and objectives

The aim of this Chapter is to assess the provision and uptake of vascular and sexual health pharmacy services through CPs on CP level and how this changed following the introduction of HLP scheme. It also aimed to delineate the perception of pharmacists regarding the commissioning and provision of these services.

The aim is translated into the following objectives:

A. To identify the type of vascular and sexual health pharmacy services that are being provided.
B. To determine the current level of provision of each service from current providers and the future willingness from non-providers.

C. To consider the perception of pharmacists with regards to the importance of vascular and sexual health pharmacy services, pharmacists' motivation to provide such services and the barriers to provision.
D. To determine, based on pharmacists' opinion, whether the introduction of the HLP scheme altered public awareness/perception, and hence the uptake of services.
E. To assess the pharmacist perceptions regarding reasons for relapse in quit smoking and how to reduce rates of relapse.

4.3 Method

4.3.1 Questionnaire development

A questionnaire for pharmacists was developed utilising some of the questions asked by PCTs in their PNA reports (Wolverhampton city, Milton Keynes, and Barking and Dagenham PCTs) (Appendix 4). The final version (Appendix 5) was 10 pages long and consisted of 20 closed questions distributed into five sections, and two open questions. All questions were directed to community pharmacists to gauge their perceptions and obtain quantitative data regarding services. Section one had four questions on the provision, importance, motivation for provision and uptake of vascular and sexual health services. Section two had two questions to identify barriers related to the provision of enhanced services. Section three had six questions on the current implementation of HLPs and the effect that HLPs have had on the awareness and uptake of enhanced services. Section four had four questions about public awareness of pharmacy services and how to improve success of SSS through CPs. Section five had four questions on general information about the pharmacist and the pharmacy.

At the end of section four there was an open ended question for any comment or extra information the pharmacist wanted to add.

4.3.2 Ethical approval

The research was conducted in accordance with Kingston University ethical policy (as it involved approaching pharmacists). An ethical approval (RE4) form (Appendix 5) was filled out prior to commencing the research. This was reviewed and approved by the Ethics Committee of the Science, Engineering and Computing Faculty at Kingston University.

The project information was made available through the covering letter which was attached to the questionnaire (a copy of this letter is available in Appendix 5).

Anonymity of respondents was guaranteed by the research student at all stages of the research.

4.3.3 Pilot study and questionnaire validation

The questionnaire was designed based on PNA reports. The questionnaire was then reviewed by the supervisory team. Then, the questionnaire was given to 5 community pharmacists in Kingston to ascertain its content and face validity. Pharmacists were asked to test the physical appearance of the questions, the flow of the questionnaire, any difficulty in understanding or answering the questionnaire and the time needed to fill in the questionnaire. The responses from the pharmacists showed an overall satisfaction with all aspects of the questionnaires. Hence, a pilot study was conducted to validate the questionnaire.

4.3.3.1 Pilot sample

At the time the research was conducted (2011/2012), there were 11 236 CPs within England (HSCIC, 2012a). The pilot sample size suggested by previous researchers ranged between 24 and 50 CPs (Lancaster *et al*., 2004; Hertzog, 2008). Five PCTs were chosen for the pilot (Kingston, Sutton and Merton, Wandsworth, Richmond and Lambeth). Two factors influenced the choice of those PCTs; the first four were chosen based on their location (South West London) where the researcher can hand the questionnaire. Lambeth PCT was chosen because it was one of the 30 HLP pathfinders (Duggan *et al.*, 2013). The number of CPs in the four PCTs was identified through their PNA reports and the sample size was calculated with 95% confidence level and 5 as interval level using an electronic sample size calculator (http://www.surveysystem.com/sscalc.htm). As a result, 188 CPs was chosen to be surveyed from the four PCTs (28, 65, 54, 41) in Kingston, Sutton and Merton, Wandsworth and Richmond, respectively. In case of Lambeth PCT, the full details of the 21 HLPs in the PCT were provided by Lambeth PCT. Hence, the final pilot sample was 188+21= 209.

4.3.3.2 Questionnaire distribution

The questionnaire was handed to CPs in Kingston and Richmond PCTs and was posted to the CPs in the other 3 PCTs in February 2013 along with a stamped, addressed envelope. A code for each pharmacy was written inside the envelope to identify non-respondents.

4.3.3.3 Pilot results

Out of 209 CPs surveyed 52 responded (25%). The responses showed overall satisfaction with the questionnaire in terms of ease to answer the questions. In

order to test the reliability of the questionnaire, the internal consistency of the Likert scale (a scale used to measure the level of agreement with 6 points, from strongly disagree (point 1) to strongly agree (point 6) was tested, as it was recommended by Gliem and Gliem (2003). The Likert scale of 6 items that measured pharmacists' perceptions towards the current and future of enhanced pharmacy service upon introduction of HLP scheme had a Chronbach's alpha value (α) of 0.77 for internal consistency, which is higher than the 0.7 as the value suggested by Nunnaly for an acceptable reliability of questionnaire (Santos, 1999). Consequently, the version used for the pilot survey was used for the main survey.

4.3.4 Main sample

The main sample was n=1 249 CPs (including the 209 CPs in pilot study). The sample was distributed between 28 PCTs across England from North to South and from East to West (Table 4.1 and Figure 4.1). The main sample size was calculated based on the total number of CPs within each PCT, then calculating the sample size based on 95% confidence level and 5% confidence interval using an electronic sample size calculator (http://www.surveysystem.com/sscalc.htm).The criteria for choosing those PCTs were based initially on the PNA reports, where provision of vascular and sexual health pharmacy services was identified. PCTs with higher CP provision (%) of vascular and sexual health services and PCTs with lower CP provision of those services were chosen to be surveyed (Table 4.1). For instance, Stockport and Bedfordshire PCTs had a low level of provision of vascular and sexual health services, while Knowsley, Isle of Wight and Wandsworth PCTs had a high level of provision (Table 4.1). Seven of the chosen PCTs (Blackburn with Darwen, Brighton and Hove City, Dudley, Hastings and Rother, Isle of Wight, Lambeth and Portsmouth) were HLP pathfinder PCTs. Furthermore, the feasibility of those PCTs to represent the rest of PCTs in England was tested in terms of demographic characteristics, needs for vascular and sexual health services and pharmacy provision (Section 4.3.4.1).

Table 4.1 Chosen PCTs to be surveyed based on average provision of services

PCT	Location	Average provision of services[3]
Knowsley	North West	78.43
Isle of Wight*	South Central	71.11
Greenwich Teaching	London	69.14
Southwark	London	67.21
Portsmouth City*	South Central	66.67
Wandsworth	London	66.67
Croydon	London	65.28
Richmond & Twickenham	London	63.04
Lambeth*	London	60.10
Blackburn with Darwen*	North West	59.69
Middlesbrough	North East	55.95
Haringey Teaching	London	51.46
Dudley*	West Midlands	48.99
Warwickshire	West Midlands	48.98
Medway	SEC[1]	48.00
Sutton and Merton	London	45.30
Doncaster	Y&H[2]	43.98
Kingston	London	37.78
North Somerset	South West	37.50
Brighton and Hove City*	SEC[1]	37.29
Bexley	London	35.56
Blackpool	North West	33.33
Hastings and Rother*	South East	32.43
Bristol	South West	32.20
Lewisham	London	28.4
Leeds	Y&H[2]	25.05
Bedfordshire	East England	18.41
Stockport	North West	8.33

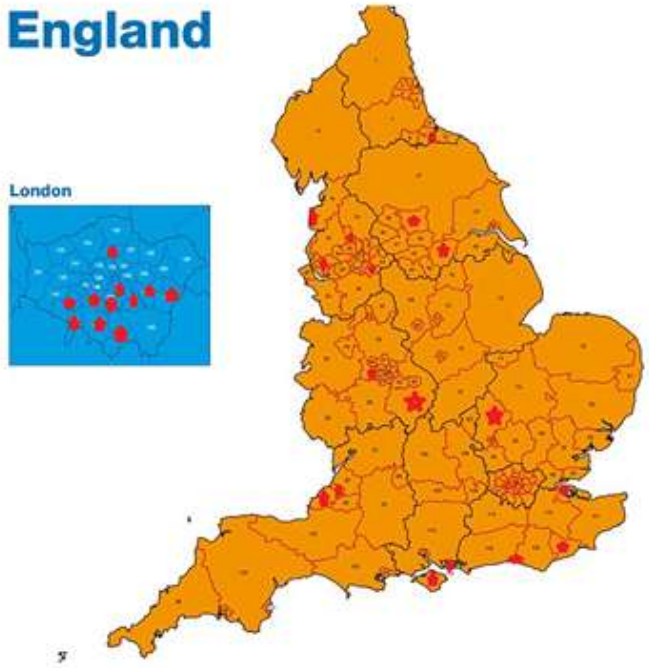
1- SEC: stands for South East Coast.

2- Y&H: stands for Yorkshire and the Humber.

3- Average provision of services is the mean of percentages of CPs in each PCT which offered SSS, EHC and chlamydia screening service in 2009/2010.

* HLP finder PCTs.

Figure 4.1 Map of surveyed PCTs



4.3.4.1 Sample selection

Normality distribution of each category (i.e. demographic characteristics, needs and provision) was initially tested using Shapiro-Wilk test. To investigate the difference between the chosen PCTs to be surveyed and the rest of PCTs in England, T-test of two independent sample was applied in case of normal distribution and Mann-Whitney test was applied in case of non-normality distribution for any of the above mentioned categories (i.e. demographic characteristics, needs, ..., etc). A 95% value was applied as confidence level. T-test was applied in all cases apart from case of BME%, where Mann-Winey test was applied (Table 4.2). The P-value in all cases apart from chlamydia screening provision through CPs was higher than 0.05, which meant that there was no significance difference between the sample and the rest of PCTs in terms of demographic characteristics, needs and pharmacy provision of vascular and sexual health pharmacy services. As a result, the sample of chosen PCTs to be surveyed was considered as a representative of the rest of PCTs in England.

Table 4.2: Tests between the main sample and the rest of PCTs

Variable	Sample Mean/Median	Rest of PCTs Mean/Median	P-value
Demographic characteristic			
Deprivation score	24.92	22.92	0.26
Male (%)	52.26	52.53	0.1
BME (%)[1]	11	12.58	0.21
Needs for services			
Prevalence of smoking adults	23.31	22.85	0.65
Teenage pregnancy rates	47.31	43.23	0.12
Chlamydia prevalence (%)	6.55	6.91	0.84
Pharmacy provision factors			
SSS provision (%)	55.18	59.39	0.39
EHC provision (%)	49.91	50.70	0.86
Chlamydia screening provision (%)	43.55	30.81	**0.04**

1- BME (%): percentages of Asian, Black, Chinese or other ethnicities out of total ethnicities.

2- Significant difference was shown in **bold**.

4.3.4.2 Questionnaire distribution

The questionnaires were posted to the randomly chosen CPs in May 2013 along with a covering letter (Appendix 5) and a stamped, self-addressed envelope. Respondents were given a period of three weeks to respond to the questionnaire. Envelopes had the codes to identify which pharmacies had responded. Non-respondents were contacted by telephone follow up in June 2013, to investigate their interest in filling out the questionnaire in order to send them another copy of the questionnaire.

4.3.5 Data analysis

Data from the respondents were coded and carefully entered into SPSS® version 17 for data analysis, including descriptive analysis of the sample distribution. The socioeconomic status of a pharmacy's user was predicted from the postcode. Townsend Deprivation Index (TDI) was used in this research, where the 34 753 LSOAs (identified in Section 2.3.1.2) in England were divided into five equal groups; group 1 includes 20% of most deprived LSOAs in England and group 5 includes 20% of least deprived LSOAs in England. CPs were allocated to the appropriate group based on the postcode. Differences in provision and willingness to provide services were tested using Chi-squared test (as the answers to those questions were yes or no). Differences in the uptake of each service were tested using Mann-

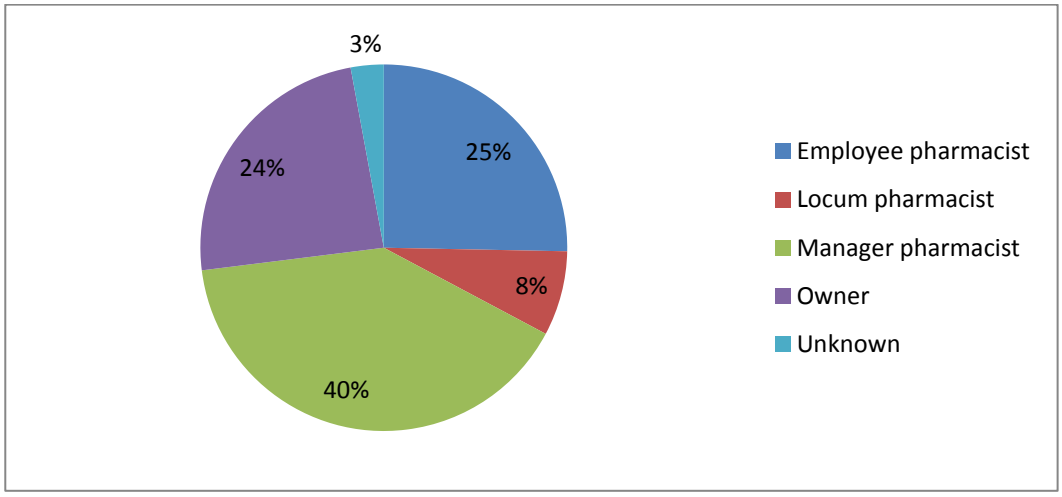
Whiney test in case of two categories only such as case of gender (male, female) and case of HLP status (HLP or non-HLP) and were tested using Kruskal-Wallis test in case of more than two categories (deprivation status, years of experience and type of CP) .

4.4 Results

4.4.1 Response rate and sample demographics

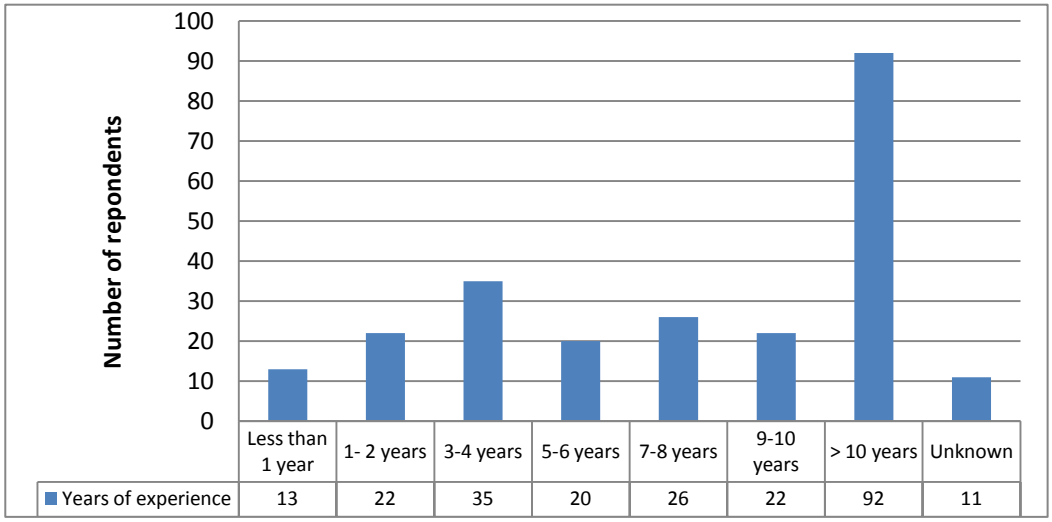
The response rate was 19.3% (241 pharmacists responded out of the 1 249 who were surveyed). The majority of responses came from CPs of PCTs with higher level of provision of SSS, EHC and chlamydia screening services. Of the 241 pharmacists who responded 118 were females (49%) and 117 were males (48%) and 6 were unknown (blank answers) (3%). A further investigation into the role of pharmacists who responded to the survey showed that the highest respondents were managers (97/241), followed by employee pharmacists (61/241) and owners (58/241). Few respondents were locum pharmacists (18/241) and 7 respondents chose not to declare their role (Figure 4.2).

Figure 4.2: Roles of CPs who responded to the survey



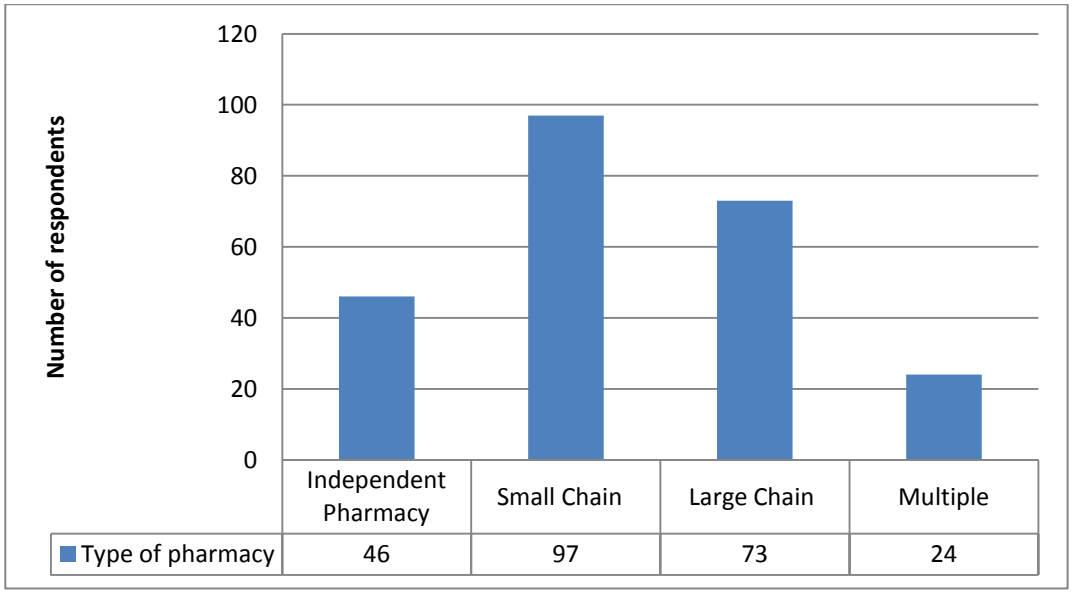
The highest percentage of respondent pharmacists 38% (92/241) had more than 10 years' experience and only 5% (13/241) had an experience of less than one year (Figure 4.3). The remaining respondents had the following experience; 1-2 years (15%) 35/241, 3-4 years (8%) 20/241, 5-6 years (11%) 26/241, 7-8 years (9%) 22/241 and (5%) 11/241 chose not to declare their experience. This shows that the answers of the questionnaire are coming mainly from experienced pharmacists.

Figure 4.3: Experience of CPs who responded to the survey



The highest percentage of respondent pharmacists came from small chain (40%) 97/241, followed by large chain (30%) 73/241, independent pharmacy (19%) 46/241 and multiple (10%) 24/241 (Figure 4.4).

Figure 4.4: Type of CPs which responses came from



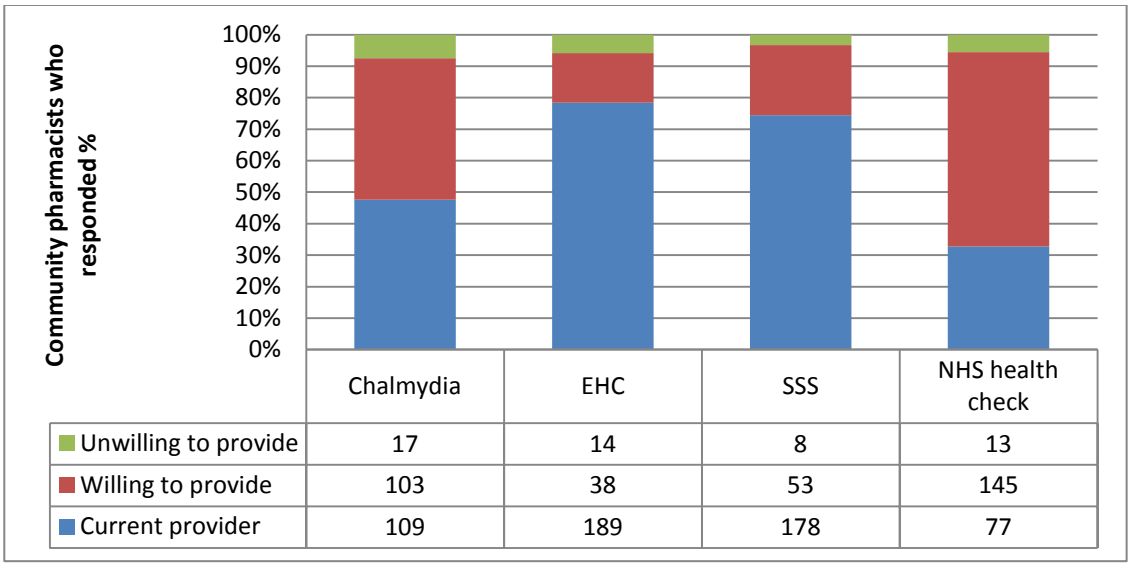
4.4.2 Enhanced services

4.4.2.1 Provision of enhanced services

The EHC service was the most common service provided among the respondent pharmacists, where 189 (78%) were current providers, followed by SSS where 178 (75%) were current providers, then chlamydia screening service which was provided by 109 (48%) and NHS health check which was provided by 77 (33%) (Figure 4.5). Non-providers were very enthusiastic towards future provision of

services, as 103 (45%) of pharmacists were willing to provide chlamydia services and only 17 (8%) were unwilling. The willingness to provide NHS health check was 11 fold higher than unwillingness, as 145 (60%) were willing and only 13 (5%) were unwilling. The percentage of respondent pharmacists who were willing to provide EHC and SSS was higher than those who were unwilling to provide, where 38 (16%) expressed their willingness to provide and 14(6%) expressed their unwillingness to provide EHC. Furthermore, 53 (22%) expressed their willingness to provide SSS and 8 (3%) expressed their unwillingness to provide SSS (Figure 4.5).

Figure 4.5 Current and future provisional status of enhanced services



	Chalmydia	EHC	SSS	NHS health check
Unwilling to provide	17	14	8	13
Willing to provide	103	38	53	145
Current provider	109	189	178	77

4.4.2.2 Factors associated with provisional status of enhanced services

In case of chlamydia service, there was no significant difference in terms of provision, willingness to provide or unwillingness to provide between male and female respondent pharmacists (Table 4.3). Furthermore, there was no significant difference in provision, willingness to provide or unwillingness between respondent pharmacists in case of years of experience or in case of type of CP (Table 4.3). Chlamydia prevalence was weakly correlated with deprivation (Section 3.4.2.2). This was not translated into any significant difference in terms of provision or willingness to provide chlamydia service between pharmacists with different deprivation neighbourhood (Table 4.3). In case of EHC provision, willingness and unwillingness to provide were not significantly different between male and female respondent pharmacists (Table 4.4). Moreover, no significant difference was identified in terms of EHC provision status between respondents with different experience and from different types of CPs. A significant difference (P= 0.04) was seen in terms of EHC service provision with percentage of provision of 87%

amongst the respondent CPs who belonged to the most deprived LSOAs, 81.3%, 82.6% and 70.6% for CPs of the next group 2, 3 and 4 of deprivation neighbourhood compared to only 44.4% of the respondents with lowest deprivation neighbourhood (Table 4.4). An exclusion of the least deprived group resulted in no difference (P= 0.48) between the first four groups based on deprivation, hence the provision was lower only in CPs in the least deprived areas when compared to any of the other four group areas.

Table 4.3: Comparison between respondents' characteristics and provision status of chlamydia

Characteristics	Chlamydia current provider Number (%) P-value	Chlamydia willing to provide Number (%) P-value	Chlamydia unwilling to provide Number (%) P-value
Gender			
Female (70)	36 (51.4%)	27(38.6%)	3 (4.3%)
Male (83)	35 (42.2%)	35 (42.7)%	9 (10.8%)
P-value	0.25	0.61	0.13
Years of experience			
Less than 1 year (20)	9 (45%)	7 (35%)	2 (10%)
1-2 years (15)	4 (26.7%)	7 (46.7%)	3 (20%)
3-4 years (12)	6 (50%)	4 (33.3%)	1 (8.3%)
5-6 years (6)	2 (33.3%)	4 (66.7%)	0 (0%)
7-8 years (4)	1 (25%)	2 (50%)	0 (0%)
9-10 years (7)	2 (28.6%)	5 (71.4%)	0 (0%)
> 10 years (82)	47 (57.3%)	25 (30.9%)	7 (8.5%)
P-value	0.23	0.23	0.68
Type of pharmacy			
Independent (59)	29 (49.2%)	20 (34.5%)	8 (13.6%)
Small chain (17)	12 (70.6%)	4 (23.5%)	0 (0%)
Large chain (13)	9 (39.1%)	10 (43.5%)	2 (8.7%)
Multiple (48)	20 (41.7%)	22 (45.8%)	2 (4.2%)
P-value	0.17	0.34	0.18
Deprivation of pharmacy location			
First 20% (most deprived) (54)	23 (42.6%)	22 (40.7%)	5 (9.3%)
Next 20% (48)	26 (54.2%)	16 (33.3%)	3 (6.3%)
Next 20% (23)	9 (39.1%)	12 (52.2%)	0 (0%)
Next 20% (17)	11 (64.7%)	6 (35.3%)	1 (5.9%)
Last 20% (least deprived) (9)	3 (33.3%)	5 (55.6%)	1 (11.1%)
P-value	0.31	0.5	0.63

Chi-squared test applied

Table 4.4: Comparison between respondents' characteristics and provision status of EHC

Characteristics	EHC current provider Number (%) P-value	EHC willing to provide Number (%) P-value	EHC unwilling to provide Number (%) P-value
Gender			
Female (70)	55 (78.6%)	10 (14.3%)	3 (4.3%)
Male (83)	65 (78.3%)	17 (20.5)%	3 (3.6%)
P-value	0.97	0.32	0.83
Years of experience			
Less than 1 year (20)	18 (90%)	2 (10%)	0 (0%)
1-2 years (15)	8 (53.3%)	4 (26.7%)	2 (13.3%)
3-4 years (12)	9 (75%)	2 (16.7%)	0 (0%)
5-6 years (6)	5 (83.3%)	1(16.7%)	0 (0%)
7-8 years (4)	4 (100%)	0 (0%)	0 (0%)
9-10 years (7)	6 (85.7%)	1 (14.3%)	0 (0%)
> 10 years (82)	64 (78%)	17 (20.7%)	3 (3.7%)
P-value	0.2	0.82	0.4
Type of CPs			
Independent (59)	48 (81.4%)	27 (18.4%)	1 (1.7%)
Small chain (17)	13 (76.5%)	2 (11.8%)	2 (11.8%)
Large chain (13)	17 (73.9%)	6 (26.1%)	1 (4.3%)
Multiple (48)	38 (79.2%)	8 (16.7%)	0 (0%)
P-value	0.89	0.68	0.07
Deprivation of pharmacy location			
First 20% (most deprived) (54)	47 (87%)	7 (13%)	0 (0%)
Next 20% (48)	39 (81.3%)	8 (16.7%)	1 (2.1%)
Next 20% (23)	19 (82.6%)	4 (17.4%)	0 (0%)
Next 20% (17)	12 (70.6%)	3 (17.6%)	2 (11.8%)
Last 20% (least deprived) (9)	4 (44.4%)	3 (33.3%)	2 (22.2%)
P-value	**0.04**	0.7	**0.002**

-Chi-squared test applied

- Significant differences are shown in **bold**.

In case of SSS, no significant difference was identified in terms of provision status between male and female pharmacists, between pharmacists with different experience or between pharmacists from different type of CPs (Table 4.5). On a PCT level, there was a significant correlation between deprivation and provision of SSS per 25 000 population, however this was due to higher concentration of CPs in more deprived PCTs (Section 2.4.1.3). This was not evident on CP level, as there was no significant difference in terms of SSS provision between areas with different deprivation status (Table 4.5). In case of NHS health check service, the service was more provided by male pharmacists than by female with P of 0.02 (Table 4.6). The

NHS health check was significantly provided more by respondents from small chain pharmacy than by respondents from other types of pharmacy with P of 0.046 (Table 4.6). No significant difference was identified in terms of NHS health check current provision, willingness to provide or unwillingness to provide between pharmacists with different years of experience.

Table 4.5: Comparison between respondents' characteristics and provision status of SSS

Characteristics	SSS current provider Number (%) P-value	SSS willing to provide Number (%) P-value	SSS unwilling to provide Number (%) P-value
Gender			
Female (70)	50 (71.4%)	14 (20%)	3 (4.3%)
Male (83)	57(68.7%)	23 (27.7)%	3 (3.6%)
P-value	0.71	0.27	0.83
Years of experience			
Less than 1 year (20)	15 (75%)	3 (15%)	2 (10%)
1-2 years (15)	12 (80%)	2 (13.3%)	0(0%)
3-4 years (12)	5 (41.7%)	5 (41.7%)	1 (8.3%)
5-6 years (6)	2 (33.3%)	4 (66.7%)	0 (0%)
7-8 years (4)	3 (75%)	0 (0%)	0 (0%)
9-10 years (7)	4 (57.1%)	3 (42.9%)	0 (0%)
> 10 years (82)	60 (73.2%)	19 (23.2%)	3 (3.7%)
P-value	0.12	0.56	0.72
Type of CPs			
Independent (59)	46 (78%)	10 (16.9%)	3 (5.1%)
Small chain (17)	11 (64.7%)	5 (29.4%)	1 (5.9%)
Large chain (13)	15 (65.2%)	6 (26.1%)	1 (2.1%)
Multiple (48)	29 (60.4%)	16 (33.3%)	1 (5.1%)
P-value	0.25	0.26	0.85
Deprivation of pharmacy location			
First 20% (most deprived) (54)	40 (74.1%)	10 (18.5%)	1 (1.9%)
Next 20% (48)	35 (72.9%)	10 (20.8%)	3 (6.3%)
Next 20% (23)	13 (56.5%)	9 (39.1%)	1 (4.3%)
Next 20% (17)	13 (76.5%)	3 (17.6%)	1 (5.9%)
Last 20% (least deprived) (9)	6 (66.7%)	3 (33.3%)	0 (0%)
P-value	0.6	0.3	0.77

- Chi-squared test applied.

- Significant differences are shown in **bold**.

Table 4.6: Comparison between respondents' characteristics and provision status of NHS health check

Characteristics	NHS health check current provider Number (%) P-value	NHS health check willing to provide Number (%) P-value	NHS health check unwilling to provide Number (%) P-value
Gender			
Female (70)	12 (17.1%)	50 (71.4%)	3 (4.3%)
Male (83)	28 (33.7%)	47 (56.6)%	5 (6%)
P-value	**0.02**	0.06	0.63
Years of experience			
Less than 1 year (20)	6 (30%)	12(60%)	3 (15%)
1-2 years (15)	4 (26.7%)	9 (60%)	1(6.7%)
3-4 years (12)	4 (33.3%)	7 (58.3%)	1 (8.3%)
5-6 years (6)	0 (0%)	6 (100%)	0 (0%)
7-8 years (4)	0 (0%)	3 (75%)	0 (0%)
9-10 years (7)	2(28.6%)	5 (71.4%)	0 (0%)
> 10 years (82)	22 (26.8%)	52 (63.4%)	9 (6.2%)
P-value	0.67	0.65	0.66
Type of CP			
Independent (59)	15 (25.4%)	40 (67.8%)	2 (3.4%)
Small chain (17)	9 (52.9%)	7 (41.2%)	3 (17.6%)
Large chain (13)	5 (21.7%)	14 (60.9%)	1 (4.3%)
Multiple (48)	9 (18.8%)	34 (70.8%)	3 (6.3%)
P-value	**0.046**	0.15	0.19
Deprivation of pharmacies locality			
First 20% (most deprived) (54)	15 (27.8%)	31 (57.4%)	1 (5.6%)
Next 20% (48)	13 (27.1%)	36 (75%)	2 (4.2%)
Next 20% (23)	6 (26.1%)	15 (65.2%)	1 (4.3%)
Next 20% (17)	4 (23.5%)	11 (64.7%)	2 (11.8%)
Last 20% (least deprived) (9)	5 (55.6%)	3 (33.3%)	0 (0%)
P-value	0.47	0.13	0.72

- Chi-squared test applied.

- Significant differences are shown in **bold**.

4.4.2.3 Uptake of enhanced services

4.4.2.3a Sexual health services uptake

Figures 4.6 and 4.7 show the distribution of uptake of sexual health services through CPs which were providing the service. The median uptake of chlamydia service was 1 per month with a range from 0 to 40, the lower quartile = 0 and the upper quartile = 3 with two outliers (one at 18 and one at 40). Both of the outliers belonged to PCTs with moderate needs for chlamydia screening services. One of

the outlier (at 18) was an HLP. The median uptake of EHC equalled to 4 times per month prior to the survey (Figure 4.7) with a range from 0 to 60 with the lower quartile being 1 and the upper quartile being 10. Four outliers were identified at (40, 42, 56 and 60 times per month). Three out of the outliers came from female pharmacists (40, 42, and 60) and one was missing data (60). Only one of the outliers was an HLP (42) (Figure 4.7). Furthermore, the two outliers (56 and 60) came from one PCT (Wandsworth), where the teenage pregnancy rate was 56.6, while the median teenage pregnancy rate was 48.5 (Section 3.4.1.1).

Figure 4.6: Number of clients who accessed chlamydia service in month prior to survey

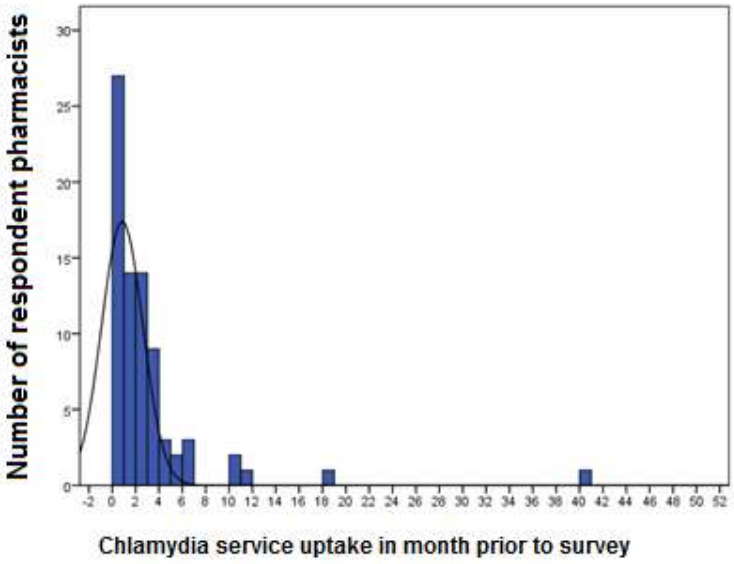
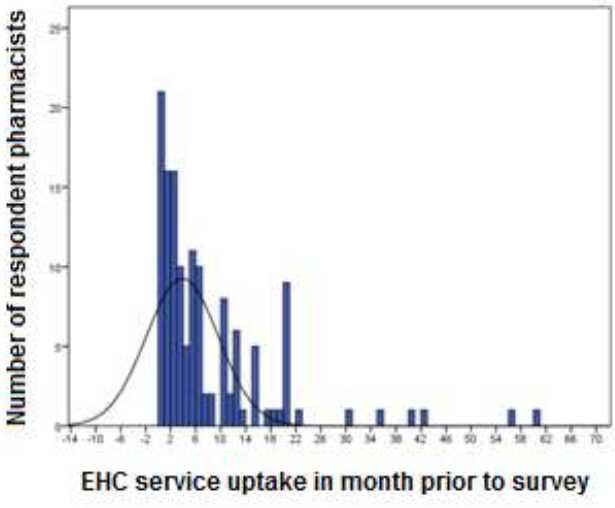


Figure 4.7: Number of clients who accessed the EHC service in month prior to survey



4.4.2.3b vascular health services uptake

A median number of 4 people set a quit date in the month prior to the survey, with a range from 0 to 50 (Figure 4.8). Twenty nine CPs dealt with number of smokers smaller than the lower quartile (2) and twenty CPs dealt with number of smokers higher than the upper quartile (10) (Figures 4.8).Ten CPs showed uptake of 20 or more times per month; 6 CPs at 20, one at 24, two at 40 and one at 50. The last three 40, 40 and 50 were outliers. The three outliers came from three PCTs (Bristol, Knowsley and Blackburn) with prevalence of smoking adults of 25.64%, 27.87% and 30.1% respectively and the median prevalence of smoking adults was 30.4% (Section 2.4.1.1). Half of the ten CPs (4 at 20 and one at 50) were HLPs. The median uptake of NHS health check service was 2 clients per month, with a range from 0 to 40 (Figure 4.9). Twelve CPs dealt with number of clients higher than the upper quartile (5 per month) (Figure 4.9). One outlier was identified (at 40 per month) and it was an HLP.

Figure 4.8: Number of clients who set a quit date through CPs in month prior to survey

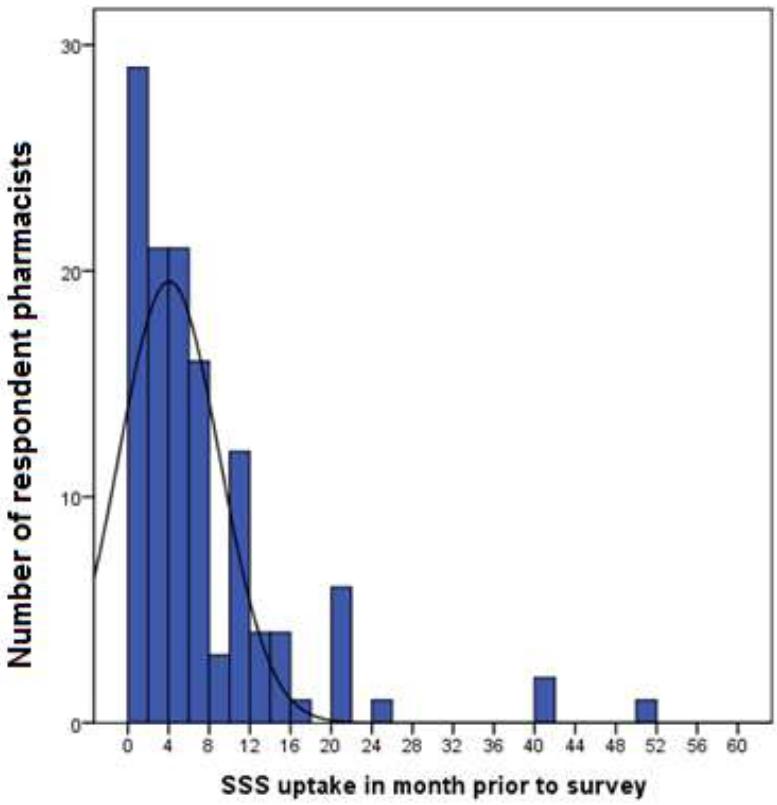
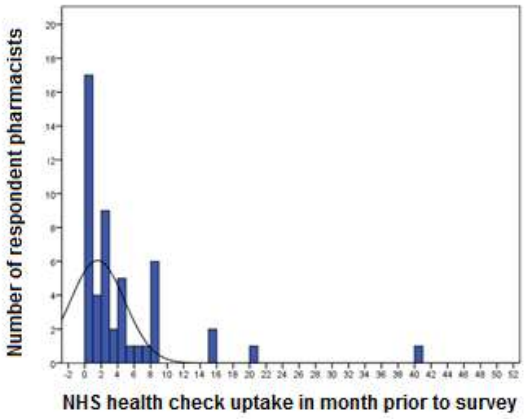


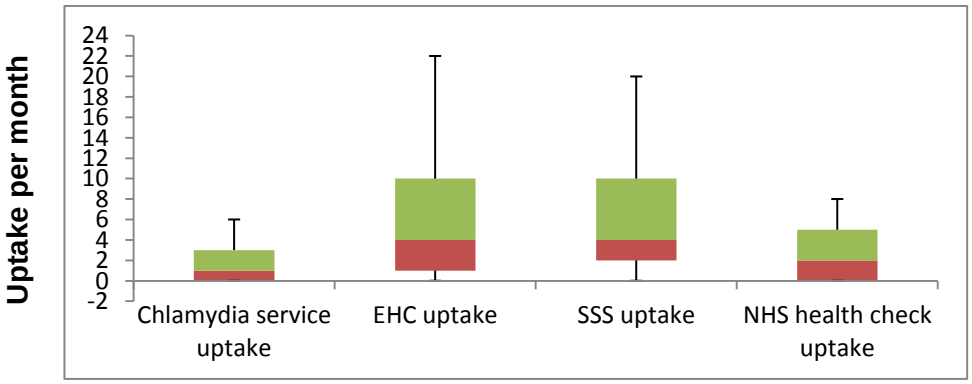
Figure 4.9: NHS of clients who accessed the health check in month prior to survey



4.4.2.3c Comparison between uptake of services

Both EHC and SSS service had the highest median at 4 clients per month prior to the survey, followed by NHS health check at 2 and chlamydia service at 1 (Figure 4.10). CPs were able to reach 22 clients per month in case of EHC compared to 20 clients per month in case of SSS (Figure 4.10).

Figure 4.10: Comparison between uptakes of services in month prior to survey



4.4.2.3d Factors associated with differences in uptake of services

When the uptake of services was compared between HLPs (18%) and non-HLPs, the only significant difference was in case of SSS, with a median uptake of 4 in non-HLPs and 6 in HLPs (P of 0.02) (Table 4.7). No significant differences were identified in terms of uptake of any of the four services between male and female respondent pharmacists (Table 4.7). The level of experience of the respondents did not affect significantly the rate of uptake (Table 4.7). A lower uptake in case of chlamydia service was seen in case of small chains when compared to the other

types of CPs with P of 0.005 (Table 4.7). Whilst the aim of these services is to bridge gaps in health inequalities, deprivation did not impact the uptake of any of the four services (Table 4.7). For the EHC service this is probably because more CPs were offering an EHC service in more deprived areas (Section 4.4.2.2). However, for the other services we hypothesise a greater concentration of CPs in areas of greater deprivation sharing the workload (Section 2.4.1.3).

Table 4.7: Comparison between uptake of enhanced services in terms of differences in responded pharmacists and pharmacy

Characteristic	Chlamydia uptake (median)	EHC uptake (median)	SSS uptake (median)	NHS health check uptake (median)
HLP status				
HLP	2	3	6	2
Non-HLP	1	5	4	2
P-value	0.96	0.68	**0.02**	0.38
Gender				
Female (70)	2	5	4	3
Male (83)	1	3	5	2
P-value	0.49	0.29	0.79	0.37
Years of experience				
Less than 1 year (20)	2	8	4	0
1-2 years (15)	3	4	4	2
3-4 years (12)	1	6	5	8
5-6 years (6)	4	2	4	NA
7-8 years (4)	4	3	1	NA
9-10 years (7)	3	2	2	4
> 10 years (82)	1	3	5	3
P-value	0.27	0.31	0.67	0.31
Type of CPs				
Independent (59)	2	3	4	2
Small chain (17)	0	2	5	0
Large chain (13)	2	4	3	4
Multiple (48)	2	5	6	3
P-value	**0.005**	0.44	0.06	0.31
Deprivation of pharmacy's location				
First 20% (most deprived) (54)	1	3	6	2
Next 20% (48)	2	5	4	1
Next 20% (23)	1	5	6	3
Next 20% (17)	1	2	3	8
Last 20% (least deprived) (9)	0	3	3	2
P-value	0.95	0.74	0.26	0.57

1- Mann-Whitney test was used in case of gender and HLP status

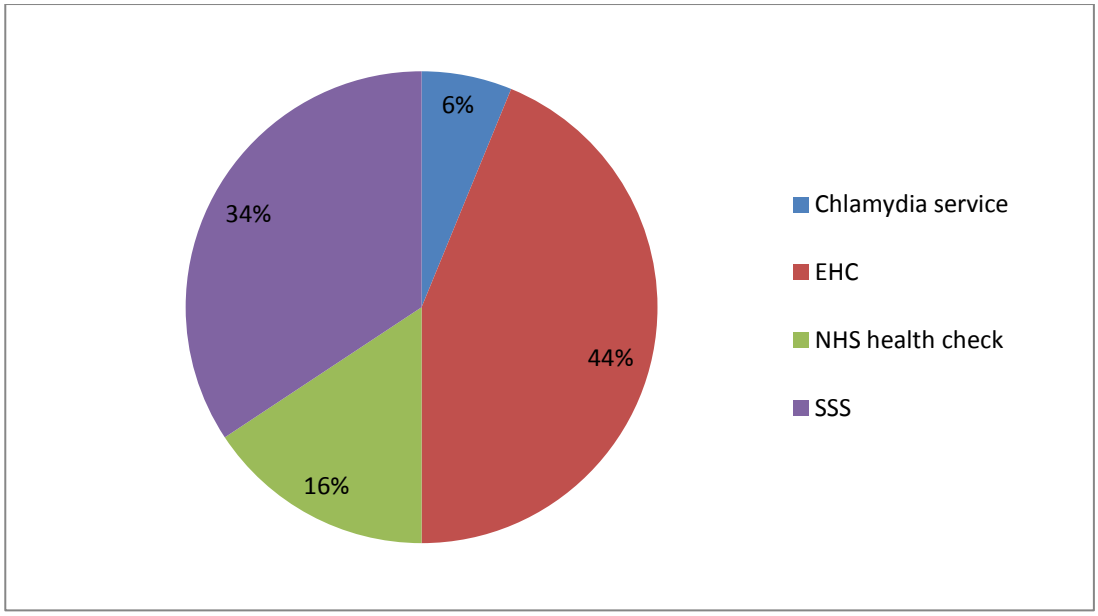
2- Kruskal-Wallis test was used in all other case.

3- Significant differences are shown in **bold**.

4.4.2.4 Importance of enhanced services based on pharmacists' perceptions

When 210 pharmacist were asked to rank the services in order of importance, only 13 (6%) considered chlamydia screening to be the most important, 33 (16%) chose the NHS health check, 72 (34%) chose SSS, and EHC was considered to be the most important by almost half 92 (44%) (Figure 4.11).

Figure 4.11: Percentage of pharmacists who considered each service as the most important



4.4.2.5 Motivational drivers and barriers towards provision of enhanced services

While pharmacists felt that they could improve their role in health promotion for their local clients, they felt that competition with other health care professionals was a barrier to taking up new roles (Figures 4.12 and 4.13). Pharmacists felt that the provision of enhanced services helped to meet the needs of their local population; however lack of time and a lack of public awareness were major barriers (Figures 4.12 and 4.13).

Figure 4.12: Motivational drivers to provide enhanced services

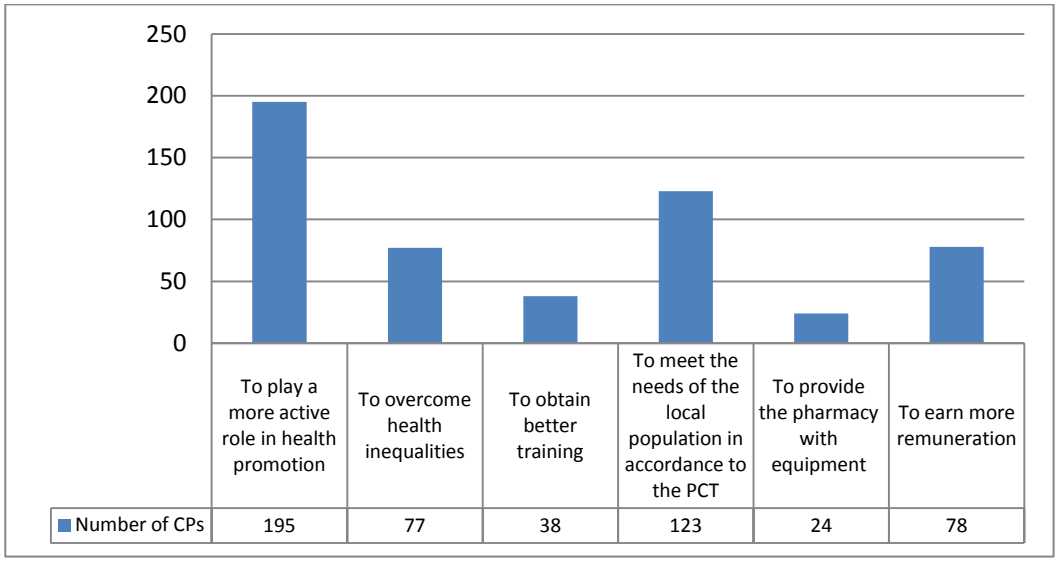
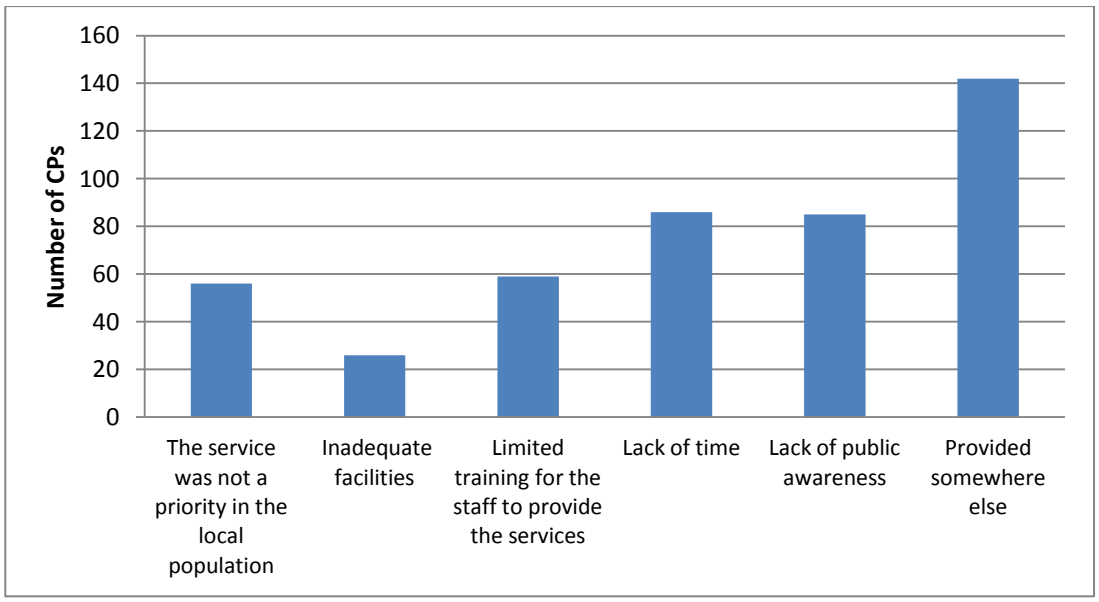


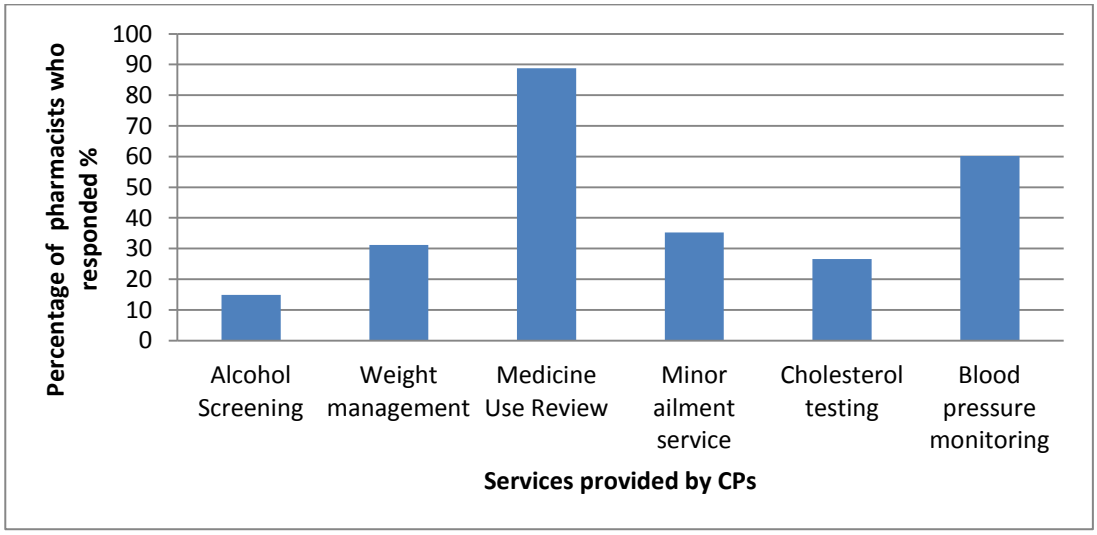
Figure 4.13: Barriers to provide enhanced services



4.4.2.6 Other services provided by pharmacies

In addition to the four services, pharmacists reported provision of other services. The most common service was medicine use review service with 214 (89%), followed by blood pressure monitoring with 145 (60%) (Figure 4.14). The alcohol screening service provision was very low with only 36 (15%) respondents providing it. This is expected as the alcohol screening service had only been recently introduced.

Figure 4.14: Percentage of CPs who provide services



4.4.3 Healthy living pharmacies

Only 18.5% (31/168) of respondent CPs worked at an HLP compared to 81.5% (137/168) worked at premises that were not HLPs. However, 4.4% (6/137) of non-HLPs were in the process of becoming HLPs and 23.4% (32/137) were willing to provide HLP scheme in the future. The two main barriers among non-HLPs were limited training for the staff to provide the service and inadequate facilities and resources (Figure 4.15). The main two drivers for current HLPs or those in the process to become HLPs were to play a more active role in health promotion and to meet the local needs of the population (Figure 4.16).

Figure 4.15: Barriers to becoming a HLP

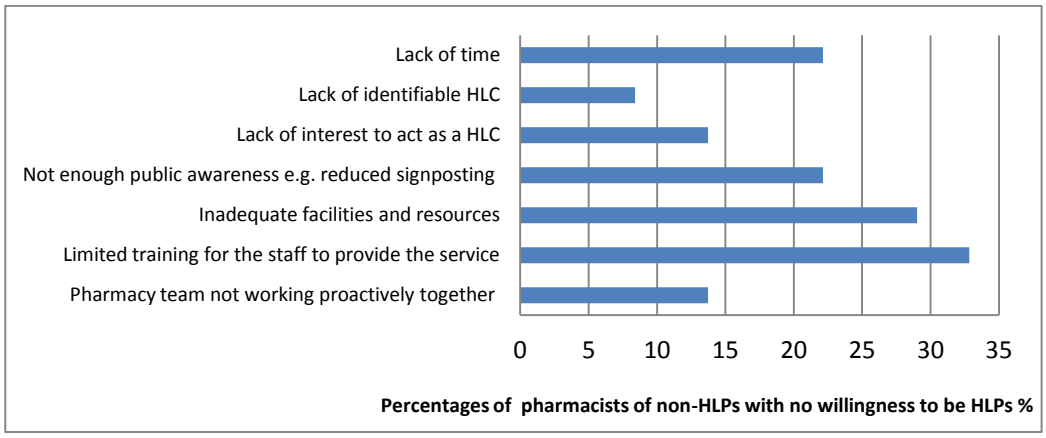
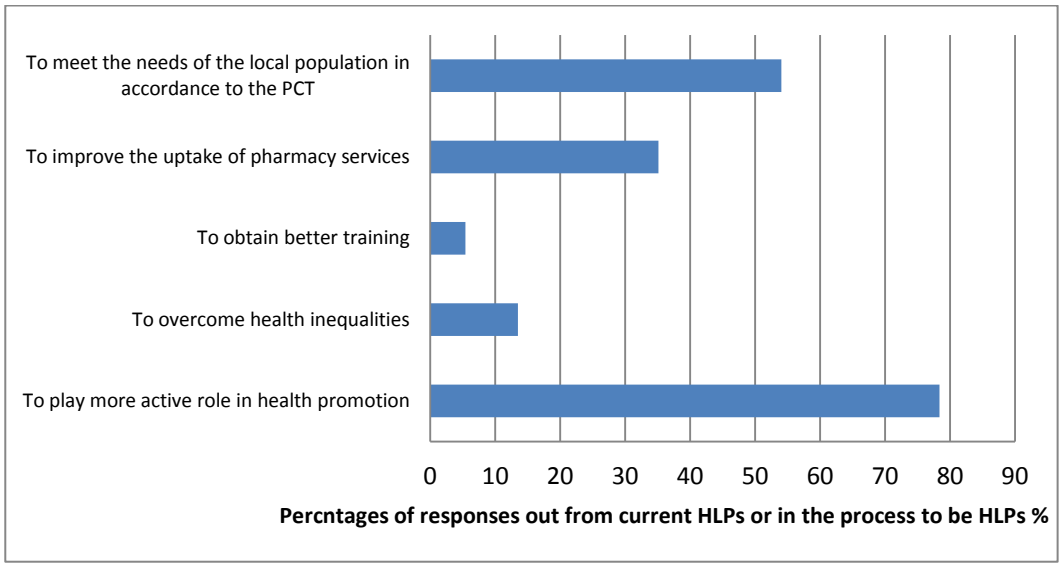


Figure 4.16: Drivers to become HLPs



4.4.3.1 Changes in enhanced services following the introduction of the HLP scheme

Respondent pharmacists who were current HLPs were asked how the services changed following the introduction of the HLP scheme in terms of public awareness and uptake. Half of them answered that public awareness increased in case of SSS, followed by 34% in case of EHC, 25% in case of chlamydia service and 18% in case of NHS health check (Figure 4.17 a-d). The improvement in public awareness has been reflected on the uptake of services. Five HLPs reported an increase in uptake of chlamydia service, two had no uptake at all prior to being HLP, one reported an increase of 2.5 fold, one at 2.7 and one at 3.7. Four HLPs out of thirty one reported an increase in uptake of EHC service of 1.3, 1.5, 1.7 and 2.5 fold of the uptake prior to being HLPs. Seven HLPs out of thirty one reported an increase in uptake of SSS, two out of them had no uptake at all prior to becoming HLPs, two reported an increase of 1.3 fold, one at 1.7 and two at 2.5. Three HLPs reported an increase in uptake of NHS health check, two had no uptake at all prior to being HLPs, and one had a two fold increase.

Figure 4.17: Perceived changes in public awareness of the availability of enhanced services related to HLP status

Figure 4.17a

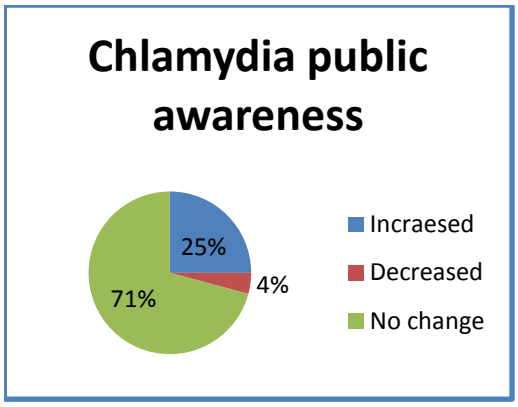


Figure 4.17b

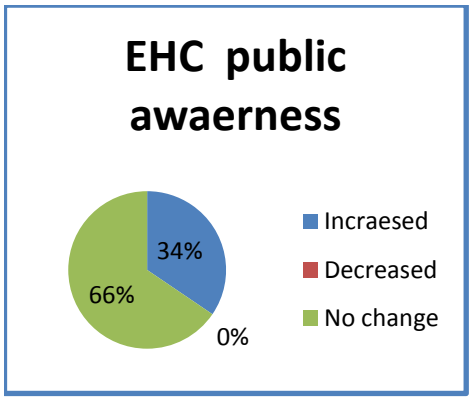


Figure 4.17c

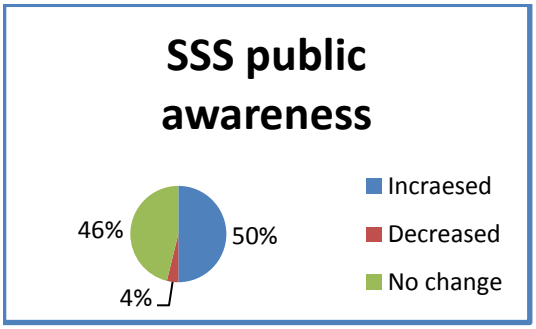
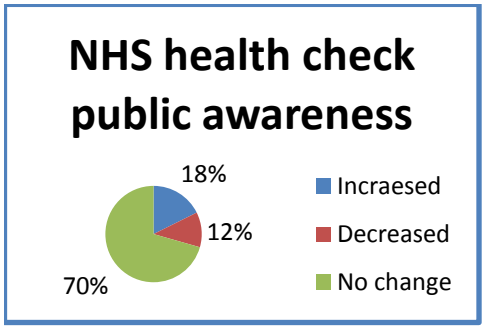


Figure 4.17d



4.4.3.2 Pharmacists' perceptions of the current and future of enhanced services upon the introduction of the HLP scheme

Pharmacists indicated their level of agreement with six statements regarding the HLP scheme (Table 4.8). A percentage of 35.7 (51/143) of the respondent pharmacists agreed or strongly agreed with the statement that the HLP scheme will be the future for all enhanced pharmacy services, whilst 12.6% (18/143) disagreed or strongly disagreed (Table 4.8). Respondent pharmacists saw that the HLP scheme provide an opportunity to improve their role in the community as 36.4% (52/143) agreed or strongly agreed with the related statement and 16.1% (27/143) disagreed or strongly disagreed. However, pharmacists felt that there was more efforts can be done to market and promote the HLP scheme, as 39.9% (57/143) disagreed or strongly disagreed with the related statement and only 11.2% (16/143) agreed or strongly agreed (Table 4.8). Respondent pharmacists felt that pharmacy

students should be trained for the HLP scheme, as 33.6% (53/143) agreed or strongly agreed with the related statement and only 21% (25/143) disagreed or strongly disagreed. Pharmacists did not think that the failure of the HLP scheme would impact the future of commissioning services, as 33.6% (48/143) disagreed or strongly disagreed with this statement and only 21% (30/143) agreed or strongly agreed (Table 4.8). Finally, pharmacist agreed or strongly agreed 42.7% (61/143) that the introduction of the HLP enhanced the public awareness about the enhanced services (Table 4.8)

Table 4.8: Responses (%) to statements regarding HLPs (n= 143)

Statement	Strongly Disagree					Strongly Agree	NA
HLP scheme will be the future for all enhanced pharmacy services	4.2	8.4	**27.3**	14	18.2	17.5	10.5
HLP has enhanced the role of the pharmacist in the community	6.3	12.6	15.4	18.2	**21.7**	14.7	11.2
The marketing and promotion of HLP scheme was effective	18.2	21.7	**24.5**	11.9	4.9	6.3	11.9
Training for HLP scheme should be provided at undergraduate level of study	8.4	9.1	18.2	15.4	16.1	**21**	11.2
If HLP scheme fails to achieve the desired results, enhanced pharmacy services will be decommissioned	15.4	18.2	**21**	12.6	13.3	7.7	11.2
HLP is a way to improve awareness of the public regarding enhanced services.	8.4	2.8	14	20.3	18.2	**24.5**	11.2

- Highest level of agreement or disagreement was indicated with **bold**.

Further analysis was conducted for the neutral statements (neither agree nor disagree, where the results were broken into two groups (HLPs and non-HLPs) (Table 4.9). The HLPs category included pharmacists who were already HLPs, in the process to be HLPs or would like to be HLPs, and non-HLPs included those who were not willing to be HLPs in the future. Differences were identified in statement related to the effectiveness of marketing and promotion of HLP scheme, where higher percentages of non-HLPs indicated disagreement with this statement in comparison to HLPs (P= 0.009). This reflects that non-HLPs felt more ignorant regarding the marketing and promotion of HLP scheme than those who belonged to the HLP category.

Table 4.9: Breakdown of level of agreements between HLPs and non-HLPs

Statement	Strongly disagree/disagree		Unsure		Strongly agree/ agree	
	HLP[1]	Non-HLP	HLP[1]	Non-HLP	HLP[1]	Non-HLP
HLP scheme will be the future for all enhanced pharmacy services	8.7%	14.7%	39.1%	47.4%	52.2%	37.9%
P-value[2]	0.31		0.36		0.11	
The marketing and promotion of HLP scheme was effective	28.3%	51.6%	58.7%	36.6%	13%	1.8%
P-value[2]	**0.009**		**0.013**		0.84	
If HLP scheme fails to achieve the desired results, enhanced pharmacy services will be decommissioned	30.4%	43.6%	52.2%	29.8%	17.4%	26.6%
P-value[2]	0.13		**0.01**		0.23	

1- HLP that includes current HLPs, in the process to be HLP or willing to be in the future.

2- Chi-squared test was used to compare the two groups.

4.4.4 Public awareness of enhanced services

In order to consider how public awareness of the availability of enhanced services through CPs might be improved, pharmacists were asked how they felt members of the public had been made aware of the enhanced services and how public awareness could be improved. Pharmacists considered media advertisements to be the main route to inform the public about enhanced services, followed by a recommendation from a friend or family member (Figure 4.18). They did not consider leaflets, posters or advice from pharmacists to be as effective as media campaigns in increasing public awareness (Figure 4.18). Moreover, pharmacists thought that by using social websites and organising health campaigns public awareness might be improved (Figure 4.19).

Figure 4.18: Pharmacists' perceptions of the venues by which members of the public were made aware of enhanced services

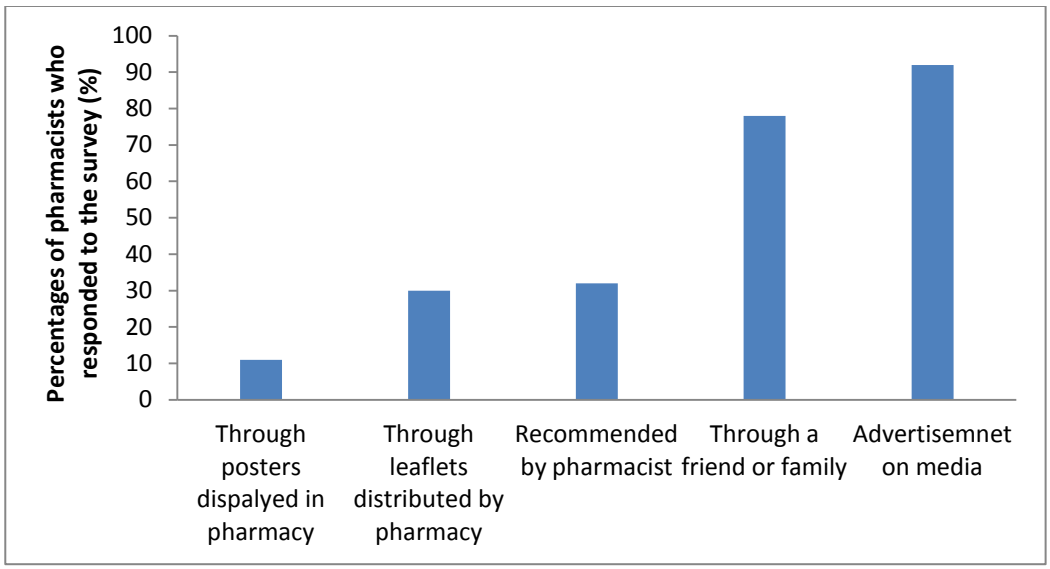
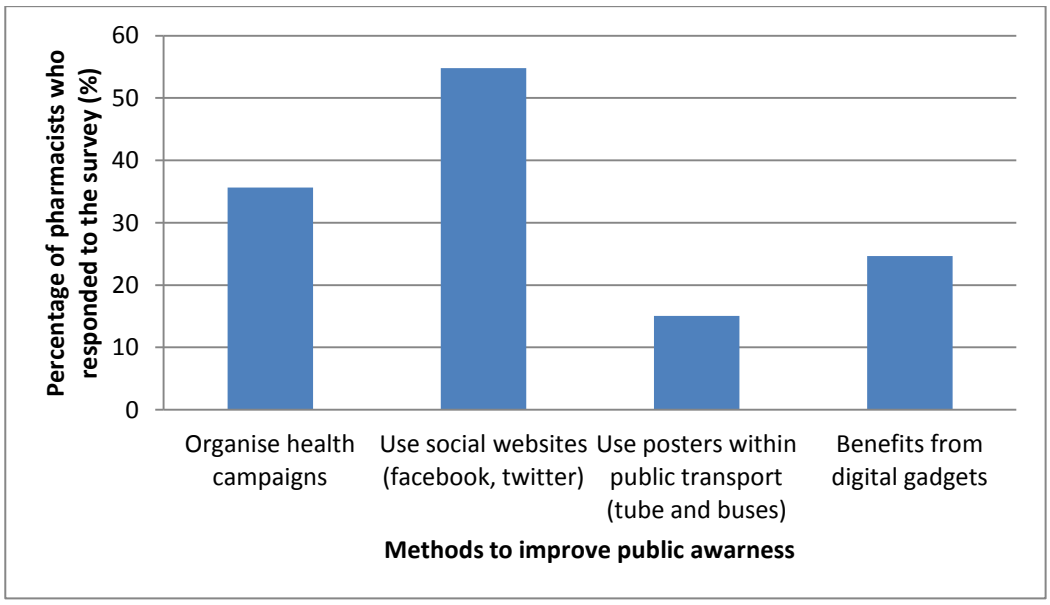


Figure 4.19: Methods to improve public awareness of enhanced services based on CPs' perceptions.



4.4.5 SSS as special case

Pharmacists were asked to provide their opinions regarding the reasons why smokers who set a quit date relapse and what changes could be made to the service to improve the outcomes. The majority of respondents (53%) cited stress relief as a major cause of relapse (Figure 4.20). Lack of follow up was considered the second most important reason for relapse (38%) (Figure 4.20). The majority of respondents (55%) answered that an increase in frequency of follow up could

reduce the rates of relapse (Figure 4.21). Involvement of relatives and friends (47%) (Figure 4.21) and making it a social experiment by sharing the experience with other smokers who are wishing to quit (38%) (Figure 4.21), could also help in reducing the rate of relapse.

Figure 4.20: Reasons smokers relapse based on CPs' perceptions

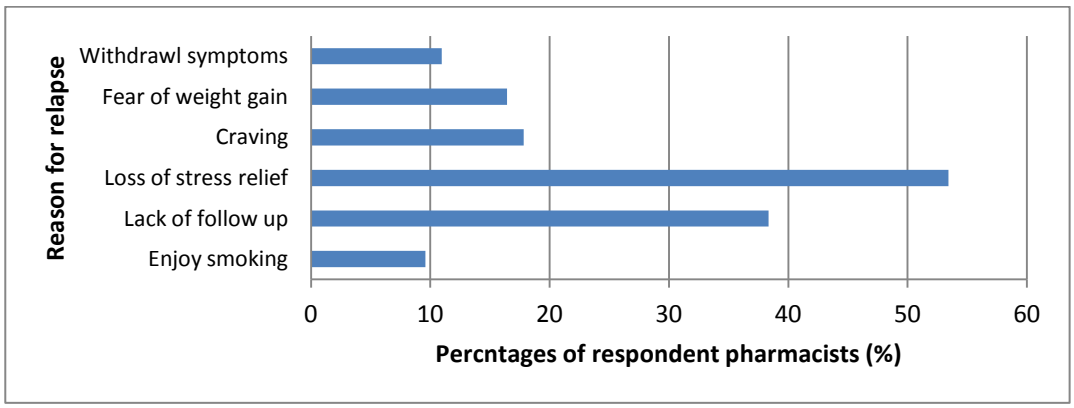
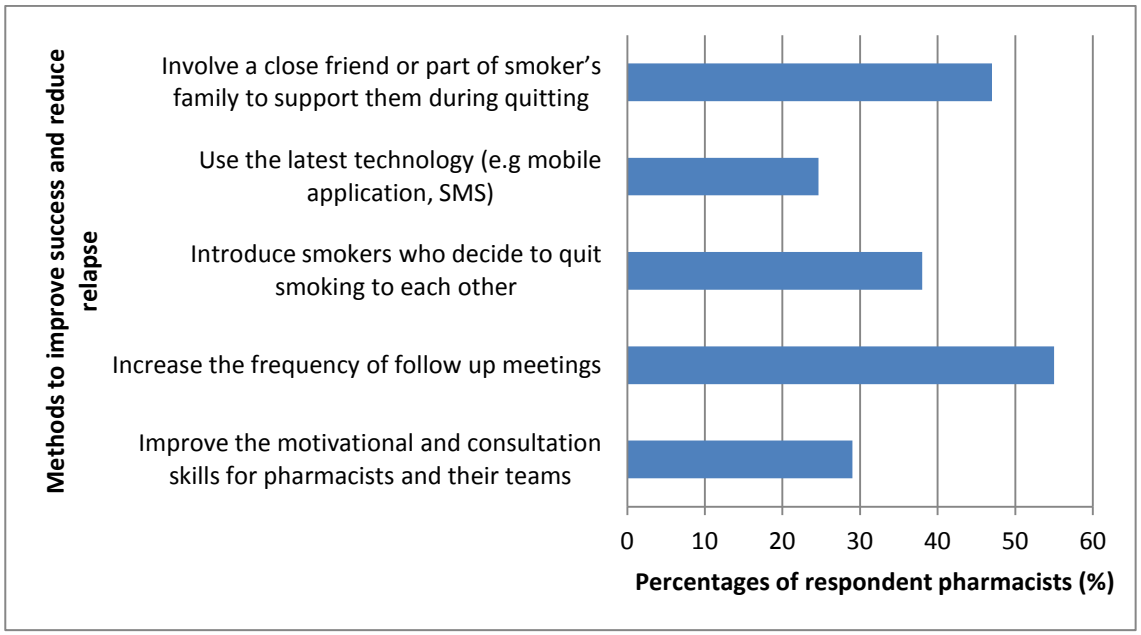


Figure 4.21: Methods to reduce the rate at which smokers relapse based on CPs' perceptions



4.5 Discussion

4.5.1 Comparison between respondent pharmacists and the pharmacists across England

In 2008, 55.9% of all registered pharmacists in England were females and 44.1% were males (Seston, 2009). Whilst in the respondent sample, the percentage of females and males was 49% and 48%, respectively (Section 4.4.1). This indicates that the respondent pharmacists came from a sample of overestimated male pharmacists when compared to the actual proportion among pharmacists in England. In 2013, the percentage of independent and small chain CPs was 39% and 61% for large and multiple chain, respectively (HSCIC, 2013). However, 59% of the responses came from independent and small chain and 41% from multiple and large chain (Section 4.4.1). The highest response (38%) came from pharmacists with an experience of 10 years and more (Section 4.4.1) and this percentage was comparable to the finding that the largest proportion of the pharmacists (51%) who registered with RPSGB in 2008 were aged 40 years and above (Seston, 2009). The two most common services among respondent pharmacists were EHC service (78%) and SSS (75%) and the two least were chalmydia service (48%) and NHS health check (33%) (Section 4.4.2.1). This agrees with the finding from PNA reports that the most common services are SSS with 63.9% of CPs offering the service (Section 2.4.1.1) and 52.3% of CPs offering EHC (Section 3.4.1.1). The majority 81.5% (137/168) of responses came from pharmacists who worked in a non-HLP compared to 18.5% (31/168) who worked in HLPs. In September 2013, 700 out of 11 236 CPs in England succeeded in becoming HLPs, representing 6.3% (Public Health England, 2014).

4.5.2 Differences in provision and uptake of enhanced services based on differences in respondent pharmacists

The study did not identify any difference in terms of provision or uptake of sexual health services and SSS between male and female pharmacists (Sections 4.4.2.2 and 4.4.2.3). This agrees with the finding that gender of respondent pharmacists was found to be irrelevant to the success of vascular health services (Maguire *et al.*, 2001). Furthermore, the effect of gender difference in terms of provision was not identified through other studies (Meshack *et al.*, 2009; Verma *et al.*, 2012; Weidmann *et al.*, 2012; Laliberte *et al.*, 2012). The only difference was in case of NHS health check provision, as the study found that NHS health check provision was higher among male respondents than among female respondents (Section 4.4.2.1). A recent study by Saba and co-workers (2014) found that male

pharmacists had a better clinical experience than female ones when dealing with pregnant smokers.

In terms of sexual health services, several studies did not identify differences in uptake of EHC service through male or female pharmacists (Downing *et al.*, 2011;Bissell *et al.*, 2006; Baraitser *et al.*, 2007). However, one study found that female pharmacists feel uncomfortable in offering sexual health services for young people behind their parents, which was a barrier to providing EHC (Gale and Watson, 2011). In terms of chlamydia, Irish women did not prefer to be screened where their identity might be known (Bafle *et al.*, 2010). Furthermore, 65% of the respondent young females in another study liked to be screened for chlamydia by female health care professionals (Brugha *et al.*, 2011). The last two studies were related to the Irish community, which is known to be more sexually conservative when compared to the English community (Daguerre and Nativel, 2006).

The years of experience of respondent pharmacists were not reflected on provision or uptake of any of the four services (Section 4.4.2.2 and 4.4.2.3d). In general, the experience of pharmacists increases with age. Hence, it is possible to correlate the age with the experience. The age of pharmacists in relation to the vascular and sexual health services was arguable. One study found that younger pharmacists are more successful in obtaining medical history of smokers who wish to quit (Saba *et al.*, 2014). Another study found that pharmacists with experience of 20 years and more were more likely to read the NICE guidelines regarding their role in smoking cessation for patients with chronic obstructive pulmonary disease (Verma *et al.*, 2012). The findings from the two studies suggest that experienced pharmacists are more likely to read the guidelines and hence provide a safe and optimal service, while young pharmacists have the youth spirit which can be reflected on approaching individuals and informing them about available services within pharmacy. In this study, most of the respondents were pharmacists with 10 years or more experience (Section 4.4.1), which in turn guarantee the safe and optimal provision of vascular and sexual health services.

Pharmacists who worked in small chain type of CPs provided more NHS health check services and had a lower uptake of chlamyida service when compared to those working in other types of CPs (Sections 4.4.2.2 and 4.4.2.3d). This study did not identify any difference in terms of provision or uptake of SSS based on the responses from pharmacists who worked in different types of CPs (Sections 4.4.2.2 and 4.4.2.3d).This agrees with findings from the study by Maguire and co-workers (2001), who found that the success of SSS from pharmacists who worked in

different types of CPs was comparable and findings from the study by Saba and co-workers (2014), who found that the performance in dealing with pregnant smokers of pharmacists who worked in different types of CPs was also comparable (Saba *et al.*, 2014). However, the recent evaluation of the new medicine service concluded that large pharmacy chains are more capable to roll out and support the programme (Elliott *et al.*, 2014). This might make pharmacists working in independent and small chain CPs feel insecure, as the services other than essential service might not be commissioned in their CPs and restricted to large chain CPs. The study findings contraindicate this plan and suggest that independent CPs and small chain CPs can perform in a comparable fashion to large chain CPs and even better as in case of uptake of NHS health check which was higher among respondents from CPs of small chain type when compared to the respondents of other types of CPs (Section 4.4.2.2 and 4.4.2.3d).

As previously emphasised, the aim of vascular and sexual health pharmacy services is to bridge the gap in health inequalities as was recommended by the white paper “pharmacy in England: building on strengths- delivering the future” (DH, 2008a). The provision of chlamydia, SSS and NHS health check services did not vary across CPs which belonged to areas with different deprivation (Section 4.4.2.2). The only significance difference was in case of EHC provision as the provision was lower in CPs which belonged to the least deprived areas when compared to most deprived and moderate ones (Section 4.4.2.2). This suggests that the higher needs (which is highly correlated with deprivation in case of SSS and slightly correlated with deprivation in case of chlamydia) were not met by the current provision of those services through CPs. This agreed with findings from Chapters 2 and 3 based on PCT level, where the provision (as percentage) of services did not match with either the needs or deprivation (Sections 2.4.1.2, 3.4.1.2 and 3.4.2.2). The initial aim of the NHS health check programme was to reach 20% of those aged 40-74 years old each year every year for a period of 5 years (DH, 2008b). However, the programme through all providers failed to reach its target in 2011/2012 (Artac *et al.*, 2013b). However, the reach was higher in more deprived PCTs when compared to least deprived ones (Artac *et al.*, 2013b). CPs can play an important role in reaching individuals in more deprived areas as outlined by Murray and co-workers (2009). They found that the important role of CPs in delivering the SSS to a wide variety of smokers, is due to smokers being able to access a service provided by trained health professionals without a prebooked appointment. Only 33% of the respondent pharmacists provided NHS

health check (Section 4.4.2.1). In order to improve the reach especially for those who live in deprived areas, extra provision of CP NHS health check service should be implemented.

4.5.3 Barriers and motivators towards provision of enhanced services

Pharmacists felt that the provision of enhanced services allow them to play a more active role in health promotion. This was expected, as pharmacists by their connection with health and sick people can participate in promoting health (Anderson, 2000). Although the provision of enhanced services is an extra resource to earn more money, pharmacists did not feel that remuneration was amongst their driver or barrier towards provision of services (Section 4.4.2.5). In contrast to the study findings, Newlands and co-workers (2011) and Gale and Watson (2011) identified inconvenient remuneration as barrier towards provision of weight management service and sexual health services. Both of those studies were related to Scottish CPs. Scottish demographic is different from that in England and Scotland has its own system in providing pharmacy services. For instance, in terms of sexual health services, Scottish pharmacists received higher payment for provision of EHC service (£25) (The Scottish Government, 2011) compared to different payments in different PCTs in England with average of £17.68 per each EHC service (Section 3.4.1.3e).

The main barrier for the provision of services was their availability through other health care professionals and lack of time (Section 4.4.2.5). Tremblay and co-workers (2009) found that trained pharmacists had an experience of counselling regarding smoking cessation that is comparable to doctors and better than other health care professionals such as; dentists and nurses. Hence, the access of CP within 20 minutes walk which was identified by Todd and co-workers (2014) and the opening times should have the advantage to attract individuals to use CPs rather than other health care providers. The preference of other health care providers especially, GPs, can be attributed to the lack of privacy in CPs which was identified in terms of weight management service in the study by Weidmann and co-workers (2012), in terms of heart check in the study by Taylor and co-workers (2012) and in terms of alcohol screening in the study by Krska and Mackridge (2014). Eades and co-workers (2011) found in their review, that lack of time and lack of demand are the main barriers to provision of public health services through CPs. Pfleger and co-workers (2008) found that lack of time, lack of training and inappropriate premises were the main barriers to utilise pharmacists' experience and knowledge in

improving and promoting health for patients. Lack of time is an important issue, and pharmacists should consider that spending more time in relation to providing those services, might increase their workload, and that will affect both pharmacists and patients (Jacobs *et al.*, 2013; Hassell *et al.*, 2011).

4.5.4 Healthy living pharmacies

The introduction of the HLP scheme was a new scheme to revive the vascular and sexual health pharmacy services. Respondent from HLPs reported an increase in public awareness for all the services, especially in case of SSS (Section 4.4.3.1). Thus, the initiative overcame the barrier that was suggested by respondent pharmacists (lack of public awareness for enhanced services provision) (Section 4.4.2.5). The involvement of member of pharmacy team to deliver the services, as per the HLP scheme, will free some of the pharmacists' time and increase the uptake of services (Duggan *et al.*, 2013). This was seen in case of SSS, as the number of smokers who set a quit date through HLPs was significantly higher than through non-HLPs (Section 4.4.2.3d). In addition, lack of time was not amongst the major two barriers to be HLP (Section 4.4.3). HLPs stated that the main reason for being an HLP was to play a more active role in health promotion and to meet the local needs of their local population (Section 4.4.3). The health promotion role was also seen through pharmacists' answers to the statement "HLP has enhanced the role of the pharmacist in the community". Lack of training for pharmacy staff was suggested to be the main barrier to be HLP. In September 2013, 2 100 HLCs were trained to work in HLPs (Public Health England, 2014), hence potentially overcoming this barrier. Pharmacists who did not wish to be HLPs were pessimistic about the effectiveness of marketing and promotion of the HLP scheme (Section 4.4.3.2).This suggests that there is need to review this finding and improve the promotion and marketing of the HLP scheme, especially among non-HLPs.

4.5.5 Public awareness of pharmacy services

Pharmacists suggested that the public become aware of health services through the media or through a friend or family. Media advertising was proved to be effective in increasing public awareness of health services (Schillo *et al.*, 2011; Wilson *et al.*, 2005; Momen *et al.*, 2014). Furthermore, Atusingwize and co-workers (2014) found that media campaigns for stop smoking can be effective and provide good value for money. The use of latest resources such as internet was proved to be effective in case of stop smoking (Momen *et al.*, 2014). Posters through CPs or through GPs were found to be effective in informing individuals about alcohol screening in CPs (Krska and Mackridge, 2014). Thus, an adoption of simple

methods such as posters and social websites could inform the public and it will be better than large health campaigns which require big proportion of the NHS budget.

4.5.6 Smoking cessation relapse

Pharmacists felt that the most important reason for smokers who set a quit date to relapse were the loss of stress relief and lack of follow up (Section 4.4.5). Zhou and co-workers (2009) and Allen and co-workers (2008) found that smoking cessation relapse is mainly dependant on nicotine dependence, craving and withdrawal symptoms. Anxiety, depression and stress are found to be more common among smokers than non-smokers (Park *et al.*, 2009) and smokers think that by smoking they are overcoming those symptoms (Jarvis, 2004). Pharmacists felt that increasing the frequency of follow up, and involving a friend or family should encourage the smoker to overcome withdrawal symptoms, thus a smoker might have a better chance to success in quit smoking and relapse rates might decrease (Section 4.4.5).

4.6 Limitations of the study

The study had a low response rate of 19.3% (Section 4.4.1) which is lower than the lowest response rate (20.6%) of studies related to vascular and sexual health services identified in Section 1.8.1.2. The low response rate restricts the generalisation of the findings and thus the results should be treated with caution.

4.7 Conclusions

The provision of vascular and sexual health pharmacy services on CP level did not match with deprivation, which is correlated with needs. The main driver for pharmacists to provide services is to play a more active role in health promotion. The main identified barriers were lack of time and provision of services through other providers. The introduction of the HLP scheme based on pharmacists' perceptions improved the awareness about the availability of vascular and sexual health services in CPs. The median uptake of SSS was higher among HLPs (6) when compared to non-HLPs (4) with $P = 0.02$. HLCs are the main point in delivering services through HLPs. Thus the focus should be on increasing the number of trained HLCs. Utilising new techniques such as social websites can also help in improving public awareness about the availability of those services through CPs. Finally, to improve the commitment and success of smokers who set a quit date through CPs, increasing the follow up frequency and involving a member of their family or a close friend can help.

4.8 Future of vascular and sexual health pharmacy services

The future of vascular and sexual health pharmacy services seems to be still unclear. Since the Local Authorities took the responsibility of commissioning those services, it seems that the same services are still being commissioned with a move to a payment by result model. The HLP scheme might be the future of those services, however, the uptake and implementation of this scheme is still limited.

Chapter Five: General conclusion and recommendations

5.1 General Conclusions

5.1.1 Review of the study

CPs are well placed in the heart of the community to offer services that promote public health. The dramatic changes in community pharmacists' role since the reform of the NHS in 2000 were presented in Section 1.1 and 1.2. The recognition of the role that community pharmacists can play to meet the public health needs was explained through the Government papers presented in Sections 1.1 and 1.2. The major shift in pharmacist role was in 2005, following the pharmacy contract, where three categories of services were introduced. Essential services that CPs have to offer as part of their contract with the NHS. These include daily routine services, such as; dispensing medicines repeat dispensing, waste management and signposting. The second category of pharmacy services is called advanced services. Those require accreditation of the pharmacist and the premises. This category currently includes; medicine use review, appliance use review, stoma appliance customisation and new medicine review services

Payments for essential and advanced services are set through the drug tariff. The last category of pharmacy services was used to be called enhanced services (currently known as locally commissioned services). The provision of those services has changed following the implementation of the new NHS structure which was introduced in 2010. This category of services, before 1st April 2013, was commissioned by PCTs based on identification of public needs for those services. From April 2013, the commissioning of those services was transferred to Local Authorities, Clinical Commissioning Groups and NHS England's area teams. The nationally commissioned enhanced (or locally commissioned) services include services such as, SSS, NHS vascular check, EHC service, chlamydia screening and treatment services, supplementary prescribing and needle and syringe exchange. The literature review identified opportunities for vascular and sexual health pharmacy services. However, all the studies were related to limited number of PCTs and none of the studies looked at the difference between provision and uptake of services on national level.

5.1.2 Aims of the study

The project aimed to identify whether the provision and uptake of vascular and sexual health pharmacy services matched the needs at PCT level for the financial

year 2009/2010 (started on 01/04/2009 and ended on 31/03/2010) and on CP level for the year 2013. It also aimed to investigate whether the provision of SSS and EHC services through CPs was cost-effective. Finally, it aimed to determine the changes in uptake of vascular and sexual health services following the introduction of the HLP scheme and how to improve the uptake of services using SSS as a special case.

5.1.3 Methods used in the study

To achieve the aims of the project, three categories of data were required to be collected; needs for each service, CPs provision of each service and uptake of each service. With regards to SSS (Chapter Two), the needs were identified based on percentage of smoking adults which was obtained from Health Profile for each PCT in England. The CP SSS provision was identified from the PNA report published in February 2011. The uptake and the costs attributed to the SSS were identified through a short survey questionnaire which was posted to the public health leads of SSS in PCTs. With regards to EHC service (Chapter Three), the needs were identified based on rates of teenage pregnancies which was obtained from the Health Profile for each PCT in England. The EHC service provision was identified from the PNA reports. The uptake and cost of EHC service were identified through survey questionnaire which was posted to the public health leads of sexual health services in PCTs. In terms of chlamydia screening service (Chapter Three), the needs were identified based on prevalence of chlamydia and the provision was identified from the PNA reports. A survey questionnaire was posted to the public health leads of sexual health service in PCTs to gauge the uptake of chlamydia screening service through CPs.

To identify the provision and uptake of vascular and sexual health services at CP level, a survey questionnaire was posted to CPs within 28 PCTs. The questionnaire aimed to gauge the pharmacists' perceptions towards vascular and sexual health services and how the introduction of HLP scheme affected those services.

5.1.4 Key findings of the study

The PCT response rate to the questionnaire regarding the uptake of services was 30% (42/138), 30% (42/139) and 19% (21/111) for SSS, EHC and chlamydia screening services, respectively (Sections 2.4.2.1, 3.4.1.3a and 3.4.2.3a). However, to overcome this low response rate, demographic characteristics and CP provision of services were tested for respondent PCTs versus non-respondent ones as was recommended by Brick and Kalton (Finchman, 2008). The provision of SSS through

CPs was lower in respondent PCTs when compared to the non-respondent ones (Section 2.4.2.2). The needs for EHC and deprivation were higher in respondent PCT when compared to the non-respondent ones (Section 3.4.1.3b). The demographic characteristics and chlamydia screening provision were comparable for the respondent and non-respondent PCTs (Section 3.4.2.3b).

Needs for SSS and EHC service were significantly correlated with deprivation with rho of 0.76 and 0.83, respectively and P< 0.001 in both cases (Sections 2.4.1.2 and 3.4.1.2). The correlation between needs for chlamydia screening service and deprivation was weak with rho of 0.25 and P = 0.009 (Section 3.4.2.2). The importance of CPs in providing public health services becomes evident based on the finding that CPs were found to be more concentrated in more deprived PCTs (Section 2.4.1.3). This agrees with the findings of Todd and co-workers (2014), that ease of access of CPs is better in more deprived areas (99.8% can access CPs within 20 minutes) than in least deprived ones (90.2% can access CPs within 20 minutes walk). Despite that, there was no significant correlation between needs or deprivation and CP provision (as percentage out of all CPs in a PCT) for SSS, EHC and chlamydia screening services. The higher concentration of CPs in higher need PCTs was responsible for a weak correlation with needs in case of SSS, however this correlation was not evident in case of EHC or chlamydia services (Sections 2.4.1.3, 3.4.1.2 and 3.4.2.2). The findings from the CP survey in 2013 indicated that there was no significant correlation between provision of SSS, NHS health check, EHC or chlamydia screening services with deprivation and hence with needs (Section 4.4.2.2).

CPs were responsible for 12% of overall uptake of SSS (through all providers) in 2009/2010 (Section 2.4.2.3) and for 1.2% of overall uptake of chlamydia screening (through all providers) (Section 3.4.2.3c). No data was identified for share in EHC service. However, a previous study by Martson and co-workers (2005) found a shift towards CPs to obtain EHC. This emphasises the importance of CPs in delivering vascular and sexual health services. Provision of any of the services through other providers should not be considered as barrier as respondent pharmacists expressed (Section 4.4.2.5). On the contrary, it should act as an incentive for competition with other providers to attract more clients and achieve better results, especially for working people, as time is an obstacle to access such services.

Although the uptake of SSS (through all providers) was significantly higher in more deprived PCTs, the smoking quit rates at 4-weeks follow up was significantly lower

in more deprived PCTs (Sections 2.4.1.4 and 2.4.2.4). This suggests that the SSS through all providers (including CPs) is not widening the gap in health inequality which is related to smoking between PCTs. Nevertheless, the NHS is enduring higher costs due to the negative correlation between quit rate and deprivation.

The uptake of services at PCT level did not match with needs or deprivation in case of SSS (Section 2.4.2.4), EHC service (Section 3.4.1.3d) or chlamydia screening service (Section 3.4.2.3d). However, when the uptake was weighted per CP, a significant correlation was identified for SSS (Section 2.4.2.4) and for EHC service (Section 3.4.1.3d) with needs. This suggests the importance of time, which respondent pharmacists considered as the second main barrier towards provision of vascular and sexual health pharmacy services (Section 4.4.2.5). In PCTs with higher needs, pharmacists have to deal with higher number of clients in regards to vascular and sexual health services. Hence if the workload related to vascular and sexual health services, in CPs of PCTs with higher needs, exceeds enduring limits, this could be reflected on pharmacist's routine roles and would affect both patients and pharmacist.

The introduction of the HLP scheme seems to improve the delivery of vascular and sexual health pharmacy services. Firstly, pharmacists felt that this scheme improved public awareness of pharmacy services, which was found to be a barrier for the NHS health check by Taylor and co-workers (2012). Secondly, the HLP scheme introduced the concept of the HLC, who should be trained to help in attracting more clients and delivering services. This can free the time of the pharmacist with one condition, that he/she should supervise and maintain safe and efficient delivery of services. The uptake of SSS was better among HLP pharmacists when compared to non HLPs (Section 4.4.2.3d). This agreed with the findings from HLP pathfinder PCTs (Duggan *et al.*, 2013).

The economic evaluation of SSS and EHC service identified that both services are cost-effective from the NHS perceptive. CP SSS was able to save £1 511 per QALY gained (Section 2.4.3.5). The economic model was taken from the NHS England perceptive. CP EHC service provision was also cost effective and could save £688.7 for the NHS (Section 3.4.1.3e).

Pharmacists felt that public awareness about pharmacy services could be improved by use of social websites (Section 4.4.4). To achieve better success of SSS, increasing the follow up meetings was the most intervention recommended by the respondent pharmacists (Section 4.4.5).

In summary, the needs for vascular and sexual health pharmacy services are not met by the provision of those services through CPs. Pharmacists of PCTs of more needs are doing more efforts to meet the needs of their localities. CP SSS is cost effective and could save the NHS £1 511 per QALY gained per individual. EHC service is cost effective and could save the NHS £688.7 per one prevention of unintended pregnancy. Pharmacists felt that the introduction of the HLP scheme improved the public awareness of vascular and sexual health pharmacy services, which was reflected on higher uptake of those services. Using social websites and increasing follow up of service users will help in achieving better success results.

5.1.4 Limitations

The low response rate was a limitation in both cases of PCT and CP surveys. However, for PCT survey, it was overcome by testing differences between respondent and non-respondent PCTs. For the CP survey, the low response rate is still a limitation and findings should be treated with caution. In case of EHC service, the provision of services was weighted against women aged 60 years old and under, as there was no exact data for women who have the ability to conceive. The limitation in collection of exact figures in relation to the cost effectiveness analysis in both SSS and EHC was overcome by conducting sensitivity analysis.

5.2 Recommendations

5.2.1 Recommendations to the commissioner

Findings from the study identified shortness in CP provision of vascular and sexual health services in PCTs with higher needs. Hence, the Local Authorities (the current commissioner of vascular and sexual health services) should increase the number of CPs which offer those services or to implement the HLP scheme on a national level. The pharmacy team need to be trained to offer those services in order to meet the local needs of their population. The public awareness about the availability of vascular and sexual health services should be improved. Based on the literature review conducted in Chapter 1, posters in the CPs were the most important method in informing public about services within CPs in case of alcohol services and EHC services (Krska and Makridge, 2014, Lloyd and Gale, 2005). However, pharmacists in this study recommended the role of social websites in informing public. This can be translated by considering that websites should be utilised to improve the awareness (both of services offered and success stories) by designing pages and blogs to attract individuals with maintaining current methods in improving the public

awareness such as posters in CPs. Improving CPs' premises to include consultation rooms with toilet facilities, so individuals who visit CPs for chlamydia services can have privacy to conduct the test, will increase the uptake of this service.

5.2.2 Recommendations to the community pharmacist

The pharmacists and the pharmacy team should try to attract more individuals to use vascular and sexual health pharmacy services, especially those in more deprived areas. They should also try to share the load that some community pharmacists take in some areas to meet their local needs. They should compete with other providers to prove to the commissioners that they are able to perform and achieve success that is comparable to other health care providers. Pharmacists should try to achieve the HLP status if it is nationally commissioned and to train the pharmacy team to offer help in delivering vascular and sexual health services. Furthermore, they should increase the follow up of service users to achieve better results.

References

1. Adams, E.J, Charlett, A, Edmunds, W.J. Hughes, G. Chlamydia trachomatis in the United Kingdom: a systematic review and analysis of prevalence studies. *Sex Transm Infect* (2004); 80: 354–362. doi:10.1136/sti.2003.005454.

2. Allen, S.S, Bade, T, Hatuskami, D. Craving, withdrawal, and smoking urges on days immediately prior to smoking relapse. *Nicotine & Tobacco Research* (2008);10: 35- 45. doi: 10.1080/14622200701705076.

3. Anderson, C, Blenkinsopp, B. Community pharmacy supply of emergency hormonal contraception: a structured literature review of international evidence. *Human Reproduction* (2006); 21: 272–284. doi: 10.1093/humrep/dei287.

4. Anderson C. Health promotion in community pharmacy: the UK situation. *Patient Educ and Couns* (2000); 29: 285– 291. doi: 10.1016/S0738-3991(99)00025-7.

5. Anderson, C, Thornley, T. A pharmacy-based private chlamydia screening programme: results from the first 2 years of screening and treatment. *Int J Clin Pharm* (2011); 33: 88–91. doi: 10.1007/s11096-010-9460-3.

6. Anderson, S. Community pharmacy and public health in Great Britain, 1936 to 2006: how a phoenix rose from the ashes. *J Epidemiol Community Health* (2007); 61: 844–848. doi:10.1136/jech.2006.055442.

7. Anderson S. *Making medicines: a brief history of pharmacy and pharmaceuticals*: Pharmaceutical Press; (2005). p. 77-92.

8. Annear, M.J, Cushman, G, Gidlow, B. Leisure time physical activity differences among older adults from diverse socioeconomic neighborhoods. *Health Place* (2009); 15: 482–490. doi: 10.1016/j.healthplace.2008.09.005.

9. Arhens, R. A, Hower, M, Best, Al. M. Effects of Weight Reduction Interventions by Community Pharmacists. *J Am Pharm Assoc* (2003); 43(5): 583- 589.

10. Artac, M, Dalton, A.R.H, Majeed, A, Car,J. Uptake of the NHS Health Check programme in an urban setting. *Family Practice* (2013a); 30: 426– 435. doi: 10.1093/fampra/cmt002.

11. Artac, M, Dalton, A.R.H, Bates, H.B, Majeed, A. Primary care and population factors associated with NHS Health Check coverage: a national cross-sectional study. *Journal of Public Health* (2013b); 35: 431– 439. doi: 10.1093/pubmed/fdt069.

12. Atusingwize, E, Lewis, S, Langley, T. Economic evaluations of tobacco control mass media campaigns: a systematic review. *Tob Control* (2014); 0: 1– 8. doi:10.1136/tobaccocontrol-2014-051579.

13. Aubin, H. J, Lebargy, F, Berlin, I, Bidauat-Mazel, C, Chemali-Hudary, J, Largue, G. Efficacy of bupropion and predictors of successful outcome in a sample of French smokers: a randomized placebo-controlled trial. *Addiction* (2004); 99: 1206–1218. doi: 10.1111/j.1360-0443.2004.00814.x

14. Aubin, H. J, Luquiens, A, Berlin, I. Pharmacotherapy for smoking cessation: pharmacological principles and clinical practice. *British Journal of Clinical Pharmacology* (2013); 77: 324- 336. doi: 10.1111/bcp.12116.

15. Awad, A, Waheedi, M. Community Pharmacists role in obesity treatment in Kuwait: a cross-sectional study. *BMC Public Health* (2012); 12: 863- 871. doi: 10.1186/1471-2458-12-863.

16. Bacon, L, Savage, I, Cook, S, Taylor, B. Training and supporting pharmacists to supply progestogen-only emergency contraception. *Journal of Family Planning and Reproductive Health* (Care 2003); 29(2): 17– 22. doi: 10.1783/147118903101197476.

17. Balfe, M, Brugha, R, O'Connell, E, McGee, H, O'Donovan, D. Where do young Irish women want Chlamydia-screening services to be set up? A qualitative study employing Coffman's impression management framework. *Health & Place* (2010); 16: 16– 24. doi: 10.1016/j.healthplace.2009.07.003.

18. Baraitser, P, Pearce, V, Holmes, J, Horne, H. Chlamydia testing in community pharmacies: evaluation of a feasibility pilot in south east London. *Qual Saf Health Care* (2007);16:303–307. doi: 10.1136/qshc.2006.020883

19. Bauld, L, Bell, K, McCullough, L, Richardson, L, Greaves, L. The effectiveness of NHS smoking cessation services: a systematic review. *Journal of Public Health* (2009a); 32: 71- 82. doi:10.1093/pubmed/fdp074.

20. Bauld, L, Boyd, KA, Briggs, AH, Chesterman, J. One-year outcomes and cost-effectiveness analysis for smokers accessing group-based and pharmacy-led cessation services. *Nicotine & Tobacco Research* (2011); 12: 135- 145. doi: 10.1093/ntr/ntq222.

21. Bauld, L, Chesterman, J, Ferguson, J, Judge, K. A comparison of the effectiveness of group-based and pharmacy-led smoking cessation treatment in Glasgow. *Addiction* (2009b); 104(2): 308- 316. doi: 10.1111/j.1360-0443.2008.02446.x

22. Bauld, L, Ferguson, J, McEwen, A, Hiscock, R. Evaluation of a drop-in rolling-group model of support to stop smoking. *Addiction* (2012); 107: 1687–1695. doi: 10.1111/j.1360-0443.2012.03861.x.

23. Bauld L, Ferguson J, Lawson L, Chesterman J, Judge K. Tackling smoking in Glasgow: final report. Glasgow: Glasgow Centre for Population Health (2006). doi: 10.1111/j.1360-0443.2009.02875.x.

24. Bauld L, Judge K, Platt S. Assessing the impact of smoking cessation services on reducing health inequalities in England: observational study. *Tob Control*. (2007); 16: 400–404. doi:10.1136/tc.2007.021626.

25. Bayer, L.L, Edelman, A.B, Caughey, A.B, Rodriguez, M.I. The price of emergency contraception in the United States: what is the cost-effectiveness of ulipristal acetate versus single-dose levonorgestrel? *Contraception* (2013); 87: 385–390. doi: 10.1016/j.contraception.2012.08.034.

26. Ben Lakdar, C, Cauchie, G, Vaillant, N. G. The role of family incomes in cigarette smoking: Evidence from French students. *Social Science & Medicine* (2012); 74: 1864- 1873. doi: 10.1016/j.socscimed.2012.02.036.

27. Berbatis, C. G, Sundeland, V. B, Joyce, A, Bulsara, M. Enhanced pharmacy services, barriers and facilitators in Australia's community pharmacies: Australia's National Pharmacy Database Project. *International Journal of Pharmaceutical Science* (2007); 15: 185- 191. doi: 10.1211/ijpp.15.3.0005.

28. Berkshire Local Pharmaceutical Committee. *Pharmaceutical Needs Assessment West.* [Published February 2011; cited 1st April 2011]. Available from:

http://archive.communitypharmacyhumber.org.uk/ERHLPC/www.lpc-online.org.uk/berkshire_lpc/pharmaceutical_needs_assessment_west.html

29. Bissell, P, Anderson, C. Supplying emergency contraception via community pharmacies in the UK: reflections on the experiences of users and providers. *Social Science & Medicine* (2003); 57(12): 2367- 2378. doi: 10.1016/S0277-9536(03)00129-1.

30. Bissell, P, Savage, I, Anderson, C. A qualitative study of pharmacists' perspectives on the supply of emergency hormonal contraception via patient group direction in the UK. *Contraception* (2006); 73: 265 – 270. doi: 10.1016/j.contraception.2005.07.017.

31. Black, K. I, Catherine, H. M, Johnson, A.M, Wellings, K. Sociodemographic and sexual health profile of users of emergency hormonal contraception: data from a British probability sample survey. *Contraception* (2006); 74: 309– 312. doi: 10.1016/j.contraception.2006.05.067

32. Black, K.I, Mercer, C.H, Kubba, A, Wellings, K. Provision of emergency contraception: a pilot study comparing access through pharmacies and clinical settings. *Contraception* (2008); 77: 181–185. doi: 10.1016/j.contraception.2007.12.001.

33. Boardman, H, Avery, A. J. Effectiveness of a community pharmacy weight management programme. *Int J Clin Pharm* (2014) 36:800–806. doi: 10.1007/s11096-014-9964-3

34. Bock, B. C, Hudmon, K.S, Christian, J, Graham, A. L. A tailored intervention to support pharmacy-based counseling for smoking cessation. *Nicotine & Tobacco Research* (2010); 12: *217–225*. doi: 10.1093/ntr/ntp197

35. Bolton, K.L, Rodriguez, E. Smoking, drinking and body weight after re-employment: does unemployment experience and compensation make a difference? *BMC Public Health* (2009); 9: 77- 89. doi: 10.1186/1471-2458-9-77

36. Bond, L, Egan, M, Kearns, A. Smoking and intention to quit in deprived areas of Glasgow: is it related to housing improvements and neighbourhood regeneration because of improved mental health*? J Epidemiol Community Health* (2012); 0: 1–6. doi:10.1136/jech-2012-201828.

37. Bowling A. Mode of questionnaire administration can have serious effects on data quality. *Journal of Public Health* (2005); 27: 281- 291. doi: 10.1093/pubmed/fdi031.

38. Boyd, K. A, Briggs, A.H. Cost-effectiveness of pharmacy and group behavioural support smoking cessation services in Glasgow. *Addiction* (2009); 104: 317- 325. doi: 10.1111/j.1360-0443.2008.02449.x.

39. Brabin, L, Thomas, G, Hopkins, M, O'Brien, K, Roberts, S. Delivery of chlamydia screening to young women requesting emergency hormonal contraception at pharmacies in Manchester, UK: a prospective study. *BMC Women's Health (*2009), 9: 1- 7. doi: 10.1186/1472-6874-9-7.

40. British Medical Association/ Royal Pharmaceutical Society of Great Britain. British National Formulary No 58. London (2009).

41. Brown, D, Portlock, J, Rutter, P. Review of services provided by pharmacies that promote healthy living. *Int J Clin Pharm* (2012); 34: 399– 409. doi: 10.1007/s11096-012-9634-2.

42. Brown, D, Portlock, J, Rutter, P, Nazar, Z. From community pharmacy to healthy living pharmacy: positive early experiences from Portsmouth, England. *Research in Social and Administrative Pharmacy* (2014); 10(1): 72- 87. doi: 10.1016/j.sapharm.2013.04.014.

43. Brugha, R, Balfe, M, Jeffares, Conroy, R, Clarke, E. Where do young adults want opportunistic chlamydia screening services to be located? *Journal of Public Health* (2011); 33(4): 571– 578. doi: 10.1093/pubmed/fdr028.

44. Bush, J, Langley, C. A, Wilson, K. A. The corporatization of community pharmacy: Implications for service provision, the public health function, and pharmacy's claims to professional status in the United Kingdom. *Research in Social and Administrative Pharmacy* (2009); 5(4): 305-318. doi: 10.1016/j.sapharm.2009.01.003

45. Businellea,M. S, Kendzora, D.E, Reitzela, L.R. Mechanisms linking socioeconomic status to smoking cessation: A structural equation modeling approach. *Health Psychol* (2010); 29(3): 262– 273. doi: 10.1037/a0019285.

46. Butland, B, Jebb, S, Kopelman, P, McPherson, K, Thomas, S. Foresight. Tackling obesities: future choices—project report. Government Office for Science, London. [Published 2007, cited 11th May 2014]. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/287937/07-1184x-tackling-obesities-future-choices-report.pdf.

47. Callison, K, Kaestner, R. Do higher tobacco taxes reduce adult smoking? new evidence of the effect of recent cigarette tax increases on adult smoking. *Economic Inquiry* (2014); 52: 155- 172. doi: 10.3386/w18326.

48. Cameron, S. T, Gordon, R, Glasier, A. The effect on use of making emergency contraception available free of charge. *Contraception* (2012); 86: 366– 369. doi:10.1016/j.contraception.2012.02.018.

49. Cameron, S. T, Melvin, L, Glasier, A, Scott, G. Willingness of gynaecologists, doctors in family planning, GPs, practice nurses and pharmacists to adopt novel interventions for treating sexual partners of women with chlamydia. *An International Journal of Obstetrics & Gynaecology* (2007); 114(12): 1516- 1521. doi: 10.1111/j.1471-0528.2007.01506.x.

50. Camp, S. L, Wilkerson, D. S, Raine, T. R. The benefits and risks of over-the-counter availability of levonorgestrel emergency contraception. *Contraception* (2003); 68: 309– 317. doi: 10.1016/j.contraception.2003.08.011.

51. Centers for Disease Control and Prevention (US); National Center for Chronic Disease Prevention and Health Promotion (US); Office on Smoking and Health (US). How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease: A Report of the Surgeon General. Atlanta (GA): Centers for Disease Control and Prevention (US); 2010. 3, Chemistry and Toxicology of Cigarette Smoke and Biomarkers of Exposure and Harm. Available from: http://www.ncbi.nlm.nih.gov/books/NBK53014/

52. Chen, X, Wen, S.W, Fleming, N, Demissie, K. Teenage pregnancy and adverse birth outcomes: a large population based retrospective cohort study. *International Journal of Epidemiology* (2007);36: 368–373. doi: 10.1093/ije/dyl284.

53. Chemist and Druggist. *PCT investigation 2011*. [Published 2011, cited 8th October 2013]. Available from: http://www.chemistanddruggist.co.uk/pct-home#

54. Conrad, D. Deprivation-based inequalities in under-18 conception rates and the proportion of under-18conceptions leading to abortion in England, 1998–2010. *Journal of Public Health* (2012); 3: 609–614. doi: 10.1093/pubmed/fds031.

55. Conrad, D, Capewell, S. Associations between deprivation and rates of childhood overweight and obesity in England, 2007e2010: an ecological study. *BMJ open* (2012); 2: 1-6. doi: 10.1136/bmjopen-2011-000463.

56. Cooper R.J, Anderson C, Avery T, Bissel P. Nurse and pharmacist supplementary prescribing in the UK – A thematic review of the literature. *Health Policy* (2008a); 85: 277- 292. doi: 10.1016/j.healthpol.2007.07.016.

57. Cooper, R. J, Bissell, P, Wingfield, J. Ethical, religious and factual beliefs about the supply of emergency hormonal contraception by UK community pharmacists. *J Fam Plann Reprod Health Care* (2008b); 34(1): 47–50. doi: 10.1783/147118908783332122.

58. Corelli, R. L, Zillich, A.J, Moor, C. Recruitment of community pharmacies in a randomized trial to generate patient referrals to the tobacco quitline. *Research in Social and Administrative Pharmacy* (2013); 9: 396– 404.

59. Cornuz, J, Gilbert, A, Pinget. C, Mcdonald, P, Salma, K. Cost-effectiveness of pharmacotherapies for nicotine dependence in primary care settings: a multinational comparison. *Tobacco Control* (2006);15: 152- 159. doi: 10.1136/tc.2005.011551.

60. Costello, M. J, Sproule, B, Victor, J. C. Effectiveness of pharmacist counseling combined with nicotine replacement therapy: a pragmatic randomized trial with 6,987 smokers. *Cancer Causes Control* (2011); 22: 167– 180. doi: 10.1007/s10552-010-9672-9

61. Cramp, G.J, Mitchell, C, Steer, C, Pfleger, S. An evaluation of a rural community pharmacy-based smoking-cessation counseling and nicotine replacement therapy initiative. *International Journal of Pharmacy Practice* (2007); 15: 113- 121. doi: 10.1211/ijpp.15.2.0006.

62. Creinin, M. D, Schlaff, W, Archer, D. F, Wan, L. Progesterone receptor modulator for emergency contraception: a randomized controlled trial. *Obstet Gynecol* (2006); 108(5): 1089- 1097. doi: 10.1097/01.AOG.0000239440.02284.45

63. Cromwell J, Bartosch WJ, Fiore MC, Hasselblad V, Baker T. Cost-effectiveness of the clinical practice recommendations in the AHCPR guideline for smoking cessation. *JAMA* 1997; 278(21): 1759– 1766. doi:10.1001/jama.1997.03550210057039.

64. Dabrera, G, Pinson, D, Whiteman, S. Chlamydia screening by community pharmacists: a qualitative study. *J Fam Plann Reprod Health Care (*2011); 37: 17-21. doi:10.1136/jfprhc.2010.0003.

65. Daguerre, A, Nativel, C. *When children become parents: welfare state responses to teenage pregnancy.* Bristol, Policy Press, 2006.

66. Dancey, C, P, Reidy J. *Statistics without Maths for Psychology*. Pearson Education [e- book]. Pearson Education; 2011. p. 168- 210. [cited 23rd February 2014]. Avialable from: https://www.dawsonera.com/readonline/9780273726036.

67. De Vogli, R, Santinello, M. Unemployment and smoking: does psychosocial stress matter? *Tobacco Control* (2005); 14: 389– 395. doi:10.1136/tc.2004.010611.

68. Dent, L. A, Harris, K. J, Noonan, C. W. Randomized Trial Assessing the Effectiveness of a Pharmacist- Delivered Program for Smoking Cessation. *The Annals of Pharmacotherapy* (2009); 43: 194- 201.

69. Department for Communities and Local Government. *The English Indices of Deprivation 2010*. [Published March 2011, cited 6th September 2013]. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6871/1871208.pdf.

70. Department of Health*. A Vision for Pharmacy in the new NHS*. [Published October 2003a; cited 20th August 2010]. Available from: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4070097

71. Department of Health. *Equity and excellence: Liberating the NHS*. [Published July 2010; cited 23rd August 2013]. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/213823/dh_117794.pdf

72. Department of Health. *Guidance for providing and monitoring stop smoking services, 2011 to 2012*. [Published March 2011a, cited 6th June 2013]. Available from: https://www.gov.uk/government/publications/guidance-for-providing-and-monitoring-stop-smoking-services-2011-to-2012

73. Department of Health. *NHS (England) summarised accounts 2010-2011*- summarised accounts of the strategic health authorities, primary care trusts and NHS trusts for the year ended 31 March 2011*.* [Published October 2011b; cited 10th October 2013]. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/229134/1297.pdf.

74. Department of Health. *Pharmacy in England: building on strengths – delivering the future.* [Published April 2008a; cited 20th August 2010]. Available from: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_083815

75. Department of Health. *Pharmacy in the future: implementing the NHS Plan*. [Published September 2000a; cited 24th August 2013]. Available from: http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4005917.

76. Department of Health. *Putting prevention first- vascular checks: risk assessment and management*. [Published April 2008b; cited 7th January 2014]. Available from: http://webarchive.nationalarchives.gov.uk/+/www.dh.gov.uk/en/publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_083822.

77. Department of Health. *Response to the health select committee 5th report of the session 2002-03 on the control of entry regulations and retail pharmacy services in the UK.* [Published July 2003b; cited 2nd February 2014]. Available from: http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4068205.pdf

78. Department of Health. *Saving our lives: Our Healthier Nation*. [Published July 1999; cited 24th September 2013]. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/265576/4386.pdf.

79. Department of Health. *Smoking Kills: a White paper on tobacco*. [Published January 1998, cited 13th September 2013]. Available from: http://www.archive.official-documents.co.uk/document/cm41/4177/4177.htm

80. Department of Health. *The NHS Plan: a plan for investment, a plan for reform*. [Published July 2000b; cited 25th September 2013]. Available from: http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/@ps/documents/digitalasset/dh_118522.pdf.

81. Department of Health. *The NHS (Pharmaceutical Services) Regulations 2005- Information for Primary Care Trusts.* [Published 2005; cited 2nd September 2014]. Available from: http://www.gpcwm.org.uk/wp-content/uploads/file/PHARMACEUTICAL%20SERVICES/NHS_pharmaceutical_services_regs_2005_info_for_pcts.pdf

82. Dhital, R, Norman, I, Whittlesea, C, McCambridge, J. Effectiveness of alcohol brief intervention delivered by community pharmacists: study protocol of a two-arm randomised controlled trial. *BMC Public Health* (2013); 13: 152- 159. doi:10.1186/1471-2458-13-152.

83. Dhital, R, Whittlesea, C. M, Norman, I. J, Milligan, P. Community pharmacy service users' views and perceptions of alcohol screening and brief intervention. *Drug and Alcohol Review* (2010); 29(6): 596- 602. doi: 10.1111/j.1465-3362.2010.00234.x.

84. Doll R, Peto R, Boreham J, Sutherland, I. Mortality in relation to smoking: 50 years' observations on male British doctors. *BMJ* (2004); 10: 1136- 1145. doi: http://dx.doi.org/10.1136/bmj.38142.554479.AE.

85. Donyai, P, Berg, M. V. D. Coronary heart disease risk screening: the community pharmacy Healthy Heart Assessment Service. *Pharm World Sci* (2009); 31: 643–647. doi: 10.1007/s11096-009-9338-4.

86. Douglas, L, Szatkowski, L. Socioeconomic variations in access to smoking cessation interventions in UK primary care: insights using the Mosaic classification in a large dataset of primary care records. *BMC Public Health* (2013); 13: 546- 553. doi: 10.1186/1471-2458-13-546.

87. Downing, S.G, Payze, C. Doyle-adams, S. Gorton, C. Emergency contraception over-the-counter: Practices and attitudes of pharmacists and pharmacy assistants in far North Queensland*. Australian and New Zealand Journal of Obstetrics and Gynaecology* (2011); 51: 527–531. doi: 10.1111/j.1479-828X.2011.01347.x.

88. Duggan, C, Evans, D, Holden, M, Kennington, E, Leach, R. Evaluation of the Healthy Living Pharmacy work programme 2011- 2012 [Published April 2013, cited 5tof November 2013] available from: http://psnc.org.uk/wp-content/uploads/2013/08/HLP-evaluation.pdf.

89. Eades, C.E, Ferguson, J.S, O'Carroll, R.E. Public health in community pharmacy: A systematic review of pharmacist and consumer views. *BMC Public Health* (2011); 11: 582. doi:10.1186/1471-2458-11-582.

90. Elliott, R. A, Boyd, M. J, Waring, J, Barber, N, Mehta, R. Department of Health Policy Research Programme Project 'Understanding and Appraising the New Medicines Service in the NHS in England (029/0124). [Published August 2014; cited 5th September 2014]. Available from: http://www.nottingham.ac.uk/~pazmjb/nms/downloads/report/index.html

91. Ermisch, J, Pevalin, D.J. Early childbearing and housing choices. *Journal of Housing Economics* (2004); 13: 170–194. doi: 10.1016/j.jhe.2004.07.001.

92. Fagerström, K, Hughes, J. Varenicline in the treatment of tobacco dependence. *Neuropsychiatric Disease and Treatment* (2008); 4: 353- 363.

93. Feenstra,T,.L, Hamberg-van Reenen, H,H, Hoogenveen, R.T, Mölken,R. Cost-Effectiveness of Face-to-Face Smoking Cessation Interventions: A Dynamic Modeling Study. *Value in Health* (2005); 8: 178- 190. doi: 10.1111/j.1524-4733.2005.04008.x

94. Ferguson, A, Bauld, L, Chesterman, J, Judge, K. The English smoking treatment services: one-year outcomes. *Addiction* (2005); 100: 59- 69. doi: 10.1111/j.1360-0443.2005.01028.x

95. Finchman, J.E. Response Rates and Responsiveness for Surveys, Standards, and the Journal. *American Journal of Pharmaceutical Education* (2008); 72 (2) Article 43.

96. Fiscella K, Franks P. Cost-effectiveness of the transdermal nicotine patch as an adjunct to physicians' smoking cessation counselling. *JAMA* (1996); 275 :1247–1251. doi:10.1001/jama.1996.03530400035035.

97. Fitzgerald, N, Watson, H, McCaig, D, Stewart, D. Developing and evaluating training for community pharmacists to deliver interventions on alcohol issues. *Pharm World Sci* (2009); 31:149–153. doi: 10.1007/s11096-009-9284-1.

98. Folkes, L, Graham, A, Weiss, M. A qualitative study of the views of women aged 18-29 on over-the counter availability of hormonal emergency contraception. *The Journal of Family Planning and Reproductive Health Care* (2001); 27(4):189-192. doi: 10.1783/147118901101195731.

99. Food and Drug Administration. [Published March 2012, cited 18th September 2013]. Available from: http://www.fda.gov/TobaccoProducts/GuidanceComplianceRegulatoryInformation/ucm297786.htm

100. Fraser, L. K, Edwards, K. L. The association between the geography of fast food outlets and childhood obesity rates in Leeds, UK. *Health & Place* (2010); 16: 1124–1128. doi:10.1016/j.healthplace.2010.07.003.

101. Fu, S, Burgess, D, Ryn, M, V, Hatsukami, D, K, Solomon, J, Joseph, A, M. Views on smoking cessation methods in ethnic minority communities: A qualitative investigation. *Preventive Medicine* (2007); 44: 235- 240. doi: 10.1016/j.ypmed.2006.11.002.

102. Fukuda, Y, Nakamura, K, Takano, T. Socioeconomic Pattern of Smoking in Japan: Income Inequality and Gender and Age Differences. *AEP* (2005);15: 365-372. doi: 10.1016/j.annepidem.2004.09.003.

103. Gale, A. Watson, M. C. The provision of current and future sexual health services from community pharmacies in Grampian, Scotland. *Int J Clin Pharm* (2011); 33: 183– 190. doi: 10.1007/s11096-010-9458-x.

104. Gidman, w. Increasing community pharmacy workloads in England: causes and consequences. *Int J Clin Pharm* (2011);33: 512- 520. doi: 10.1007/s11096-011-9498-x.

105. Gilman, S, E, Martin, L, T, Abrams, D, B. Smoking educational attainment and cigarette smoking: a causal association? *International Journal of Epidemiology* (2008); 37: 615–624. doi: 10.1093/ije/dym250.

106. Giskes, K. Lenthe, F,J. Turrell, G, Mackenbach, J, P. Smokers living in deprived areas are less likely to quit: a longitudinal follow-up. *Tobacco Control* (2006); 15: 485- 488. doi: 10.1136/tc.2006.015750.

107. Glasier A, Baird DT. The effects of self-administering emergency contraception. *New Eng J Med* (1998); 339: 1–4. doi: 10.1056/NEJM199807023390101

108. Glasier A. Emergency contraception. Is it worth all the fuss? *BMJ* (2006);333: 560– 1. doi 10.1136/bmj.38960.672998.80.

109. Glasier, A. Emergency contraception: clinical outcomes. *Contraception* (2013); 87: 309– 313. doi: 10.1016/j.contraception.2012.08.027

110. Glasier, A, Manners, R, Loudon, J. C, Muir, A. Community pharmacists providing emergency contraception give little advice about future contraceptive use: a mystery shopper study. *Contraception* (2010a); 82(6): 538- 542. doi: 10.1016/j.contraception.2010.05.008

111. Glasier, A.F, Cameron, S.T, Fine, P.M, Logan, S.J. Ulipristal acetate versus levonorgestrel for emergency contraception: a randomised non-inferiority trial and meta-analysis. *The Lancet (*2010b); 375: 555–562. doi: 10.1016/S0140-6736(10)60101-8.

112. Gliem, J.A, Gliem, R.R. Calculating, interpreting, and reporting Cronbach's Alpha reliability coefficient for likert-type scales. Midwest Research to Practice Conference in Adult, Continuing, and Community Education, Ohio, USA (2003): 82–88.

113. Goodman A., Kaplan G. and Walker I. Understanding the effects of early motherhood in Britain: the effects on mothers. *IFS Working Papers* (2004); W04/20.

114. Grimes, D, Hertzen, H. V, Piaggio, G, Van Look, P. F. A. Randomised controlled trial of levonrgesterl versus the Yuzpe regimen of combined oral contraceptives for emergency contraception. *The Lancet* (1998); 352: 428- 432. doi: 10.1016/S0140-6736(98)05145-9

115. Gross, T, Lafortune, J, Low, C. (2012). What happens the morning after? The costs and benefits of expanding access to emergency contraception. Unpublished Working Paper available at http://eco3147.facea.puc.cl/economia_puc/docs/dt_425.pdf

116. Gudka, S, Bourdin, A, Watkins, K, Eshghabadi, A. Self-reported risk factors for chlamydia: a survey of pharmacy-based emergency contraception consumers. *International Journal of Pharmacy Practice* (2014);22: 13–19. doi: 10.1111/ijpp.12042.

117. Gudka, S, Marshall , L, Creagh, A, Clifford, R. M. To develop and measure the effectiveness and acceptability of a pharmacy-based chlamydia screening intervention in Australia. *BMJ* (2013) ; 3. doi:10.1136/bmjopen-2013-003338

118. Gupta, N, Kuran, U, Bhal, K. Teenage pregnancies: Obstetric characteristics and outcome. *European Journal of Obstetrics & Gynecology and Reproductive Biology* (2008); 137: 165–171. doi: 10.1016/j.ejogrb.2007.06.013.

119. Harden, A, Brunton, G, Fletcher, A. Teenage pregnancy and social disadvantage: systematic review integrating controlled trials and qualitative studies. *BMJ* (2009); 339: 254. doi: http://dx.doi.org/10.1136/bmj.b4254.

120. Harrison-Woolrych M, Duncan, A, Howe J, Smith, C. Improving access to emergency contraception. *BMJ* (2001); 322: 186– 187. doi: http://dx.doi.org/10.1136/bmj.322.7280.186/a.

121. Hasan, S, Sulieman, H, Chapman, C. B, Stewart, K. Community pharmacy services in the United Arab Emirates. *International Journal of Pharmacy Practice* (2012); 20: 218– 225. doi: 10.1111/j.2042-7174.2011.00182.x.

122. Hassel, K. Office of Fair Trading. The control of entry regulations and retail pharmacy services in the UK. [Published January 2003, cited 24th April 2011].

Available from: http://www.kernowlmc.org.uk/OFT_Control_of_Entry_Regs.pdf

123. Hassell, K, Seston, E.M, Shafheutle, E.I, Wagner, A. Workload in community pharmacies in the UK and its impact on patient safety and pharmacists' well-being: a review of the evidence. *Health and Social Care in the Community* (2011); 19(6): 561– 575. doi: 10.1111/j.1365-2524.2011.00997.x.

124. Health and Social Care Information Centre. *General Pharmaceutical Services in England- 2002-2003 to 2011- 2012*. [Published November 2012a, cited 24th January 2013]. Available from: http://www.hscic.gov.uk/searchcatalogue?productid=9731&q=general+pharmaceutical+services&topics=1%2fPrimary+care+services%2fCommunity+pharmacy+services&sort=Most+recent&size=10&page=1#top

125. Health and Social Care Information Centre. *General Pharmaceutical Services in England- 2003-2004 to 2012- 2013*. [Published November 2013, cited 6th April 2014]. Available from: http://www.hscic.gov.uk/article/2021/Website-Search?productid=13373&q=general+pharmaceutical+service&sort=Relevance&size=10&page=1&area=both#top

126. Health and Social Care Information Centre. *Statistics on Alcohol: England 2011*. [Published May 2011a, cited 3rd April 2014]. Available from: http://www.hscic.gov.uk/catalogue/PUB00144/alco-eng-2011-rep.pdf.

127. Health and Social Care Information Centre. *Statistics on Smoking- England 2006*. [Published August 2006 , cited 9th July 2013]. Available from: http://www.hscic.gov.uk/catalogue/PUB00662/smok-eng-2006-rep.pdf.

128. Health and Social Care Information Centre. *Statistics on NHS Stop Smoking Services- England, April 2010 to March 2011, Annual report*. [Published August 2011b, cited 8th September 2013]. Available from:

http://www.hscic.gov.uk/catalogue/PUB00417/nhs-stop-smok-serv-eng-2010-2011-rep.pdf.

129. Health and Social Care Information Centre. *Statistics on Smoking- England 2012*. [Published August 2012b, cited July 2013]. Available from: http://www.hscic.gov.uk/catalogue/PUB07019.

130. Health and Social Care Information Centre. Statistics on NHS Stop Smoking Services- England, April 2009 to March 2010, Annual report. [Published August 2010, cited September 2013]. Available from:

http://www.hscic.gov.uk/searchcatalogue?productid=1220&q=title%3a%22Statistics+on+NHS+Stop+Smoking+Services%22&sort=Relevance&size=10&page=2#top

131. Health & Social Care Information Centre. Statistics on Smoking: England, 2007. [Published September 2007, cited 2nd July 2013]. Available from: http://www.hscic.gov.uk/article/2021/Website-Search?productid=1275&q=title%3a%22Statistics+on+Smoking%22&sort=Relevance&size=10&page=2&area=both#top

132. Heikkinen, H, Patja, K, Jallinoja, P. Smokers' accounts on the health risks of smoking: Why is smoking not dangerous for me? *Social Science & Medicine* (2010); 71: 877- 883. doi: 10.1016/j.socscimed.2010.05.036.

133. Hendricks, P. S, Ditre, J. W, Drobes, D. J. The early time course of smoking withdrawal effects. *Psychopharmacology* (2006); 187: 385– 396.doi: 10.1007/s00213-006-0429-9

134. Henkler, F, Luch, A. E-cigarettes in Europe: does regulation swing from overcautious to careless? *Arch Toxicol* (2014); 88: 1291–1294. doi: 10.1007/s00204-014-1293-8.

135. Hertzen, H. V, Piaggio, G, Peregoudov, A, Ding, J. Low dose mifepristone and two regimens of levonorgestrel for emergency contraception: a WHO multicentre randomised trial. *The Lancet* (2002); 360- 1803- 1810. doi: doi:10.1016/S0140-6736(02)11767-3.

136. Hertzog, M. A. Considerations in Determining Sample Size for Pilot Studies. *Research in Nursing & Health* (2008); 31: 180– 191. doi: 10.1002/nur.20247.

137. Hinchliffe, A. Literature review: emergency hormonal contraception and other interventions to reduce teenage pregnancy. Public Health Wales NHS Trust (2010). [Published July 2019; cited 12th January 2013]. Available from: https://www2.nphs.wales.nhs.uk/PharmaceuticalPHTDocs.nsf/($All)/C3D14C48910CF6378025723500377DF6/$File/Microsoft%20Word%20-%20Literature%20review-%20emergency%20hormonal%20contraception%20_update%202010_.pdf?OpenElement.

138. Hiscock, R, Bauld, L, Amos, A, Fidler, Plarr, S. Smoking and socioeconomic status in England: the rise of the never smoker and the disadvantaged smoker. *Journal of Public Health* (2012a); 34: 390- 396. doi: 10.1093/pubmed/fds012.

139. Hiscock, R, Bauld, L, Amos, A, Fidler, J, A, Munaf, M. Socioeconomic status and smoking: a review. *Ann. N. Y. Acad. Sci* (2012b); 1248, 107- 123. doi: 10.1111/j.1749-6632.2011.06202.x.

140. Horgan, J. M. P, Blenkinsopp, A, McManus, R. J. Evaluation of a cardiovascular disease opportunistic risk assessment pilot ('Heart MOT' service) in community pharmacies. *Journal of Public Health* (2010); 32(1): 110-116. doi: 10.1093/pubmed/fdp092.

141. Horsfield, E, Kelly, F, Sheridan, J, Stewart, J. Could community pharmacies help to improve youth health? Service availability and views of pharmacy personnel in New Zealand. *Int J Public Health* (2014). *doi:*10.1007/s00038-014-0593

142. Hudson, B, Boylan, M. The School of Pharmacy, University of London: Medicines Science and Society, 1842-2012; (2013). Available from: http://www.sciencedirect.com/science/book/9780124076655

143. Huisman, M, Kunst, A.E, Mackenbach, J.P. Inequalities in the prevalence of smoking in the European Union: comparing education and income. *Preventive Medicine* (2005); 40: 756– 764. doi:10.1016/j.ypmed.2004.09.022.

144. Hukkanen, J, Jacob, P, Benowitz, N, L. Metabolism and Disposition Kinetics of Nicotine. *Pharmacological Reviews* (2005); 57: 79- 115. doi: 10.1124/pr.57.1.3.

145. Hutzler, C, Paschke, M, Kruschinski, S, Henkler, F, Hahn, J, Luch, A. Chemical hazards present in liquids and vapors of electronic cigarettes. *Arch Toxicol* (2014); 88: 1295– 1308. doi: 10.1007/s00204-014-1294-7.

146. Jacobs, S, Hassell, K, Ashcroft, D, Johnson, S. Workplace stress in community pharmacies in England: associations with individual, organizational and job characteristics. *Journal of Health Services Research & Policy* (2014); 19(1): 27–33. doi: 10.1177/1355819613500043.

147. Jackson, R, A, Schwarz, E. B, Freedman, L, Darney, P. Advance Supply of Emergency Contraception: Effect on Use and Usual Contraception—A Randomized Trial. *The American College of Obstetricians and Gynecologists* (2003); 102: 8- 16.

148. Jarvis, M.J. ABC of smoking cessation- Why people smoke. *BMJ* (2004); 328: 227- 279.

149. Jha, P, Peto, Zatonski, W, Boreham, J, Jarvis, M, J, Lopez, A, D. Social inequalities in male mortality, and in male mortality from smoking: indirect estimation from national death rates in England and Wales, Poland, and North America. *The Lancet* (2006); 368: 367- 370. doi: 10.1016/S0140-6736(06)68975-7.

150. Jha, P, Ramasundarahettige, C, Landsman, V. 21st-Century Hazards of Smoking and Benefits of Cessation in the United States. *The new England Journal of Medicine* (2013); 368: 341- 350. doi:10.1056/NEJMsa1211128.

151. Jolly, K, Lewis, A, Beach, J, Denley, J. Comparison of range of commercial or primary care led weight reduction programmes with minimal intervention control for weight loss in obesity: Lighten Up randomised controlled trial. *BMJ* (2011); 343: 1-16. doi: http://dx.doi.org/10.1136/bmj.d7243.

152. Kaplan G, Goodman A, Walker I (2004), Understanding the Effects of Early Motherhood in Britain: the Effects on Mothers. Economic Research Papers (2004); 706. Coventry: University of Warwick.

153. Karlsen, S, Millward, D, Sandford, A. Investigating ethnic differences in current cigarette smoking over time using the health surveys for England. *European Journal of Public Health* (2011); 22: 254- 256. doi: 10.1093/eurpub/ckr097.

154. Khan, N. S, Norman, I. J, Dhital, R, McCrone, P. Alcohol brief intervention in community pharmacies: a feasibility study of outcomes and customer experiences. *Int J Clin Pharm* (2013) ; 35: 1178– 1187. doi:10.1007/s11096-013-9845-1.

155. Killick, S. R, Irving, G. A national study examining the effect of making emergency hormonal contraception available without prescription. *Human Reproduction* (2004); 19: 553- 557. doi: 10.1093/humrep/deh128.

156. Kissiwaa, S, Simpson, M.D, Burton, D.L. Smoking cessation and the pharmacy: what are the issues that need to be addressed before the implementation of an intensive pharmacy based smoking cessation programme? Pharmacists and pharmacy assistant perspective. *Innovative Journal of Medical and Health Science* (2012); 2: 112 – 117.

157. Kotz D, West, R. Explaining the social gradient in smoking cessation: it's not in the trying, but in the succeeding. *Tob Control* (2009), 18: 43- 46. doi: 10.1136/tc.2008.025981

158. Krska, J, Lovelady, C, Connolly, D, Parmer, S. Community pharmacy contribution to weight management: identifying opportunities. *International Journal of Pharmacy practice* (2010); 18: 7- 12. doi: 10.1211/ijpp/18.01.0003.

159. Krska,J, Mackridge, A. J. Involving the public and other stakeholders in development and evaluation of a community pharmacy alcohol screening and brief advice service. *Drug and Alcohol Review* (2013); 32: 147– 156. doi: 10.1111/j.1465-3362.2012.00513.x.

160. Lader, D. (2007). Smoking-related Behaviour and Attitudes, 2006. London: The Office for National Statistics. Available from: http://www.ons.gov.uk/ons/rel/lifestyles/smoking-related-behaviour-and-attitudes/2006/index.html

161. Laliberté, M, Perreault, S, Damestoy, N, Lalonde, L. Ideal and actual involvement of community pharmacists in health promotion and prevention: a cross-sectional study in Quebec, Canada. *BMC Public Health* (2012);12: 192- 201. doi: 10.1186/1471-2458-12-192.

162. Lancaster, G. A, Dodd, S, Williamson, P. R. Design and analysis of pilot studies: recommendations for good practice. *Journal of Evaluation in Clinical Practice* (2004); 10: 307– 312. doi: 10.1111/j..2002.384.doc.x

163. Lea VM, Corlett, SA, Rodgers, RM. Workload and its impact on community pharmacists' job satisfaction and stress: a review of the literature. *Int J Pharm Pract* (2012);20: 259-71. doi: 10.1111/j.2042-7174.2012.00192.x.

164. Legislation.gov.uk. Health Act 2009. [Published 2009; cited 22th October 2013]. Available from: http://www.legislation.gov.uk/ukpga/2009/21/contents

165. Lewington, G, Marshall, K. Access to emergency hormonal contraception from community pharmacies and family planning clinics. *British Journal of Pharmacology* (2006); 61(5): 605- 608. doi:10.1111/j.1365-2125.2006.02623.x.

166. Lloyd, K, Gale, E. Provision of emergency hormonal contraception through community pharmacies in a rural area. *J Fam Plann Reprod Health Care* (2005); 31(4): 297- 300. doi: 10.1783/jfp.31.2.297.

167. Low. A, Unsworth. L, Miller. I. Avoiding the danger that stop smoking services may exacerbate health inequalities: building equity into performance assessment. *BMC* Public Health (2007); 7: 198. doi:10.1186/1471-2458-7-198.

168. Low, N, McCarthy, A, Macleod, J, Salisbury, C. Epidemiological, social, diagnostic and economic evaluation of population screening for genital chlamydial infection. *Health Technology Assessment* (2007); 11: 1-148. doi: 10.3310/hta11080.

169. Lowey H, Tocque K, Bellis MA et al. Smoking cessation services are reducing inequalities. J Epidemiol Community Health. (2003); 57(8): 579– 580. doi:10.1136/jech.57.8.579

170. Maguire, T.A, Mcelnay, J.C, Drummonda, A. Randomized controlled trial of a smoking cessation intervention based in community pharmacies. *Addiction* (2001); 96: 325- 331. doi: 10.1046/j.1360-0443.2001.96232516.x

171. Mandelblatt, J. S, Fryback, D.G, Weinstein, M. C, Russell, L. B. Assessing the effectiveness of health interventions for cost-effectiveness analysis. Panel on Cost-Effectiveness in Health and Medicine. *J Gen Inern Med* (1997); 12: 551– 558

172. Marciante, K.D, Gardner, J.S, Veenstra, D.L, Sullivan, S.D. Modeling the Cost and Outcomes of Pharmacist-Prescribed Emergency Contraception. *American Journal of Public Health* (2001); 91: 1443- 1445.

173. Marston, C, Meltzer, H, Majeed, A. Impact on contraceptive practice of making emergency hormonal contraception available over the counter in Great Britain: repeated cross sectional surveys. *BMJ* (2005); 331: 271- 276. doi: http://dx.doi.org/10.1136/bmj.38519.440266.8F.

174. McAllister, K. F, Elliott, L, Thomson, D. A, Bigrigg, A. Evaluation of a young person's sexual health service in a commercial setting. *The Journal of Family Planning and Reproductive Health Care* (2002); 28(4): 203–206. doi: 10.1783/147118902101196586.

175. McCabe, C. What is cost–utility analysis?. Hayward Group Ltd, February 2009. Available from: http://www.medicine.ox.ac.uk/bandolier/painres/download/whatis/What_is_cost-util.pdf

176. McCaig, D, Fitzgerald, N, Stewart, D. Provision of advice on alcohol use in community pharmacy: a cross-sectional survey of pharmacists' practice, knowledge, views and confidence. *International Journal of Pharmacy practice* (2011); 19 (3): 171- 178. doi: 10.1111/j.2042-7174.2011.00111.x.

177. McEwen, A, West, R, McRobbie, H. Effectiveness of specialist group treatment for smoking cessation vs. one-to-one treatment in primary care. *Addictive Behaviours* (2006); 31: 1650-1660. doi: 10.1016/j.addbeh.2005.12.014.

178. McNaughton, R. J, Oswald, N. T. A, Shucksmith, J. S, Heywood, P.J. Making a success of providing NHS Health Checks in community pharmacies across the Tees Valley: a qualitative study. *BMC Health Services Research* (2011); 11: 222-228. doi:10.1186/1472-6963-11-222.

179. McNeill, A, Raw, M, Whybrow, J, Bailey, P. A national strategy for smoking cessation treatment in England. *Addiction* (2005); 100: 1-11. doi: 10.1111/j.1360-0443.2005.01022.x.

180. Medicines and Healthcare Products Regulatory Agency. *Azithromycin reclassification: pharmacy availability to treat chlamydia.* [Published September 2008, cited 17th May 2014]. Available from: http://www.mhra.gov.uk/Safetyinformation/DrugSafetyUpdate/CON094193.

181. Medicines and Healthcare Products Regulatory Agency*. Change in dose of emergency contraceptive (Levonell*e). [Published December 2003; cited 5th January 2013]. Available from: http://www.mhra.gov.uk/Safetyinformation/Safetywarningsalertsandrecalls/Safetywarningsandmessagesformedicines/CON2015690.

182. Medicines and Healthcare Products Regulatory Agency. Legal status and reclassification. [Updated May 2013a, cited 24th February 2014]. Available from: http://www.mhra.gov.uk/Howweregulate/Medicines/Licensingofmedicines/Legalstatusandreclassification/.

183. Medicines and Healthcare Products Regulatory Agency. *Patient Group Directions in the NHS.* [Updated December 2013b, cited 22th March 2014]. Available from: http://www.mhra.gov.uk/Howweregulate/Medicines/Availabilityprescribingsellingandsupplyingofmedicines/ExemptionsfromMedicinesActrestrictions/PatientGroupDirectionsintheNHS/index.htm.

184. Medicines and Healthcare Products Regulatory Agency. *Stop smoking treatments.* [Updated February 2014, cited 24th March 2014]. Available from: http://www.mhra.gov.uk/Safetyinformation/Generalsafetyinformationandadvice/Product-specificinformationandadvice/Product-specificinformationandadvice%E2%80%93M%E2%80%93T/Stopsmokingtreatments/index.htm

185. Merks,P, Kaźmierczak,J, Olszewska, A.E, Kołtowska-Häggström, M. Comparison of factors influencing patient choice of community pharmacy in Poland and in the UK, and identification of components of pharmaceutical care. *Patient Preference and Adherence* (2014); 8: 715– 726. doi: 10.2147/PPA.S53829.

186. Meshack, A, Moultry, A.M, Hu, S, McAlister, A.L. Smoking Cessation Counseling Practices of Texas Pharmacists. *J Community Health* (2009); 34: 231–238. doi: 10.1007/s10900-008-9146-0.

187. Molyneux, A. ABC of smoking cessation Nicotine Replacement Therapy. *BMJ* (2004); 328: 454- 456.

188. Momin, B, Neri, A, McCausland, K, Duke, J, Hansen, H. Traditional and Innovative Promotional Strategies of Tobacco Cessation Services: A Review of the Literature. *J Community Health* (2014); 39: 800– 809. doi: 10.1007/s10900-014-9825-y.

189. Montouchet, C, Trussell, J. Unintended pregnancies in England IN 2010: costs to the National Health Service (NHS). *Contraception* (2013); 87(2): 149– 153. doi: 10.1016/j.contraception.2012.06.008

190. Morrison, D, McLoone, P, Brosnahan, N, McCombie, L. A community pharmacy weight management programme: an evaluation of effectiveness. *BMC Public Health* (2013); 13: 382- 389. doi: 10.1186/1471-2458-13-282.

191. Murray, R. L, Bauld, L, Hackshaw, L.E, McNeill, A. Improving access to smoking cessation service for disadvantaged groups: a systematic review. *Journal of Public Health* (2009); 31: 258- 277. doi: 10.1093/pubmed/fdp008.

192. National Chlamydia Screening Programme. *Guidance for the development of specifications for the commissioning of chlamydia screening in General Practice and Community Pharmacy.* [Published March 2010a, cited 25th June 2014]. Available from: http://www.chlamydiascreening.nhs.uk/ps/resources/guidelines/guidance_development_of_specifications.pdf

193. National Chlamydia Screening Programme. Home page on the internet. [Published 2013, cited 24th April 2014]. Available from: http://www.chlamydiascreening.nhs.uk/.

194. National Chlamydia Screening Programme. *NHS Vital Signs 2009/10.* [Published 2010b, cited 11th June 2011]. Available from: http://www.chlamydiascreening.nhs.uk/ps/resources/data-tables/VSI_by_PCT_Apr09_Mar10.pdf

195. NHS Ashton, Leigh and Wigan. *Pharmaceutical Needs Assessment.* [Published February 2011, cited 24th March 2011]. Available from: http://www.wigan.gov.uk/Docs/PDF/Council/Strategies-Plans-and-Policies/HealthAndSocialCare/JSNA/NHSALWPharmaceuticalNeedsAssessment-Finalversion.pdf

196. National Health Services Choices. *Emergency contraception (morning after pill, IUD)*. [Updated January 2013, cited 24th May 2014]. Available from: http://www.nhs.uk/Conditions/contraception-guide/Pages/emergency-contraception.aspx.

197. NHS Portsmouth. *Healthy Living Pharmacy Prospectus*. [Published December 2009; cited 16th September 2014]. Available from: http://www.networks.nhs.uk/nhs-networks/hlp-pathfinder-sites/documents/hlp-prospectus/072HealthyLivingPharmacyFINAL.pdf

198. National Institute for Health and Care Excellence. *The guidelines manual.* [Published November 2012; cited 15th August 2013]. Available from:

http://publications.nice.org.uk/the-guidelines-manual-pmg6/about-this-manual.

199. National Pharmacy association. *Healthy Living Champion course and Applied Award.* [Updated 2014; cited 16th September 2014]. Available from: http://www.npa.co.uk/Developing-Teams-Careers/NPA-Learning/Healthy-Living-Champion-course-and-Applied-Award/

200. Newlands, R. S, Watson, M. C, Lee, A. J. The provision of current and future Healthy Weight Management (HWM) services from community pharmacies: a survey of community pharmacists' attitudes, practice and future possibilities. *International Journal of Pharmacy practice* (2011); 19(2): 106- 114. doi: 10.1111/j.2042-7174.2010.00080.x.

201. Nowak, D, Jörres, R.A, Rüther, T. E-Cigarettes—Prevention, Pulmonary Health, and Addiction. *Dtsch Arztebl Int* (2014); 111: 349-355. doi: 10.3238/arztebl.2014.0349.

202. Noyce, P.R. Providing Patient Care Through Community Pharmacies in the UK: Policy, Practice, and Research. *The Annals of Pharmacotherapy* (2007); 41: 861-868.

203. O'Donnell, S. C, Brown, C. M, Dastani, H. B.Barriers to Counseling Patients With Obesity: A Study of Texas Community Pharmacists. *J Am Pharm Assoc* (2006); 46(4): 465- 471.

204. Office of Fair Trading. Evaluating the impact of the 2003 OFT study on the Control of Entry regulations in the retail pharmacies market. [Published March 2010, cited 11th January 2014]. Available from: http://www.dotecon.com/assets/images/oft1219.pdf.

205. Office for National Statistics*. Population estimates by ethnic group (experimental), mid-2009*. [Published May 2011, Accessed 15th September 2012]. Available from: http://www.ons.gov.uk/ons/rel/peeg/population-estimates-by-ethnic-group--experimental-/current-estimates/population-estimates-by-ethnic-group-mid-2009-for-primary-care-organisations--experimental-.xls.

206. Oza, A.. Plan b as insurance: The effect of over-the-counter emergency contraception on pregnancy terminations and STIs. Unpublished Working Paper. Retrieved from Indiana University-Purdue University Indianapolis Department of Economics website. [Published October 2009; cited 25th January 2013] Available from: http://liberalarts.iupui.edu/economics/uploads/docs/oza.pdf.

207. Oza, S, Thun, M, J, Henley, S, J, Lopez, A, D, Ezzati, M. How many deaths are attributable to smoking in the United States? Comparison of methods for estimating smoking-attributable mortality when smoking prevalence changes. *Preventive Medicine* (2011); 52: 428–433. doi: 10.1016/j.ypmed.2011.04.007.

208. Park, E.R, Chang, Y, Quinn, V, Regan, S, Cohen, L. The association of depressive, anxiety, and stress symptoms and postpartum relapse to smoking: A longitudinal study. *Nicotine & Tobacco Research* (2009); 11: 707– 714. doi: 10.1093/ntr/ntp053.

209. Parson, J, Adams, C, Aziz, N, Holmes, J. Evaluation of a community pharmacy delivered oral contraception service. *Journal of Family Planning and Reproductive Health Care* (2013); 39: 97– 101. doi:10.1136/jfprhc-2012-100304

210. Peipert J.F. Genital Chlamydial Infections. *New England Journal of Medicine* (2003); 349**:** 2424-2430. doi: 10.1056/NEJMcp030542

211. Peipert, J.F, Madden, T, Allsworth, J.E, Secura, M. Preventing Unintended Pregnancies by Providing No-Cost Contraception. *Obstet Gynecol* (2012); 120(6): 1291–1297. doi: http://10.1097/AOG.0b013e318273eb56.

212. Pfleger D, McHattie L, Diack H, McCaig D, Stewart D. Views, attitudes and self assessed training needs of Scottish community pharmacists to public health practice and competence. *Pharmacy World and Science* (2008); 30: 801-809. doi: 10.1007/s11096-008-9228-1

213. Pharmaceutical Services Negotiating Committee. *Services specifications and resources.* [Updated 2014, Accessed 11th June 2014]. Available from: http://psnc.org.uk/services-commissioning/locally-commissioned-services/service-specifications-and-resources/

214. Phillips, C. What is cost effectiveness? Hayward Group Ltd, February 2009. Available from: http://www.medicine.ox.ac.uk/bandolier/painres/download/whatis/Cost-effect.pdf

215. Phillips, C, Thompson, G. What is QALY? Hayward Group Ltd, April 2009. Available from: http://www.medicine.ox.ac.uk/bandolier/painres/download/whatis/QALY.pdf

216. Pirie, K, Peto, R, Reeves,G, K, Green,J, Beral, V. The 21st century hazards of smoking and benefits of stopping: a prospective study of one million women in the UK. *The Lancet* (2013); 381: 133–141. doi: http://dx.doi.org/10.1016/S0140-6736(12)61720-6.

217. Pisinger, C, Aadahl, M, Toft, U, Jørgensen, T. Motives to quit smoking and reasons to relapse differ by socioeconomic status. *Preventive Medicine* (2011); 52: 48–52. doi: 10.1016/j.ypmed.2010.10.007.

218. Primary Care Commissioning. Pharmacy enhanced services from 1 April 2013. [Published April 2013, cited 5th August 2014]. Available from: http://www.pcc-cic.org.uk/article/pharmacy-enhanced-services-1-april-2013.

219. Public Health England. *Consolidating and developing the evidence base and research for community pharmacy's contribution to public health: a progress report from Task Group 3 of the Pharmacy and Public Health Forum*. [Published January 2014, cited 4th September 2014]. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/271682/20140110-Community_pharmacy_contribution_to_public_health.pdf

220. Public Health England. *Welcome to Health Profiles*. [Published July 2010, cited 25th July 2010]. Available from: http://www.apho.org.uk/default.aspx?QN=HP_FINDSEARCH2012

221. Richardson, E, Pollock, A. M. Community pharmacy: moving from dispensing to diagnosis and treatment. *BMJ* (2010); 340: 1066- 1068. doi: http://dx.doi.org/10.1136/bmj.c2298.

222. Roddy, E, Antoniak, M, Britton, J. Barriers and motivators to gaining access to smoking cessation services amongst deprived smokers – a qualitative study. *BMC Health Services Research (*2006); 6: 147- 153. doi:10.1186/1472-6963-6-147

223. Royal Pharmaceutical Society. *History of pharmacy*. [Published 2014, cited 11th May 2014]. Available from: http://www.rpharms.com/about-pharmacy/history-of-pharmacy.asp

224. Saba, M, Diep, J, Bittoun, R, Saini, B. Provision of smoking cessation services in Australian community pharmacies: a simulated patient study. *Int J Clin Pharm* (2014); 36: 604– 614. doi: 10.1007/s11096-014-9944-7.

225. Santos, J. R. Cronbach's Alpha: A tool for assessing the reliability of scales. *Journal of Extension* (1999), 37(2). Available from: http://www.joe.org/joe/1999april/tt3.html

226. Sarayani, A, Rashidian, A, Gholami, K.Efficacy of Continuing Education in Improving Pharmacists' Competencies for Providing Weight Management Service: Three-Arm Randomized Controlled Trial. *Journal of Continuing Education in Health Professions* (2012); 32: 165- 173. doi: 10.1002/chp.

227. Saunders, J.M, Mercer, C.H, Sutcliffe, L.J, Hart, G.J. Where do young men want to access STI screening? A stratified random probability sample survey of young men in Great Britain. *Sex Transm Infect* (2012); 88; 427– 432. doi:10.1136/sextrans-2011-050406

228. Schunck, R. Rogge, B.G. No causal effect of unemployment on smoking? A German panel study. *International Journal of Public Health* (2012); 57: 867- 874. doi: 10.1007/s00038-012-0406-5.

229. Schillo, B.A, Mowery, A, Greenseid, L.O, Luxenberg, M. G, Zieffler, A. The relation between media promotions and service volume for a statewide tobacco quitline and a web-based cessation program. *BMC Public Health* (2011); 11: 939-948. doi:10.1186/1471-2458-11-939

230. Seston, E. M, Elliott, R. A, Noyce, P. R, Payne, K. Women's preferences for the provision of emergency hormonal contraception services. *Pharmacy world & Science* (2007); 29(3): 183- 189. doi: 10.1007/s11096-006-9068-9.

231. Seston, E.M, Holden, K, Cantrill, J. Emergency hormonal contraception: The community pharmacy perspective. *The Journal of Family Planning and Reproductive Health Care* (2001); 27(4): 203-208. doi: 10.1783/147118901101195768.

232. Seston L, Hassel K. Royal Pharmaceutical Society of Great Britain. Pharmacy Workforce Census 2008. [Published July 2009, cited 12th August 2013]. Available from: http://www.rpharms.com/about-pharmacy-pdfs/census08.pdf

233. Sinclair, HK, Bond, CM, Stead, LF. Community pharmacy personnel interventions for smoking cessation (Review). *Cochrane Database Systematic Review* (2004); 4.

234. Sinclair, HK, Silcock, J, Bond, CM, Lennox, AS. The cost effectiveness of intensive pharmaceutical intervention in assisting people to stop smoking. *Int J Pharm Pract* (1999); 7: 107- 112. doi:10.1111/j.2042-7174.1999.tb00957.x

235. Sindelar, J.L, O'Malley, S.S. Financial versus health motivation to quit smoking: A randomized field study. *Preventive Medicine* (2014); 59: 1– 4. doi: 10.1016/j.ypmed.2013.10.008.

236. Smith, F. Private local pharmacies in low- and middle-income countries: a review of interventions to enhance their role in public health. *Tropical Medicine and International Health* (2009); 14(3): 362- 372. doi:10.1111/j.1365-3156.2009.02232.x.

237. Social Exclusion Unit (SEU) (1999) Teenage Pregnancy. London: Stationery Office. [Published June 1999; cited 5th January 2013]. Available from: http://dera.ioe.ac.uk/15086/1/teenage-pregnancy.pdf.

238. Sonnenberg, F. A, Burkman, R. T, Hagerty, C. G, Speroff, L. Theodore. Costs and net health effects of contraceptive methods. *Contraception* (2004); 69: 447–459. doi: 10.1016/j.contraception.2004.03.008.

239. Sonnenberg, P, Cliffton, S, Beddows, S, Field, N. Prevalence, risk factors, and uptake of interventions for sexually transmitted infections in Britain: findings from the National Surveys of Sexual Attitudes and Lifestyles (Natsal). *The Lancet(* 2013); 382: 1795–806. doi: 10.1016/S0140-6736(13)61947-9.

240. Stafford, M., Brunner, E. J., Head, J. & Ross, N. A. Deprivation and the development of obesity a multilevel, longitudinal study in England. *American Journal of Preventative Medicine* (2010); 39: 130-139. doi: 10.1016/j.amepre.2010.03.021.

241. Stapleton, J. Cigarette smoking prevalence, cessation and relapse. *Statistical Methods in Medical Research* (1998); 7: 187- 203. doi: 10.1177/096228029800700206

242. Stead, LF, Perera, R, Bullen, C, Mant, D, Hartmann-Boyce, J, Cahill, K, Lancaster, T. Nicotine replacement therapy for smoking cessation. *Cochrane Database of Systematic Reviews* (2012); 1: CD000146. doi:10.1002/14651858.CD000146.pub4.

243. Taylor, M. *What is sensitivity analysis.* Consortium YHE: University of York. (2009):1-8. Available from: http://www.medicine.ox.ac.uk/bandolier/painres/download/whatis/What_is_sens_analy.pdf.

244. Taylor, J, Krska, J, Mackridge, A. A community pharmacy-based cardiovascular screening service: views of service users and the public. *International Journal of Pharmacy Practice (*2012); 20: 277– 284. doi: 10.1111/j.2042-7174.2012.00190.x.

245. Taylor, K. M. G., Harding, G. *Pharmacy Practice* [e- book]. Hoboken: Taylor and Francis; 2003. p. 5- 27 [cited 26 August 2013]. Available from: Ebook Library: http://www.kingston.eblib.com/patron/FullRecord.aspx?p=198366.

246. Thabane, L, Mbuagbwa, L, Zhang, S, Samaan, Z. A tutorial on sensitivity analyses in clinical trials: the what, why, when and how. *BMC Medical Research Methodology* (2013); 13: 92- 103.

247. The Scottish Government. *Review of the Community Pharmacy Public Health Service for Smoking Cessation and Emergency Hormonal Contraception.* [Published 2011, cited 24th August 2013]. Available from: http://www.scotland.gov.uk/Resource/Doc/363654/0123440.pdf

248. Thomas, C. M, Schmid, R, Cameron, S. Is it worth paying more for emergency hormonal contraception? The cost-effectiveness of ulipristal acetate versus levonorgestrel 1.5 mg. *J Fam Plann Reprod Health Care (*2010a); 36: 197- 201. doi: 10.1783/147118910793048656.

249. Thomas, G, Humphris, G, Ozakinci, G, O'Brien, K. A qualitative study of pharmacists' views on offering chlamydia screening to women requesting emergency hormonal contraception. *An International Journal of Obstetrics & Gynaecology* (2010b); 117(1): 109- 113. doi: 10.1111/j.1471-0528.2009.02362.x.

250. Todd, A, Copeland, A, Husband, A, Kasim, A. The positive pharmacy care law: an area-level analysis of the relationship between community pharmacy distribution, urbanity and social deprivation in England. *BMJ Open* (2014); 4: 1- 8. doi: 10.1136/bmjopen-2014-005764.

251. Trojesen, I. E-cigarretes are to be regulated as medicines from 2016. *BMJ* (2013); 346: f3859.

252. Tinelli, M, Blenkinsopp, A, Latter, S, Smith, A, Chapman, S.R. Survey of patients' experiences and perceptions of care provided by nurse and pharmacist independent prescribers in primary care Health Expectations (2013); 16: 113– 224. doi: 10.1111/hex.12099.

253. Tremblay, M, Cournoyer, D, O'Loughlin, J. Do the correlates of smoking cessation counseling differ across health professional groups? *Nicotine & Tobacco Research* (2009); 11(11): 1330- 1338. doi: 10.1093/ntr/ntp142.

254. Trussell, J, Lallac, A.M, Donac, Q.V, Reyes, E. Cost Effectiveness of Contraceptives in the United States. *Contraception* (2009); 79(1): 5– 14. doi: 10.1016/j.contraception.2008.08.003.

255. Um, I. S, Armour, C. Krass, I, Gill, T, Chaar, B. B. Consumer perspectives about weight management services in a community pharmacy setting in NSW, Australia. *Health Expectations* (2012); 17: 579- 592. doi: 10.1111/j.1369-7625.2012.00788.x

256. Um, I. S, Armour, C. Krass, I, Gill, T, Chaar, B. B. Managing obesity in pharmacy: the Australian experience. *Pharm World Sci* (2010) ; 32: 711– 720. doi: 10.1007/s11096-010-9426-5.

257. Verma, A, Harrison, A, Torun, P, Vestbo, J. Edwards, R. Are pharmacists reducing COPD'S impact through smoking cessation and assessing inhaled steroid use? *Respiratory Medicine* (2012);106: 230- 234. doi: 10.1016/j.rmed.2011.08.011.

258. Warner, C, Shoain, M. How does bupropion work as a smoking cessation aid? *Addiction Biology* (2005); 10: 219 – 231. doi: 10.1080/13556210500222670

259. Weidmann, A.E, Cunningham, S, Gray, G, Hansford, D, Bermano, G, Stewart, D. Views of the Scottish general public on community pharmacy weight management services: international implications. *Int J Clin Pharm* (2012); 34: 389–397. doi: 10.1007/s11096-012-9624-4.

260. Weiss, M. C, Booth, A, Jones, B, Ramjeet, S. Use of simulated patients to assess the clinical and communication skills of community pharmacists. *Pharmacy world & Science* (2010); 32(3): 353- 361. doi: 10.1007/s11096-010-9375-z.

261. West R. 'Payment by results' and smoking cessation support. *Addiction* (2011);106: 1730–1731.

262. West, R, McNeill, A, Raw, M. Smoking cessation guidelines for health professionals: an update. *Thorax* (2000);55: 987- 999.

263. West, R, May, S, West, M, Croghan, E. Performance of English stop smoking services in first 10 years: analysis of service monitoring data. *BMJ* (2013); 347: 1-9. doi: http://dx.doi.org/10.1136/bmj.f4921.

264. Whalley, B.J, Fletcher, K, Weston, S, Howard, R. *Foundation in Pharmacy Practice* [e- book]. Royal Pharmaceutical Society; 2008. p. 9- 22. [cited 26 August 2013]. Available from: https://www.dawsonera.com/abstract/9780853699408.

265. White, M, Bush, J, Kai, J, Bhopal, R, Rankin, J. Quitting smoking and experience of smoking cessation interventions among UK Bangladeshi and Pakistani adults: the views of community members and health professionals. *J Epidemiol Community Health* (2006); 60:405–411. doi: 10.1136/jech.2005.040345.

266. Wibowo, Y, Berbatis, C, Joyce, J, Sunderland, V. B. Analysis of enhanced pharmacy services in rural community pharmacies in Western Australia. *Rural and Remote Health* (2010); 10: 1400- 1408.

267. Wilcox, A.J, Dunson, D.B, Weinberg, C.R, Trussell, J. Likelihood of conception with a single act of intercourse: providing benchmark rates for assessment of post-coital contraceptives. *Contraception* (2001); 63: 211– 215. doi: 10.1016/S0010-7824(01)00191-3.

268. Wilkins, N., A. Yurekli, and T. Hu. *Economic Analysis of Tobacco Demand. Tool 3: Demand Analysis.* World Bank Economics of Tobacco Control Tool Kit. [Published 2007, cited January 2014]. Available from: http://siteresources.worldbank.org/INTPH/Resources/3Demand.pdf.

269. Wilson, N, Grigg, M, Graham, L, Cameron, G. The effectiveness of television advertising campaigns on generating calls to a national Quitline by Ma¯ori. *Tobacco Control* (2005); 14: 284– 286. doi:10.1136/tc.2004.010009

270. Wiltshire, S, Bancroft, A, Amos, A, Parry, O. They're doing people a service - qualitative study of smoking, smuggling, and social deprivation. *BMJ* (2001); 323: 203- 207.

271. Wise, J. UK survey confirms link between deprivation and smoking. *BMJ* (2014): 348. doi: http://dx.doi.org/10.1136/bmj.g2184.

272. Woodhall, S. C, Sile, B, Talebi, A, Baraitser, P. Internet testing for Chlamydia trachomatis in England, 2006 to 2010. *BMC Public Health* (2012); 12: 1095- 2003. doi: 10.1186/1471-2458-12-1095.

273. Woolacott, NF, Jones, L, Forbes, CA, Mther, LC. The clinical effectiveness and cost-effectiveness of bupropion and nicotine replacement therapy for smoking cessation: a systematic review and economic evaluation. *Health Technology Assessment* (2002); 6: 1- 245.

274. World Health Organisation. *Global status report on alcohol and health 2014*. [Published 2014, cited 26 July 2014]. Available from: http://apps.who.int/iris/bitstream/10665/112736/1/9789240692763_eng.pdf?ua=1

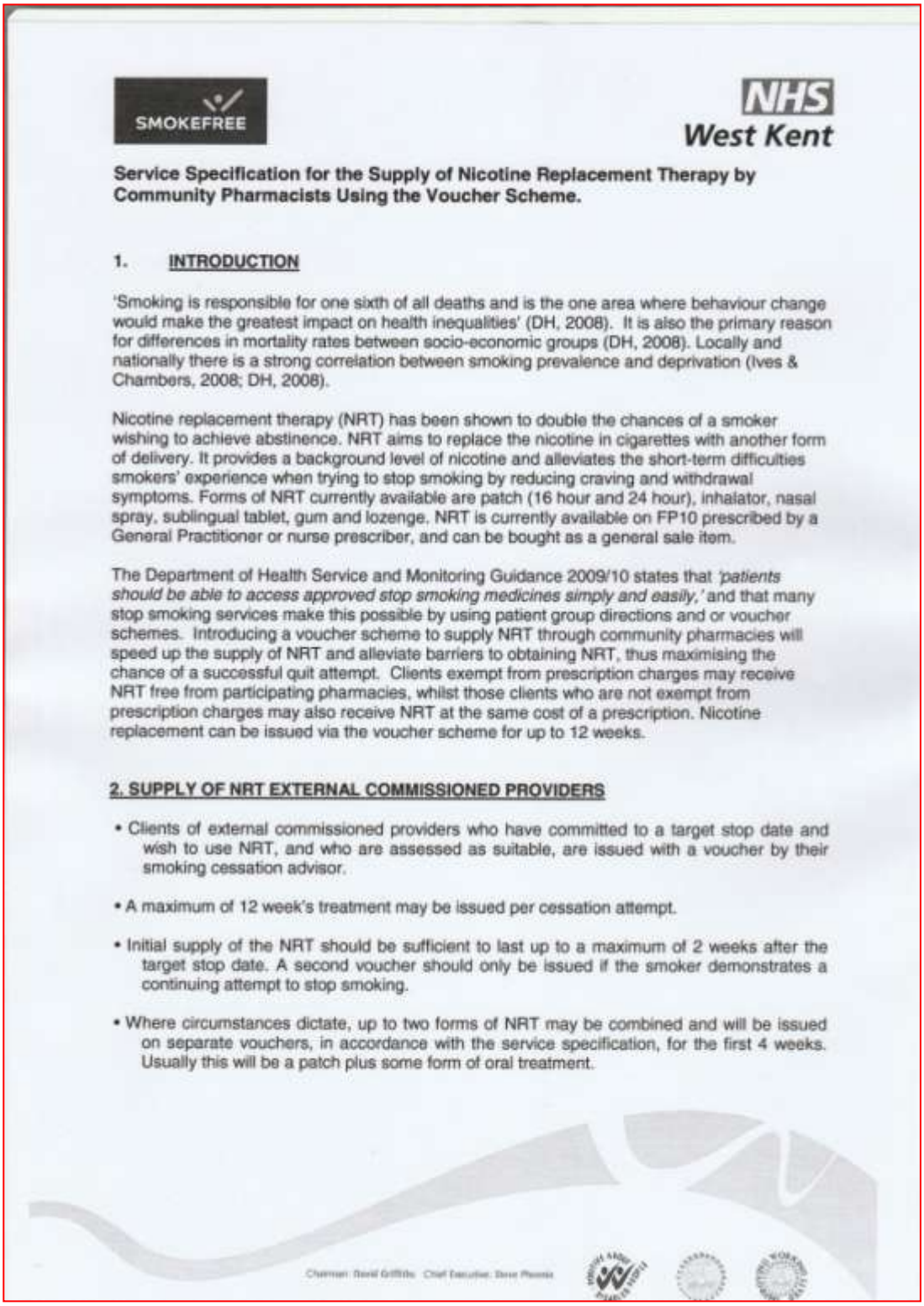
275. Wyatt S. Payment by results can increase the availability of Smoking Cessation Services while improving quality and equity. *Addiction (*2012); 107: 226–7.

276. Zhou, X, Nonnemaker, J, Sherrill, B, Gilsenan, A.W. Attempts to quit smoking and relapse: Factors associated with success or failure from the ATTEMPT cohort study. *Addictive Behaviors* (2009); 34: 365– 373. doi: 10.1016/j.addbeh.2008.11.01

Appendices

Appendix 1: Examples of different models used by different PCTs to pay CPs to provide SSS

Appendix 1.1: Kent PCT



SMOKEFREE

NHS
West Kent

Service Specification for the Supply of Nicotine Replacement Therapy by Community Pharmacists Using the Voucher Scheme.

1. INTRODUCTION

'Smoking is responsible for one sixth of all deaths and is the one area where behaviour change would make the greatest impact on health inequalities' (DH, 2008). It is also the primary reason for differences in mortality rates between socio-economic groups (DH, 2008). Locally and nationally there is a strong correlation between smoking prevalence and deprivation (Ives & Chambers, 2008; DH, 2008).

Nicotine replacement therapy (NRT) has been shown to double the chances of a smoker wishing to achieve abstinence. NRT aims to replace the nicotine in cigarettes with another form of delivery. It provides a background level of nicotine and alleviates the short-term difficulties smokers' experience when trying to stop smoking by reducing craving and withdrawal symptoms. Forms of NRT currently available are patch (16 hour and 24 hour), inhalator, nasal spray, sublingual tablet, gum and lozenge. NRT is currently available on FP10 prescribed by a General Practitioner or nurse prescriber, and can be bought as a general sale item.

The Department of Health Service and Monitoring Guidance 2009/10 states that *'patients should be able to access approved stop smoking medicines simply and easily,'* and that many stop smoking services make this possible by using patient group directions and or voucher schemes. Introducing a voucher scheme to supply NRT through community pharmacies will speed up the supply of NRT and alleviate barriers to obtaining NRT, thus maximising the chance of a successful quit attempt. Clients exempt from prescription charges may receive NRT free from participating pharmacies, whilst those clients who are not exempt from prescription charges may also receive NRT at the same cost of a prescription. Nicotine replacement can be issued via the voucher scheme for up to 12 weeks.

2. SUPPLY OF NRT EXTERNAL COMMISSIONED PROVIDERS

- Clients of external commissioned providers who have committed to a target stop date and wish to use NRT, and who are assessed as suitable, are issued with a voucher by their smoking cessation advisor.
- A maximum of 12 week's treatment may be issued per cessation attempt.
- Initial supply of the NRT should be sufficient to last up to a maximum of 2 weeks after the target stop date. A second voucher should only be issued if the smoker demonstrates a continuing attempt to stop smoking.
- Where circumstances dictate, up to two forms of NRT may be combined and will be issued on separate vouchers, in accordance with the service specification, for the first 4 weeks. Usually this will be a patch plus some form of oral treatment.

- The client takes the voucher to a participating pharmacy and exchanges this for a supply of NRT. For clients who are not exempt from NHS charges, a **non-refundable fee** equivalent to the NHS prescription charge will be levied.

- The pharmacist claims the over the counter (OTC) cost of the product plus a professional handling fee of £2.50 from NHS West Kent Stop Smoking Service (WKSS).

3.THE ROLE OF THE COMMISSIONED EXTERNAL PROVIDER

- Assess client suitability for NRT in accordance with NHS West Kent Prescribing Guidelines (separate document)

- Vouchers will normally be issued for an initial 2 weeks supply, followed by a further 2 weeks supply, subsequent supply will be for 4 weeks up to a maximum of 12 weeks. Combination therapy (the use of 2 NRT products) will only be supplied for the first 4 weeks of the quit attempt and will require separate vouchers for each product.

- Complete part one of the voucher and inform clients of participating pharmacies.

- Indicate on the voucher the product recommended.

- Ensure the date of issue is completed on the top copy. Encourage the client to obtain treatment within 7 days, and to take proof of eligibility for free prescriptions.

- Retain the bottom yellow copy of the voucher within the client's record. This must be stored safely and be available for up to 8 years.

- Vouchers should not be collected by persons other than the client. If this poses particular problems for an individual, they should speak with their stop smoking advisor.

- Notify the patients GP regarding the product(s) supplied using standard service letters designed for this purpose.

- Forward any spoiled vouchers to the WKSSS.

- Specific requests to supply a particular brand of NRT product, or flavour of gum, may be handwritten by the Advisor on the voucher and initialled.

- Ask the client to present the top (white) and middle (pink) copy of the voucher and the treatment card at the pharmacy

4. THE ROLE OF THE PHARMACIST

All pharmacists should ensure that they have signed up to the Stop Smoking Services NRT Voucher Scheme Service Specification, before supplying NRT under the voucher scheme. If the pharmacist has any concerns or queries over the NRT order on the voucher, they should discuss this with the issuing adviser before supply.

•The Pharmacy Contractor will ensure that Pharmacists and staff make the supply of NRT in accordance with the service specification and produce a standard operating procedure for use in the pharmacy.

• The Pharmacy Contractor will ensure the service is covered by their indemnity insurance.

• In taking the professional responsibility for the supply of the NRT, the pharmacist should assure him/herself that the NRT therapy is being supplied safely paying particular attention to the client's medical conditions and concurrent medication (including possible side effects, drug interactions and contra-indications).

• Ensure adequate stocks of the NRT products available on the voucher scheme are maintained within the pharmacy.

• • Ensure the voucher has been completed satisfactorily. If any details are absent contact NHS West Kent Stop Smoking Service 01622 723836.

• Check that the voucher has not expired. **Vouchers are valid for 14 days from the date written on the voucher.** If the voucher has expired, advise the client to contact their stop smoking advisor.

• Ensure the NRT product requested is appropriate for use by the client in accordance with the product licence.

• Discuss any particular client product preferences e.g. flavour of NRT gum or type of patch.

• **Take professional responsibility for the supply of the NRT. The voucher is not a prescription. It is a means of supplying NRT on the NHS. The pharmacist is professionally accountable for the supply. The pharmacist retains professional discretion to judge the suitability of the NRT product recommended and change the product if deemed necessary.** If the pharmacist has a query, they must contact the Advisor. If an amendment to the voucher is necessary, the pharmacist should clearly annotate the voucher with the amendment, signing both copies of the voucher.

• Make an entry on the PMR and label the NRT supply in accordance with RPSGB Labelling Guidelines

• Complete the relevant section on the voucher. Fill in the pharmacist's name and **stamp with the pharmacy details.** Ensure you stamp both copies of the voucher. Please note, **failure to stamp the voucher will delay payment at the very least and may result in non-payment.**

• Retain the middle (pink) copy of the voucher and send the completed top (white) copy to WKSSS. The retained copy must be made available to WKSSS at a later date as part of an audit trail/for audit purposes should this be required. They must be stored safely for 2 years and thereafter confidentially shred.

• Vouchers should be presented to WSSS within the calendar month if possible but no longer than 3 month's duration from issuing of NRT. Reimbursement may not take place if outside of this period.

• Vouchers must be submitted with a covering invoice as attached to this document.

5. VOUCHERS

A voucher approved by NHS West Kent Stop Smoking Services must be used. This will be produced in triplicate in A5 size.

6. THE PROCEDURE FOR USING THE VOUCHER

- The advisor completes the relevant sections of the voucher. If any amendment or alteration to the voucher is required, this must be clearly indicated and the amendments signed on all voucher copies. If necessary, where there is scope for ambiguity, the instruction should be written out in full.
- The advisor retains the bottom (yellow) copy of the voucher for the records and provides the client with the top two copies (white & pink) to take to a participating pharmacy.
- Where clients are exempt from prescription charges, they must tick the appropriate box on the voucher under exemption categories and sign the declaration.
- The pharmacist must check their proof of exemption.
- If proof of exemption is not seen, place a cross on the back of the voucher and endorse 'proof of exemption not seen'.
- Where the client is not exempt from prescription charges they must complete the declaration. Collect any NHS fees (equivalent to the standard prescription charge) where appropriate in accordance with current Department of Health policy i.e. one charge per item unless it is for different strengths of the same formulation. A till receipt should be issued for the charge made, which should be the current prescription charge. If a client is awaiting an exemption certificate do not issue an FP57 as the NRT voucher is not a prescription and therefore this would not be appropriate. If the client later presents with a valid exemption certificate a refund should be made providing the till receipt is also presented. The amount of the refund should be claimed back from WKSSS on the monthly invoice. The till receipt should be submitted with the invoice with the exemption certificate number clearly indicated on the receipt.
- The pharmacist completes the voucher with the Pharmacist's name and pharmacy stamp, supplying the NRT product for the client in return for the voucher. The pharmacist keeps the second (pink) copy of the voucher and returns the top (white) copy of the voucher to WKSSS on a **MONTHLY** basis.

7. REIMBURSEMENT & FINANCIAL ARRANGEMENTS TO PHARMACISTS

Pharmacists will be reimbursed with the current OTC price for the NRT supplied plus a professional handling fee of £2.50 per voucher. Any NRT product requested and supplied on the voucher should be in accordance with the NRT voucher scheme formulary as presented in Appendix 1. The reimbursement prices for the NRT products on the formulary will be updated quarterly.

- **NHS West Kent Stop Smoking Service will** check that the voucher has been completed satisfactorily. Return any incomplete vouchers to the pharmacy.

- Arrange reimbursement to pharmacies.

- Produce budget statements and reports to support the monitoring of the service for the PCT

- Record pharmacist's and pharmacy details

- Reimburse costs of the NRT supplied in accordance with the service specificalton

- Record the type of NRT supplied

- Record the voucher issuing advisor details and Number of the voucher.

All enquiries regarding fee payment need to be directed to:
Kerry Oddy
NHS West Kent Stop Smoking Service
Farm Villa
Old Oakwood Site
Hermitage Lane
Maidstone Kent ME16 9QQ
Tel: 01622 723830. email: kerry.oddy@nhs.net

9. AUDIT TRAIL

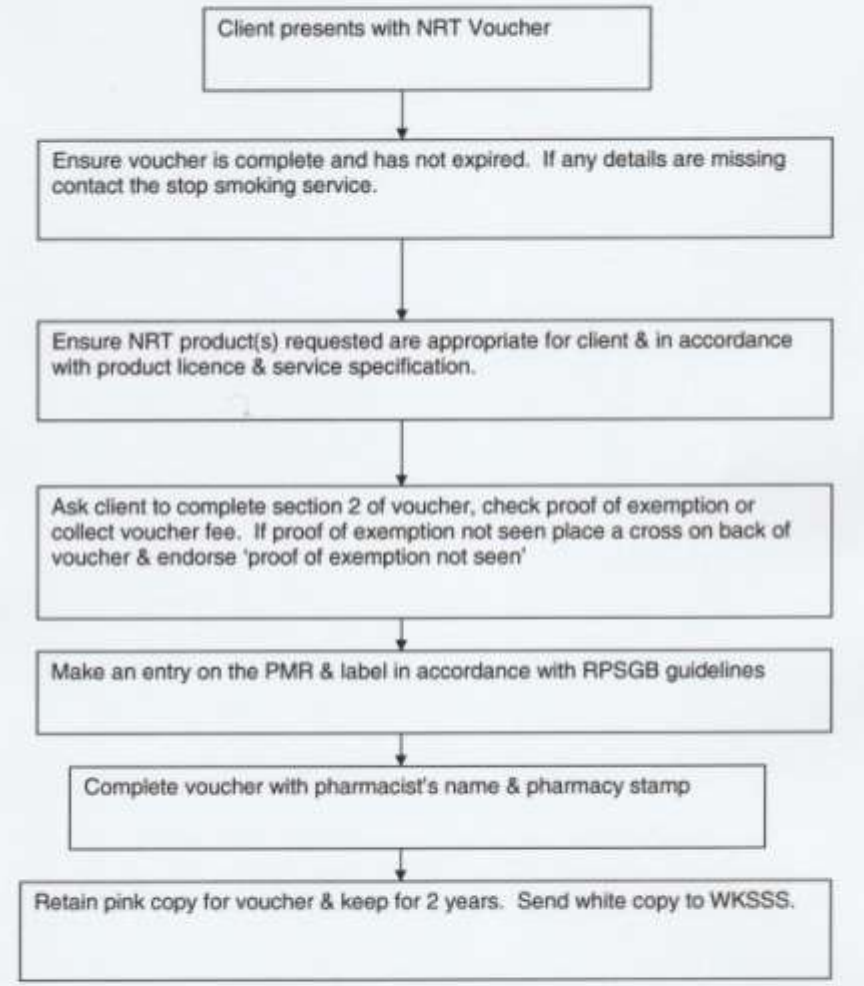
NHS West Kent Stop Smoking Service has established an audit trail for the vouchers so that they can all be individually tracked from the point of issue at the pharmacy through to their return to NHS WKSSS. A sample audit of the vouchers may be carried out.

APPENDICES

Appendix 1. NRT VOUCHER SCHEME FORMULARY

Product	Strength	Pack Size (s)
Nicotine Patch 24 hr. clear/ buff. (NiQuitin / Nicotinell)	21mg, 14mg, 7mg	7 (NiQuitin 21mg available in 14 pack size)
Nicotine Patch 16hr. clear/buff. (Nicorette)	25mg, 15mg, 10mg, 5mg	7
Nicotine Gum (Nicotinell)	2mg, 4mg.	24, 96.
Nicotine Gum (Nicorette)	2mg, 4mg.	30, 105, 210. (icy white 105)
Nicotine inhalator	10mg	Starter pack (6), 42 refill
Nicotine Lozenge (Nicotinell)	1mg, 2mg.	36, 96.
Nicotine Lozenge (NiQuitin)	1.5mg, 4mg(mini), 2mg, 4mg.	20, 60 (mini); 36, 72 standard
Nicotine Sublingual tablet (Nicorette)	2mg	105
Nicotine Nasal Spray (Nicorette)	500 micrograms	1

Appendix 2
STANDARD OPERATING PROCEDURE FLOWCHART for the SUPPLY of NRT IN ACCORDANCE WITH THE SERVICE SPECIFICATION FOR THE NRT VOUCHER SCHEME within PARTICIPATING COMMUNITY PHARMACIES in West Kent.



NHS West Kent Stop Smoking Service Specification for the supply of NRT under the voucher scheme.

Signed on behalf of West Kent PCT. Name of Professional *(Please Print)*	Signature	Date

Pharmacy Trading Name and Address

Signed on Behalf of the Pharmacy Contractor. Name of Professional *(Please Print)*	Signature	Date

Please return a copy of this signed specification to:

NHS West Kent Stop Smoking Service
Farm Villa, Old Oakwood Site
Hermitage Lane, Maidstone
Kent
ME16 9QQ

Appendix 1.2: Mid Essex PCT

NHS
Mid Essex

Services Name:

Pharmacy Based Stop Smoking Service

Service Level Agreement 2009/10

Type of service agreement	Cost per case contract
Service Commissioned:	Local enhanced service for smoking cessation service in community pharmacies
Period of agreement	1st January 2009 – 31st March 2010
Purchasers	NHS Mid Essex Swift House Hedgerows Business Park Colchester Road Springfield Chelmsford CM2 5PF
Contact	Health Improvement Provider Services Helen Gray
Telephone/Fax	Office:**01621 727334** Mob : **0779 554 8921**

NHS
Mid Essex

1. Introduction

The purpose of this agreement is to set out a Local Enhanced Service (LES) to provide a Stop Smoking Service and treatment in the community for the target population of smokers aged 12 and over. The agreement is in respect of the period 1st January 2009 to 31st March 2010 when it will be reviewed and extended subject to the agreement of both parties.

Smoking is the UK's single greatest cause of preventable illness and early death. The most recent estimates show that around 11,400 people in the UK are killed by smoking every year, accounting for one fifth of all UK deaths, with smoking contributing to a wide range of illnesses, including various cancers, respiratory disease and heart disease. Smoking costs the NHS between £1.4 and £1.7 billion each year.

Evidence suggests that people wishing to make a quit attempt are more likely to be successful when supported by appropriate medication and motivational support provided by a trained stop smoking advisor. Provision of stop smoking services in a community based setting, such as general practice and community pharmacy, increases access to services and thus attracts a greater number of would be quitters.

Brief advice to stop smoking works, can be given quickly and easily, and can be provided to all smokers irrespective of whether they express a wish to stop smoking or not. Brief advice appears to work by triggering a quit attempt, so wherever possible it should be followed by referral to a smoking cessation service and a recommendation to use medication.

2. Aims of the Agreement

The aim of this agreement is to remunerate pharmacy contractors (the provider) for providing a Stop Smoking Service to their own customers as well as to clients referred from other services. This LES sets out the process for contractors to:

- Provide a level 2 stop smoking service on both an opportunistic basis and as a planned intervention with clients wishing to make a supported quit attempt.
- Increase public awareness about the full range of stop smoking services by targeting smokers in community pharmacy and providing a full range of promotional material.
- Increase access to both brief interventions aimed at raising awareness amongst smokers of the inherent risks in continuing to smoke and provide referral routes to specialist services if appropriate.
- Offer those wishing to stop smoking appropriate help either through pharmacy based support or referral to other stop smoking services.
- Supply NRT to clients who receive counselling and support from other services

NHS
Mid Essex

3. Scope of Service /Service Specification

Brief and opportunistic interventions

As part of the new community pharmacy contract, pharmacists can record the advice given to patients, where they perceive it to be necessary or helpful. This could be made on the client's pharmacy record to facilitate future follow up and audit of clients

Verbal advice may be supported by the provision of written information e.g. leaflets, and a referral to other sources of advice and assistance, including the local NHS Stop Smoking Service as an alternative to the pharmacy programme

NHS Mid Essex (the PCT) will provide materials from time to time to support national campaigns e.g. patient literature, posters and referral cards.

Intervention for clients wishing to make a quit attempt – Level 2 programme

- Community Pharmacy staff shall support clients wishing to make a quit attempt through the provision of 1:1 support and pharmacological intervention as appropriate.
- Clients must be assessed by a trained Stop Smoking Advisor (the advisor) and be fully advised of all aspects of making a quit attempt.
- The initial consultation should usually last 20-30 minutes, involving assessment of motivation, competence (Fraser guidelines for under 16s), readiness to quit, agreement on a quit date, and advice on choice of medication where appropriate.
- Quit programmes for the 12 – 17 years age group and pregnant women should be undertaken with reference to the guidance provide during training and *NICE Public Health Guidance 10 (February 2008).*
- Weekly support should be offered for the first four to six weeks after the stated quit date. In exceptional cases where patients are unable to attend every week, two weekly contact would be acceptable. On each visit a CO reading must be obtained and recorded on the monitoring form.
- After the initial intensive support it may be more appropriate to see the client every two weeks when they call to collect further supplies of medication.
- All interventions should be multi-session with expected contact time with the client being at least 1.5 hours (including pre-quit preparation and up to 12 weeks post quit) to ensure continued monitoring, client compliance and ongoing access to medication.
- If a client has set a quit date and commenced on a programme, but fails to attend for subsequent consultations, it is good practice for the advisor to telephone the patient to ascertain their quit progress.
- If the client has quit he/she should be encouraged to return to the pharmacy to obtain a CO reading, if this is not possible the provider may still count the quitter but must record on the form as "Quit, self report". If the patient is still smoking then the "Not Quit" box should be ticked. If contact with the patient has failed then the box "Lost to follow up" should be ticked.
- To receive the 4 week quitter payment which is made available as a bonus until end March 2009, the provider must verify that the patient has not smoked for four consecutive weeks after their quit date, as demonstrated by a CO reading of <10.

NHS
Mid Essex

- Clients should be advised that they may be contacted by the Stop Smoking Service periodically within 12 months of their attempt to quit.
- The provider must complete the monitoring form (appendix 1) provided by the PCT and must submit this promptly at the end of each quit attempt whatever the outcome.

Choice of Medication

Advisors should discuss the full range of medications with the client to allow them to make an informed choice.

In deciding which of the available therapies to use and in which order they should be prescribed/supplied, advisors should take the following factors into account:

- The smoker's intention and motivation to quit, and how likely it is they will follow the course of treatment as prescribed/supplied.
- The availability of counselling and support
- Whether the person has used treatments to attempt to stop smoking in the past.
- Whether there are medical reasons why the person should not be prescribed/supplied with NRT, bupropion or varenicline, and whether they are likely to experience adverse effects with either treatment
- Which treatment they would prefer to use.

Clients wishing to use bupropion or varenicline will need to be referred to an independent prescriber for prescriptions. They may continue to receive counselling at the pharmacy.

If the smoker's attempt to quit is unsuccessful, the advisor should not usually supply/request NRT bupropion or varenicline for another attempt within 6 months. However, if external factors interfere with the initial attempt to stop smoking, it may be reasonable to try again sooner. (For example, if a particularly stressful event occurred after the person had started the initial attempt to quit.)

NRT, bupropion and vareniciline should be used individually and not in combination during any one quit attempt.

Supply of Nicotine Replacement Therapy (NRT)

Advisors should discuss the full range of NRT with clients who identify this as part of their quit attempt to ensure that clients make an informed choice of product. More than one type of product may be supplied when appropriate. A maximum of 12 week's supply of NRT will be reimbursed under the scheme.

Clients not exempt from prescription charges will pay prescription charges as usual on each occasion and for each product. NRT should usually be supplied on a **fortnightly** basis even when the client is attending weekly.

NB it may be cost effective for clients to obtain a 3 month prepayment certificate – if they have a mobile phone and a credit / debit card with them they can order one straight away which will be valid from the date of their call. The cost is £27.85 i.e. less than four items, and the order line is 0845 850 0030.

Products that cost less than £7.10 should be sold to clients who pay prescription charges – these will not be reimbursed by the PCT.

NHS
Mid Essex

Record the number of packs supplied on the NRT claim form (appendix 2). The client signature on the form indicates receipt of product as well as payment status.

As a counter fraud measure, pharmacy staff supplying NRT on this scheme must **use a black permanent marker to delete the bar-code and annotate the pack 'NRT scheme supply'**.

NRT Voucher

Patients attending a support group or drop in clinic may be given an NRT voucher (appendix 3) and instructed to take to a participating community pharmacy. The pharmacy will be paid £2.00 per voucher for supplying the product. As a counter-fraud measure, ONE PRODUCT ONLY may be ordered per voucher. Vouchers with an order for more than one product should be verified with the adviser before dispensing.

Free NRT

For clients setting a quit date between 1st January and 31st March 2009 there is no prescription charge. This applies to pharmacy clients as well as supplies made against a voucher provided by another service. Vouchers supplied under the free scheme will be printed on coloured paper and be marked 'Free NRT' but should be used in exactly the same way.

4. Eligibility to Provide Service

It is essential that all providers wishing to undertake local Enhanced Services are providing all Essential Services, have had a satisfactory PCT monitoring visit and are actively addressing outstanding action points agreed at the visit.

Pharmacies providing this stop smoking service must have a consultation room that meets the specifications for provision of advanced services

The provider will ensure that they have a standard operating procedure for this service which is reviewed on a regular basis.

Training & Accreditation

The provider will be required to demonstrate to the PCT that they can meet the required standards and competencies to deliver the service. Each pharmacy must have a named pharmacist who will take responsibility for the delivery of the service from that pharmacy. Any changes to this 'named pharmacist' must be notified to the PCT, giving at least one month's notice.

The named pharmacist must ensure that all advisors delivering the service are able to demonstrate their eligibility, competence and continuing professional development in order to remain up to date and deliver an effective service.

All advisors are required to undertake training dependent on existing experience and knowledge.

By the end of the training, participants will be able to demonstrate competencies as specified in DH Service & Monitoring guidance 2007/8);

- Understand the requirements and obligations of their role as a community advisor
- Describe how smoking impacts on the health of the general population and also on specific groups
- Describe the pharmacological and psychological effects of tobacco
- Understand the nature of nicotine addiction

- List positive factors that smokers report as reasons why they smoke
- Identify common barriers to quitting
- Critically evaluate a range of current treatments and their effectiveness
- Describe common withdrawal symptoms, their prevention and treatment
- Provide information and support to enable a client to obtain and begin NRT, varenicline or bupropion if appropriate
- Support a client with the effective use of NRT, varenicline or buproprion over a course of treatment as appropriate
- Plan a treatment programme based on national guidelines and local protocols and the withdrawal orientated approach
- Be able to use the Carbon Monoxide (CO) monitor appropriately
- Monitor a clients progress over a series of interventions
- Support a client to develop strategies to prevent relapse
- Maintain a client's interest in the service so that if they relapse they will seek further assistance
- Identify how smoking status, advice given and response to that advice should be recorded in patient record systems
- Provide monitoring and evaluation information in line with local and national criteria
- Understand the relationship between tobacco, cannabis and sheesha

The competencies required to provide this service could be met through evidence of completion of;

- Mid-Essex PCT Stop Smoking Service training Level 2
- Level 2 training with another NHS PCT
- For pharmacists and technicians, the CPPE Stop Smoking download or CD ROM 2006 plus attendance at an abbreviated level 2 training session.

If you have undertaken other Level 2 equivalent training, then please contact the PCT Stop Smoking Service to discuss whether it meets the competencies required for this service

A form (appendix 4) is available from the PCT for providers to apply for accreditation. This provides additional information on the process and courses which may be useful in demonstrating competency to provide this service.

DH guidance states that all stop smoking advisors should have yearly update training. Opportunities will be provided by the PCT on a regular basis and will be approximately 2-3 hours long. Alternative equivalent update education may be undertaken.

5. Monitoring & Evaluation

In order to allow for timely processing of payments, correctly completed paperwork must be returned monthly and should include the following:

- A monitoring form for all clients supported by the provider
- Consent form

NHS
Mid Essex

- NRT claim forms for NRT supplied to clients supported by the provider
- NRT vouchers where the pharmacy is dispensing for clients supported by another service

Incomplete or unclear monitoring forms will be returned to the pharmacy for completion, as there is a minimum dataset requirement by the Department of Health. This will delay payment. Incomplete or unclear NRT claim forms will be paid on the basis of the smallest pack size. If there is no exemption box ticked, it will be assumed that a prescription charge was collected.

Monitoring and claim forms must be submitted on a **regular monthly basis** following completion of treatment or last contact with the client. **Claims for counselling or supply of NRT received after 1st May for interventions relating to the previous financial year will not be paid.**

Any queries should be addressed to the Stop Smoking Service Co-ordinator Helen Gray on 01621 727334 | Mob : 0779 554 8921 or by email: Helen.Gray@midessexpct.nhs.uk or the general service helpline on 0800 085 2113

Stop Smoking Service
St Peter's Hospital
Spital Road
Maldon CM9 6EG

Performance monitoring

Current DH guidance states that the expected 4 week quit success range will be between 35% & 70% of those patients setting a quit date. Pharmacies will receive a quarterly report showing their access to service and success rates.

If provider quit rates fall outside the range, the Mid-Essex Stop Smoking Service are required to undertake a number of checks. This could include

- Contacting patients who have received the service
- Visiting pharmacies in order to ensure that the service meets the required standards
- Providing additional training and support

6. Financial Arrangements

Providers will receive:

1. Up to £30 for each correctly completed stop smoking form received, where quit date has been set (up to 6 consultations: consultation 1 £7, consultation 2 £5, consultations 3 – 5 £4, consultation 6 £6).
2. As a bonus, an additional payment of £15 will be made for each successful 4 week quitter (see page 3). This payment is available until end March 2009 when it will be reviewed. Similar bonus payments may be offered at different times throughout the course of this agreement in line with progress against the PCT Strategic Plan.
3. £2 for each voucher (ONE PRODUCT PER VOUCHER ONLY) to clients receiving counselling support elsewhere
4. Reimbursement for products supplied at Drug Tariff rate plus VAT (currently 5%).

Providers will receive quarterly reports from the Stop Smoking Service on their activity and payments.

NHS
Mid Essex

7. Clinical Governance

Responsibilities of Contractors and Named Pharmacist

Under the conditions of this agreement the provider must ensure that:

- They have a named pharmacist who is responsible for the delivery of the service in the named premises. This person must be notified to the PCT and to the Stop Smoking Service. A months notice must be provided of any change to this named person.
- The provider has staff that have the necessary skills and experience to carry out the contracted procedures. Only those trained to Level 2 or equivalent should carry out the services
- The named pharmacist should ensure that training records and names of individuals signed up to the pharmacies standard operating procedure are kept
- The named pharmacist is able to provide satisfactory evidence on demand of names of staff providing the contracted service and their qualifications, registrations and membership of appropriate professional bodies.
- At commencement of the service the named pharmacist must notify the Stop Smoking Service of all qualified Level 2 advisers who they will be using to provide the service. Any new advisers taken on during the period of the contract must also be notified to the Stop Smoking Service.
- The provider will indemnify the PCT against all acts of clinical negligence arising from their acts or omissions in providing the service. Such indemnity will be limited to the amount of indemnity provided by the provider's underwriter
- The provider will maintain a safe and suitable environment for patients and staff and comply with all appropriate relevant statutory requirements, legislation, and guidance e.g. as detailed in Department of Health Guidance and Professional Codes of Practice, Standards for Better Health (www.dh.gov.uk/en/publicationsandstatistics/publicationsandguidance/DH_4086665) , Health and Safety regulations, Consent and Chaperone policies.
- Clinical governance standards as specified in the Pharmacy Contractual Framework Essential Service 8 apply to this service.
- The provider will agree that access to records and documents containing information relating to individual patients treated under the terms of this Service Level Agreement will be restricted to authorised personnel and that information will not be disclosed to a third party. Both parties will comply with the Data Protection Act, Caldicott Guardian and any other legislation covering access to confidential patient information.
- The PCT or its nominated agent has the right to visit the pharmacy to audit this service at any reasonable time, having regard for the provision of services and their customers' rights to privacy and dignity.

Responsibilities of the Mid-Essex Stop Smoking Service

- Monitor the performance of contractors
- Provide all advertising, support materials, monitoring, claim and consent forms
- Coordinate local campaigns to inform the local community on how to access the service

NHS
Mid Essex

- Receive all monitoring forms regardless of patient outcome
- Provide appropriate training and support

8. Termination of Agreement

Both the contractor and the PCT may terminate this agreement by giving not less than 3 months notice in writing to the other party. However, if for any reason the PCT has cause for concern over the competencies to provide a Local Enhanced Service for the provision of Stop Smoking Services, then the PCT will withdraw its accreditation and terminate the agreement with immediate effect.

9. Agreement

Name and address of pharmacy:

Under this agreement the pharmacy agrees to:

Provide Stop Smoking advice as stated in this service level agreement

Signed..... *Date*.....

(For and on behalf of the contractor)

Name:..... (Please print)

Named pharmacist: .....

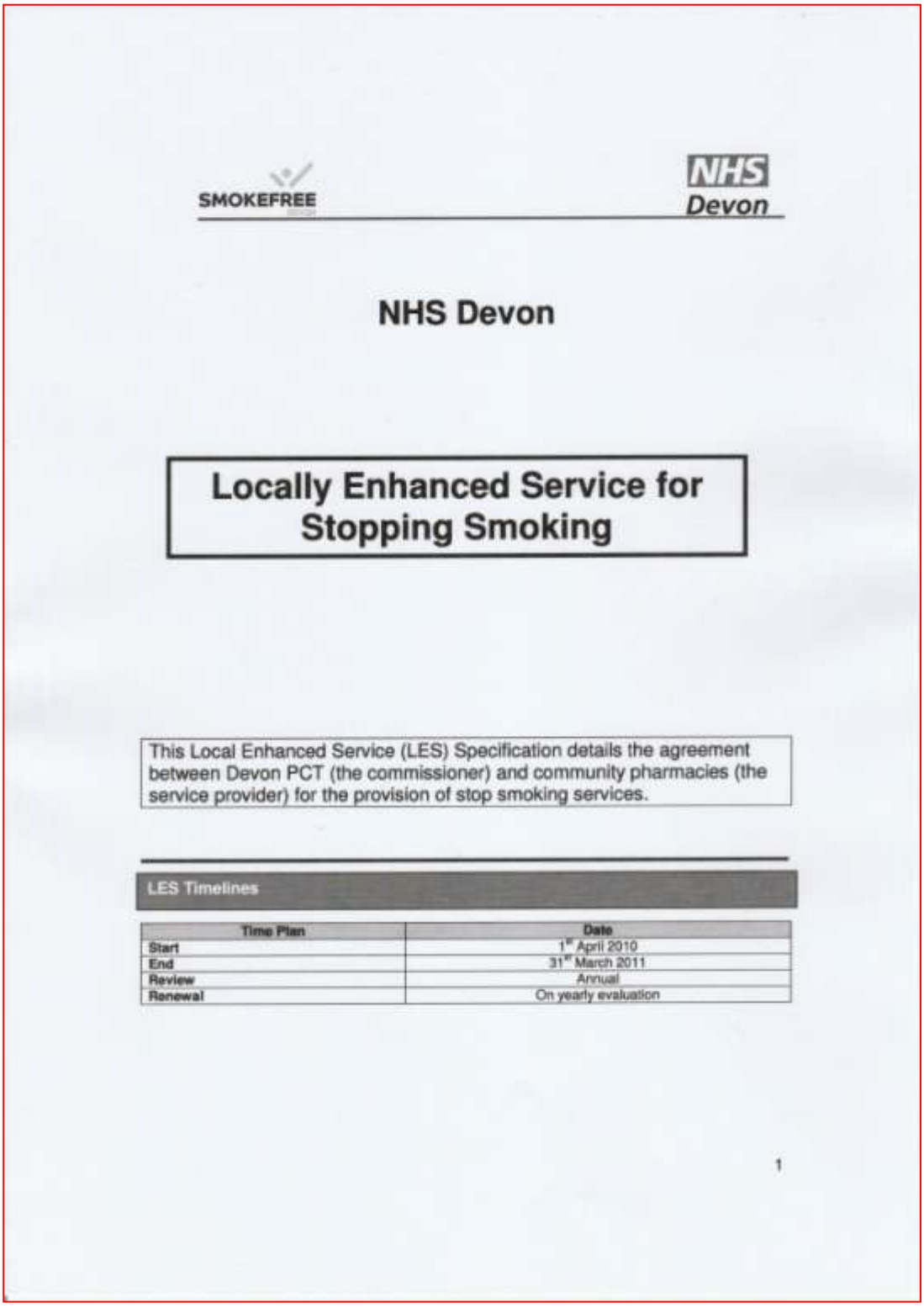
Please note: this must be the name of the pharmacist at this location who is responsible for delivering these services. If this changes, the PCT must be informed in writing one month prior to the change occurring.

Signed..... *Date*.....

(For and on behalf of PCT)

Name:..... (Please print)

Appendix 1.3: Devon PCT



SMOKEFREE

NHS Devon

NHS Devon

Locally Enhanced Service for Stopping Smoking

This Local Enhanced Service (LES) Specification details the agreement between Devon PCT (the commissioner) and community pharmacies (the service provider) for the provision of stop smoking services.

LES Timelines

Time Plan	Date
Start	1st April 2010
End	31st March 2011
Review	Annual
Renewal	On yearly evaluation

1

1. Background

- Smoking is the single greatest cause of preventable illness and premature death in the U.K.
- A person who smokes cigarettes regularly more than doubles their risk of dying before the age of 65.
- More than any other identifiable factor, smoking contributes to the gap in life expectancy between the most deprived and the most affluent.
- Across Devon the prevalence of smoking is estimated as 21% generally and 26% for routine and manual groups[1] (R/M). However, this figure varies across wards and there are 76/201 wards[2] where tobacco attributable mortality is higher than expected.
- In Devon around 1 in 8 women smoke in pregnancy[3] (12%). Smoking during pregnancy is estimated to contribute to 40% of all infant deaths[4]
- Helping a patient to stop smoking is one of the most cost effective of all medical interventions.

Compare the numbers need to treat (NNT) to prevent one death over ten years for various interventions listed below:

Intervention	Outcome	NNT
Statins	Prevent one death over five years	107
Antihypertensive therapy	Prevent one stroke, MI, death over one year	700
Cervical cancer screening	Prevent one death over ten years	1140
GP brief advice to stop smoking	Prevent one premature death*	8
Add pharmacological support	Prevent one premature death*	38-56
Add behavioural support	Prevent one premature death*	16-40

*Over half of all continuing smokers will die prematurely from a smoking-related disease. For every two long term quitters, one premature death will be avoided. (Doll & Peto)

(Sobak, Alex, GP with a special interest in smoking, presentation at UK National Smoking Cessation conference, London 2005 & Willis, N. NHS Stop Smoking Services: Service and Monitoring Guidance, Department of Health October 2007)

2. Aims of the Locally Enhanced Service for Stopping Smoking

The main aim of this LES is to support the reduction of smoking prevalence in the geographical area covered by NHS Devon. To enable smokers to access a choice of high quality support to stop smoking to best suit their needs.

The LES also aims to:

- Provide high quality, accessible, convenient and comprehensive stop smoking services across the county
- Ensure that robust data is collected by NHS Devon in order to measure outcomes and effectiveness of the service, as required by the Department of Health

[1] Office for National Statistics (2009) Smoking and drinking among adults, 2007.
[2] What a Waste. Premature Deaths due the smoking – the picture in the South West. SWPHO September 2008
[3] Vital Signs monitoring data. 2008/9. NHS Devon
[4] Salihu H et al (2003). Levels of excess infant deaths attributable to maternal smoking during pregnancy in the United States. Journal of Maternity and Child Health, 7(4) pp 219-227

- Support the achievement of 4-week quitter targets

3. Service Outline

3.1 The Provider (pharmacy) will:

- Provide one or more in-house Stop Smoking Advisers, trained and registered with NHS Devon. Advisers must attend face to face level 2 intermediate adviser training initially. Thereafter training updates must be completed annually to ensure best practice. Updates may take the form of face to face training provided at NHS Devon pharmacy forums or written updates
- Offer clients stop smoking appointments with a suitably trained healthcare professional within their own pharmacy premises. Guidelines for the content and frequency of these appointments are at Appendix C.
- Provide a suitable area for consultation with clients. This does not have to be in a separate consultation room, but may be a quiet area within the shop.
- Advertise the availability of support to stop smoking within the pharmacy (posters, referral cards & leaflets available from the Stop Smoking Service, Devon Stop Smoking Service, Cullompton Integrated Centre for Health, Willand Road, Cullompton EX15 1FE. Tel. 01884 836024.
- Refer those patients deemed unsuitable for support within the pharmacy to the NHS Devon Specialist Stop Smoking Service, tel 01884 836024.
- Complete an NHS Devon stop smoking monitoring form (Appendix A) for each patient entering the service. Monitoring forms should be returned to the PCT when the intervention is completed, regardless of the outcome. As monitoring forms contain patient details they must be faxed to 01392 267885. (Safe Haven Fax)
- Perform a Carbon Monoxide breath test (smokerlyzer) to confirm patients have quit smoking at four weeks after their quit date. Results to be recorded on the monitoring form. (DH Service & Monitoring Guidance 2010-11 requires 85% of four-week quitters to be validated with a CO breath test).
- Make contact with patients "lost to follow-up" before returning monitoring forms to NHS Devon. This will require an attempt to make contact with the client at different times of the day, with up to three attempts made if unsuccessful.
- Agree to undertake additional training (if deemed necessary by NHS Devon) if quit rates are less than 35%.

3.2 The Commissioner (NHS Devon) will:

- Provide accessible training (outlined in Appendix B) to all healthcare professionals to support the delivery of this LES.
- Provide training to any member of service provider staff who requires it to equip them to be an intermediate adviser.
- Provide one Carbon Monoxide monitor ("smokerlyzer") and disposable mouthpieces to every pharmacy in the scheme. The CO monitor will remain the property of NHS Devon.
- Offer calibration and servicing of CO monitors, and provide replacement mouthpieces, as required. These will be available at NHS Devon forums and training events, or on request.

- Maintain a list of all registered intermediate advisers and keep them updated via regular newsletters and training updates. Cascade best evidence and any updated information on clinical effectiveness and new products etc. to all registered advisers and service providers.
- The Specialist Stop Smoking service will accept referrals for the out of hours service e.g. evening groups, as well as for clients with special circumstances, e.g. pregnancy, mental health issues.
- Remunerate the pharmacy for monitoring forms completed and returned, as specified in the payment schedule, within three months of claims being submitted.
- Monitor the quit rates of individual pharmacies, reporting back on a quarterly basis and where appropriate include a breakdown by specific groups.
- Provide specific training and support for pharmacies that have a quit rate of less than 35% (DH Service & Monitoring Guidance 2010-11).

4. Monitoring & Evaluation

- The key indicators for measuring performance and the success of the stop smoking service, which should all be recorded on the monitoring forms, are:
  - Number of smokers setting a quit date
  - Number of 4-week quitters (still stopped smoking 4 weeks after the quit date[1]).
  - Number of pregnant women quitting smoking
  - Quits by specific groups including gender, age, profession, ethnic background and postcode.

5. Payment overview

5.1 Training

- Payment for initial training will be: £50 per pharmacist
£30 per other member of pharmacy staff
- Payment for training will be paid automatically, based on the signing of an attendance sheet. A maximum of two staff per pharmacy will be paid per financial year.
- Training updates will be carried out by email or newsletter and no payment is attached to them.

5.2 Invoice – service and dispensing fees and NRT reimbursement

A standard invoice for service fees and dispensing fees (SS3) should be completed and returned to NHS Devon **monthly**.

5.3 NRT supply

- NRT may be dispensed under this scheme for a maximum of 12 weeks. It is recommended that this is dispensed for 2 weeks, 2 weeks, 4 weeks and 4 weeks. A dispensing fee of £1 per supply may be claimed when this dispensing procedure is followed.
- The first two prescriptions are limited to two weeks worth of NRT to minimise drug wastage. However, in recognition of the fact that GPs may prescribe 28 days supply on te first prescription. The PCT has agreed to waive the patient prescription charge for the second set of items. So the patient will pay a maximum of three sets of prescription charges, once every 4 weeks.
- The supply of Varenicline (Champix) and Bupropion (Zyban) is not covered under the community pharmacy LES. However, the adviser can support a patient using such medication by providing a prescription request letter for the GP.

[1] DH Service & Monitoring Guidance 2010-11 defines this as measure as 28 days from the client's quit date -3 or +14 days. Where CO monitored, the CO reading should be <10ppm.

5.4 NRT charge / exemption

- The client should be charged £7.20 (or the current prescription charge) per item of NRT dispensed (i.e. if a combination of 2 items is supplied this would constitute two charges).
- Patients who are exempt from prescription charges should complete the Payment Exemption Form (SS2), which should be retained in the pharmacy for 7 years for audit purposes. The Payment Exemption Form does not need to be returned to the PCT.

5.5 Reimbursement for NRT

- The pharmacy will be paid the cost price for the NRT product. (Drug tariff cost + 5% VAT).
- If the patient is exempt from prescription charges, and has signed an NRT payment exemption form, full payment will be received from the PCT.
- If the client is charged a service charge by the pharmacy, then this is to be deducted from the PCT payment to the pharmacy.

5.6 Subsequent Quit Attempts

If an attempt to stop is unsuccessful, the scheme will not normally fund a further quit attempt within 6 months. If external factors interfere with an individual's attempt to quit, then it may be reasonable to try again sooner with the advisor's agreement.

Appendix 1.4: Kirklees PCT

Locala
Community Partnerships

Locala Stop Smoking Service

Service Level Agreement for Nicotine Replacement Therapy Voucher Scheme

Author: Amina Hans-Adam
Locala Community Partnerships CIC
Stop Smoking Specialist

Introduction

NHS Kirklees have commissioned Locala Community Partnerships CIC to administer a pharmacy voucher scheme for the supply of Nicotine Replacement Therapies (NRT) across Kirklees. The administration of this scheme will be carried out by the Locala Stop Smoking Service (LSSS). The scheme enables patients using Locala's Stop Smoking Service and the Pharmacy/Dental Stop Smoking Service to issue a voucher for NRT. This service level agreement forms the agreement between Locala Community Partnerships CIC and the pharmacy who wishes to issue vouchers/dispense NRT under this scheme.

Summary

Smoking is the primary cause of preventable morbidity and premature death, accounting for 81400 deaths in England in 2009 (1).

The Government is committed to reducing smoking rates (1), and smoking cessation guidelines have been published including the cost effectiveness of interventions for smoking cessation (2). These guidelines recommend that all smokers should be asked about their smoking habit at every opportunity, advised to stop smoking, offered assistance where appropriate and follow up arranged to reassess smoking status. The guidelines include the provision of nicotine replacement therapy as a pharmacological aid for smoking cessation.

Nicotine Replacement Therapy (NRT) has been shown to approximately double cessation rates compared with controls (3), and smoking cessation guidelines recommend that smokers should be encouraged to used NRT as a cessation aid.

Efficacy

Cochrane carried out a meta-analysis of 81 trials involving 25,600 smokers to examine the effectiveness of all forms of NRT, compared with placebo or no NRT (4). This study showed that all forms of NRT were significantly more effective than placebo or no NRT, in helping smokers to achieve abstinence. The pooled results for all forms of NRT showed that 18% of all patients receiving treatment were still abstinent at 52 weeks, compared with 11% in the control group.

Data on direct comparisons of the different forms of NRT with each other are limited. Overall, there is little evidence to suggest superiority of any one form of NRT (5). It is recommended that choice of product is tailored to the patient (6).

Adverse Effects

NRT products provide much lower doses of nicotine than is obtained by smoking and its adverse effects are not complicated by the additional toxic effects of tar and carbon monoxide generated by cigarette smoke.

With the use of patches there is a possibility of localised skin reaction (7). Nicotine can also exacerbate symptoms in patients with peptic ulcers or gastritis, and the possibility of this is greater with the gum than other NRT products, as nicotine may be swallowed and enter the stomach directly (7). Denture wearers may also have difficulty in chewing gum.

In addition, NRT products may produce the same range of side effects as nicotine from smoking (hiccups, sore throat, headache, nausea and dizziness). However, these side-effects are less likely to occur than with smoking, and clinical trials have shown most to be comparable to those caused by placebo (8).

Special Precautions

Nicotine is a known stimulant and is associated with an increased risk of angina, atherosclerosis, stroke and other cardiovascular disease.

The manufacturers advise that doctors should assess the possible risks and benefits of using NRT versus cigarettes in the following patient groups

- History of angina
- Recent myocardial infarction
- Recent cerebrovascular accident
- Serious cardiac arrhythmias
- Pregnant and breast feeding women

These are **NOT** contra-indications and it is preferable for a patient in any of the above groups to stop smoking with the use of NRT rather than continue smoking.

Nicotine can also stimulate production of adrenaline; NRT should therefore be used with caution on patients with diabetes mellitus, hyperthyroidism or phaeochromocytoma. Again NRT presents a lesser hazard than smoking.

Significant changes in the use of NRT with previously cautioned / contra-indicated groups (Dec 2005)

Ref: Safety of NRT – Helping Smokers to Stop – Advice for Pharmacists in England (9)
Report of the Committee on Safety of Medicines Working Group on NRT (10)

Adolescent smokers

Many young smokers show signs of nicotine dependence. Although there is little published data demonstrating the efficacy of NRT in young smokers, there is no logical reason why it should not help as long as it is used correctly and the smoker is determined to give up. NRT products are now licensed for use by smokers under 18. Ultimately the decision to use NRT should be based on the smoker's determination to quit, and on their level of dependence (as opposed to age). Given that NRT is less harmful than smoking, safety concerns should not be a barrier to use.

Cardiovascular disease

Although nicotine has some acute effects on the cardiovascular system, unlike tobacco smoke it is not a significant risk factor for cardiovascular disease or acute cardiac events. Nicotine replacement therapy provides less nicotine, less rapidly than cigarette smoking, without substances such as carbon monoxide (which is known to have adverse effects on the cardiovascular system). On this basis, experts agree that all NRT products can be safely used by smokers with stable cardiovascular disease. It is recommended that the risks and benefits of using NRT should be assessed for smokers with unstable cardiovascular disease, or

who have suffered an acute event in the past four weeks. If the only other option for this group is continued smoking, a risk–benefit assessment invariably leads to recommending NRT. When using NRT for smokers with unstable cardiovascular disease, it is advisable to use the shorter-acting oral products that can be discontinued immediately in the event of any problems. Nicotine patches, even once removed, leave a small reservoir of nicotine under the skin.

Pregnant and breastfeeding women

Smoking during pregnancy is associated with large risks to both mother and foetus, and later to the newborn and growing infant. Although nicotine may be implicated in some of the adverse effects of smoking (e.g. low birth weight and behavioural problems in infants), NRT delivers much less nicotine than cigarettes without the other harmful ingredients of tobacco smoke. It is better for pregnant women to be both nicotine- and tobacco-free. Whilst there is not sufficient evidence at present on the effect of NRT on cessation in pregnant women, the overwhelming evidence for effectiveness generally and the need to stop smoking to protect the baby mean that NRT should be offered to pregnant smokers who have not given up and who feel that they would be unable to give up without it.[10] When considering NRT use, it is prudent to document any discussion of risks and benefits, and oral products should be recommended initially as these will provide less nicotine to the foetus than a patch. If oral products are not acceptable a patch may be considered, but this must be removed before going to bed, i.e. the patch should not be used for more than a 16-hour period, with a break of 8 hours between patches. Treatment should be provided as early in pregnancy as possible, with the aim of being smoke-free and nicotine-free by the third trimester.

The use of NRT while breastfeeding, is associated with very few risks to the child. Nicotine does accumulate in breast milk but relatively little is absorbed from the infant's gut, and this then undergoes first pass metabolism resulting in a low plasma concentration. Any small risk to the child from this low level of nicotine is preferable to the risk of the breastfeeding woman continuing to smoke.

Smoking can cause great harm to the mother, the unborn child and the newborn infant, and would-be parents should be advised of these risks. Treating pregnant smokers involves specific challenges (e.g. the immediacy of the need to stop; the mother's fear of being judged), and clients may be best supported by a specialist smoking and pregnancy advisory service, where this exists. Pharmacists will need to discuss local treatment options carefully with pregnant women and help them decide which service is likely to be the most appropriate for their needs.

The following table indicates specific actions to be followed for patients with a variety of underlying conditions that may impact on their use of NRT products.

Guidance summarised from Report on Safety of Medicines Working Group on Nicotine Replacement Therapy
Medicines and Healthcare products Regulatory Agency / Committee on Safety of Medicine (Dec 2005)

Question	Action if yes	Suggested product
Is the voucher holder aged between 12 and 18?	• Confirm the client is being supported by a trained smoking cessation advisor • Dispense product if no contraindications	• Any product suitable
Is the voucher holder pregnant or breast-feeding?	• Confirm the client has already received at least 1 prescription during this quit attempt from their GP. If not refer client to GP for first prescription using letter provided. Contact advisor who issued voucher as soon as possible to inform them that a referral has been made. • Is client already using one NRT product? Refer to GP for prescription for any additional product.	• Intermittent dosing products may be preferable as these usually provide a lower daily dose of nicotine than patches. Slow release 24-hour patches should not be used to avoid the administration and exposure of the foetus to nicotine overnight. However, if the woman suffers from nausea and/or vomiting, a 16-hour patch removed at night is preferable. • For breast feeding mothers, intermittent NRT products will allow the time between NRT use and feeding to be as long as possible
Has the voucher holder been hospitalised with a recent myocardial infarct, severe dysrhythmia or cerebrovascular accident **within the last 4 weeks** and/or are they considered to be haemodynamically unstable?	• Refer patients to their GP / Consultant using letter provided. Contact advisor who issued voucher to inform them that a referral has been made	• This group should be encouraged to stop smoking with non-pharmacological interventions • With GP or Consultant approval any product could be dispensed
Does the voucher holder suffer from lung disease? E.g. Asthma / COPD / chronic throat disease	• Consideration of appropriate product	• Patients with obstructive lung disease may find use of the inhalator difficult. Nicotine

		gum, patch, nasal spray, lozenge or sublingual tablet may be preferred in such cases.
Does the voucher holder suffer from diabetes mellitus?	• Advise client they may need to monitor blood glucose levels more closely as catecholamines released by nicotine can affect carbohydrate metabolism	• Any product suitable
Does the voucher holder suffer from moderate to severe hepatic impairment and/or severe renal impairment?	• Use with caution with this group as the clearance of nicotine or its metabolites may be decreased with the potential for increased side effects.	• Any product suitable
Is the voucher holder taking drugs metabolised by CYP 1A2 / CYP 1A1 e.g. theophylline, clozapine and ropinirole?	• Advise patient to inform their consultant they have stopped smoking. Polycyclic aromatic hydrocarbons in tobacco smoke induce the metabolism of drugs metabolised by CYP 1A2 (and possible CYP 1A1). When a smoker stops smoking, this may result in slower metabolism and a consequent rise in blood levels of such drugs. This is of potential clinical importance for products with a narrow therapeutic window e.g. theophylline, clozapine and ropinirole	• Any product suitable
Does the voucher holder suffer from GI disease?	• Advise client swallowed nicotine may exacerbate symptoms in patients suffering from oesophagitis, gastritis or peptic ulcers and oral NRT preparations should be used with caution in these cases.	• Patch (24 and 16 hr)
Does the voucher holder suffer from any generalised dermatological disorders?	• Patients with chronic generalised dermatological disorders such as psoriasis, chronic dermatitis or urticaria should not use NRT patch.	• Nicotine gum, nasal spray, lozenge or sublingual tablet, inhalator,
Does the voucher holder suffer from phaeochromocytoma and / or uncontrolled hyperthyroidism?	• As nicotine causes the release of catecholamines, NRT should be used with caution in patients with phaeochromocytoma and / or uncontrolled hyperthyroidism.	• Any product suitable

Interaction with other medicinal products

No clinically relevant interactions between NRT and other drugs have definitely been established. However nicotine may possibly enhance the haemodynamic effects of adenosine i.e. increase in blood pressure and heart rate and also increase pain response (angina-pectoris type chest pain) provoked by adenosine administration.

Protocol for providing Nicotine Replacement Therapy via the Voucher Scheme:

Nicotine Replacement Therapy Vouchers pads will be given to all Smoking cessation Specialist advisors and Intermediate advisors who are based in Pharmacies and Dental Practices
Voucher pads are to be kept in accordance with the Good practice guidelines for the safe and secure handling of voucher pads. (Appendix 1)

- To issue NRT vouchers you must be:
    - A Specialist Advisor working for LSSS OR
    - An Intermediate Advisor accredited by LSSS and working in a pharmacy or dental practice in Kirklees
    - Have attended the voucher scheme training
    - Have signed up and received a voucher pad

- Only clients who are attending LSSS or a Smoking Cessation clinic in a pharmacy/dental practice participating in the smoking cessation Local Enhanced Scheme (LES)will be eligible to be issued with a voucher
- All clients will be screened to assess nicotine dependence, motivation and readiness to stop smoking by the Specialist/Intermediate Stop Smoking Advisor.
- Prior to their quit day, as part of the cessation planning and preparation process, the client will initially receive a voucher for 2 weeks supply of NRT to commence use on the day they stop smoking. (Vouchers will be valid for 4 weeks from the issue date)
- In those cases where the client smokes more than 20 cigarettes a day or equivalent tobacco, dual therapy may be offered.
- At one week after 'quit day', the client will be issued with a voucher for a further 2 weeks supply of NRT.
- 3 weeks following the client's 'quit' day, the client will be assessed for abstinence from smoking using carbon monoxide verification by the Specialist/pharmacy/dental advisor.
- If there is evidence the client is still smoking, no further NRT vouchers will be issued.
- Should the client's abstinence be verified, vouchers for a further 4 week supply of NRT will be given.
- If the client is still not smoking 4 weeks after their quit date and choose not to have further support after that time, or have attended a group that ceases at that time, they may receive a voucher asking for the rest of the NRT course to be supplied (this could be up to 4 weeks supply of NRT)

- In total this means there will be 4 vouchers (if the client finishes the full course of medication) and will follow a 2 weeks, 2 weeks, 4 weeks and 4 weeks course of medication
- All vouchers will be marked with status of supply e.g. Voucher 1, voucher 2 etc.

Dispensing details

- NRT vouchers will be redeemable at any pharmacy which has signed up to dispense via the Voucher Scheme.
- All clients will be screened to assess nicotine dependence, motivation and readiness to stop smoking by the Specialist Stop Smoking Advisor or the pharmacy/Dental advisor. The patients' suitability to receive NRT will be assessed by the contracted pharmacist, using the guidelines provided by Locala Stop Smoking Service (table on pages 6 and 7 of this document).
- Should a client fall into a patient group with special warnings/ precautions, **where a second opinion should be sought**, (pregnancy/breastfeeding or hospitalisation in the last 4 weeks through a cardiovascular/cerebrovascular event) a prescription will be required from the patient's GP or Consultant before NRT may be issued. The advisor must request the first 2 weeks of medication from the GP/Consultant in the first instance, if no cautions identified then NRT vouchers can be given for follow up treatment. If a voucher has been issued and the pharmacy assessment identifies that the client falls into the special warnings/precautions group; they must notify the advisor as soon as possible. In these cases the voucher should be retained, marked as **VOID** and returned with the monthly summary sheet.
- Following the initial clinical assessment, it is the responsibility of the dispensing pharmacist to check there have been no changes in the client's medical status. Should a client present a voucher for continued treatment to a pharmacist who did not conduct the initial assessment, a new assessment should be completed.
- Should the initial NRT product be unsuitable for the client, the client should go back to the advisor who will re-assess and issue a further voucher for an alternative product. To minimise the chance of fraud it is advisable that when NRT is supplied under this scheme the barcode be marked and in those cases where the NRT product is unsuitable, unused NRT products are to be returned to the pharmacy and destroyed in line with Medicines Management Policy –A Guide to the Safe and Secure Handling of Medicines(11). In these cases the service will reimburse the pharmacy in the normal way; however we envisage a maximum of 1 change of NRT per quit attempt

Client Payment details

- If the client pays for prescriptions a fee equal to that of the normal prescription charge should be collected per item dispensed.
- If the client receives free prescriptions, they should complete the exemption and declaration on the back of the voucher,
- It is the pharmacist's responsibility to request evidence of exemption from prescription charges and the pharmacist should confirm on the back of the voucher whether evidence of exemption has been seen.
- Clients who hold pre-payment certificates **will be** exempt from the prescription fee.

Reimbursement

- The pharmacist should send the completed bottom yellow copy OF THE VOUCHER (with the exemption declaration) to Locala Stop Smoking Service, Dewsbury Health Centre, Wellington Road, Dewsbury, WF13 1NH, to reach them by the 5th of the following month. Any forms received outside of this period will result in a delay for the reimbursement to the following month.
- The pharmacist should retain the pink copy of the voucher for their own records
- The copies must be stored safely for 2 years and thereafter shred confidentially.

Fees

- Locala Stop Smoking Service (LSSS) will pay the pharmacists £3.00 per item on the voucher
- LSSS will reimburse the pharmacist the cost of the product (Drug Tariff plus VAT @ reduced rate - 5%) on a monthly basis.

Additional Pharmacist Duties

The participating pharmacy and ultimately the person stated in the service agreement have a duty to:

- Produce a Standard Operating Procedure for the service that corresponds to the procedures and documentation provided by LCP. The standard operating procedure should include error and near miss reporting.
- Ensure the service is underpinned by a system of clinical governance, which ensures that the service is of a high quality, provided to the agreed standard and supports pharmacists to deliver patient care.
- Ensure that pharmacists and staff involved in the provision of the service have the relevant knowledge and competencies and are appropriately trained in the operation of the service.
- Ensure that any locum providing the service has the appropriate knowledge and is competent to operate the service.

- Ensure that pharmacists and staff involved in the provision of the service are aware of and operate within local protocols.
- Ensure that the LSSS Manager is promptly informed of any change in pharmacy personnel/ circumstances that mean that either more pharmacists need training or the pharmacy is unable to participate in the service.
- Pharmacists are reminded that they are to be vigilant to the possible fraudulent use of the service by patients or other pharmacists. If this is suspected the LSSS Manager is to be contacted.
- Ensure that the pharmacy maintains appropriate records to ensure effective ongoing service delivery and audit.
- Allow an authorised agent of the Locala Community Partnership (LCP) access to all documentation for audit/fraud purposes, at any reasonable time.
- Ensure that pharmacy has the appropriate professional indemnity insurance.
- Ensure the pharmacy participates in any quality indicator assessments as requested by the LCP.

Core Competencies for Pharmacists

All pharmacists involved in Pharmacy Voucher Scheme have a professional responsibility to develop, reinforce and update their knowledge and skills.
Further information can be found at:

http://www.ncsct.co.uk/Content/FileManager/documents/NCSCT_Training_Standard.pdf

Locala Stop Smoking service offer Brief Interventions training in Smoking Cessation throughout the year. For more information and to book a place visit:

http://publichealthtraining.kirkdees.nhs.uk

Confidentiality

All parties agree that access to records and documents containing information relating to individual clients treated under the terms of this Voucher Scheme SLA will be restricted to authorised personnel. The pharmacy will comply with the Data Protection Act, Caldicott and other legislation covering access to confidential client information.

Indemnity

The pharmacist will ensure that they hold appropriate clinical indemnity against any claim from a client arising from the provision of this service. Evidence will be provided annually to LCP.

Incidents and Near Misses

Incidents and near misses should be reported directly to the LCP using a Serious Untoward Incident Reporting Form (SUI), available from LCP CIC. Incidents relating to the Pharmacy Voucher Scheme must be sent directly to LCP even if this is not the pharmacies usual route for incident reporting.

Complaints

The pharmacist will effectively manage any complaints or incidents using the pharmacies own complaints procedure, keeping a record for audit purposes. If the complainant is not happy with your response or does not wish to discuss the complaint with the pharmacy they should contact:

Customer Liaison Manager,
Locala Community Partnerships
First floor, Beckside Court,
Batley
West Yorkshire
WF17 5PW
Email: enquiry@locala-cic.nhs.uk
Telephone: 01924 351531

LCP duties

LCP will agree with local stakeholders the Nicotine Replacement Therapy formulary for this service. They will regularly review the formulary to ensure that the formulary reflects the availability of new medicines and changes in practice or guidelines, as well as relevant NICE guidelines.

LCP will pay the pharmacy operating the scheme as outlined in **Fees**.

LCP will provide a framework for the recording of relevant service information for the purposes of audit and the claiming of payment.

LCP will provide details of relevant referral points which pharmacy staff can use to signpost service users who require further assistance.

LCP will supply patient information leaflets for use in the service.

LCP is responsible for the promotion of the service locally, including the development of publicity materials, which pharmacies can use to promote the service to the public.

Quality Indicators

- The pharmacy has appropriately provided patient information leaflets and provides these as per the service specifications.
- The pharmacy reviews its standard operating procedures and the referral pathways for the service on an annual basis.
- The pharmacy co-operates with any locally agreed PCT-led assessment of service user experience.

Monitoring arrangements

The PCT will monitor the service delivery as part of the pharmacy contract monitoring process to ensure consistency of high quality service delivery. Potentially, any element of the services provided may be monitored. The elements to be monitored will be shared with the contractors before any monitoring visit. Elements likely to be monitored are the existence of a SOP, with a review date, signed and dated by relevant staff and availability of patient information leaflets.

Duration of Agreement

This agreement shall commence on the ***date the authorisation is signed by both parties*** and shall continue until further notice
This service will be reviewed quarterly and evaluated yearly.
At least 28 days notice must be given by either party to terminate or change Voucher Scheme SLA. LCP retains the right to withdraw the scheme at any time if it is deemed to be unsuccessful or if the Voucher Scheme SLA is seriously breached.

References

1. Government White Paper-Healthy lives, A Tobacco control plan for England (2011)
2. Stop smoking service delivery and monitoring guidance 2011/12 (2011)
3. Smoking Cessation Guidelines and their Cost Effectiveness Thorax (Dec 1998) ; 53: S1-S38
4. Silagy C., Mant D. et al. Nicotine Replacement Therapy for Smoking Cessation (Cochrane review). In The Cochrane Library Issue 2. Oxford, Update Software, 1998. (updated quarterly)
5. Nicotine replacement to aid smoking cessation. Drug Ther. Bulletin 1999; 37(7): S2-S4
6. Nicotine replacement therapy. MeReC 1999; 10, (3) 9-12
7. Division of Drugs and Toxicology. Drugs Evaluation Annual 1994. Chicago: American Medical Association (1994)
8. Nathan A. Smoking Cessation Products. Pharmaceutical Journal 1998; 260: 340-343
9. McRobbie,H. & McEwen, A. Helping smokers to stop: advice for pharmacists in England. National Institute for Health and Clinical Excellence, Royal Pharmaceutical Society of Great Britain and PharmacyHealthLink 2005; 14-15.
10. Report of the Committee on Safety of Medicines Working Group on Nicotine Replacement Therapy. Medicines and Healthcare products Regulatory Agency. Committee on Safety of Medicines. November 2005
11. Medicines Management Policy-A Guide to the Safe and Secure Handling of Medicines. SEPTEMBER 2011

Appendix 1.5: Peterborough PCT

NHS Peterborough

NHS PETERBOROUGH

(working in partnership with Peterborough City Council)

SERVICE LEVEL AGREEMENT

LOCAL ENHANCED SERVICE

For the provision of a

Community Pharmacy Based Stop Smoking Programme 2008/10

1. **Aim**

1.1. The aim for this Local Enhanced Service is to commission a Community Pharmacy Based Stop Smoking Programme across the Peterborough area.

2. **Definitions**

2.1. ***Contractor*** means the Community Pharmacy providing services under the *New Contractual Framework for Community Pharmacy (April 2005)* with NHS Peterborough and which is responsible for the provision of services under this Agreement.

2.2. ***Local Enhanced Service*** means the Local Enhanced Service for Community Pharmacy Based Stop Smoking Programme.

2.3. ***NHSP*** means NHS Peterborough (working in partnership with Peterborough City Council).

2.4. ***PSSS*** means Peterborough NHS Stop Smoking Service who will manage and monitor the Programme (see appendix 1 for specification).

2.5. ***Level 2*** means 1:1 multi-session interventions to help individuals stop smoking (generally offered by trained clinicians).

2.6. ***Quit date*** means the date the client has committed to stop smoking.

2.7. ***Monitoring form*** means the form (see appendix 2) used to report activity on every client that sets a quit date as part of the programme and returned on a weekly basis.

2.8. ***CO verified 4-week quitter*** **means a self-reported quitter** (who has set a quit date as above) whose expired carbon monoxide (CO) reading is assessed 28 days from quit date (-3 or +14) and whose CO reading is found to be less than 6ppm.

3. **Parties to the Agreement**

3.1. This Service Level Agreement is between ***NHSP*** (commissioner of the programme) and *«Pharmacy Name»* (provider of the programme).

4. **Relationship between the parties**

4.1. The Agreement is for the provision of Local Enhanced Services for the Community Pharmacy Based Stop Smoking Programme as defined in Appendix 1 of this Agreement.

4.2. This Agreement forms an Appendix to the *New Contractual Framework for Community Pharmacy, which* came into effect on 1 April 2005 and as such is subject to the overriding conditions contained within it.

5. **Commencement of the Agreement**

5.1. This Agreement will commence on **1st December 2008**.

6. **Duration of the Agreement**

6.1. The Agreement will subsist until **31st March 2010** following which a review of the programme provision within NHSP will inform future commissioning of the Local Enhanced Service.

7. **Programme Specification**

7.1. The programme specification will be in accordance with Appendix 1 and managed and monitored by PSSS.

8. **Qualifications/ Level of Skill**

8.1. Pharmacy contractors providing services under this Agreement would be expected to have staff who deliver the service to undertake Level 2 training, provided free of charge by PSSS.

8.2. It will also be mandatory for all level 2 trained advisors to attend two update meetings; these will be provided by PSSS three times a year. Follow up one to one clinical supervision will be given for 6 months following the initial training and further to that will be offered by PSSS on a needs basis.

8.3. The advisor and or manager has a duty to ensure that all staff involved in the provision of the programme have relevant knowledge and are appropriately trained in the operation of the programme.

9. Accreditation

9.1. It is the responsibility of the contractor to ensure the part of the pharmacy used for the provision of the programme provides a sufficient level of privacy and safety and meets other locally agreed criteria within the pharmacy.

10. Records and Information

10.1 Activity monitoring is crucial to determine the future commissioning of this Local Enhanced Service.

10.2 The contractors are required to collect monitoring data using the required form (see appendix 2) and to report data weekly. Failure to provide the correct information by the due date will result in delayed payment.

10.3 NHSP remains responsible for ensuring that public funds are used and accounted for appropriately. To that end the NHSP or its appointed agents will have rights of access to the pharmacies records in relation to this programme to satisfy itself that those responsibilities are being discharged. Such access will be on demand within normal working hours of the pharmacy and at a time agreed with the pharmacy contractor..

11. Dispute Resolution

11.1 It is the intention that any disputes can be resolved through a direct process. Recourse will be via Panel of the NHSP Board members, to include the Chair, the PEC Chair and nominated Non-Executive Director. Pharmacies will be invited to make representation to the panel, and may elect to involve the Local Pharmaceutical Committee at this stage. In the event that matters remain unresolved, the matter will be referred through the appropriate mechanism as set out in the *New Contractual Framework for Community Pharmacy*.

12. Audit and Evaluation

12.1 PSSS would expect the pharmacies enrolled to achieve 24 four-week quitters per Level 2 advisor in each 12-month period i.e. a pharmacy with three advisors will achieve 72 quitters per year. In order to meet this target, given that quit rate at 4 weeks is just over 50%, each pharmacy would need to recruit as minimum 4 new clients per advisor/per month.

12.2 Results for all intervention types and settings will be checked by the PSSS Manager to determine whether the 4-week quit rates fall between 35% and 70%. If the overall programme results (or those for a specific intervention type/setting) fall outside this range then checks (see programme specification) will be carried out.

13. Payment

13.1 Payments will be paid in arrears in accordance with data provided the pharmacy subject to validation outlined above. Pharmacies will be remunerated monthly at the following rates:-

13.2 An annual set up fee of £100 will be made per pharmacy for costs towards advisor training time.

13.3 A fee of £10 per client for initial consultation will be paid followed by £35 for each successfully 4-week quitter been seen for a minimum of 5 sessions, on return of appropriate forms.

13.4 Payment will be dependent upon the submission of a completed Client Monitoring Form and all necessary information should be recorded.

13.5 Pharmacies will be reimbursed monthly in arrears for the cost of Pharmacology Treatments at the following rates (based on the Drug Tariff, February 2008):-

Niquitin / Nicotinell 24 hour Patch 21mg - £9.97
Niquitin / Nicotinell 24 hour Patch 14 mg - £9.97
Niquitin / Nicotinell 24 hour Patch 7 mg - £9.97 (36) £4.95
Niquitin Lozenges 4mg - (72) £9.97, (36) £5.12
Niquitin Lozenges 2mg - (72) 9.97, (36) £5.12

Nicotinell Lozenges 1mg – (96) £9.12
Nicotinell Gum 4mg– (96) £10.26
Nicotinell Lozenges 2mg – (96) £10.60,
Nicotinell Gum 2mg - (96) £8.26

Nicorette 16 hour Patch 15mg - £9.07
Nicorette 16 hour Patch 10mg - £9.07
Nicorette 16 hour Patch 5 mg - £9.07
Nicorette Gum 4mg – (210) £18.24, (105) £10.83, (30) £3.99
Nicorette Gum 2mg – (210) £14.82, (105) £8.89, (30) £3.25

Inhalator starter pack - £3.99
Inhalator refills (pack of 42) - £12.81

Microtab (pack of 105) - £11.12

Nasal Spray - £12.26

14. Termination

Should either party wish to terminate this Agreement, a minimum period of 3 months notice must be provided in writing.

In the event that NHSP or Contractor terminates the *New Contractual Framework for Community Pharmacy*, this Service Level Agreement will also be deemed to have been terminated.

Signatories to the Agreement

Signed by .....**Date** .....

Alison Asplin
Manager of Peterborough NHS Stop Smoking Service
On behalf of NHS Peterborough

«Pharmacy_Name» agrees to participate in the Local Enhanced Service as outlined within this Agreement.

Signed by .....**Date**.....

Name .....
Authorised Signatory
«Pharmacy_Name»

APPENDIX 1

PROGRAMME SPECIFICATION

Background

The contribution pharmacists can make to improve the health of the population has been recognised in 'A Vision for Pharmacy in the New NHS' (Department of Health 2003). This is also reflected in the new contractual framework for community pharmacy (DH 2004) and in 'Choosing Health through Pharmacy: a programme for pharmaceutical public health 2005 – 2015' (DH 2005).

Pharmacies are in a prime position to provide stop smoking advice having opportunities to intervene with both ill and well customers attending the pharmacy. Community pharmacy could become one of the major providers of Stop Smoking Services (Choosing health through Pharmacy, DH 2005).

Introduction

This programme specification has been produced by PSSS to enable community pharmacists to deliver an NHS Stop Smoking Service to smokers within the community pharmacy setting.

This Agreement sets out the terms for: -

- A community pharmacy based stop smoking advisory programme in selected locations across NHS Peterborough.
- A scheme to supply Nicotine Replacement Therapy (NRT) from these locations to clients wishing to quit smoking. This will only be for clients attending counselling sessions run by trained stop smoking advisors in community pharmacies.

There is a strong evidence base for the effectiveness of pharmacy led stop smoking programmes. NHS Stop Smoking Services in community pharmacy are a major success story, in some cases enabling NHSP to achieve their stop smoking targets.

It is apparent that there is a need to raise the awareness and profile in the community about the Stop Smoking Services. Although smokers are still actively accessing primary care and Rivergate Walk-In Centre and other outlets, the throughput needs to increase to reach NHSP's smoking target.

Pharmacies can provide one to one support and advice to people who want to give up smoking. This will help to increase choice and improve access to Stop Smoking Services especially for 'hard to reach' groups, such as pregnant mothers, young people, ethnic and minority groups, and facilitate access to NRT.

Aims of the programme

- To improve access to and choice of stop smoking services, including access to pharmacological stop smoking aids
- To assist in the delivery of NHSP targets
- To reduce smoking related illnesses and deaths by helping people to give up smoking
- To improve the health of the population by reducing exposure to second-hand smoke.

The Programme

The accredited Stop Smoking Advisor will provide a 1:1 counselling programme in the community pharmacy for clients who wish to stop smoking.

The programme will consist of five compulsory consultations with the Stop Smoking Advisor at weekly intervals. This will ensure each client is seen prior to quitting and followed up for at least the recommended 4 weeks after their quit date. It is anticipated that the first consultation will take approximately 30 - 45 minutes, and subsequent consultations 15 minutes each. The stop smoking programme is available to clients up to 12 weeks and should the client request on-going support it is the duty of the contractor to ensure that this is provided for that individual. The minimal total contact time should be 1.5 hours as per national guidance.
A period of six months is recommended by NICE for clients returning to the service for a further quit attempt.

The Advisor using an agreed method should maintain a list of appointments.

It will be the responsibility of the Advisor to follow up any clients failing to attend a particular session and encourage them to continue the programme the reason for this will be noted on the Client Record Form.

If the quality of programme falls below or rises above the agreed standard the following checks will be carried out. A minimum of 3 random checks of smokers treated by the programme provider/s concerned will be carried out by telephone (or face to face if possible), to establish that they met with the criteria for self-reported or CO verified 4 week quits at the 4 week follow-up point and that they have received an approved intervention of the required content and duration, as described in this guidance. If the random checks indicate that recorded quits are unreliable, all cases received from this provider will be checked using the approved definitions and the total number of 4 week quits should be re-entered onto the programme database. If, after the required checks have been carried out, the results are still outside the expected range, an assessment should be made of the most likely causes.

Client record forms should be stored in a locked cabinet to protect confidentiality. Supply of NRT will be made directly from the pharmacy to appropriate clients without the need for referral to a GP for a prescription.

Client Referral

Clients interested in stopping smoking can be recruited directly in the pharmacy on to the Advisor Scheme. Clients who ring the free Helpline number (0800 376 56 55) will be informed of the pharmacy programme where appropriate. Some clients will be referred by other advisors to the pharmacist to assess the suitability of supplying NRT. This will be by letter of referral issued to the patient.

PSSS will provide bespoke promotional campaigns to refer clients direct to the pharmacy scheme. When these are taking place notification will be sent to all pharmacists to ensure adequate provision is available.

Consultation sessions

All consultations should be by appointment only. The initial consultation should include:-

1 An assessment of the person's readiness to make a quit attempt
2 A Carbon Monoxide (CO) test and explanation of it's use as a motivational aid
3 A description of the effects of passive smoking on children and adults
4 An explanation of the benefits of quitting smoking
5 A description of the main features of the tobacco withdrawal syndrome and the common barriers to quitting
6 Identify treatment options that have proven effectiveness
7 Describe what a typical treatment programme will look like, it's aims, length, how it works and it's benefits
8 Maximise commitment to the target quit date
9 Apply appropriate behavioural support strategies to help the person to quit
10 Conclude with an agreement on the chosen treatment pathway, ensuring the person understands the ongoing support, request consent to follow-up by the Advisor and/or PSSS, and monitoring arrangements

Clients wishing to use Nicotine Replacement Therapy (NRT) as an aid to stopping smoking

If considered appropriate the pharmacist may supply NRT and will advise on its use. Supply of treatment must be recorded on the person's pharmacy medication record.
The quantity supplied should follow where appropriate the following guidelines:

Week One	
Week Two	Weekly
Week Three	Weekly
Week Four	Weekly
Week Five	Weekly
Week Six	Weekly

A total of 5 weeks NRT will be supplied, the client will then be issued with a letter to take to his/her GP to complete the course. The 5 weeks worth of NRT will be charged as one prescription charge (currently £7.10) to the client, this must be collected by the pharmacist when the first product is dispensed at week 2. If however, the client is dispensed different products i.e. patches and lozenges then the prescription charge will be made per item.

The pharmacist will initially assess the client's suitability for the supply of NRT. All NRT supplied after the initial assessment by the accredited pharmacist will follow the pattern shown in the table above, subject to the client continuing to attend the pharmacy counselling sessions.

Clients wishing to use Zyban (Bupropion) as an aid to stopping smoking

At the present time there is no mechanism for pharmacists to supply Zyban without a prescription. If the client is interested in using this product they will be given the necessary product information and provided with a letter for their GP **after attending the initial session** of the stop smoking programme.

The letter will state: -

1 They have accessed the Stop Smoking Service
2 Their motivation or commitment to stop smoking
3 Their preferred choice of pharmacological aid
4 Any possible cautions or contra-indications to its use in the patient

The decision to supply the client with a prescription for Zyban will remain with the GP who must take into account the patient's medical history before prescribing a product. It will remain the responsibility of the GP to check the patient's medical record for any possible contra-indications to the supply of Zyban before issuing a prescription.

Follow up consultations should be carried out weekly for the first 4 weeks and will include smoking status validation using a CO test.

Clients wishing to use Champix (Varenicline) as an aid to stopping smoking

Champix is available for clients who have had failed quit attempts with use of NRT and is subject to clinician approval. If a client requests the use of Champix, or if you feel they are particularly suited to this product, the procedure as above (for Zyban) should be followed.

Advisors Holidays

A 6-week programme is essential, and all clients will be encouraged to complete the programme. If an Advisor is planning a holiday it is recommended that you do not start a client on the programme unless they will complete at least the first 3 sessions at weekly intervals. Holiday in the last 3 sessions can be accommodated by arranging for clients to return 1-2 weeks later when the holiday is finished. This will extend the 6 weekly sessions over a longer period.

Advisors Unexpected Absence

If the advisor is unexpectedly unavailable for a returning client then the pharmacy staff will telephone the client(s) to cancel and rearrange any appointments

Responsibilities

The Pharmacy Stop Smoking Advisor will:-

1 Complete and return the monitoring data required by PSSS
2 Record a successful quitter as defined by the DH Stop Smoking Guidelines
3 Offer people not wishing to initially engage or those who choose not to complete the programme appropriate health literature
4 Attempt to reduce the number of clients lost to follow-up
5 Maintain appropriate records to ensure effective ongoing programme delivery and audit as requested by PSSS

PSSS will:-

1 Supply free of charge materials and equipment to support the programme
2 Supply a maximum of x2 CO monitors on a loan basis (any additional ones will incur a charge)
3 Reimburses the pharmacy for the cost of 5 weeks supply of NRT
4 Provide a framework for the recording of relevant programme information for the purposes of audit and the claiming of payment
5 Be responsible for the promotion of the programme, including the development of publicity materials, which can be used to promote the programme to the public
6 Be responsible for training advisors to an agreed standard, in conjunction with the pharmacy CPD trainer.

Pharmacy profiles will be created for each contractor. These will be updated quarterly and reviewed against contract. Any issues arising from these will be discussed in the first instance with the contracting manager and input from PSSS will be assigned as appropriate.

Enquiries

Any enquiries about this document should be addressed to:-

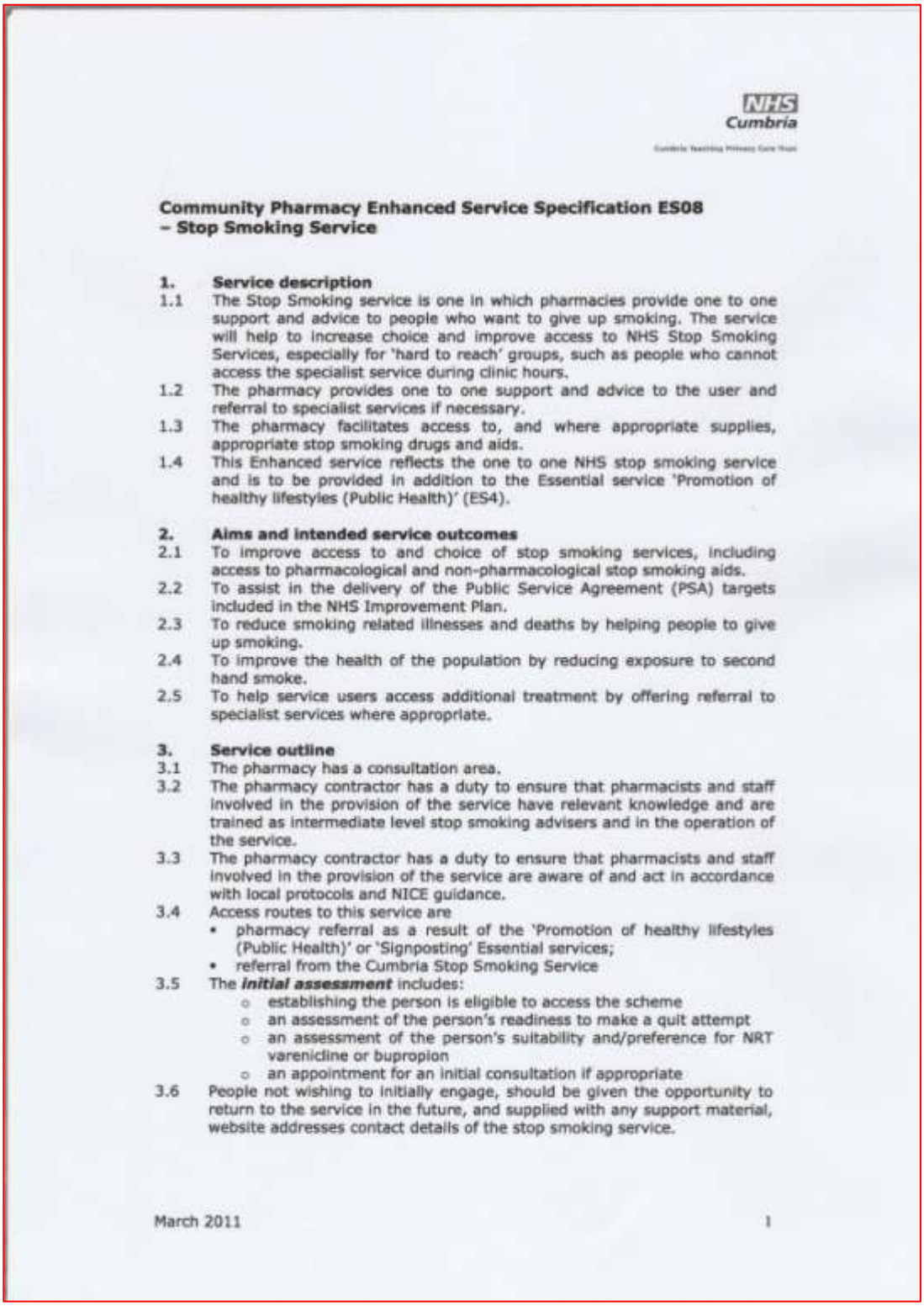
Alison Asplin
Manager of Peterborough NHS Stop Smoking Service
Trinity Court
Trinity Street
Peterborough
PE1 1DA

Tel: 01733 207194
Email: alison.asplin@peterboroughpct.nhs.uk

APPENDIX 2

Monitoring Form

Appendix 1.6: Cumbria PCT



NHS
Cumbria

Community Pharmacy Enhanced Service Specification ES08 – Stop Smoking Service

1. Service description

1.1 The Stop Smoking service is one in which pharmacies provide one to one support and advice to people who want to give up smoking. The service will help to increase choice and improve access to NHS Stop Smoking Services, especially for 'hard to reach' groups, such as people who cannot access the specialist service during clinic hours.

1.2 The pharmacy provides one to one support and advice to the user and referral to specialist services if necessary.

1.3 The pharmacy facilitates access to, and where appropriate supplies, appropriate stop smoking drugs and aids.

1.4 This Enhanced service reflects the one to one NHS stop smoking service and is to be provided in addition to the Essential service 'Promotion of healthy lifestyles (Public Health)' (ES4).

2. Aims and intended service outcomes

2.1 To improve access to and choice of stop smoking services, including access to pharmacological and non-pharmacological stop smoking aids.

2.2 To assist in the delivery of the Public Service Agreement (PSA) targets included in the NHS Improvement Plan.

2.3 To reduce smoking related illnesses and deaths by helping people to give up smoking.

2.4 To improve the health of the population by reducing exposure to second hand smoke.

2.5 To help service users access additional treatment by offering referral to specialist services where appropriate.

3. Service outline

3.1 The pharmacy has a consultation area.

3.2 The pharmacy contractor has a duty to ensure that pharmacists and staff involved in the provision of the service have relevant knowledge and are trained as intermediate level stop smoking advisers and in the operation of the service.

3.3 The pharmacy contractor has a duty to ensure that pharmacists and staff involved in the provision of the service are aware of and act in accordance with local protocols and NICE guidance.

3.4 Access routes to this service are

- pharmacy referral as a result of the 'Promotion of healthy lifestyles (Public Health)' or 'Signposting' Essential services;
- referral from the Cumbria Stop Smoking Service

3.5 The ***initial assessment*** includes:

- establishing the person is eligible to access the scheme
- an assessment of the person's readiness to make a quit attempt
- an assessment of the person's suitability and/preference for NRT varenicline or bupropion
- an appointment for an initial consultation if appropriate

3.6 People not wishing to initially engage, should be given the opportunity to return to the service in the future, and supplied with any support material, website addresses contact details of the stop smoking service.

March 2011 1

3.7 Young people under 16 years old and pregnant women who request a specialist midwife appointment should be offered appropriate health literature and/or referred to Cumbria PCT Stop Smoking Service.

3.8 The ***initial consultation*** should last approximately 30 minutes and include:

- an explanation of the benefits of quitting smoking;
- a description of the main features of the tobacco withdrawal syndrome and the common barriers to quitting;
- a description of the effects of second hand smoke on children and adults;
- identification of treatment options that have proven effectiveness;
- a description of a typical treatment programme, its aims, length, how it works and its benefits;
- completion of Smokefree monitoring form
- applying appropriate behavioural support strategies to help the person quit, including supply of supportive literature;
- a carbon monoxide (CO) test and an explanation of its use as a motivational aid;
- maximising commitment to setting a quit date;
- gaining agreement on the chosen treatment pathway, ensuring the person understands the ongoing support and monitoring arrangements.

3.9 If considered appropriate for NRT, the pharmacist supplies nicotine replacement therapy and advises on its use. A supply sufficient for two weeks should be made at the initial consultation. The Client Charges Declaration Form must be completed on EVERY occasion NRT is supplied.

3.10 If considered appropriate for Varenicline or bupropion the client is issued with a referral request letter to take to their own GP

3.11 Completion of paperwork

- Ensure Smokefree monitoring form is completed. Attach a copy to Stop Smoking claim form after the 4 week follow up consultation. Complete Client Charges Declaration Form on every occasion NRT is supplied. Retain with Client Notes.
- Client Notes- record of the consultation, retain in pharmacy, securely stored.
- Stop Smoking Claim form- Make an entry and retain for submission at month end.

3.12 Supply of treatment must be recorded on the person's pharmacy medication record. Consideration should be given to communicating this information to the person's GP where clinically appropriate, eg. Drug interactions.

3.13 Follow up consultations which can be in the form of a telephone consultations should be agreed with the person, last approximately 10 minutes and include support and smoking status validation using a CO test where possible. A further supply of NRT or GP request letter should be made, if necessary, following the appropriate protocol. The Client Charges Declaration Form must be competed if NRT is supplied and retained with the Client Notes. The Client Notes should be completed at every follow up consultation, and an entry made on the Claim Form, ready for submission at month end.

3.14 People who chose not to complete the programme at any point should be offered appropriate health literature and/or referred to Cumbria PCT Stop Smoking Service as appropriate. The Smokefree monitoring Form should be completed and attached to the Stop Smoking Claim Form.

3.15 Following the initial consultation up to six follow up consultations may be undertaken depending upon the needs of the client (this includes telephone consultations)

An example of a consultation schedule is shown below

Start	3 to 4 days post quit date	10 days post quit date	2½ wks post quit date	4½ wks post quit date	6½ wks post quit date	8½ wks post quit date

3.16 The ***4-week follow up*** should include self-reported smoking status, including a CO test for validation where possible. The Smokefree monitoring Form must be completed and attached to the Stop Smoking Claim form.

3.17 The pharmacy must maintain appropriate records to ensure effective ongoing service delivery and audit. Client Notes must be stored securely for 8 years.

3.18 The materials and equipment required, including CO monitors and disposable mouthpieces, are supplied free of charge to the pharmacy by the PCT.

3.19 The PCT will provide a framework for the recording of relevant service information for the purposes of audit and the claiming of payment(Client notes, Smokefree monitoring form, Client Charges Declaration Form, Claim Form)

3.20 The PCT will be responsible for the promotion of the service locally, including the development of publicity materials.

3.21 The PCT will provide details of relevant referral points which pharmacy staff can use to signpost service users who require further assistance.

3.22 The PCT will arrange contractor meetings as appropriate to promote service development and update the knowledge.

4. Training requirements

4.1 All pharmacists, technicians and pharmacy staff providing the service must have attended a local training meeting prior to commencing the service, and participated in observed role play. Anyone who attends such a meeting and passes the training assessment (4.3) can provide Stop Smoking services as an intermediate level adviser. A certificate of attendance will be issued.

4.2 In addition, all pharmacists and registered technicians providing the service must have read

- "Helping smokers to stop: advice for pharmacists in England" (ISBN 1-84629-035-X) published by NICE, RPSGB and PharmacyHealthLink. A copy can be downloaded from www.nice.org.uk/download.aspx?o=517943.
- "Brief Interventions and Referral for Smoking Cessation in Primary Care and other Settings (Public Health Intervention Guidance No 1)" published by NICE. A copy can be downloaded from www.nice.org.uk/phi001.
- Any other relevant national or local guidelines, as and when notified by the PCT

4.3 In addition, all staff providing the service must complete the NHS Centre for Smoking Cessation and Training (NCSCT) Stage 1 Training and Assessment programme (knowledge)
http://www.ncsct.co.uk/training/training-and-assessment/training-assessment.
Please use Val Ferriman as the contact name for the stop smoking lead email Val.ferriman@cumbriapct.nhs.uk

A copy of the certificate of completion of the programme must be sent to Medicines Management Administration at the PCT within 3 months of starting to provide the service.

4.4 On completion of these training requirements, pharmacists will be accredited and will be issued with a Certificate of Accreditation for Community Pharmacy Enhanced Services in the NHS Northwest which accredits the pharmacist to provide the service within Cumbria PCT and may be recognised by other PCTs in NHS Northwest region.

5. Suggested Quality Indicators

5.1 The pharmacy has appropriate health promotion material available for the user group and promotes its uptake.

5.2 The pharmacy reviews its standard operating procedures and the referral pathways for the service on an annual basis.

5.3 The pharmacy can demonstrate that pharmacists and staff involved in the provision of the service have undertaken CPD relevant to this service.

5.4 The pharmacy participates in any PCT organised audit of service provision.

5.5 The pharmacy co-operates with PCT-led assessment of service user experience.

6. Payment details

6.1 The PCT will pay the contractor £20 for the initial consultation **AND** for the submission of Smokefree monitoring form with the smoking status at 4 week follow up. Please attach the Smokefree monitoring form to the Stop Smoking Claim form.

6.2 A further fee of £10 will be paid if the client is a quitter

6.3 An additional bonus payment of £50 will be paid per 5 quitters

6.4 A charge (equal to prescription charge) must be collected from any patient who is NOT exempt from prescription charges on each occasion when NRT is supplied. Proof of exemption should be seen if possible and the Client Charges Declaration Form completed and retained with the Client Notes. Any charges collected will be deducted from the reimbursement.

6.5 The claim form should be completed when NRT is supplied; the PCT will reimburse this stock at drug tariff price plus VAT. If the product is not listed in the drug tariff, the C&D cost price plus VAT will be used.

6.6 Payments will be made by Contractor Services at the PCT. Completed Claim Forms should be sent to Contractor Services, Cumbria PCT, Tenterfield, Brigsteer Road, Kendal LA9 5EA by the 7th of each month.

Appendix 2: SSS PCT survey

Appendix 2.1: RE4 (APPLICATION FORM FOR ETHICAL REVIEW)

Ref no (for admin use):

SECTION A

Project title:	**Cost-effectiveness analysis of vascular and sexual pharmacy services**

Name of the lead applicant:

Name (Title / first name / surname):	Mr. WAIL CHALATI
Position held:	PhD student
Department/School/Faculty:	Faculty of Science, Engineering and computing
Telephone:	
Email address:	K0800011@kingston.ac.uk

Name of co-applicants:

Name (Title / first name / surname):	
Position held:	
Department/School/Faculty:	
Telephone:	
Email address:	

Name (Title / first name / surname):	
Position held:	
Department/School/Faculty:	
Telephone:	
Email address:	

Name (Title / first name / surname):	
Position held:	

Department/School/Faculty:	
Telephone:	
Email address:	

Is the project

Student research	Yes	✓	No	
KU Staff research	Yes		No	
Research on KU premises	Yes		No	

If it is STUDENT research Course: Phd in pharmacy practice

Supervisor/Do: **Dr.Reem Kayyali - Dr.John Fletcher**

SECTION B

Has approval for the project already been granted by another ethics committee?

Yes		No	✓

If **NO**, proceed to **Section C**;

If **YES**, please complete the rest of this section before going to the declaration in **Section D**:

Name of the committee: _____ Date of approval: _____

Please attach the submission made to that committee, together with the approval letter. The Faculty Research Ethics Committee (FREC) may require further information or clarification from you and you should not embark on the project until you receive notification from the FREC that recognition of the approval has been grante

SECTION C

Briefly describe the procedures to be used in this research involving human participants

1- Surveying certain PCTs chosen to represent all PCTs in England based on demographic characteristics to identify the uptake and costs of vascular and sexual enhanced pharmacy services.

Summarise the data sources to be used in the project:

1- The needs of these services were obtained from the health profiles (Public Health Authorities website) and chlamydia screening programme website.

2- The provisions of services were imported from the Pharmaceutical Needs Assessment (PNA) reports released in February 2011 for all PCTs in England.

3- Uptake and costs of the services will be obtained through surveying certain PCTs;

a- 37 PCTs were chosen to be surveyed for vascular enhanced pharmacy services (smoking cessation and NHS health check services).

b- 32 PCTs were chosen to be surveyed for Emergency Hormonal Contraception service.

c- 18 PCTs were chosen to be surveyed for chlamydia screening and treatment services.

Among these PCTs;

- Two PCTs will be surveyed for all services.

- 13 PCTs will be surveyed for vascular services and Emergency Hormonal Contraception services.

- Two PCTs will be surveyed for vascular services and Chlamydia screening and treatment services.

- Two PCTs will be surveyed for Emergency Hormonal Contraception service and Chlamydia screening and treatment services.

- The rest of PCTs will be surveyed for either vascular services, Emergency Hormonal Contraception service, or Chlamydia screening and treatment services.

Estimate duration of the project (months): 6 months

State the source of funding:

Is it collaborative research?

Yes ☐ No ☑

If YES, name of the collaborator institutions:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

Provide a brief project description (max. 150 words). This should be written for a lay audience

The project aimed to determine the cost-effectiveness analysis of vascular and sexual enhanced pharmacy services. Through identifying the needs, provisions and uptake of these services. Needs and provisions of the services were identified earlier. Uptake and costs attributed with the services will be identified through surveying certain PCTs (chosen to represent all PCTs in England based on demographic characteristics). Community pharmacies will be surveyed later for assessing their views regarding the services and the uptake of the services.

Risk Assessment: Does the proposed research involve any of the following?

Children or young people under 18 years of age?	Yes		N0	✓

If YES, have you complied with the requirements of the CRB? YES NO

People with an intellectual or mental impairment, temporary or permanent?	Yes		No	✓
People highly dependent on medical care, e.g., emergency care, intensive care, neonatal intensive care, terminally ill, or unconscious?	Yes		No	✓
Prisoners, illegal immigrants or financially destitute?	Yes		No	✓
Pregnant women?	Yes		No	✓
Will people from a specific ethnic, cultural or indigenous group be involved, or have the potential to be involved in the proposed research?	Yes		No	✓
Assisted reproductive technology?	Yes		No	✓
Human genetic research?	Yes		No	✓
Epidemiology research?	Yes		No	✓
Stem cell research?	Yes		No	✓

Use of environmentally toxic chemicals?	Yes		No	✓
Use of radioactive substances?	Yes		No	✓
Ingestion of potentially harmful or harmful dose of foods, fluids or drugs?	Yes		No	✓
Contravention of social/cultural boundaries?	Yes		No	✓
Involves use of data without prior consent?	Yes		No	✓
Involves bodily contact?	Yes		No	✓
Compromising professional boundaries between participants and researchers?	Yes		No	✓
Deception of participants, concealment or covert observation?	Yes		No	✓

Will this research significantly affect the health* outcomes or health services of subjects or communities?	Yes		No	✓

Note* health is defined as not just the physical well-being of the individual but also the social, emotional and cultural well-being of the whole community.

Is there a potential for enduring physical and/or psychological harm/ distress to participants?	Yes		No	✓
Does your research raise any issues of personal safety for you or other researchers involved in the project? (especially if taking place outside working hours or off University premises)	Yes		No	✓

Will the research be conducted without written informed consent being obtained from the participants?	Yes		No	✓

Will financial/in kind payments (other than reasonable expenses and compensation for time) be offered to participants? (Indicate in the proposal how much and on what basis this has been decided)	Yes		No	✓

Is there a potential danger to participants in case of accidental unauthorised access to data?	Yes		No	✓

N.B. If you have answered YES to any of these questions, you should address them fully in your project proposal and show that there are adequate controls in place.

Storage, access and disposal of data

Describe what research data will be stored, where, for what period of time, the measures that will be put in place to ensure security of the data, who will have access to the data, and the method and timing of disposal of the data. *(Reference to the relevant paragraphs of the Ethics Guidance to be added)*

All data will be anonymised whereby each PCT will be given a code, and the later will be used in all electronic processing of responses. The spreadsheet identifying the codes will be stored electronically on a password protected saved file on Dr. Reem Kayyali and Dr. John Fletcher D-drives and on my H-drive and the hard copies of it will be kept under lock in Dr.Reem Kayyali and Dr.John Fletcher office for a period of 5 years. All electronic files will be encrypted using Microsoft office rather than normal saving. After the period of five years all documents will be disposed of using confidential waste service available at Kingston University.
All other data will be maintained anonymous in the thesis write-up and any other form of presentation findings (including publications and presentations at conferences) and the identities of PCTs will not be revealed in reports or presentations.

SECTION D

Complete either Part 1 or Part 2 as appropriate.

Part 1: (*to be signed by applicants who have already obtained approval from another Research Ethics Committee)*

Declaration to be signed by the applicant(s) and the supervisor (in the case of a student):

- I confirm that the research will be undertaken in accordance with the Kingston University *Guidance and procedures for undertaking research involving human participants*

- I shall ensure that any changes in approved research protocols are reported promptly to the relevant Faculty Research Ethics Committee.

- I shall ensure that the research study complies with the law and with University policy on Health and Safety.

- I confirm that the research study is compliant with the requirements of the Criminal Records Bureau where applicable.

- I am satisfied that the research study is compliant with the Data Protection Act 1998, and that necessary arrangements have been, or will be made with regard to the storage and processing of participants' personal information and generally, to ensure confidentiality of such data supplied and generated in the course of the research.
  (Note: Where relevant, further advice should be sought from the Data Protection Officer, University Secretary's Office)

- I shall ensure that the research is undertaken in accordance with the University's Diversity and Equality Policy Statement

- I will ensure that all adverse or unforeseen problems arising from the research project are reported immediately to the Chair of the relevant Faculty Research Ethics Committee.

- I will undertake to provide notification when the study is complete and if it fails to start or is abandoned;

- (*if the applicant is a student)* I have met and advised the student on the ethical aspects of the study design and am satisfied that it complies with the current professional (*where relevant),* departmental and University guidelines. I accept responsibility for the conduct of this research and the maintenance of any consent documents as required by this Committee.

- I understand that failure to provide accurate information can invalidate ethical approval.

Signature of lead applicant: **Date:**

Signature of co-applicant: **Date:**

Signature of co-applicant: **Date:**

Signature of co-applicant: **Date:**

Signature of supervisor: **Date:**

Part 2: (*to be signed by all other applicants)*

Declaration to be signed by the applicant(s) and the supervisor (in the case of a student):

- I confirm that the research will be undertaken in accordance with the Kingston University *Guidance and procedures for undertaking research involving human participants*

- I will undertake to report formally to the relevant Faculty Research Ethics Committee for continuing review approval.

- I shall ensure that any changes in approved research protocols are reported promptly for approval by the relevant Faculty Research Ethics Committee.

- I shall ensure that the research study complies with the law and University policy on Health and Safety.

- I confirm that the research study is compliant with the requirements of the Criminal Records Bureau where applicable.

- I am satisfied that the research study is compliant with the Data Protection Act 1998, and that necessary arrangements have been, or will be made with regard to the storage and processing of participants' personal information and generally, to ensure confidentiality of such data supplied and generated in the course of the research.
  (Note: Where relevant, further advice should be sought from the Data Protection Officer, University Secretary's Office)

- I shall ensure that the research is undertaken in accordance with the University's Diversity and Equality Policy Statement

- I will ensure that all adverse or unforeseen problems arising from the research project are reported immediately to the Chair of the relevant Faculty Research Ethics Committee.

- I will undertake to provide notification when the study is complete and if it fails to start or is abandoned;

- (For supervisors, *if the applicant is a student)* I have met and advised the student on the ethical aspects of the study design, and am satisfied that it complies with the current professional (*where relevant),* departmental and University guidelines. I accept responsibility for the conduct of this research and the maintenance of any consent documents as required by this Committee.

- I understand that failure to provide accurate information can invalidate ethical approval.

Signature of lead applicant: Mr. Wail Chalati **Date: 15/06/2012**

Signature of co-applicant: **Date:**

Signature of co-applicant: **Date:**

Signature of co-applicant: **Date:**

Signature of supervisor: Dr. Reem Kayyali **Date: 15/06/2012**

Signature of supervisor: Dr. John Fletcher **Date: 15/06/2012**

CHECKLIST

Please complete the checklist and attach it to your application:

Project title: Cost-effectiveness analysis of vascular and sexual enhanced pharmacy services

Lead Applicant: Mr. Wail Chalati

Date of application:

Before submitting this application, please check that you have done the following: *(N/A = not applicable)*	**Applicant**			*Committee use only*		
	Yes	**No**	**N/A**	**Yes**	**No**	**N/A**
All questions have been answered	✓					
All applicants have signed the application form	✓					
The research proposal is attached						
Correspondence from other ethics committees is attached			✓			
Informed Consent Form is attached	✓					
Participant Information Sheets are attached	✓					
All letters, advertisements, posters or other recruitment material to be used are attached	✓					
All surveys, questionnaires, interview/focus group schedules, data sheets, etc, to be used in collecting data are attached	✓					
Reference list attached, where applicable						

Appendix 2.2: SSS survey cover letter

Kingston University London

Dr Reem Kayyali
Dr. John Fletcher
Kingston University London
Pharmacy Department
School of Pharmacy and Chemistry
Penrhyn Road
Kingston Upon Thames
KT1 2EE

15/09/2012
Dear Sir/Madam

I am writing to kindly request your participation in my pharmacy research project. I am a PhD student studying at Kingston, aiming to determine the cost-effectiveness of enhanced vascular pharmacy services.

As community pharmacies provide easy access to many services, it seems that they could be the correct place to bridge the gaps in health inequalities between different areas with different deprivation statuses. As commissioning of pharmacy enhanced services will change in the future, it is useful to identify the cost effectiveness of enhanced vascular pharmacy services. My project aims to identify the relationship between needs for sexual health pharmacy services and the provision of these services through community pharmacies and the uptake of these services. By identifying the needs, provisions and uptakes together with the costs of running these services; I will be able to create a cost-effective analysis for these services.

I would be grateful if you could complete the enclosed questionnaire regarding the costs and uptake of sexual health enhanced pharmacy services that you are currently providing at your PCT. All data provided will be dealt with confidentially and anonymously.

This study has been approved by the Science, Engineering and Computing Faculty Research Ethics Committee at Kingston University. If you need any further information, do not hesitate to contact me or one of my supervisors at the e-mails below. Please return the questionnaires in the stamped envelopes by 15/10/2012.

Mr Wail Chalati: K0800011@kingston.ac.uk
Dr.Reem Kayyali: R.Kayyali@kingston.ac.uk
Dr.John Fletcher: J.Fletcher@kingston.ac.uk

I look forward to hearing from you. Thank you for your time.

Yours sincerely

Wail Chalati

Appendix 2.3: SSS survey questionnaire

This questionnaires is aimed to determine the costs and uptakes of smoking cessation enhanced pharmacy services based on information provided by PCTs. I would be very grateful if you could spare some of your precious time in filling my questionnaires. All questionnaires will be dealt with anonymously and confidentially.

Please complete all questions related to smoking cessation enhanced services that are offered now or were offered previously within your PCT.
For all questions, I would be grateful if you could provide approximate values if the exact figures are unknown.

Stop Smoking Enhanced Pharmacy Service

There are two parts under this section:
- Part A, which aims to complete the information provided in the Pharmaceutical Needs Assessment (PNA) reports released in 2011, by asking questions related to the provision of the enhanced stop smoking pharmacy service in 2010 within your PCT.
- Part B, which intends to determine how the provision, costs and uptake of the enhanced stop smoking pharmacy service have changed since 2010 within your PCT.

Part A- Service provision in financial year 2009/2010

1) What year did your PCT start providing the enhanced stop smoking pharmacy service?
_____

2) In financial year 2009/2010, how was each community pharmacy being paid for providing the enhanced stop smoking service?
(Please specify the payment rate in your answer)
A- As a fixed fee
£ _____ per (month/year) (Delete as appropriate)

B- Per each service provided
£_____ for returning individual client data
£_____ for successful quit at 4 week follow up

3) Beyond the fees specified in the question above (question 2), what was the average spend per pharmacy to provide (training, advertising, equipment, etc) related to stop smoking pharmacy service?
£_____

4) In financial year 2009/2010, how many individuals have set a quit date for smoking at community pharmacies within your PCT?
_____ Individuals

5) In financial year 2009/2010, and after 4-week follow up, how many individuals who set a quit date at a community pharmacy within your PCT were still not smoking?
_____ Individuals

6) What method was used to determine whether an individual had successfully quit smoking after 4 weeks follow up?
☐ Self- reported method
☐ Carbon-monoxide testing
☐ Others, please specify:_____

Part B- Service current provision

1) How many community pharmacies within your PCT provide a stop smoking service currently?
(Fill as appropriate)
_____ Community pharmacies

_____ % of all community pharmacies within your PCT.

2) How was the uptake of stop smoking services changed since 2010?

☐ Increased
☐ Decreased
☐ Did not change

3) Has the fee for providing an enhanced stop smoking service changed since 2010?

☐ Yes
☐ NO

If the answer is yes, how much is the rate now?

(Please specify the payment rate in your answer)

A- As a fixed fee

£ _____ per (month/year) (Delete as appropriate)

B- Per each service provided

£_____ for returning individual client data

£_____ for successful quit at 4 week follow up

4) If you have any comments or any extra information related to the stop smoking pharmacy service you like to share please write them in the following box.

(Use an extra paper if the space is not enough)

Thank you for taking your time to complete this questionnaire.

<u>Please return any completed questionnaire in the enclosed stamped envelope</u>

Appendix 3: Sexual health PCT Survey

Appendix 3.1: Sexual health survey cover letter

Dr Reem Kayyali
Dr. John Fletcher
Kingston University London
Pharmacy Department
School of Pharmacy and Chemistry
Penrhyn Road
Kingston Upon Thames
KT1 2EE

20/11/2012
Dear Sir/Madam

I am writing to kindly request your participation in my pharmacy research project. I am a PhD student studying at Kingston, aiming to determine the cost-effectiveness of enhanced sexual health pharmacy services.

As community pharmacies provide easy access to many services, it seems that they could be the correct place to bridge the gaps in health inequalities between different areas with different deprivation statuses. As commissioning of pharmacy enhanced services will change in the future, it is useful to identify the cost effectiveness of enhanced sexual health pharmacy services. My project aims to identify the relationship between needs for sexual health pharmacy services and the provision of these services through community pharmacies and the uptake of these services. By identifying the needs, provisions and uptakes together with the costs of running these services; I will be able to create a cost-effective analysis for these services.

I would be grateful if you could complete the enclosed questionnaire regarding the costs and uptake of sexual health enhanced pharmacy services that you are currently providing at your PCT. All data provided will be dealt with confidentially and anonymously.

This study has been approved by the Science, Engineering and Computing Faculty Research Ethics Committee at Kingston University. If you need any further information, do not hesitate to contact me or one of my supervisors at the e-mails below. Please return the questionnaires in the stamped envelopes by 10/12/2012.

Mr Wail Chalati: K0800011@kingston.ac.uk
Dr.Reem Kayyali: R.Kayyali@kingston.ac.uk
Dr.John Fletcher: J.Fletcher@kingston.ac.uk

I look forward to hearing from you. Thank you for your time.

Yours sincerely

Wail Chalati

Appendix 3.2: Sexual Health survey questionnaire

This questionnaire is aimed to determine the costs and uptakes of sexual health enhanced pharmacy services based on information provided by PCTs. I would be very grateful if you could spare some of your precious time in filling my questionnaires. All questionnaires will be dealt with anonymously and confidentially.

The questionnaire is divided into two sections:
Section Three: Emergency Hormonal Contraception enhanced pharmacy service (Pages 1, 2)
Section Four: Chlamydia screening and treatment enhanced pharmacy service (Pages 3- 5)

Please complete the two sections which are related to the sexual health enhanced services that are offered now or were offered previously within your PCT.
For all questions, I would be grateful if you could provide approximate values if the exact figures are unknown.

Section One: Emergency Hormonal Contraception Service

There are two parts under this section:
- Part A, which intends to complete the information provided in the Pharmaceutical Needs Assessment (PNA) reports released in 2011, by asking questions related to the provision of an enhanced Emergency Hormonal Contraception service at community pharmacies in 2010 within your PCT.
- Part B, which intends to look at how the provision, costs and uptake of Emergency Hormonal Contraception service have changed since 2010 within your PCT.

Part A- Service provision in 2009/2010

1) What year did your PCT start providing Emergency Hormonal Contraception (EHC) service as an enhanced service through community pharmacies?

_____

2) In financial year 2009/2010, how was each community pharmacy being paid for providing an enhanced Emergency Hormonal Contraception service?

(Please specify the payment rate in your answer)
A- As a fixed fee
£_____ per (month/year) (Delete as appropriate)
B- Per each service provided
£_____ for each consultation
£_____ for prescribed medication provided

3) Beyond the fees specified in the question above, what was the average spend per to provide (training, advertising, equipments, etc) related to Emergency Hormonal Contraception service?

£_____

4) In financial year 2009/2010, how many individuals did use the Emergency Hormonal Contraception service at community pharmacies within your PCT?

_____ individuals

5) In financial year 2009/2010, how many individuals who used the Emergency Hormonal Contraception service at community pharmacies within your PCT were provided with the prescribed medication?

_____ individuals

Part B- Service current provision

1) Approximately, how many community pharmacies are currently providing an enhanced Emergency Hormonal Contraception service within your PCT?

(Fill as appropriate)

_____ community pharmacies

_____% of all community pharmacies in your PCT

2) How did the uptake of Emergency Hormonal Contraception service changed since 2010?

☐ Increased

☐ Decreased

☐ Did not change

3) Has the fee for providing Emergency Hormonal Contraception service changed since 2010?

☐ Yes

☐ No

If the answer is yes, how much is the rate now?

(Please specify the payment rate in your answer)

A- As a fixed fee

£_____ per (month/year) (Delete as appropriate)

B- Per each service provided

£_____ for each consultation

£_____ for prescribed medication provided

4) If you have any comments or any extra information related to the Emergency Hormonal Contraception pharmacy service you like to share please write them in the following box.

(Use an extra paper if the space is not enough)

Section Two: Chlamydia Screening and Treatment Pharmacy

There are two parts under Chlamydia screening and treatment services:
- Part A, which intends to complete the information provided in the Pharmaceutical Needs Assessment (PNA) reports released in 2011, by asking questions related to the provision of an enhanced Chlamydia screening and treatment services at community pharmacies in 2010 within your PCT.
- Part B, which intends to look at how the provision, costs and uptake of Chlamydia screening and treatment services at community pharmacies within your PCT have changed since 2010.

1- Chlamydia Screening Service

Part A- Service provision in 2010

1) What year did your PCT start providing an enhanced Chlamydia screening service at community pharmacies?

_____

2) In financial year 2009/2010, how is each community pharmacist being paid for providing Chlamydia screening service?

(Please specify the payment rate in your answer)
A- As a fixed fee
£_____ per (month/year) (Delete as appropriate)

B- Per each service provided
£_____ for each consultation
£_____ for test kit provided
£_____ for validated test returned

3) Beyond the fees specified in the question above, what is the average spend per pharmacy to provide (training, advertising, equipment, etc) related to Chlamydia screening service?

£_____

4) In financial year 2009/2010, how many individuals were screened for Chlamydia infection at community pharmacies within your PCT?

_____ individuals

5) In financial year 2009/2010, how many of those who screened for Chlamydia infection at community pharmacies were tested positive within your PCT?

_____ individuals

Part B-Service current provision

1) Approximately, how many community pharmacies currently provide the enhanced Chlamydia screening service within your PCT?

(Fill as appropriate)
_____ Community pharmacies
_____% of all community pharmacies within your PCT

2) How is the uptake of an enhanced Chlamydia screening service through community pharmacies changed since 2010?

☐ Increased
☐ Decreased
☐ Did not change

3) Has the fee for providing an enhanced Chlamydia screening service changed since 2010?

☐ Yes
☐ No

If the answer is yes, how much is the rate now?

A- As a fixed fee

£_____ per (month/year) (Delete as appropriate)

B- Per each service provided

£_____ for each consultation
£_____ for test kit provided
£_____ for validated test returned

2- Chlamydia Treatment Service:

Part A- Service provision in 2010

1) What year did your PCT start providing an enhanced Chlamydia treatment service at community pharmacies?

_____

2) In financial year 2009/2010, how is each community pharmacist being paid for providing Chlamydia treatment service?

(Please specify the payment rate in your answer)

A- As a fixed fee

£_____ per (month/year) (Delete as appropriate)

B- Per each service provided

£_____ for each consultation
£_____ for treatment provided
£_____ for screening and treatment provided

3) Beyond the fees specified in the question above, what is the average spend per pharmacy to provide (training, advertising, equipment, etc) related to Chlamydia treatment service?

£_____

4) In financial year 2009/2010, how many individuals were treated for Chlamydia infection at community pharmacies within your PCT?

_____ individuals

Part B-Service current provision

1) Does your PCT provide chlamydia treatment service as an enhanced service through community pharmacist?

☐ Yes
☐ NO (If the answer is NO, please go to question 5)

2) Approximately, how many community pharmacies currently within your PCT provide Chlamydia treatment service?

(Fill as appropriate)

_____ Community pharmacies

_____% of all community pharmacies within your PCT

3) How is each community pharmacist being paid for providing Chlamydia treatment service?

(Please specify the payment rate in your answer)

A- As a fixed fee

£_____ per (month/year) (delete as appropriate)

B- Per each service provided

£_____ for treatment provided

£_____ for screening and treatment provided

4) Beyond the fees specified in the question above, what is the average spend per pharmacy to provide (training, advertising, equipment, etc) related to Chlamydia treatment service?

£_____

5) If you have any comments or any extra information related to the Chlamydia screening and treatment pharmacy services you like to share please write them in the following box.

(Use an extra paper if the space is not enough)

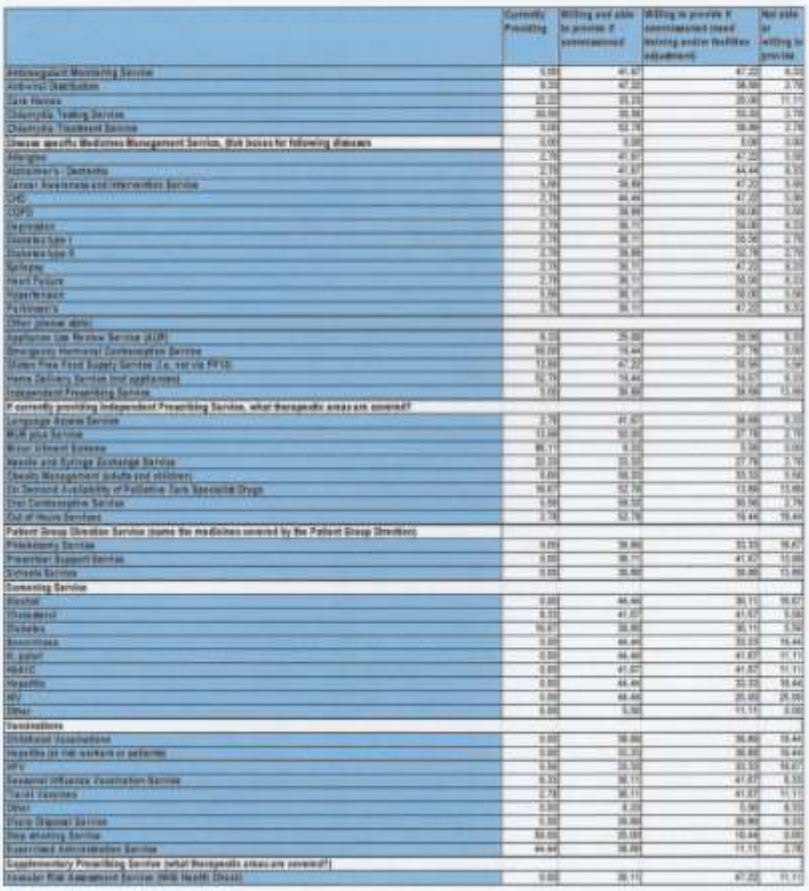
Thank you for taking your time to complete this questionnaire.

Please return any completed questionnaire in the enclosed stamped envelope

Appendix 4: Examples of pharmacy questionnaire from PNA reports

Appendix 4.1: Milton Keynes PCT

Appendix 10 – Locally Enhanced Services which pharmacies may or may not be willing to provide in the NHS MK area (Figures shown as percentages)



Appendix 4.2: Wolverhampton PCT

Appendix 7

Wolverhampton City NHS
Primary Care Trust

Pharmacy Needs Assessment
Community Pharmacy Questionnaire 2010

This information will be used to prepare the Pharmacy Needs Assessment for Wolverhampton City PCT.

Please ensure that the person completing this form is authorised to comment on current and future provision of services. Please reply to the PCT by ***5th July 2010*** *(contact details given at the end of this form)*

Pharmacy Information	
[1] Pharmacy Trading Name:	
[2] Address:	
[3] Email:	
[4] Telephone:	
[5] Fax:	
[6] Website (if available):	
[7] Preferred method of business contact? (e.g. email, post, fax)	
[8] Preferred method of personal contact? (Optional) (e.g. email, post, fax)	

Hours of Opening			
Day	Open from	Open to	Lunchtime (if closed)
[9] Monday			
[10] Tuesday			
[11] Wednesday			
[12] Thursday			
[13] Friday			
[14] Saturday			
[15] Sunday			
[16] Bank Holidays*			

* Bank holidays opening on a **regular** basis (does not include out of hours rota scheme)

(17) **Are you planning to change your opening hours within the next 12 months?** If yes, please provide details below (e.g. going to offer Saturday and/or Sunday service)

Collection & Delivery Services					
Patient Services	(18) Do you offer a collection service from surgeries?	Yes		No	
	(19) Do you currently offer a home delivery service (not appliances)?	Yes		No	
	(20) Do you offer delivery of dispensed medicines to selected patient groups or areas, such as housebound patients?	Yes		No	
	(21) If answering **yes** to the question 20 above, please provide details:				
	(22) If **other languages** are spoken in store (in addition to English) please provide details:				
Consultation Facilities					
On premises	(23) Is your consultation area **approved** as meeting criteria for the Medicines Use Review service?	Yes		No	
	(24) If answering **yes** to question 23 above, do you have an available room/area with wheelchair access?	Yes		No	
	(25) If answering **no** to question 23 above, do you plan to have a consultation room within the next 12 months?	Yes		No	
Off-site	(26) Are you approved to undertake off-site MURs?	Yes		No	
	(27) Are you willing to undertake MUR/consultations in patient's home / other suitable locations?	Yes		No	
Facilities	(28) Are hand-washing facilities** available in the consulting area/room?	Yes		No	
	(29) Are hand-washing facilities available near the consultation area/room?	Yes		No	
	(30) Do patients attending for consultations have access to toilet facilities?	Yes		No	
IT Facilities					
Electronic Prescription Service	(31) Is the Pharmacy **Release 1** enabled?	Yes		No	
	(32) If answering **no** to question 31 above, are you planning to become Release 1 enabled within 12 months?	Yes		No	
	(33) Are you planning to become Release 2 enabled when your pharmacy system is **accredited**?	Yes		No	

[34] **Additional space for comments on premises/consultation rooms or IT:**

** Bank holidays opening on a **regular** basis (does not include out of hours rota scheme)

Essential Services					
	Under the new arrangements, all pharmacy contractors choosing to dispense qualifying products in the normal course of their business are required to comply with new Essential Services requirements.				
Appliances	[35] Does the pharmacy dispense appliances (directly or through a third party arrangement) contained in the drug tariff?	Yes		No	
	[36] Do you / are you willing to dispense any of the following (that are listed in Part IXA of the Drug Tariff) directly or through a third party arrangement?				
	• [37] catheter appliances (including a catheter accessory and maintenance solution)	Yes		No	
	• [38] tracheotomy and laryngectomy appliances; anal irrigation systems	Yes		No	
	• [39] vacuum pump or constrictor ring for erectile dysfunction	Yes		No	
	• [40] wound drainage pouch	Yes		No	
	[41] Do you dispense incontinence appliances that are listed in Part IXB of the Drug Tariff?	Yes		No	
	[42] Do you dispense stoma appliances listed in Part IXC of the Drug Tariff?	Yes		No	
	[43] Do you dispense dressings?	Yes		No	
Advanced Services					
'Opt In' Service Provision	[44] Do you offer Medicines Usage Review and prescription intervention service?	Yes		No	
	[45] Do you currently currently provide or are willing to provide an Appliance Use Review (directly or through a third party arrangement)?	Yes		No	
	[46] Do you currently currently provide or are willing to provide a stoma appliance customisation service (directly or through a third party arrangement)?	Yes		No	

[47] Are you **likely** to offer any of these services within the **next 12 months**? If so, which services?

Enhanced Services					
EN1	[48] Do you currently currently provide or are willing to provide Supervised Administration (Consumption of Prescribed Medicines)?	Yes		No	

EN2	[48] Do you currently provider/are willing to provide **Needle** and Syringe Exchange?	Yes		No	
EN4	[50] Do you currently currently provide or are willing to provide stop smoking cessation?	Yes		No	
	[51] Do you currently provide/are you willing to provide Stop Smoking Service: smoking cessation supply service (voucher redemption)	Yes		No	
	[52] Do you currently provide/are you willing to provide Stop Smoking Service: smoking cessation advice and referral service (level 1)	Yes		No	
	[53] Do you currently provide/are you willing to provide Stop Smoking Service: smoking cessation counselling service (level 2)	Yes		No	
EN8	[54] Do you currently provide/are you willing to provide a minor ailment scheme?	Yes		No	
EN9	[55] Do you currently participate / willing to participate in the Out of Hours rota (access to medicines)?	Yes		No	
EN11	[56] Do you currently offer / willing to offer emergency hormonal contraception?	Yes		No	

[57] If you are not currently offering any of the above services commissioned by the PCT, are you **likely** to offer any of these services within the **next 12 months**? If so, which services?

[58] If you are not currently offering some / any of the commissioned services and do not intend to do so in the future, **please state reasons**? E.g. not able to offer due to training requirements or facilities/building limitations?

Enhanced Services – not currently commissioned by the PCT					
EN5	[59] If commissioned, would you offer a care home service (support and advice on storage, supply and administration of drugs and appliances)?	Yes		No	
EN14	[60] If commissioned, would you offer chlamydia screening and treatment?	Yes		No	
EN15	[61] If commissioned / re-tendered, would you offer NHS Health Check (vascular risk assessment and management service)?	Yes		No	

[62] If you answered **no** for any of the above services, please state service and reason(s) (e.g. training requirements, lack of facilities etc)?

Appendix 4.3: Barking and Dagenham PCT

1. The following relate to your premises. Do you have:				
Your premises comply with the Disability Discrimination Act	**95.2% (20)**	0.0% (0)	4.8% (1)	21
Patients have access to toilet facilities in the pharmacy	**61.9% (13)**	38.1% (8)	0.0% (0)	21

2. This question relates to Information Technology				
	Yes	**No**	**Don't Know**	**Response Count**
Does the pharmacy have an N3 connection?	**85.7% (18)**	0.0% (0)	14.3% (3)	21
Is there a computer in the consultation	**81.0% (17)**	19.0% (4)	0.0% (0)	21

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2. This question relates to Information Technology				
area?				
Is this computer networked to another computer in the pharmacy?	**81.0% (17)**	19.0% (4)	0.0% (0)	21
Does your computer(s) have Word?	**81.0% (17)**	9.5% (2)	9.5% (2)	21
Does your computer(s) have Excel?	**66.7% (14)**	23.8% (5)	9.5% (2)	21

3. This relates to how much IT equipment you have in the pharmacy						
	1	2	3	More than 3	None	Response Count
How many computers	9.5%	23.8%	**42.9%**	23.8%	0.0% (0)	21

3. This relates to how much IT equipment you have in the pharmacy						
are there in the pharmacy?	(2)	(5)	**(9)**	(5)		
How many printers are there in the pharmacy?	28.6% (6)	**57.1% (12)**	9.5% (2)	4.8% (1)	0.0% (0)	21
How many computers have access to email?	14.3% (3)	33.3% (7)	**42.9% (9)**	9.5% (2)	0.0% (0)	21

4. This question relates to the Enhanced Services currently commissioned by NHSBD. Do you provide:					
	Yes	**No**	**No, but would like to**	**Don't know**	**Response Count**
Minor Ailments	**90.5% (19)**	4.8% (1)	4.8% (1)	0.0% (0)	21

4. This question relates to the Enhanced Services currently commissioned by NHSBD. Do you provide:					
Supervised Consumption	**76.2% (16)**	14.3% (3)	9.5% (2)	0.0% (0)	21
Emergency Contraception	**71.4% (15)**	4.8% (1)	23.8% (5)	0.0% (0)	21
Chlamydia Screening	**95.0% (19)**	5.0% (1)	0.0% (0)	0.0% (0)	20
Needle Exchange	23.8% (5)	33.3% (7)	**38.1% (8)**	4.8% (1)	21
Smoking Cessation (Level 1)	**57.9% (11)**	5.3% (1)	36.8% (7)	0.0% (0)	19
Smoking Cessation (Level 2)	**84.2% (16)**	0.0% (0)	15.8% (3)	0.0% (0)	19
Access to Palliative Medicines	27.8% (5)	22.2% (4)	**38.9% (7)**	11.1% (2)	18

4. This question relates to the Enhanced Services currently commissioned by NHSBD. Do you provide:

Out of Hours	**44.4% (8)**	38.9% (7)	11.1% (2)	5.6% (1)	18
Weight Management	23.8% (5)	4.8% (1)	**66.7% (14)**	4.8% (1)	21
Anti Coagulation Monitoring	5.0% (1)	35.0% (7)	**60.0% (12)**	0.0% (0)	20
Vascular Risk Assessment	14.3% (3)	14.3% (3)	**71.4% (15)**	0.0% (0)	21
Medication Support Project (MAR sheets)	**55.0% (11)**	25.0% (5)	20.0% (4)	0.0% (0)	20

5. This question relates to your ambitions to provide new Enhanced Services that may be commissioned by NHSBD. These include:

	Yes	No	Don't Know	Response Count

5. This question relates to your ambitions to provide new Enhanced Services that may be commissioned by NHSBD. These include:				
EHC (for adults)	**95.2% (20)**	4.8% (1)	0.0% (0)	21
Alcohol Screening	**81.0% (17)**	0.0% (0)	19.0% (4)	21
Alcohol Brief Intervention	**76.2% (16)**	0.0% (0)	23.8% (5)	21
Long-acting reversible contraception	**75.0% (15)**	10.0% (2)	15.0% (3)	20
Condom Distribution Scheme	**85.0% (17)**	15.0% (3)	0.0% (0)	20
Diabetic Screening	**90.5% (19)**	4.8% (1)	4.8% (1)	21
Supplementary Prescribing	**81.0% (17)**	4.8% (1)	14.3% (3)	21

5. This question relates to your ambitions to provide new Enhanced Services that may be commissioned by NHSBD. These include:				
Independent Prescribing	**85.0% (17)**	5.0% (1)	10.0% (2)	20
Seasonal Flu Vaccination	**95.2% (20)**	0.0% (0)	4.8% (1)	21
Hep B Vaccination	**73.7% (14)**	5.3% (1)	21.1% (4)	19
Childhood Vaccinations	**70.0% (14)**	5.0% (1)	25.0% (5)	20

6. In order to provide a greater range of enhanced services, would you need:				
	Yes	**No**	**Don't know**	**Response Count**
Further training for the pharmacist	**95.2% (20)**	4.8% (1)	0.0% (0)	21

6. In order to provide a greater range of enhanced services, would you need:				
Further training for staff	**95.0% (19)**	0.0% (0)	5.0% (1)	20
More staff	**71.4% (15)**	23.8% (5)	4.8% (1)	21
Access to more specialist equipment	**95.2% (20)**	4.8% (1)	0.0% (0)	21
To upgrade your existing premises	**52.4% (11)**	38.1% (8)	9.5% (2)	21
To expand the space available in your existing premises	42.9% (9)	**57.1% (12)**	0.0% (0)	21
To look to re-locate to larger	5.0% (1)	**75.0% (15)**	20.0% (4)	20

6. In order to provide a greater range of enhanced services, would you need:

premises				
Requires no large-scale change	**52.6% (10)**	26.3% (5)	21.1% (4)	19
Show repliesPlease identify any issues you can see with this				2

7. In terms of staffing, at any one time in a normal working day, can you say how many of the following staff would be working in the pharmacy:

	0	1	2	3 or more	Response Count
Pharmacist	7.1% (1)	**78.6% (11)**	14.3% (2)	0.0% (0)	14
Technician	8.3% (1)	**41.7% (5)**	16.7% (2)	33.3% (4)	12
Counter Assistant	8.3% (1)	25.0% (3)	**50.0% (6)**	16.7% (2)	12

7. In terms of staffing, at any one time in a normal working day, can you say how many of the following staff would be working in the pharmacy:					
Health Care Assistant	**50.0% (3)**	0.0% (0)	**50.0% (3)**	0.0% (0)	6
Please indicate if any staff provide dual roles (e.g. HCA and Counter Asst.)?					9

8. In terms of training and education, to what NVQ level are your support staff in the pharmacy trained?				
	NVQ1	**NVQ2**	**NVQ3**	**Response Count**
Technician	13.3% (2)	20.0% (3)	**66.7% (10)**	15
Counter Assistant	**58.3% (7)**	33.3% (4)	8.3% (1)	12
Health Care Assistant	**60.0% (3)**	**60.0% (3)**	0.0% (0)	5

Appendix 5: CP survey

Appendix 5.1: RE4 (APPLICATION FORM For Ethical Review)

SECTION A

Ref no (for admin use):

Project title:

Cost-effectiveness analysis of vascular and sexual health pharmacy services

Name of the lead applicant:

Name (Title / first name / surname):	**Wail Chalati**
Position held:	**PhD student**
School/Faculty:	**Faculty of Science, Engineering and Computing**
Telephone:	
Email address:	**K0800011@kingston.ac.uk**

Name of co-applicants:

Name (Title / first name / surname):	
Position held:	
Department/School/Faculty:	
Telephone:	
Email address:	

Name (Title / first name / surname):	
Position held:	

Department/School/Faculty:	
Telephone:	
Email address:	

Name (Title / first name / surname):	
Position held:	
Department/School/Faculty:	
Telephone:	
Email address:	

Is the project

Student research	✓			
KU Staff research				
Research on KU premises				

If it is STUDENT research: Course: **PhD in Pharmacy Practice**

Supervisor/DoS: **Dr. Reem Kayyali – Dr. John Fletcher**

SECTION B

Has approval for the project already been granted by another ethics committee?

If **NO**, proceed to **Section C**;

If **YES**, please complete the rest of this section before going to the declaration in **Section D**:

Name of the committee: _____ Date of approval: _____

Please attach the submission made to that committee, together with the approval letter. The Faculty Research Ethics Committee (FREC) may require further information or clarification from you and you should not embark on the project until you receive notification from the FREC that recognition of the approval has been granted.

SECTION C

Briefly describe the procedures to be used in this research involving human participants

The research at this point will survey community pharmacists within certain PCTs chosen based on identifying the needs for vascular and sexual health enhanced pharmacy services.

Summarise the data sources to be used in the project:

1- The needs of these services were obtained from the health profiles (Public Health Authorities website) and chlamydia screening programme website.

2- The provisions of services were imported from the Pharmaceutical Needs Assessment (PNA) reports released in February 2011 for all PCTs in England.

3- Uptake and costs of the services will be obtained through surveying certain PCTs (Application for this survey was submitted to the Faculty of Science, Engineering and Computing Ethics Committee on 21/06/2012 with a reference number 1112/53).

4- The provision, uptake and perceptions of community pharmacists regarding vascular and sexual health enhanced pharmacy services will be identified through surveying community pharmacist in certain PCTs (The questionnaires for this survey are the ones attached with this form).

Estimate duration of the project (months): 6 months

State the source of funding:

Is it collaborative research? No

If YES, name of the collaborator institutions:

Provide a brief project description (max. 150 words). This should be written for a lay audience

The project aimed to determine the cost-effectiveness analysis of vascular and sexual health enhanced pharmacy services. Through identifying the needs, provisions and uptake of these services. Needs and provisions of the services were identified earlier. Uptake and costs attributed with the services will be identified through surveying certain PCTs (chosen to represent all PCTs in England based on demographic characteristics). Community pharmacies will be surveyed for assessing their views regarding the services and the uptake of the services.

Risk Assessment: Does the proposed research involve any of the following?

Children or young people under 18 years of age?	Yes		No	✓
If YES, have you complied with the requirements of the CRB?	Yes		No	

People with an intellectual or mental impairment, temporary or permanent?	Yes		No	✓

People highly dependent on medical care, e.g., emergency care, intensive care, neonatal intensive care, terminally ill, or unconscious?	Yes		No	✓
Prisoners, illegal immigrants or financially destitute?	Yes		No	✓
Women who are known to be pregnant?	Yes		No	✓
Will people from a specific ethnic, cultural or indigenous group be targeted in the proposed research?	Yes		No	✓
Assisted reproductive technology?	Yes		No	✓
Human genetic research?	Yes		No	✓
Epidemiology research?	Yes		No	✓
Stem cell research?	Yes		No	✓
Use of environmentally toxic chemicals?	Yes		No	✓
Use of ionizing radiation?	Yes		No	✓

Ingestion of potentially harmful or harmful dose of foods, fluids or drugs?	Yes		No	✓

Contravention of social/cultural boundaries?	Yes		No	✓

Involves use of data without prior consent?	Yes		No	✓

Involves bodily contact?	Yes		No	✓

Compromising professional boundaries between participants and researchers?	Yes		No	✓

Deception of participants, concealment or covert observation?	Yes		No	✓

Will this research significantly affect the health* outcomes or health services of subjects or communities?	Yes		No	✓

Note* health is defined as not just the physical well-being of the individual but also the social, emotional and cultural well-being of the whole community.

Is there a significant risk for enduring physical and/or psychological harm/ distress to participants?	Yes		No	✓

Does your research raise any issues of personal safety for you or other researchers involved in the project? (especially if taking place outside working hours or off University premises)	Yes		No	✓

Will the research be conducted without written informed consent being obtained from the participants?	Yes		No	✓

Will financial/in kind payments (other than reasonable expenses and compensation for time) be offered to participants? (Indicate in the proposal how much and on what basis this has been decided)	Yes		No	✓

Is there a potential danger to participants in case of accidental unauthorised access to data?	Yes		No	✓

N.B. If you have answered YES to any of these questions, you should address them fully in your project proposal and show that there are adequate controls in place.

Storage, access and disposal of data

Describe what research data will be stored, where, for what period of time, the measures that will be put in place to ensure security of the data, who will have access to the data, and the method and timing of disposal of the data.

All data will be anonymised whereby each PCT will be given a code, and the later will be used in all electronic processing of responses. The spreadsheet identifying the codes will be stored electronically on a password protected saved file on Dr. Reem Kayyali and Dr. John Fletcher D-drives and on my H-drive and the hard copies of it will be kept under lock in Dr.Reem Kayyali and Dr.John Fletcher office for a period of 5 years. All electronic files will be encrypted using Microsoft office rather than normal saving. After the period of five years all documents will be disposed of using confidential waste service available at Kingston University.
All other data will be maintained anonymous in the thesis write-up and any other form of presentation findings (including publications and presentations at conferences) and the identities of community pharmacies will not be revealed in

reports or presentations.

SECTION D

To be signed by all applicants

Declaration to be signed by the applicant(s) and the supervisor (in the case of a student):

- I confirm that the research will be undertaken in accordance with the Kingston University *Guidance and procedures for undertaking research involving human participants*

- I will undertake to report formally to the relevant Faculty Research Ethics Committee for continuing review approval.

- I shall ensure that any changes in approved research protocols or membership of the research team are reported promptly for approval by the relevant Faculty Research Ethics Committee.

- I shall ensure that the research study complies with the law and University policy on Health and Safety.

- I confirm that the research study is compliant with the requirements of the Criminal Records Bureau where applicable.

- I am satisfied that the research study is compliant with the Data Protection Act 1998, and that necessary arrangements have been, or will be made with regard to the storage and processing of participants' personal information and generally, to ensure confidentiality of such data supplied and generated in the course of the research.
  (Note: Where relevant, further advice should be sought from the Data Protection Officer, University Secretary's Office)

- I shall ensure that the research is undertaken in accordance with the University's Single Equality Scheme.

- I will ensure that all adverse or unforeseen problems arising from the research project are reported immediately to the Chair of the relevant Faculty Research Ethics Committee.

- I will undertake to provide notification when the study is complete and if it fails to start or is abandoned;

- (For supervisors, *if the applicant is a student)* I have met and advised the student on the ethical aspects of the study design, and am satisfied that it complies with the current professional (*where relevant),* departmental and University guidelines. I accept responsibility for the conduct of this research and the maintenance of any consent documents as required by this Committee.

- I understand that failure to provide accurate information can invalidate ethical approval.

Signature of lead applicant: Wail Chalati **Date: 04/07/2012**

Signature of supervisor: Dr. Reem Kayyali **Date:**

04/07/2012

Signature of supervisor: Dr. John Fletcher **Date:**

04/07/2012

CHECKLIST

Please complete the checklist and attach it to your application:

Project title: **Cost-effectiveness analysis of vascular and sexual health pharmacy services**

Lead Applicant: Mr. Wail Chalati

Date of application: 04/07/2012

Before submitting this application, please check that you have done the following: *(N/A = not applicable)*	**Applicant**			*Committee use only*		
	Yes	**No**	**N/A**	**Yes**	**No**	**N/A**
All questions have been answered	✓					
All applicants have signed the application form	✓					
The research proposal is attached	✓					
Correspondence from other ethics committees is attached			✓			
Informed Consent Form is attached			✓			
Participant Information Sheets are attached	✓					
All letters, advertisements, posters or other recruitment material to be used are attached	✓					
All surveys, questionnaires, interview/focus group schedules, data sheets, etc, to be used in collecting data are attached	✓					
Reference list attached, where applicable						

Appendix 5.2: CP survey cover letter

Kingston University London

Mr. Wail Chalati
Dr Reem Kayyali
Kingston University London
Pharmacy Department
School of Pharmacy and Chemistry
Penrhyn Road
Kingston Upon Thames
KT1 2EE

15/05/2013
Dear Sir/Madam

I am writing to kindly request your participation in my pharmacy research project. I am a PhD student studying at Kingston University, aiming to determine the cost-effectiveness of enhanced vascular and sexual health pharmacy services (Currently called as locally commissioned services).

As community pharmacies provide easy access for many services, it seems that they could be the correct place for bridging the gaps in health inequalities between different areas with different deprivation statuses. My project aims to identify the relationship between needs for vascular and sexual health pharmacy services and the provision of services through community pharmacies and the uptake. Findings, so far, showed that provision of those services through community pharmacies did not match the needs. Healthy Living Pharmacies (HLPs) were introduced in order to reduce health inequalities. Evaluation report of HLPs showed that uptake has increased in terms of smoking cessation and sexual health services.

I would be grateful if you could complete the enclosed questionnaire to provide me with information about vascular and sexual health pharmacy services that you provide at your pharmacy, with identification whether you are HLP or not, and your perception towards the future of pharmacy services. All data provided will be dealt with confidentially and anonymously.

This study has been approved by the Faculty of Science, Engineering and Computing Ethics Committee at Kingston University. Please return the completed questionnaire in the enclosed stamped, addressed envelope by 5th June 2013. If you need any further information, do not hesitate to contact me or one of my supervisors at the emails below.

Mr Wail Chalati: K0800011@kingston.ac.uk
Dr.Reem Kayyali: R.Kayyali@kingston.ac.uk
Dr.John Fletcher: J.Fletcher@kingston.ac.uk

I look forward to hearing from you. Thank you for your time.

Yours sincerely

Wail Chalati

Appendix 5.3: CP survey questionnaire

Dear Pharmacist,

I would be grateful if you could please spare ten minutes of your time to complete the questionnaire. Answers provided will be confidential and will be used only for the purpose of this study. When answering the questions please tick the relevant box and follow the instructions provided. Your participation is highly valued.

Section 1: Enhanced Services

Q1. Which of the following Enhanced services do you provide? Please tick as appropriate.

Chlamydia Screening	☐	NHS Health Checks	☐
Emergency Hormonal Contraception	☐	Smoking Cessation	☐

Q2. Please rank the following enhanced services in order of importance, (1 = Most Important to 4 = Least Important)

Chlamydia Screening	☐	NHS Health Checks	☐
Emergency Hormonal Contraception	☐	Smoking Cessation	☐

Q3. What is your motivational driver for providing the above Enhanced services? Please tick the TWO most important options based on your opinion.

To play a more active role in health promotion ☐

To overcome health inequalities ☐

To obtain better training ☐

To meet the needs of the local population in accordance to the PCT ☐

To provide the pharmacy with equipment ☐

To earn more remuneration ☐

Other, please specify:……

Q4. Please complete the following table, tick as appropriate

Types of Enhanced services	Provision status	Please specify the approximate number of times the service has been provided in the last month
Chlamydia screening service	Current provider ☐ Willing to provide ☐ Unwilling to provide ☐	☐
Emergency Hormonal Contraception service	Current provider ☐ Willing to provide ☐ Unwilling to provide ☐	☐
Smoking Cessation	Current provider ☐ Willing to provide ☐ Unwilling to provide ☐	☐
NHS Health Checks	Current provider ☐ Willing to provide ☐ Unwilling to provide ☐	☐

Section 2: Barriers and facilitators related to the provision of sexual and vascular services

Q5. In general, what are the barriers limiting the provision of the enhanced services listed in Q1? Please choose the TWO most important barriers.

The service was not a priority in the local population ☐

Inadequate facilities ☐

Limited training for the staff to provide the services ☐

Lack of time ☐

Lack of public awareness *e.g lack of advertising* ☐

Provided elsewhere or through other Health services e.g by GPs ☐

Others, please specify:……..

Q6. For each of enhanced services listed below, Please indicate the TWO main barriers specifically limiting the provision of that service

Type of sexual health service	Barriers limiting the provision of services	
Chlamydia screening service	The service was not a PCT priority	☐
	Financial constraints	☐
	Lack of public need	☐
	Lack of demand	☐
	Inadequate facilities	☐
	Lack of public trust in pharmacy	☐
	Limited training for the staff to provide the service	☐
	Lack of time	☐
	Lack of public awareness *e.g lack of advertising*	☐
	Provide elsewhere or through other Health services	☐
	Other, please specify:……..	
Emergency Hormonal Contraception service	The service was not a PCT priority	☐
	Financial constraints	☐
	Lack of public need	☐
	Lack of demand	☐
	Inadequate facilities	☐
	Lack of public trust in pharmacy	☐
	Limited training for the staff to provide the service	☐
	Lack of time	☐
	Lack of public awareness *e.g lack of advertising*	☐
	Provide elsewhere or through other Health services	☐
	Other, please specify:……..	
Smoking Cessation	The service was not a PCT priority	☐
	Financial constraints	☐

	Lack of public need ☐ Lack of demand ☐ Inadequate facilities ☐ Lack of public trust in pharmacy ☐ Limited training for the staff to provide the service ☐ Lack of time ☐ Lack of public awareness *e.g lack of advertising* ☐ Provide elsewhere or through other Health services ☐ Other, please specify:……..
NHS Health Checks	The service was not a PCT priority ☐ Financial constraints ☐ Lack of public need ☐ Lack of public demand ☐ Inadequate facilities ☐ Lack of public trust in pharmacy ☐ Limited training for the staff to provide the service ☐ Lack of time ☐ Lack of public awareness *e.g lack of advertising* ☐ Provide elsewhere or through other Health services ☐ Other, please specify:……..

Section 3: Healthy Living Pharmacies

Q7. Are you a Healthy Living Pharmacy, with an identifiable Healthy Living Champion (HLC)? Please tick the most applicable to you.

Yes (please go to Q9) ☐ No *(Please go to Q8)* ☐ In the process of accreditation ☐

Not currently but willing to provide the scheme in the future ☐

Q8. What are the barriers for not providing the Healthy Living Pharmacy scheme? Please tick the TWO most important barriers based on your opinion.

Low engagement within the community ☐

Pharmacy team not working proactively together ☐

Limited training for the staff to provide the service ☐

Inadequate facilities and resources ☐

Not enough public awareness *e.g. reduced signposting* ☐

Lack of interest to act as a HLC ☐

Lack of identifiable HLC ☐

Lack of time ☐

Others, please specify:……

Q9. What other services do you provide in your pharmacy? Please tick as appropriate.

Alcohol Screening ☐

Weight management ☐

Medicine Use Review ☐

Minor ailment service ☐

Cholesterol testing ☐

Blood pressure monitoring ☐

Others, please specify:……

Please only fill the remainder of this section if you are currently a Healthy Living Pharmacy. Otherwise please go to Q12 and thank you for completing the questionnaire.

Q10. What is your motivational driver in becoming a Healthy Living Pharmacy? Please tick the most important TWO options that apply to you.

To play more active role in health promotion ☐

To overcome health inequalities ☐

To obtain better training ☐

To improve the uptake of pharmacy services ☐

To meet the needs of the local population in accordance to the PCT ☐

Other, please specify:……

Q11. Please complete the following table to indicate the status of Enhanced services that your pharmacy provides after becoming a Healthy Living Pharmacy (please tick as appropriate)

Types of Enhanced services	Public awareness of each enhanced service	Provision status	Please specify the approximate number of times the service has been provided PRE and POST becoming a HLP.
Chlamydia screening service	Increased ☐ Decreased ☐ No change ☐	Increased ☐ Decreased ☐ No Change ☐	PRE ☐ POST ☐
Emergency Hormonal Contraception service	Increased ☐ Decreased ☐ No Change ☐	Increased ☐ Decreased ☐ No Change ☐	PRE ☐ POST ☐
Smoking Cessation	Increased ☐ Decreased ☐ No Change ☐	Increased ☐ Decreased ☐ No Change ☐	PRE ☐ POST ☐
NHS Health Checks	Increased ☐ Decreased ☐ No Change ☐	Increased ☐ Decreased ☐ No change ☐	PRE ☐ POST ☐

Q12. Please indicate your level of agreements of each of the following statements regarding the current and future of enhanced pharmacy services following the introduction of HLP scheme.

Statement	Strongly Disagree					Strongly Agree
HLP scheme will be the future for all enhanced pharmacy services	1	2	3	4	5	6
HLP has enhanced the role of the pharmacist in the community	1	2	3	4	5	6
The marketing and promotion of HLP scheme was effective	1	2	3	4	5	6
Training for HLP scheme should be provided at undergraduate level of study	1	2	3	4	5	6
If HLP scheme fails to achieve the desired results, enhanced pharmacy services will be decommissioned	1	2	3	4	5	6
HLP is a way to improve public awareness of the public regarding enhanced services.	1	2	3	4	5	6

Section 4: Public awareness and methods to improve success of SSS

Q13. In your opinion, how do you think the public became aware of the availability of enhanced services within the pharmacy?

Please tick the TWO most important and useful methods based on your opinion.

Through posters displayed in pharmacies ☐

Through leaflets distributed in pharmacies ☐

Recommended by pharmacists ☐

Through a friend or family ☐

Advertisements on television, radio, magazines and newspaper. ☐

Others, specify:

……

Q14. How we can improve the public awareness of the availability of enhanced services within the pharmacy? Please tick the TWO most important and useful methods based on your opinion.

Organise health campaigns in schools ☐

Use social websites (e.g. Facebook, Twitter) ☐

Use posters within public transports (e.g. buses and tubes) ☐

Benefit from digital gadgets (e.g. SMS and emails) ☐

Others, please specify:……

Q15. Based on your experience, what are the main factors that make smokers who set a quit date relapse? Please tick the TWO most important barriers

Enjoy smoking ☐

Lack of follow up ☐

Loss of stress relief ☐

Craving ☐

Fear of weight gain ☐

Withdrawal symptoms ☐

Other, please specify:……

Q16. Based on your opinion, how we can help smoker who decide to quit smoking in achieving quit smoking at the end of the follow up? Please tick as appropriate.

Improve the motivational and consultation skills for pharmacists and their teams ☐

Increase the frequency of follow up meetings ☐

Introduce smokers who decide to quit smoking to each other to share their experiences ☐

Use the latest technology (e.g. mobile applications, SMS) to support the smoker who decided to quit smoking ☐

Involve a close friend or part of smoker's family to support them during quitting ☐

Other, please specify:……..

Section 5: General information

Finally, could you please fill in the questions below providing information about yourself and your pharmacy. I assure you again that all information will be dealt with in anonymously and confidently.

Q1. Please indicate your gender.

Male ☐

Female ☐

Q2. What type of pharmacist do you consider yourself are?

Employee pharmacist ☐

Locum pharmacist ☐

Manger pharmacist ☐

Owner ☐

Q3. Please indicate your years of experience as a pharmacist

< 1year ☐

1-2 years ☐

3-4 years ☐

5-6 years ☐

7-8 years ☐

9-10 years ☐

> 10 years ☐

Q4. What type of pharmacy is your pharmacy?

Independent (5 outlets or less) ☐

Small chain (>5-20 outlets) ☐

Large chain (>20- <200 outlets) ☐

Multiple (200 or more outlets) ☐

***If* you have any extra information regarding the vascular services that you like to share, or if you have any comments about the questionnaires please write them in the following box (use an extra paper if necessary)**

If you are willing to participate in a future follow up regarding vascular or sexual health pharmacy services, or you are willing to be contacted regarding the service, please provide your contact details in the box below.

Thank you for taking your time to complete this questionnaire.

<u>Please return any completed questionnaire in the enclosed stamped envelope</u>

Appendix 6: Examples of the used calculations

Appendix 6.1: Descriptive analysis of all PCTs using SPSS 17 output

		Prevalence of smoking adults (%)	Total reach out of needs (%)	Total success out of needs (%)	Self reported quit rate (%)
N	Valid	138	138	138	138
	Missing	0	0	0	0
	Mean	22.940194	8.767947	4.302071	49.894723
	Median	22.440677	7.874028	3.939604	49.258559
	Range	23.2000	31.4328	15.9607	38.6961
Percentiles	25	19.266795	6.654696	3.322088	44.088656
	50	22.440677	7.874028	3.939604	49.258559
	75	26.658270	9.712818	4.757390	56.827244

		CO-validated quit rate (%)	Deprivation score (IMD)	Ethnicity minority proportion (%)	Male proportion (%)
N	Valid	138	138	138	138
	Missing	0	0	0	0
	Mean	34.161978	23.326091	12.965	52.472
	Median	35.503221	22.967205	9.104	52.506
	Range	55.5991	34.6378	50.2	4.1
Percentiles	25	28.145008	16.425153	5.396	52.061
	50	35.503221	22.967205	9.104	52.506
	75	40.756076	29.270540	19.195	53.013

		Weighted provision of SSS (%)	Weighted provision of SSS (N)
N	Valid	138	138
	Missing	0	0
	Mean	58.534512	3.21
	Median	62.882653	3.15
	Range	92.0000	6
Percentiles	25	39.070048	2.09
	50	62.882653	3.15
	75	76.762295	4.34

Appendix 6.2: Correlations between needs, demographic characteristics and CP SSS provision SPSS 17 output

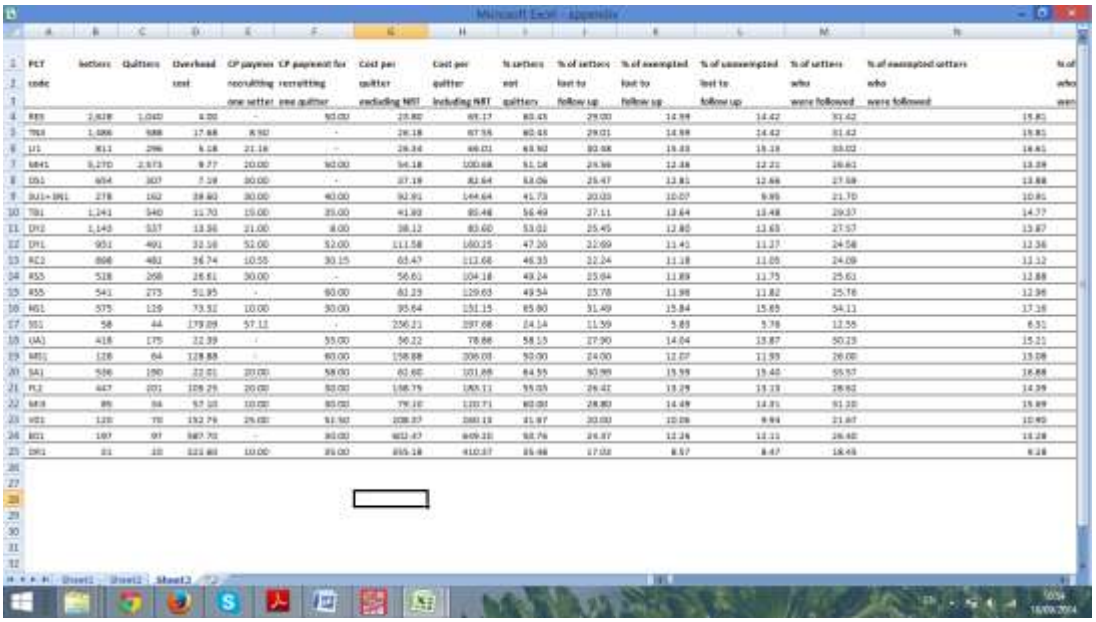
Correlations				
			Prevalence of smoking adults (%)	Deprivation score (IMD)
Spearman's rho	Prevalence of smoking adults (%)	Correlation Coefficient	1.000	.760**
		Sig. (2-tailed)	.	.000
		N	138	138
	Deprivation score (IMD)	Correlation Coefficient	.760**	1.000
		Sig. (2-tailed)	.000	.
		N	138	138
	Ethnicity minority proportion (%)	Correlation Coefficient	-.022	.197*
		Sig. (2-tailed)	.800	.021
		N	138	138
	Male proportion (%)	Correlation Coefficient	-.065	-.204*
		Sig. (2-tailed)	.449	.017
		N	138	138
	Weighted provision of SSS (%)	Correlation Coefficient	-.037	.089
		Sig. (2-tailed)	.668	.300
		N	138	138
	Weighted provision of SSS (N)	Correlation Coefficient	.062	.269**
		Sig. (2-tailed)	.470	.001
		N	138	138
	CPs per 25000 population	Correlation Coefficient	.340**	.634**
		Sig. (2-tailed)	.000	.000
		N	138	138
**. Correlation is significant at the 0.01 level (2-tailed).				
*. Correlation is significant at the 0.05 level (2-tailed).				

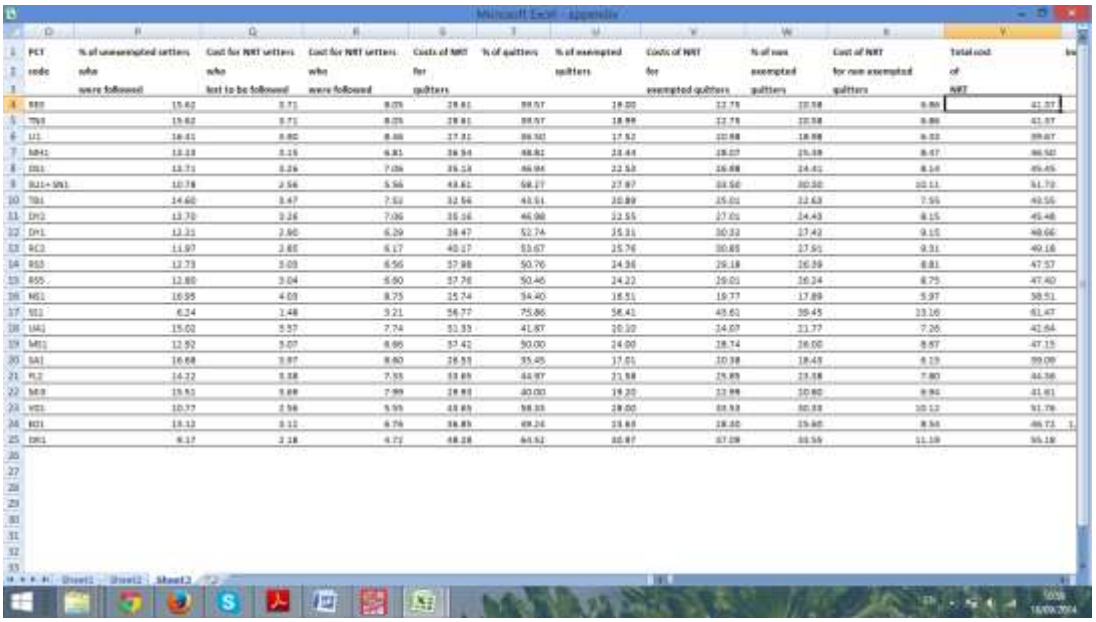
Correlations				
			Ethnicity minority proportion (%)	Male proportion (%)
Spearman's rho	Prevalence of smoking adults (%)	Correlation Coefficient	-.022	-.065
		Sig. (2-tailed)	.800	.449
		N	138	138
	Deprivation score (IMD)	Correlation Coefficient	.197*	-.204*
		Sig. (2-tailed)	.021	.017
		N	138	138
	Ethnicity minority proportion (%)	Correlation Coefficient	1.000	-.147
		Sig. (2-tailed)	.	.085
		N	138	138
	Male proportion (%)	Correlation Coefficient	-.147	1.000
		Sig. (2-tailed)	.085	.
		N	138	138
	Weighted provision of SSS (%)	Correlation Coefficient	.330**	-.067
		Sig. (2-tailed)	.000	.435
		N	138	138
	Weighted provision of SSS (N)	Correlation Coefficient	.363**	-.124
		Sig. (2-tailed)	.000	.147
		N	138	138
	CPs per 25000 population	Correlation Coefficient	.181*	-.234**
		Sig. (2-tailed)	.034	.006
		N	138	138
**. Correlation is significant at the 0.01 level (2-tailed).				
*. Correlation is significant at the 0.05 level (2-tailed).				

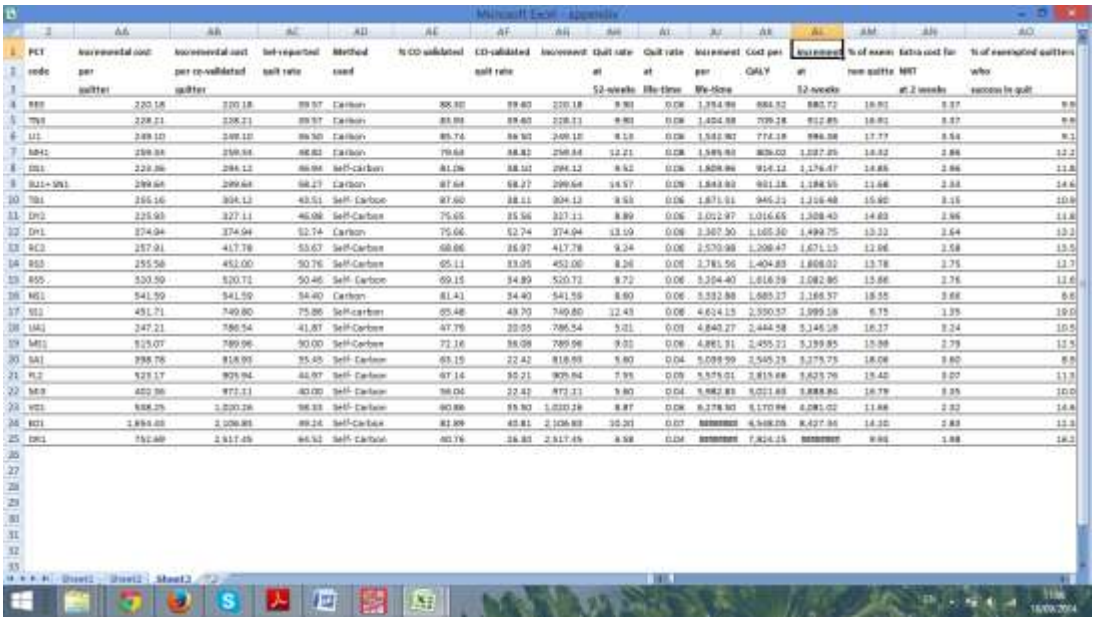
Correlations				
			Weighted provision of SSS (%)	Weighted provision of SSS (N)
Spearman's rho	Prevalence of smoking adults (%)	Correlation Coefficient	-.037	.062
		Sig. (2-tailed)	.668	.470
		N	138	138
	Deprivation score (IMD)	Correlation Coefficient	.089	.269**
		Sig. (2-tailed)	.300	.001
		N	138	138
	Ethnicity minority proportion (%)	Correlation Coefficient	.330**	.363**
		Sig. (2-tailed)	.000	.000
		N	138	138
	Male proportion (%)	Correlation Coefficient	-.067	-.124
		Sig. (2-tailed)	.435	.147
		N	138	138
	Weighted provision of SSS (%)	Correlation Coefficient	1.000	.921**
		Sig. (2-tailed)	.	.000
		N	138	138
	Weighted provision of SSS (N)	Correlation Coefficient	.921**	1.000
		Sig. (2-tailed)	.000	.
		N	138	138
	CPs per 25000 population	Correlation Coefficient	.120	.444**
		Sig. (2-tailed)	.160	.000
		N	138	138
**. Correlation is significant at the 0.01 level (2-tailed).				

Correlations			
			CPs per 25000 population
Spearman's rho	Prevalence of smoking adults (%)	Correlation Coefficient	.340**
		Sig. (2-tailed)	.000
		N	138
	Deprivation score (IMD)	Correlation Coefficient	.634**
		Sig. (2-tailed)	.000
		N	138
	Ethnicity minority proportion (%)	Correlation Coefficient	.181*
		Sig. (2-tailed)	.034
		N	138
	Male proportion (%)	Correlation Coefficient	-.234**
		Sig. (2-tailed)	.006
		N	138
	Weighted provision of SSS (%)	Correlation Coefficient	.120
		Sig. (2-tailed)	.160
		N	138
	Weighted provision of SSS (N)	Correlation Coefficient	.444**
		Sig. (2-tailed)	.000
		N	138
	CPs per 25000 population	Correlation Coefficient	1.000
		Sig. (2-tailed)	.
		N	138
**. Correlation is significant at the 0.01 level (2-tailed).			
*. Correlation is significant at the 0.05 level (2-tailed).			

Appendix 6.3: Cost-effective analysis of SSS excel sheets







	Z	AA	AB	AC	AD	AE	AF	AH	AH	AI	AJ	AK	AL	AM	AN	AO
1	PCT	Incremental cost	Incremental cost	Self-reported	Method	% CO validated	CO-validated	Increment	Quit rate	Quit rate	Increment	Cost per	Increment	% of exam	Extra cost for	% of exercising quitters
2	code	per	per co-validated	quit rate	used		quit rate		at	at	per	QALY	at	non quitte	NRT	who
3		quitter	quitter						52-weeks	life-time	life-time		52 weeks		at 2 weeks	success in quit
4	B80	220.18	220.18	89.97	Carbon	88.80	89.40	220.18	9.80	0.08	1,354.99	884.52	880.72	10.91	3.37	9.9
5	TN9	228.21	228.21	89.97	Carbon	85.98	89.40	228.21	9.80	0.08	1,404.58	709.28	912.85	10.91	3.37	9.9
6	LU1	249.10	249.10	89.90	Carbon	85.74	89.90	249.10	8.10	0.06	1,532.92	774.18	996.38	17.77	3.54	9.1
7	NH1	259.84	259.84	88.82	Carbon	79.68	88.82	259.84	12.21	0.08	1,599.00	809.02	1,037.35	14.02	2.86	12.2
8	DS1	229.86	284.12	86.94	Self-carbon	81.06	88.10	284.12	9.52	0.06	1,809.86	914.12	1,176.47	14.85	2.86	11.8
9	BL1+ SN1	299.64	299.64	88.27	Carbon	87.64	88.27	299.64	14.57	0.09	1,843.93	931.38	1,198.55	11.68	2.34	14.6
10	TB1	265.16	304.12	43.51	Self- Carbon	87.60	88.11	304.12	9.53	0.06	1,871.01	945.21	1,216.48	15.80	3.15	10.8
11	DY2	225.93	327.11	46.08	Self-Carbon	75.65	85.56	327.11	8.89	0.06	2,012.97	1,016.65	1,308.43	14.83	2.96	11.8
12	DY1	374.94	374.94	52.74	Carbon	75.06	82.74	374.94	13.19	0.08	2,307.30	1,165.30	1,499.75	13.21	2.64	13.2
13	RC3	257.91	417.78	53.67	Self-Carbon	68.86	81.97	417.78	9.24	0.06	2,570.98	1,298.47	1,671.13	12.96	2.58	15.5
14	RS3	255.56	452.00	50.76	Self-Carbon	65.11	81.05	452.00	8.26	0.05	2,781.56	1,404.83	1,808.02	13.78	2.75	12.7
15	RS5	520.59	520.72	50.46	Self- Carbon	69.15	84.89	520.72	8.72	0.06	3,204.40	1,618.39	2,082.86	13.86	2.76	12.6
16	NE1	541.59	541.59	54.40	Carbon	81.41	84.40	541.59	8.60	0.06	3,332.98	1,683.27	2,166.37	18.55	3.68	8.6
17	SS1	451.71	749.80	75.86	Self-carbon	65.48	48.70	749.80	12.43	0.08	4,614.15	2,330.57	2,999.18	6.75	1.35	19.0
18	SA1	247.21	786.54	41.87	Self-Carbon	47.78	20.05	786.54	5.01	0.03	4,840.27	2,444.58	3,145.18	16.17	3.24	10.5
19	MS1	515.07	789.96	90.00	Self-Carbon	72.16	38.08	789.96	9.01	0.06	4,861.31	2,455.21	3,159.85	15.98	2.79	12.5
20	SA1	398.78	818.93	35.45	Self- Carbon	65.19	22.42	818.93	5.80	0.04	5,088.59	2,569.29	3,275.73	18.08	3.80	8.8
21	FL2	523.17	905.94	61.97	Self- Carbon	67.14	30.21	905.94	7.95	0.05	5,575.01	2,815.68	3,623.76	15.40	3.07	11.3
22	M19	402.96	971.11	40.00	Self- Carbon	58.06	22.42	971.11	5.80	0.04	5,982.83	3,021.65	3,888.86	16.79	3.35	10.0
23	YO1	938.25	1,020.26	98.33	Self- Carbon	80.86	55.90	1,020.26	8.87	0.06	6,278.90	3,170.96	4,081.02	11.66	2.32	14.4
24	BD1	1,894.03	2,106.83	89.24	Self-Carbon	81.89	43.81	2,106.83	10.20	0.07	[redacted]	4,568.06	8,427.34	14.10	2.83	12.3
25	DN1	762.69	2,617.45	44.52	Self- Carbon	40.76	16.80	2,617.45	4.58	0.04	[redacted]	7,824.25	[redacted]	9.66	1.98	16.2
26																
27																
28																
29																
30																
31																
32																
33																

Appendix 6.4: Responses from CP's survey

PCT	Number of surveyed CPs	RESPONSES	RESPONE RATE
Bedfordshire	53	6	11.32
Bexley	36	2	5.56
Blackburn	35	12	34.29
Blackpool	34	6	17.65
Brighton and Hove city	47	6	12.77
Bristol	68	4	5.88
Croydon	57	10	17.54
Doncaster	57	8	14.04
Dudley	52	4	7.69
Greenwich	43	4	9.30
Haringey	46	6	13.04
Hasting and Rother	30	9	30.00
Isle of Wight	24	8	33.33
Kingston	24	8	33.33
Knowesly	27	5	18.52
Lambeth	21	6	28.57
Leeds	106	21	19.81
Lewisham	43	3	6.98
Medway	40	12	30.00
Middleborough	22	7	31.82
North Somerset	32	10	31.25
Portsmouth	30	10	33.33
Richmond	37	6	16.22
Southwark	49	5	10.20
Stockport	51	5	9.80
Sutton and Merton	61	13	21.31
Wandsworth	50	19	38.00
Warwickshire	74	26	35.14
Total	1249	241	19.30