

Non-Medical Approach to Screening Young Men And Women for

Chlamydia trachomatis

Author: Karen Lorimer

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Faculty of Medicine, University of Glasgow

Division of Community Based Sciences

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Abstract

Objectives: Chlamydia trachomatis is the most prevalent sexually transmitted infection in the UK. Prevalence is highest among those aged under 25 years. Traditional efforts to screen and treat this largely asymptomatic infection have primarily focused on women, with no screening for men outwith sexual health clinics. However, screening and treating men, apart from reducing the total burden of disease, also serves as a primary prevention strategy for women. There is a lack of data on how best to involve men in screening, although recently 'innovative approaches' to target men have been advocated in the government's White Paper '*Choosing Health*'. The aims of this PhD study were to assess the feasibility of accessing non-medical settings within which to offer chlamydia screening, to ascertain the knowledge of chlamydia and young men's and women's views of towards non-medical screening, and to assess relative willingness to be screened for chlamydia by young men and women.

Design: A mixed method study, using both quantitative and qualitative methods, with a survey conducted in each of three settings with all participants to assess knowledge of and attitudes towards screening for chlamydia in non-medical situations. All participants approached were offered opportunistic screening for chlamydia by urine sample. In-depth interviews were conducted with 24 participants (10 men and 14 women) to explore young people's views towards screening in non-medical settings. Participant observation techniques were also employed to collect data on young people's response to the offer of screening.

Participants: Three hundred and sixty three young women and men aged between 16 and 24 years participated in the survey; 24 in the depth interview.

Setting: Three non-medical locations in Glasgow: 'Education' (a large further education college); 'Health and Fitness' (three local authority leisure centres); and, 'Workplace' (two contact centres).

Results: Eighty-four percent of age eligible users approached participated in education, health and fitness and workplace settings (n=126, n=133 and n=104, respectively). Of all sexually active people 113 (32%) were willing to be tested for chlamydia in non-medical settings. Uptake of testing was highest in the health and fitness setting (50% uptake for both women and men compared with 20% in education and 30% in workplace settings). In each setting young men were more willing than women to accept the offer of a chlamydia test. Overall, 40% of men approached provided a sample compared with 27% of all women. Disease prevalence was 4.4% (4.9% in men; 3.8% in women). Interview data suggests young men's willingness to be tested for chlamydia in non-medical settings is due to convenience and raised awareness of the largely asymptomatic nature of chlamydia infection. Whilst 94% of men screened had never been tested for chlamydia before, one in three young women screened had previous screening experience. Women's lower uptake of screening was due to concerns about the public nature of the settings leading to stigma.

Conclusions: Willingness to be screened in non-medical settings and views in support of non-medical screening were highest among men. Supports and barriers to willingness differed by gender, with men less concerned with the stigma of participating in screening in public settings than women and instead favouring the convenience of the offer. This approach reached young men who had never been screened before. Thus, increasing opportunities for the take-up of screening in non-medical settings could be an effective approach to reaching young men and have a significant impact on the incidence and prevalence of this easily treated STI, thereby reducing the future burden of unwanted reproductive health sequelae.

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Preface

For clarification purposes, it is useful to define some terms used throughout this thesis. First, the term 'chlamydia' refers to genital *Chlamydia trachomatis*. Second, in this thesis all settings that are non-medical are referred to as being non-medical settings. Community-based approaches or community screening studies are defined in this thesis as those which involve medical spaces, such as community family planning clinics and youth clinics that are often attached to schools. The author acknowledges that many clinical settings are referred to in the literature as 'community'; however the author wished to make a distinction between community and non-medical in this thesis. Third, the terms 'young men' and 'young women' are often used and refer to men and women aged 16-25 years. Where a distinction is to be made between persons under 20 years and those aged 20-24, this will be clearly stated.

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¹ Now Director, Centre for Sexual Health & HIV Research, Royal Free & University College Medical School, London.

Author's Declaration

The work presented in this thesis was performed solely by the author.

Definitions

AIDS	Acquired Immunodeficiency Syndrome
CASI	Computer-assisted self-completion interviews
CDC	Centres for Disease Control and Prevention
CI	Confidence interval. A range of values for a variable of interest constructed so that this range has a specific probability of including the true value of the variable
CMO	Chief Medical Officer
EIA	Enzyme Immunosorbant Assays
FVU	First-void urine (i.e. the first part of the stream)
GUM	Genitourinary Medicine Clinics
HIV	Human Immunodeficiency Virus
IAQ	Interviewer administered questionnaire
LCR	Ligase Chain Reaction, a specific kind of NAAT
MSM	Men who have sex with men
NAAT	Nucleic Acid Amplification Test- laboratory based test for the diagnosis of genital <i>Chlamydia trachomatis</i>
Natsal	National Survey of Sexual Attitudes and Lifestyles
NGU	Non-gonococcal urethritis
OR	Odds ratio. It is defined as the ratio of the odds of an event occurring in one group to the odds of it occurring in another group
PCR	Polymerase Chain Reaction, a specific kind of NAAT
PID	Pelvic Inflammatory Disease
P&P	Pen and Paper (refers to questionnaire completion method)
RCT	Randomised Control Trial
SAQ	Self-administered questionnaire
SBHC	School-based health centres
STD	Sexually Transmitted Disease. Refers only to infection causing symptoms or problems
STI	Sexually Transmitted Infection. Refers to infection with any germs that cause an STD, even if the infected person has no symptoms

Introduction

“We have been appalled by the crisis in sexual health we have heard about and witnessed during our inquiry. We do not use the word ‘crisis’ lightly but in this case it is appropriate. This is a major public health issue and the problems identified in this report must be addressed immediately.”
(House of Commons Health Committee 2003).

This was the conclusion of a House of Commons Health Committee report in 2003. Sexually transmitted infections (STIs) are hidden epidemics of considerable health and economic consequence in the UK. As such, they present a significant public health issue. Currently the most common STI in the UK is *Chlamydia trachomatis* (chlamydia). This bacterial infection is most common in young people under 25 years: there may be around 1 in 10 young people under 25 with this infection (Chief Medical Officer's Expert Advisory Group 1998b).

To date, much screening research and planning have largely centred on women (Hart et al. 2002). There is currently a lack of data on how best to involve men in screening, although recently ‘innovative approaches’ to target men have been advocated in the government's White Paper *Choosing Health* (Department of Health 2001b). As such, the current climate supports more ‘innovative ways’ with which to offer chlamydia testing and screening to those at risk populations who have no symptoms of infection and who seldom access clinical services (specifically young men).

The aims of this PhD study were to assess the feasibility of accessing non-medical settings within which to offer chlamydia screening, to ascertain the knowledge of chlamydia and young men's and women's views of towards non-medical screening, and to assess relative willingness to be screened for chlamydia by young men and women.

Chapter 1 outlines the nature of the problem: first the chapter provides background epidemiology of chlamydia infection and describes the various control measures in place in various countries, including England and Scotland. The chapter then presents the key screening debates including how best to screen, where best to screen and to whom screening should be offered. Chapter 2 draws out in more detail the key issues that may impinge upon the effectiveness of screening approaches, with particular attention paid to the methods that improve the effectiveness of screening. The review of screening studies focuses on setting-specific issues because non-medical settings do not have the same infrastructure in place as clinical settings. Barriers and supports to screening are explored.

The aims and objectives of this study are presented in Chapter 3, which also discusses the methodology and methods employed in this study. Particular issues of concern in the design of this study included the sensitive nature of the topic and the young age of the sample population (16-24 years) and these are discussed. The largely exploratory nature of this particular area of research meant that some of the planning was re-evaluated throughout the progress of data collection. This chapter also describes the approach to accessing non-medical settings within which to establish screening.

In Chapters 4, 5 and 6, the results of the study are presented. These chapters are presented according to the overarching aims of the study: to assess feasibility, knowledge and, willingness. Chapter 4 describes the feasibility of gaining access to non-medical settings for the purpose of conducting a screening study. A large part of the data used in this chapter was drawn from fieldnote diaries, within which the author's experiences and observations during the study were noted, as well as the views of respondents that were conveyed within these settings. Interview data provides further information regarding how young men and women in the study settings responded to the offer of screening. Chapter 5 describes the views of young men and women towards chlamydia screening as well as their knowledge of chlamydia. Both those who accepted screening and those who declined gave their views towards screening. Chapter 6 presents the results of the willingness of young men and women to accept the offer of screening, by providing a sample of urine. The proportion of those who accepted the offer is reported, by gender, age and setting. Factors reported by respondents as barriers or supports to accepting screening are discussed.

The final summary and interpretation of results chapter (Chapter 7) draws together the findings from the data chapters to address the aims of the study and the research questions. The chapter concludes by noting the limitations of the study, but also suggesting its contribution to the existing literature, and the implications to policy and further research.

Chapter 1

The Nature of the Problem

Since the mid-1990s, the United Kingdom (UK) has witnessed a rapid deterioration in sexual health; indeed, a recent Health Committee Report referred to a current 'crisis in sexual health' in the UK (House of Commons Health Committee 2003). Sexually transmitted infections (STIs) are estimated to cost the NHS around £874 million per year in treatment and consequences. Of these genital *Chlamydia trachomatis* (chlamydia), the most common STI, costs around £100 million per year (Chief Medical Officer's Expert Advisory Group 1998b). Currently, around 1 in 10 sexually active young people under 25 years in the UK are thought to be infected with chlamydia (Chief Medical Officer's Expert Advisory Group 1998b). Associated complications with chlamydia infection include pelvic inflammatory disease (PID), ectopic pregnancy and infertility. The physical and psychological impact on individual health, and the economic consequences of chlamydia signifies this infection as a major public health issue.

The high prevalence of chlamydia infection is not just a public health issue in the UK. According to the World Health Organisation (WHO) chlamydia infection is currently the most common bacterial STI in the industrialised world, with an estimated 92 million cases of chlamydia occurring worldwide each year, of which 5 million occur in Western Europe (WHO 2001). There have been notable rises in chlamydia in most western industrialised countries, including Sweden, USA, Canada, as well as in Australia and New Zealand since the mid-1990s. At the same time, reported rates of infection in all nations of the UK have mirrored this trend. The incidence of chlamydia infection has been increasing in England, Wales and Northern Ireland: from 30, 794 in 1995 to 97, 027 in 2004, a 215% increase (Health Protection Agency 2005). In Scotland, reported cases of this curable bacterial infection have continued to rise each year since the mid-1990s, with 15, 865 cases reported to the Scottish Centre for Infection and Environmental Health (SCIEH) in 2004 from laboratories in Scotland, compared with 2679 in 1995 (Wallace et al. 2005).

The response by government to the rising rate of chlamydia infections in the UK has been to examine the evidence for introducing a nationwide chlamydia screening programme. There has been a growing impetus towards introducing a national screening programme for chlamydia because active case finding and early treatment are strategies to prevent the

development of sequelae and to reduce transmission. A reduction in both of these will reduce costs to both the NHS and individual health.

The possibility of introducing a national screening programme has been made more feasible since the introduction of highly sensitive tests that can be performed on non-invasively collected urine specimens (Catry et al. 1995). These tests are more acceptable to patients (Pimenta et al. 2003b) and therefore any proposed widespread screening may be more successful in reaching asymptomatic populations who do not present to health care settings for a genital examination. Currently, in England, chlamydia screening is being rolled-out across the country. The Department of Health aim to establish screening in all areas of England by 2007.

As the devolved Government for Scotland, the Scottish Executive is responsible for health policy in Scotland. The screening programme for chlamydia that has been proposed by the Department of Health is specific to England. No chlamydia screening programme is planned in Scotland. As the thesis will describe, the English proposals to control chlamydia infection in the population places emphasis on opportunistically screening people predominantly when they access clinical settings (Department of Health 2001a; Department of Health 2001c); however, the largely asymptomatic nature of chlamydia infection means that many asymptomatic infections may not be identified thorough clinic-control efforts. It has been estimated that only around 10% of prevalent infections are diagnosed at genitourinary medicine (GUM) clinics (Chief Medical Officer's Expert Advisory Group 1998b). There is therefore a significant 'reservoir of infection' unidentified in the population (Fenton 2000). Taking screening and testing into non-medical settings within communities could be one approach to reach asymptomatic persons. The use of non-invasive tests offers new opportunities for screening outwith clinical settings. Evidence on the utility of non-medical approaches is emerging, from studies conducted in settings such as student bars (Hay et al. 2004), schools and universities (Cohen et al. 1999; Debattista et al. 2002b) and in field settings such as street corners and parks (Gunn et al. 1998; Rietmeijer et al. 1997). Despite this, further evidence on the feasibility of offering screening in non-medical settings is required. Such information would bolster the current evidence-base, upon which screening policy is based.

This thesis therefore aims to assess the feasibility of an innovative approach to offering chlamydia screening to young men and women under 25 years: non-medical settings will

be chosen in which to establish screening. In this chapter, the first section outlines the epidemiology of chlamydia and discusses the implications of the development of sensitive tests, which can be performed on non-invasive samples such as urine samples. The second section of the chapter outlines the status of chlamydia screening around Europe, North American countries as well as some Australasian countries (Australia and New Zealand) to contextualise chlamydia control activities taking place in the broader context. Finally the chapter offers an exploration of the current debates (predominantly in England) regarding how best to screen, where to offer screening, and to whom screening efforts should be targeted.

Clinical features of chlamydia

Chlamydia trachomatis is an obligate intracellular human bacterial pathogen that infects the epithelial cells² of the eye and genital tract, such as the urethra, cervix and fallopian tubes. Chlamydia has three important features: it is often asymptomatic; infection can persist for more than a year; and, if left untreated, it has been associated with complications, such as ectopic pregnancy, PID as well as infertility in women, and fertility complications in men.

Chlamydia is often symptomless in both women and men: around 50% of men and 70% of women may show no sign or symptoms of having infection (Chief Medical Officer's Expert Advisory Group 1998b). Symptoms associated with chlamydia infection are given in table 1. Chlamydia infections can therefore run both a symptomatic and an asymptomatic course.

Table 1: Clinical features of chlamydia infection, in women and men

<i>Men</i>	<i>Women</i>
Urethral discharge	Vaginal discharge
Dysuria (pain or discomfort on passing urine)	Intermenstrual bleeding (bleeding between periods)
Conjunctivitis	Post-coital bleeding (bleeding after intercourse)
	Dysuria
	Lower abdominal pain
	Painful intercourse
	Conjunctivitis

² Epithelial cells cover the surface of the body and line its cavities.

Untreated, chlamydia can remain undetected. In such cases, it has been suggested that there is an association between chlamydia infection and secondary complications in women, such as PID and its major sequelae, tubal infertility and ectopic pregnancy (Giertz et al. 1987; Hillis et al. 1997; Scholes et al. 1996). In females, chlamydia infects first the cervix, spreading to the endometrium. When left untreated the infection may ascend to the upper reproductive tract of women to the fallopian tubes where PID may manifest (Cates et al. 1994). In addition to infertility, chlamydia has also been associated with ectopic pregnancy and infant conjunctivitis - obtained during vaginal deliveries to a mother with chlamydia infection in the genital tract (Pellowe & Pratt 2006). In men, chlamydia mostly affects the urethra (the urine tube) or epididymis (the tube which carries sperm from the testicles) causing inflammation in the affected site of infection (Idahl et al. 2004). It has also been suggested that chlamydia can damage men's sperm (Eley et al. 2005). The association between chlamydia infection and future reproductive morbidity, for both sexes, highlight chlamydia infection as a serious health concern for individuals.

Recently, however, it has been suggested that chlamydia infection, in some cases, can clear up if left untreated (Morré et al. 2003). In addition, the link between chlamydia and subsequent associated sequelae, such as ectopic pregnancy and PID has been questioned (Honey & Templeton 2002). In a systematic review of screening articles Honey and Templeton (2002) found only two randomised control trials (RCTs) which proposed a link between chlamydia infection and PID (Giertz et al. 1987; Scholes et al. 1996). From the analysis of the two RCT studies, the authors concluded that there was as yet no unequivocal evidence for screening reducing the incidence of PID and its major sequelae, tubal infertility and ectopic pregnancy (Honey & Templeton 2002). The links between chlamydia and subsequent associated sequelae will be discussed in more detail in chapter 2. The important point to bear in mind here is that the sparse evidence from RCTs (considered the most rigorous of methodology) of a link between chlamydia and PID, ectopic pregnancy and infertility has implications for future screening programmes, as well as cost-benefits that can be attributed to screening. Nevertheless, despite only two RCTs published in the literature other evidence does suggest it is biologically plausible that chlamydia can cause damage to reproductive organs in women (Cohen et al. 1999; Egger et al. 1998; Kamwendo et al. 2000).

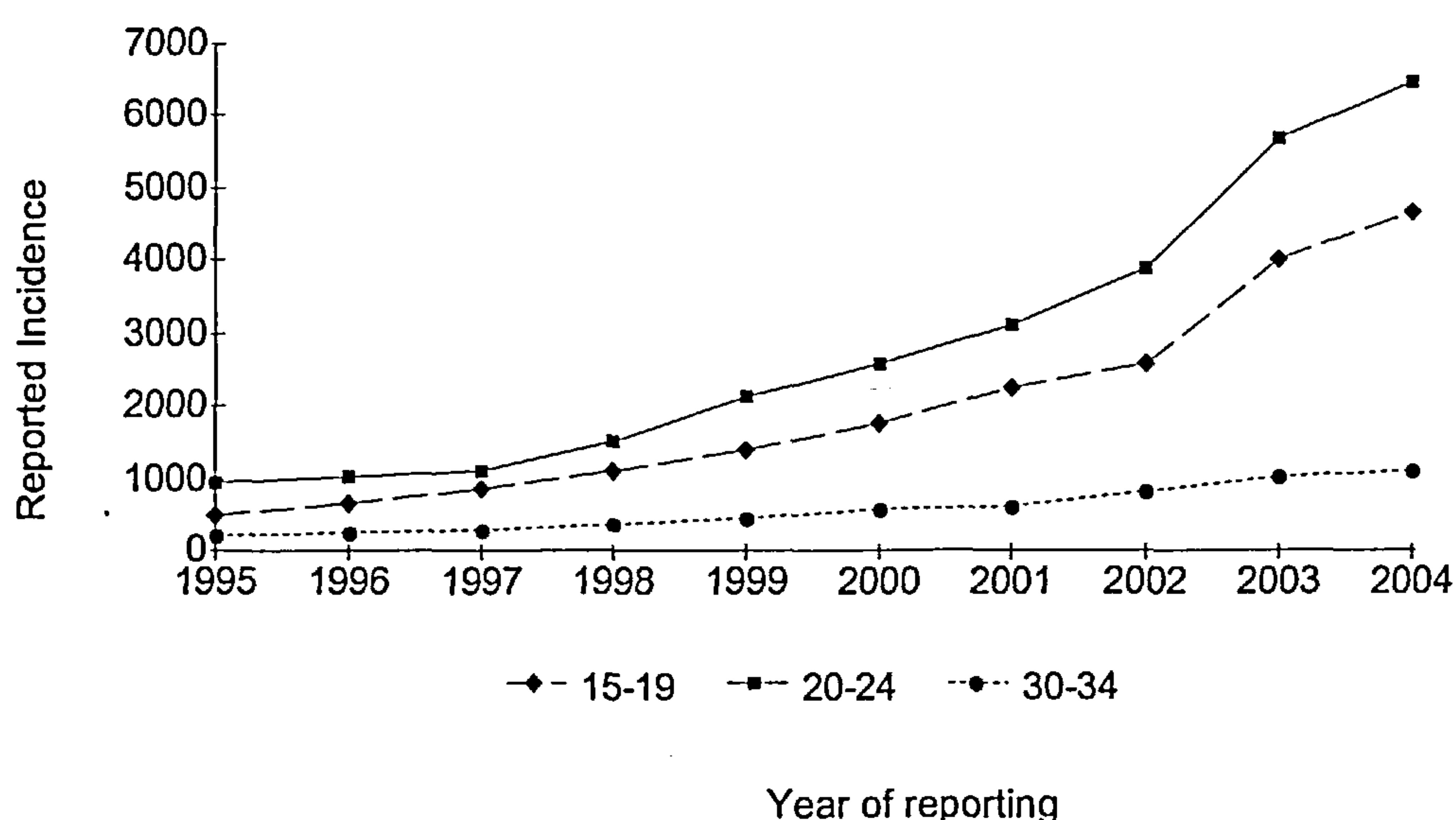
Epidemiology of infection

Currently chlamydia infection is the most common reported STI in Scotland, with 15, 865 cases diagnosed in 2004, having increased from 2679 in 1995 (Wallace et al. 2005). This

reported increase in chlamydia in Scotland is based on the collection of GUM clinic data. Data from GUM clinics started to be collected in Scotland in 1921/22 and continued until the early 1980s in an aggregated form showing Scotland only totals (ISD, 2005³). Until 1990, chlamydia was reported in the category non-specific genital infections; since 1990 chlamydia has been reported separately and since 1995 the collection of data became patient based (allowing the collection of information on gender and age). Since 1995, chlamydia reports in Scotland have mirrored trends reported in other nations of the United Kingdom: in England, Wales and Northern Ireland combined, there were 30,794 diagnoses made in 1995, increasing to 97,027 in 2004 – a 215% increase (Health Protection Agency 2005).

Epidemiological data suggests there is geographical, gender and age specific incidence of chlamydia infection. In Scotland in 2004, the majority, 21.9%, of reported cases of chlamydia were from Greater Glasgow Health Board, with 19% from Lothian, 11.3% from Grampian and 8% from Tayside (Wallace et al. 2005). There are also notable gender differences in incidence. The incidence of chlamydia is higher among women than men. In 2004, 65.5% of reported cases in Scotland were among females. The highest incidence rates are reported among those under the age of 25, where rates have been increasing since 1995 (see figure 1). The highest age prevalence among women and men in Scotland is 20-24 years (Wallace et al. 2005).

Figure 1: GUM reports of genital chlamydia, by age, Scotland 1995 – 2004



Source: SCIEH/HPS, 2005

³ <http://www.isdscotland.org>

The prevalence of chlamydia in the UK has not been comprehensively established (Underhill et al. 2003); however, epidemiological data from prevalence studies report prevalence between 1% and 29%, depending on the population studied and diagnostic test used (Burstein et al. 1998a; Chief Medical Officer's Expert Advisory Group 1998b; Fenton et al. 2001c; Grun et al. 1997; MacMillan et al. 2005; Skjeldestad et al. 1997; Stokes 1997). The highest age-prevalence reported in prevalence literature is in persons aged younger than 25 years old and it is estimated that around 1 in 10 young people have chlamydia in the UK (Chief Medical Officer's Expert Advisory Group 1998b).

Prevalence data is based largely on studies of clinic-based populations, in particular GUM clinics and from primary care settings. In England, the Health Protection Agency compiles statistics based on quarterly reports from GUM clinics. In Scotland data is collected routinely from GUM clinics and laboratories. The reports from GUM and laboratories confirm only those who have been tested and identified with infection. Since many persons with chlamydia will show no sign(s) or symptom(s) of infection, reports of infection from GUM clinics may underestimate true prevalence. Furthermore, high proportions of chlamydia cases have also been found in primary care settings in the UK, indicating the distribution of chlamydia in the population as endemic and particularly associated with high-risk groups (Lowndes & Fenton 2004). However, only 10% of prevalent infections are diagnosed in GUM clinics (Chief Medical Officer's Expert Advisory Group 1998b). Clearly, methods for reaching asymptomatic persons who do not self-refer for testing are required. A screening programme for chlamydia would need to be acceptable to target groups if it is to be successful in increasing testing activity and one recent important development that may aid the acceptability of screening has been the introduction of urine-based tests.

Diagnosing chlamydia: advances in diagnostic tests

Enzyme immunoassays (EIAs) and immunofluorescence techniques have been used for many years for the routine diagnosis of chlamydia infections (Stary 1999). Both of these techniques were performed on culture methods, which require cell scrapings from the site of infection - an invasive process for both women and men, and often painful for men. The development of nucleic acid amplification (NAA) assays, such as ligase chain reaction (LCR), polymerase chain reaction (PCR) and transcription-mediated amplification (TMA) is the most recent important advance in the field of diagnosis of sexually transmitted infections for two reasons: they can be performed on non-invasive samples, such as urine

samples, and they are more sensitive which means they will detect more cases of chlamydia.

Screening for asymptomatic chlamydia infections was first proposed in the mid-1980s (Handsfield et al. 1986). Amplification techniques were first developed and reported as being effective on non-invasively collected urine samples in 1988 (Caul et al. 1988). Caul and colleagues found that these new tests could detect the genetic material (DNA) of chlamydia bacteria. The diagnosis of chlamydia requires sensitive (identifying truly diseased persons) and specific (identifying truly non-diseased persons) tests that can be used on symptomatic and asymptomatic persons. NAA assays have been proven highly sensitive and specific: LCR and PCR have reported sensitivities of greater than 94% and specificity above 99% (Hadgu 1999; Stary 1999). In addition, both can be performed on non-invasive samples, such as first-void urine (FVU). In one of the first urine studies in symptomatic and asymptomatic women, the sensitivity of the LCR assay with FVU showed a detection rate for infected women almost 30% greater than that of endocervical swab culture (Lee et al. 1995). This was a surprise finding at the time⁴.

These newer diagnostic techniques improve the detection of chlamydia infection in various ways. Firstly, the greater sensitivity of these methods means that more infections are diagnosed in samples that are currently sent to laboratories. Secondly, urine tests, upon which LCR and PCR techniques can be performed, may increase testing in clinical settings during situations where there is no justification for genital examination and sampling. Thirdly, the use of urine samples to detect chlamydia permits the expansion of screening beyond traditional clinic environments, which may reach at-risk groups not currently accessing healthcare settings in which opportunistic screening is being offered. Essentially, urine tests are assisting with widening the screening 'net'.

The greater acceptability of these non-invasive tests has been reported in the literature (Hay et al. 1991; Logan et al. 2005; Pimenta et al. 2003b; Serlin et al. 2002). In Glasgow, when the LCR diagnostic test was introduced to the main testing laboratory in April 1997, the chlamydia testing activity increased four and a half times between 1996-1997 and 1999-2000 and the detection rate rose from 4.8% to 7.8% (Scoular et al. 2001a). The greatest rise in activity was observed in general practice. Clearly, the new urine-based tests were more acceptable to both patients and professionals.

⁴ http://www.chlamydiae.com/restricted/docs/labtests/diag_noninvasive.asp#home

The introduction of non-invasive samples has opened up opportunities for screening in settings not previously possible when swab-based sampling was common. Since the introduction of urine tests, studies have assessed the feasibility of offering screening in a range of non-medical settings. For example, postal methods and home testing are two methods that have been considered. Studies have also begun to assess the feasibility of urine-based screening in some non-medical settings (Cohen et al. 1998; David & Tang 2003; Poulin et al. 2001; Rietmeijer et al. 1997). Self-sampling, using urine specimens, has been found to be as effective as practitioner sampling (Ostergaard et al. 1996).

Studies involving the use of urine samples have shown that that scope for introducing testing extends beyond clinical settings and also outwith medical professionals', since respondents themselves are responsible for collecting their own urine sample. The use of urine samples for diagnosing chlamydia therefore has the potential to make the previously conceived impossible, possible: a wide range of settings could potentially be used in which to establish chlamydia screening. Ten years ago, Professor Anne Johnson, principal investigator on the 1990 National Survey of Sexual Attitudes and Lifestyles (Natsal), commented that advances in diagnosis may make screening for chlamydia worthwhile (Johnson et al. 1996a). Alongside the increased use of urine tests there has been debate about introducing a national chlamydia screening programme (in England). Perhaps, as Professor Johnson suggested, the introduction of these non-invasive tests may have been a driving force behind the development of chlamydia screening policy.

Status of chlamydia screening in Europe and North America

With the rapid rise in reported infections in all parts of the UK, there has been a growing discourse regarding controlling chlamydia infection by introducing a screening programme. Various factors are associated with the proportion of chlamydia cases detected: screening practices, the sensitivity and specificity of tests, contact tracing and awareness among at-risk groups of the need for prompt testing. Clinicians do not necessarily determine screening practice; rather policy often drives this control measure. The response, therefore, of Health Departments in England and Scotland to this growing crisis in sexual health has an important effect on screening practices and so is worth discussing.

Before this, it is worth referencing the context of chlamydia control activities taking place at a European and North American level as this contributes to the evidence-base upon which policy in the UK is shaped. Screening practices vary widely across the European countries⁵. STI clinic attendees and pregnant women are the population groups most frequently screened (Lowndes & Fenton 2004). There are also considerable variations in partner notification practices for STIs in western European countries (Lowndes & Fenton 2004). Variations in screening and partner notification influence the degree to which asymptomatic patients and sexual contact are diagnosed, treated and recorded in surveillance statistics across the EU.

Chlamydia control activities in Sweden have been cited as the most extensive in the world (Taylor-Robinson 1994). Opportunistic chlamydia screening of young women in a variety of healthcare settings was introduced in some Swedish counties in the early 1980s. Since May 1988, Swedish law has made it compulsory across the country to provide free testing, treatment and contact tracing to any patient with suspected chlamydia, and to report diagnosed infections (Herrmann & Egger 1995). Screening is targeted at sexually active women aged 15-29 years seeking contraception or abortion. Men are screened when found through contact tracing or if symptomatic and self-refer to a healthcare setting for testing.

Guidelines for chlamydia screening were introduced in both Canada and USA in 1989 and 1993, respectively. Both the 1989 Canadian Guidelines for Screening for Chlamydia Trachomatis Infection and the Centre for Disease Control (CDC) 1993 guidelines Recommendations for the prevention and management of *Chlamydia trachomatis* infections apply specifically to women. Men are screened through partner notification procedures and when they present to GUM (or STD) clinics.

Australia introduced screening guidelines for women in 1997 as part of the National Management Guidelines for Sexually Transmissible Diseases and Genital Infections. Men are involved in screening through partner notification procedures. New Zealand has no screening for chlamydia in any population group. The Netherlands, Denmark, Finland, Switzerland and Austria all have no organised national chlamydia screening programmes (Lowndes & Fenton 2004). In a recent national population based study in the Netherlands nationwide screening for chlamydia was not indicated based on low prevalence of infection

⁵ Data refers to 15 EU countries and Norway. From 1 May 2004, 10 accession countries (Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia) joined the union.

found in rural populations (van Bergen et al. 2005). However, in Austria, registered prostitutes are regularly screened and screening of pregnant women is also common.

Chlamydia screening in England and Scotland

Until the mid-1990s there were no national policy or guidelines dealing with chlamydia screening in the UK. Testing was performed on symptomatic primary health care attendees, primarily in GUM settings. As previously mentioned, health is a devolved matter in the UK. Thus any discussion of health policy needs to take account of the differences which may exist between England and Scotland in the response to the rising rate of chlamydia infections.

As regards England, in 1992 sexual health was one of five priority public health issues in *Health of the Nation*, the public health strategy for England (Department of Health 1992). By 1999 *Our Healthier Nation* no longer prioritised sexual health; only four areas were now heralded as a priority for improving public health in England (Department of Health 1999). Despite this, the Chief Medical Officer's (CMO) Expert Advisory Group on chlamydia was set up in 1996 to advise on issues pertaining to chlamydial infections and screening programmes. At this time the impetus was 'concern over the steep rise of chlamydia cases, particularly amongst the younger sexually active groups' (Kane et al. 2001). This report is important in the English context as it laid the foundations for feasibility studies to be carried out into chlamydia screening around England. The Expert Advisory Group report highlighted the need to introduce measures to reduce the prevalence of infection and proposed a model for opportunistic screening to be assessed. The report concluded:

'Opportunistic screening should also be offered to women aged over 25 with a new sexual partner or who have had two or more partners in the past 12 months although they are a lower priority than the younger age group which has higher prevalence rates'

(Chief Medical Officer's Expert Advisory Group 1998a).

In response to the CMO report, and with advice from the National Screening Committee, the Department of Health established a pilot study to examine the feasibility and acceptability of the CMO's screening model. The pilot study was established in two health authorities in England, Portsmouth and the Wirral, over one year (Pimenta et al. 2003a; Pimenta et al. 2003b). In September 1999, pilot work commenced in healthcare sites in Portsmouth and the Wirral (Underhill et al. 2003). The pilot study focused mainly on 16-

24 year old women and offered women screening by testing a urine sample using LCR. Men (aged 16-24 years) were screened by using the same methods at GUM and adolescent sexual health clinics. Screening settings in the pilot were general practice, family planning clinics, GUM clinics, young people clinics, antenatal clinics and others, including colleges and universities (Underhill et al. 2003). The pilot study screened 14,756 persons for chlamydia. The overall prevalence was 9.6%, but varied by health care setting: the highest prevalence was detected in GUM clinics in Wirral and the lowest in gynaecology clinic attendees in Wirral. Urine screening was found to be highly acceptable to patients (Pimenta et al. 2003b). More detail on this study will be given in Chapter 2. Here the key point is that the CMO's model for screening, taking screening beyond GUM clinics, was assessed and found to be feasible and acceptable to patients. As such, the pilot study concurred with the CMO report findings by recommending opportunistic screening for all women aged 16–24 years attending any health care site and men attending sexual health care settings.

The recommendations from the pilot study were endorsed in the first *National Strategy for Sexual Health and HIV*, published in 2001, in which screening for chlamydia for specific groups (women under 25 years included) was recommended (Department of Health 2001c). Chlamydia screening in England has since gathered momentum, especially since the publication of the Health Select Committee report which described England as having a 'crisis' in sexual health (House of Commons Health Committee 2003). However, at the time of writing, the money allocated for the implementation of the strategy was not ring-fenced; therefore, at this point in time it remains unclear how far the strategy will be implemented in each Primary Care Trust (PCT) in England, especially given the large amount of debt many PCTs have.

No national chlamydia screening is planned in Scotland. Whilst there has been target based public health policy in Scotland since 1992 it was not until 1998 that sexual health was given specific reference in a Green Paper *Working Together for a Healthier Scotland* (Department of Health 1998). The White Paper *Towards a Healthier Scotland* announced Government funding of £15m for four national health demonstration projects to be established (Scottish Executive, 1999). One of the four projects is Healthy Respect, a three-year (phase one) project addressing sexual health and prevention of teenage pregnancies.

Healthy Respect was established in 2000 and was located in the Lothian area (Central-East) of Scotland. Phase 1 of Healthy Respect involved 19 projects, including postal

testing kits for chlamydia in a wide range of non-medical settings as well as chlamydia screening in Further Education (FE) colleges. Healthy Respect was evaluated externally, with a view to applying lessons learnt to form the basis of a model for the whole of Scotland (Tucker et al. 2005). Results from Phase 1 suggested that chlamydia screening in FE colleges was acceptable to young people and feasible (Kernaghan et al. 2005). The external evaluation, however, suggested the chlamydia testing component of the project had limited impact on uptake of testing in general practice in Lothian (Tucker et al. 2005). The evaluation report noted:

'Overall, Healthy Respect in Lothian appeared to have little impact on clinicians' practice although the few significant differences that were detected tended to suggest better practice in Lothian.'
(Tucker et al. 2005).

The results of the Healthy Respect project will inform subsequent work across Scotland regarding improving sexual health. In the meantime, chlamydia screening in all healthcare settings in Scotland are informed by the Scottish Intercollegiate Guidelines Network (SIGN 2000). These guidelines were published in 2000 and recommended that testing for chlamydia is performed on both women and men with symptoms or signs of chlamydia. In addition, the guidelines recommended opportunistic screening of sexually active women under 25 years and women aged 25 years or older with two or more sexual partners in the last year or a change of sexual partner in the last year. As with other European and North American countries referred to above, opportunistic screening of men was not included in these recommendations as there were few data on men outwith GUM clinics.

In 2002, a National Sexual Health Strategy was commissioned and a draft sexual health strategy for Scotland entitled *Enhancing Sexual Wellbeing in Scotland: A Sexual Health and Relationships Strategy* was published September 2003. In the proposal, poor sexual health in Scotland was attributed to there having been 'neither leadership on sexual health issues nor recognition of sexual health as a priority at national level.' (Scottish Executive 2003a). The final strategy was published in February 2005. The strategy recommends population-based chlamydia screening for women under 25, with targeted screening for men who present to GUM clinics.

Each country in Europe has experienced increase in incidence of reported chlamydia infections since the mid-1990s. From around this time, there are no systematic, register-based screening programmes for genital chlamydia in Europe, although this is the only intervention that has been shown to be effective in randomised controlled trials (Ostergaard

et al. 2000; Scholes et al. 1996). Whilst the English model for screening is opportunistic, the Scottish Executive has recommended a population-based approach. There is debate in the literature as to the best method to screen for chlamydia. This and other debates will now be considered.

Screening debates

Screening debates have largely centred upon three considerations: how best to screen; where to screen; and who to target screening efforts towards. Firstly, both population-based and opportunistic approaches to screening for chlamydia have been proposed. Secondly, clinic-control efforts have been the focus of most screening approaches but community-based approaches have been made possible by the introduction of urine-based samples. Thirdly, emerging evidence on the high asymptomatic infection in men and the results, from a recent population based survey of sexual attitudes and lifestyles, has questioned the failure to include men in screening approaches in England. Debates regarding whom best to screen have begun to raise questions over men's exclusion from screening beyond the level of partner notification. These three issues will now be dealt with in turn.

Firstly, there is debate concerning how best to screen, which centres upon whether an opportunistic approach or population-based approach is the most effective method of controlling chlamydia infection in a population. Opportunistic screening offers a test to those who access health services even if attendances are unrelated to the disease being screened for. Population-based screening, or active screening, seeks out at-risk persons and offers screening. Postal screening methods are one example of population-based approaches.

Considering opportunistic approaches first, the model for screening proposed in the CMO report was opportunistic screening of women under 25 years for chlamydia and men when they present to GUM clinics and as part of partner notification procedures (Chief Medical Officer's Expert Advisory Group 1998a). The two pilot studies established by the Department of Health followed this recommendation and the pilots were designed as opportunistic (Pimenta et al. 2000). In Scotland, SIGN Guideline 42 also recommends the opportunistic screening of women under 25 years who present to healthcare settings for any reason (Scottish Intercollegiate Guidelines Network 2000b). There is therefore a developing consensus in the UK that opportunistic screening is the best method of screening for chlamydia. Perhaps the best example of an opportunistic approach has

occurred in Sweden: when opportunistic screening was introduced in the mid-1980s there was a reported reduction in chlamydia infection between 1985 and 1995 (Herrmann & Egger 1995).

Opportunistic approaches have been favoured on the grounds of cost-effectiveness (Genc et al. 1993; Genc & Mardh 1996; Paavonen 1997). Questions, however, have been raised in the literature regarding the effectiveness of opportunistic approaches to chlamydia screening. Low and Egger (2002), for example, suggest that much of the evidence, on which the decision to introduce opportunistic screening in England was based, stemmed from population-based evidence. The authors argue that it is as yet unclear how far such evidence can be extrapolated to opportunistic strategies (Low & Egger 2002).

Further concerns have been raised regarding the extent to which opportunistic approaches have been implemented in primary healthcare settings, as recommended in policy and guidelines. As mentioned above, the allocated money for the strategy was not ring-fenced; therefore it remains unclear how much money will be directed to front line sexual health services and how much will be allocated to debt reduction in PCTs. In addition to financial restrictions, research has revealed other barriers to implementation for healthcare professionals. In a focus group study with members of primary healthcare teams in general practices around Southwest England, none of the practices were happy to discuss chlamydia in a consultation unrelated to sexual health (McNulty et al. 2004a). This study also found knowledge among healthcare professionals to be low, especially regarding the benefits of testing as well as when and how to take specimens (McNulty et al. 2004a). Other studies have found a low referral rate from primary healthcare settings to GUM (Mason et al. 1996; Ross et al. 1996). Some of this has been explained by low knowledge of specialist services by primary healthcare professionals in some areas (McNulty et al. 2004a). Macleod and Smith (1999) have also suggested pragmatic issues, such as the limited time available to practitioners in general practice consultations, are likely to reduce the number of persons offered opportunistic screening for chlamydia in general practice (Macleod & Smith 1999). However, more recent research shows that general practice (in England) may be managing chlamydia infections more effectively. The authors of one study suggest:

'a substantial and increasing number of sexually transmitted infections are diagnosed and treated in general practice and may reflect increasing engagement of general practitioners with sexual health'
(Cassell et al. 2006).

More detail on the advantages and disadvantages of opportunistic screening will be drawn out in the next chapter (the review of empirical screening studies). Here, the key point is that questions have been raised over the effectiveness of opportunistic approaches, which stem from the underlying evidence upon which opportunistic approaches have been based as well as provider willingness to screen in healthcare settings. Community settings, such as general practice, may be improving management of chlamydia infections, however, the degree to which this is effectively reaching persons with asymptomatic infection remains unclear. Low et al (2002) suggest that 'a strategy combining opportunistic screening in health care settings, which tends to miss a large proportion of men at risk, and partner notification may not be sufficient to produce sustained reductions in chlamydia prevalence'. A different approach advocated and undertaken by some has been population-based approaches.

Population-based studies have become more feasible since the introduction of urine-based tests. Population-based approaches may have been slower to have been explored as the technology required to support PCR or LCR testing on urine samples was slow to be introduced throughout the country. As such, population approaches are still undergoing evaluation in the literature. Nevertheless, variations in cost-effectiveness, uptake and coverage of the target population have been found (see for example, Honey et al 2002). Specific detail on the different methods of taking screening to at-risk persons will be discussed in Chapter 2.

Here, particular problems associated with this approach have begun to emerge, such as the coverage and uptake of screening in the target populations. The Chlamydia Screening Study (ClaSS) was designed as an active screening approach using general practice list and postal screening (Low et al. 2004). In all, 19,773 men and women aged between 19-39 years were offered screening but the authors believed there had only been a 'modest' uptake (34%) achieved (Macleod et al. 2005b). The authors of this study reported that it was labour intensive to ensure repeat mailings were sent to those who failed to respond to the first mail (Macleod et al. 2005b). Despite this, the prevalence of infection found among men and women under 25 years was 5.1% and 6.2%, respectively (Macleod et al. 2005b). During evidence to the Health Select Committee, a population based strategy was proposed by the principal investigator of the Natsal 1990 study, on the basis that chlamydia is so widespread in society (House of Commons Health Committee 2003). Population approaches may, in this view, reach more people than clinic-control efforts.

A second issue considered in screening debates concerns where to screen. Traditional efforts to reduce infection rates have depended on testing for infection in clinic settings (such as GUM, general practice, family planning, and termination of pregnancy clinics), either when a person presents with symptoms or opportunistically during routine health care. This approach has its limitations: firstly, most people with infection do not experience symptoms and therefore have no physical cue to seek health care. Secondly, few young people, the most at-risk group for chlamydia infection, use specialist sexual health services (Johnson et al. 1996b). Thirdly, poor knowledge of sexual health matters, especially among teenagers from lower socio-economic backgrounds, may affect one's ability to 'choose' health care (Devonshire et al. 1999; Scottish Executive 2003c).

Barriers to young people accessing clinic-based settings for healthcare include poor accessibility due to geographical location, low referral to specialist sexual health services, low awareness and knowledge about chlamydia and low perception of risk. These issues will be expanded upon in the next chapter, but issues such as these underscore the argument for considering widening screening opportunities to settings outwith the traditional clinic boundary.

Offering chlamydia screening in non-medical settings could be effective in reducing some of these barriers to accessing testing. This approach offers the opportunity to take testing to where young people can be found, which could reduce issues of access, especially in locations where specialist sexual health services are not conveniently located. Offering screening in non-medical settings also has the potential to raise awareness of chlamydia and the need for prompt testing to reduce the possibility of onward transmission and developing complications. If this approach became more widespread, then there is the possibility that screening could become 'normalised' by virtue of the increased visibility and accessibility. Young people accepting testing for chlamydia in non-medical settings may also avoid the associated stigma that is attached to accessing GUM clinics, although there is not yet enough evidence to suggest this would occur.

Ultimately, the effectiveness in any control measure depends upon identifying asymptomatic infections promptly and reducing the onwards transmission and associated complications. As such, approaches to screening for chlamydia in non-medical settings, could have the effect of reducing costs to both the NHS (in treatment costs if the prevalence of infection declines) and to individuals (in terms of their physical and mental health). Screening in the wider community, especially in non-medical settings, needs

evaluating if a significant impact on the problem is to be made since chlamydial infection is widely distributed among young, sexually active people who may have little contact with health services (Stephenson 1998).

A third issue in the literature concerns to whom is screening best offered? In Scotland, testing is recommended in women and men presenting to healthcare settings with symptoms and in particular asymptomatic groups (see Table 2). It has also been proposed that women presenting to healthcare settings for reasons sexual health related or not, men who are partners of chlamydia-positive persons should be offered screening for chlamydia (SIGN 2000). Prevalence of infection varies considerably in the literature from 2.6% among women aged 18-35 years attending general practice for a smear test (Grun et al. 1997), to 31.2% females attending GUM clinics (Burstein et al. 2001). However, prevalence is consistently highest among persons under 25 years (Adams et al. 2004a). Given the evidence regarding the prevalence, screening has been recommended for asymptomatic women who attend healthcare settings for any reason (SIGN 2000). Women younger than 25 years and sexually active, and those aged 25 years or older with two more partners in the last year or a change of sexual partner in the last year are recommended target populations for screening (SIGN 2000). No opportunistic screening was recommended for men due to a lack of data on men outwith GUM clinics (SIGN 2000).

Table 2: Recommendations for testing symptomatic and asymptomatic groups for chlamydia (SIGN).

	<i>Symptomatic</i>	<i>Asymptomatic</i>
Women	Vaginal discharge Post-coital/intermenstrual Inflamed/friable cervix (which may bleed on contact) Urethritis Pelvic inflammatory disease Lower abdominal pain in the sexually active Reactive arthritis in the sexually active	Women undergoing TOP Attendees at GUM clinics Persons with STIs presenting in other clinics Women prior to IUD insertion Egg donors Sexual partners of those with chlamydial infection
Men	Urethral discharge Dysuria Urethritis Epididymo-orchitis in the sexually active Reactive arthritis in the sexually active.	Semen donors Attendees at GUM clinics Persons with STIs presenting in other clinics Sexual partners of those with chlamydial infection

Opportunistic screening approaches therefore tend to disproportionately target screening efforts towards female populations, since women used the healthcare settings in which opportunistic screening is offered more often than men, for example, termination of pregnancy clinics, family planning clinics and general practice. The opportunistic model of screening was justified in the CMO report as being evidence based and cost effective (Pimenta et al. 2000). However, there has been a growing discourse recently that advocates the involvement of men in chlamydia screening (Fenton 2000; Hart et al. 2002; Rogstad 1996). This has stemmed from an increasing evidence-base, which suggests the prevalence of infection in men may be similar to that in women, and also that chlamydia may be mostly asymptomatic in men.

Prevalence data from population-based studies in the UK, such as the Natsal 2000 and the ClaSS study, have shown significant reservoirs of asymptomatic untreated infection, which may be similar in men and women (Fenton et al. 2001a; The ClaSS Study Group 2001; Van Valkengoed et al. 1999). Recently, a systematic review of prevalence studies suggested the prevalence in men may be as high as that in females (Adams et al. 2004a). Furthermore, the second annual report from the National Chlamydia Screening Programme, for England, reports a higher prevalence of infection in men under 25 years than in women (11.9% compared with 10.9%, respectively) (NCSSG 2005). Until this data emerged, it had been assumed that the prevalence of infection was lower in men than in women, based on the view that men were symptomatic of infection more than women (Quinn et al. 1996). Similar prevalence of infection between men and women raises questions over the focus of opportunistic screening approaches being primarily upon women. Low (2004), for example, has drawn attention to a recent increase in chlamydia infections in Sweden, a country that has a reputation for having the most extensive chlamydia control activities in the world. Despite this, Sweden has witnessed a recent increase in reported chlamydia infections after a substantial downturn since the early-1990s (Gotz et al. 2002). These activities are largely opportunistic which, for Low, have failed as effective control measures to reducing the prevalence of chlamydia infection in the population as many men were not reached via this approach (Low & Egger 2002). In light of recently emerging findings, which suggest men are equally at risk of infection as women, there has been a growing acknowledgement that to effectively interrupt transmission, and tackle the growing rates of infection, men also need to be involved in screening, not just women.

Including men in screening is part of a primary prevention strategy for women – or reducing the risks of actually acquiring the infection; in other words, screening men benefits women (Hart et al. 2002). Reducing the risks of women acquiring the infection by reducing the prevalence of infection among men is a strong argument for screening men, especially in light of prevalence data that suggests there is a large reservoir of asymptomatic infection among young men in the population. The most important measure to prevent the spread of STIs in societies is primary prevention: these are measures to prevent an uninfected person becoming infected or attempts to eliminate or reduce the exposure of the infectious agent. Primary prevention strategies can be medically or behaviourally focused. As regards chlamydia, medical prevention strategies are limited, as no vaccine currently exists. The only effective prevention measures currently available are measures affecting personal behaviour.

Secondary prevention measures attempt to prevent the infected asymptomatic person spreading the infection further and prevent complications. Partner tracing is an important part of secondary prevention measures. Including men in chlamydia screening programmes would identify asymptomatic infection and reduce complications in men, but it would also reduce the prevalence of infection in the population, from which women could acquire the infection.

Including men in chlamydia screening is important in disease control and prevention terms. In the absence of good epidemiological data on men, screening women will be ineffective in terms of eradication or control (Hart et al. 2002). As the Swedish experience suggests, the pool of prevalent male infections will not be effectively reduced via an opportunistic screening of women approach. Including men in screening constitutes a good control measure but it is also important in preventing any negative 'psychosocial consequences for women' (Duncan et al. 2001a).

The promotion of women's health and the associated attention placed upon the importance of gender within debates on health has facilitated the emerging argument for men's health. Women have led the way in promoting gender equality in health care debates; feminist debates often incorporated health into its exploration of women's disadvantage in society. However, recently the argument that gender differences be recognised in the field of sexual and reproductive health has been used to highlight the specific needs of men, which are not being addressed. In other words, men are now drawing links between gender and health in relation to the inequalities men face. Services for men who have sex with men (MSM)

have been provided for many decades; however, until recently there was little known about young heterosexual men's beliefs and behaviour in relation to screening, although evidence is beginning to emerge (Blake et al. 2003b; Fenton et al. 2001a). Young men are as likely as young women to acquire a sexually transmitted infection; therefore a key challenge of sexual health services is to involve young men in screening.

Community and non-medical setting are being considered in feasibility and acceptability studies and could be one approach to including men in screening as well as women who may not use primary health care or specialist sexual health settings. Non-medical settings that have been considered include: student bars (Hay et al. 2004); mailed test kits and results received on the Internet (Novak et al. 2003); population based mailed postal testing kits (Andersen et al. 1998; Macleod et al. 2005c); field settings (Gunn et al. 1998); mobile clinics (Kahn et al. 2003); and schools and universities (Cohen et al. 1999; Debattista et al. 2002b). These studies found testing in all of these settings was feasible, largely due to the detection method with urine samples. More detail on these approaches will be given in the next chapter. The emerging findings from these first non-medical approaches which show feasibility and willingness at present underscore the importance of experimenting with alternative, innovative screening strategies directed at young men.

Summary

This chapter has focused on describing the epidemiology, policy developments and screening debates concerning genital chlamydia. It is apparent that the rising incidence of reported cases of chlamydia is not limited to Scotland, or the UK, but is occurring throughout Europe and North America. Whilst some countries have published guidelines and strategies for tackling the high incidence of chlamydia infection, no country has a systematic register-based screening programme for chlamydia. Increasing rates of infection in Sweden suggests this particular strategy of opportunistic screening has not controlled transmission – although men still only account for a quarter of those tested in Sweden (Low 2004).

Theoretical models describing the main determinants of the incidence of sexually transmitted infections suggest that reducing the mean duration of infectiousness is likely to lead to substantially lower levels of disease (Yorke et al. 1978). Therefore, the theoretical underpinning of a screening programme is that it detects infections earlier. Screening for asymptomatic infection is key to reducing onward transmission and the risks of

complications. Opportunistic screening of women, with men included through partner notification processes, is the recommended approach to reducing population prevalence and complications associated with chlamydia infection (Chief Medical Officer's Expert Advisory Group 1998b; SIGN 2000). However, this chapter has illuminated questions regarding the effectiveness of this approach. The screening debates encompass questions regarding how best to screen, where to screen and to whom screening should be offered. Within these debates, issues such as the effectiveness of screening women, with men included through partner notification, has been questioned from a control point-of-view but also because of the potential for there to be negative implications to women (Duncan et al. 2001a; Low & Egger 2002). Non-medical approaches to screening offer opportunities to widen the screening net and potentially reach at-risk asymptomatic persons who are currently being missed with clinic-control efforts.

How best to screen, where to screen and to whom screening should be offered consist key debates in the screening literature. The following chapter offers a more detailed review of recent approaches to controlling transmission of chlamydia and outlines the barriers and supports to screening in various settings. The utility of screening in non-medical settings will also be further explored.

Chapter 2

Existing Empirical Work: the evidence-base

This chapter outlines the main findings from published research on chlamydia screening and testing of women and men. First, the chapter provides an overview of the chlamydia screening literature from the 1960s to the present day. Second, a more focused examination of recent research that has been carried out in clinical settings will be discussed. The third part of the chapter examines the literature concerning screening that has occurred in non-medical settings.

In Chapter 1, the debate regarding how best to screen was outlined. The advantages and limitations of both opportunistic and population-based approaches were outlined. Key emphasis was placed upon how effective both approaches are in reaching persons with asymptomatic infection. In this chapter, the review of screening studies will draw out in more detail the key issues that may impinge upon the effectiveness of screening approaches, with particular attention paid to participation rates in the approaches cited in the literature as well as the number of infected individuals who are notified of their result, treatment and partner notification strategies. These are key concerns for any control measure, as the effectiveness of screening is limited unless persons identified as having chlamydia infection are treated and their partners notified. Lessons learned from the various approaches cited in the literature will inform the design of the research which underpins this thesis.

Overview of the chlamydia literature from the 1960s to present

Early chlamydia research

Early chlamydia research stemmed largely from research in the field of ophthalmology, as chlamydia is a cause of ocular trachoma. In 1903, interested in the experimental infection by *Treponema pallidum* (the pathogen responsible for syphilis) Neisser (whom *Neisseria gonorrhoea* is named after) undertook a journey to the island of Java together with two other scientists - Ludwig Halberstaedter and Stanislaus von Prowazek. Against the will of Neisser, von Prowazek inoculated the eyes of orang-utans with trachoma material (obtained from eye scrapings from patients with trachoma) and found that the primates

developed conjunctival inclusions. Similar inclusions were found in the conjunctiva of infants, the cervix of their mothers and the urethral scrapings from male patients with non-gonococcal urethritis. But it was not until 1930 that Philip Thygeson and his colleagues were the first to prove the causal baby-mother-non-gonococcal urethritis (NGU) connection (Paavonen 2000). Subsequently, a series of papers were published in the 1964 *British Journal of Venereal Diseases* (now known as *Sexually Transmitted Infections*), which detailed the isolation of the trachoma agent from the genital tract. Chlamydia was initially considered to be a virus as it cannot be cultured on routine artificial (nonliving) media used in the clinical microbiology lab – as this technique requires living cells so that it can replicate. However, unlike viruses, chlamydia is sensitive to antibiotics (tetracyclines and macrolides). That chlamydia is not a virus only became evident in 1965 with the advent of tissue culture techniques and of electron microscopy.

Interest in chlamydia infections around the late 1960s early-1970s began to move from the periphery of medicine to the mainstream. Rose and Schacter presented tentative conclusions in 1964 regarding the potential public health significance of these infections: they believed that some infections were sexually acquired as they had observed cases where no conjunctivitis was present (Paavonen 2000). A series of articles published in the *British Journal of Venereal Diseases* in 1972 reinforced the initial conclusions presented in 1964.

The scope of research on chlamydia subsequently broadened and extended to fields such as epidemiology, medical sociology, politics and anthropology. The aetiology of chlamydia, the sensitivity and specificity of tests, the prevalence of infection and who best to screen in clinic settings has dominated the literature since the publication of the first papers in 1964 and 1972. Ensuing questions, such as where the disease was found, who was affected and how to control it, meant that subsequent research was rooted firmly within the epidemiological paradigm.

The emergence of HIV/AIDS in the early-1980s gave a renewed impetus to sexual health research, in general. Since this time, there has been a ‘mushrooming’ of research on chlamydia published. To illuminate this point, a search of Medline, for example, from 1966 to 2005, using the search term ‘Chlamydia trachomatis’ found 9,127 results: between 1966 and 1976 there were 81 results; between 1976 and 1986 there were 1,892; between

1986 and 1996 there were 4,232; and, between 1996 and 2006 (the first quarter) there were 3,675⁶.

Despite the increased volume of published research, an early analysis of the literature highlighted debates concerning how best to screen, where best to screen and who best to screen (as discussed in Chapter 1). Gaps therefore remain in the evidence-base. The next section of the chapter offers a detailed discussion of the recent clinic-based screening literature.

Screening studies

Search strategy

A search of the available literature was carried out using MEDLINE, EMBASE, Scopus and Cochrane Library databases. The search was performed on literature from 1980 onwards⁷. Search terms included: chlamydia trachomatis; chlamydia trachomatis and screening; chlamydia and tests; chlamydia and men; chlamydia and re-infection; chlamydia and postal; chlamydia and mail; chlamydia and community; chlamydia and men; sexually transmitted infections and sexual health. In addition, studies located by these searches were then hand searched for additional references and selected key journals were rigorously searched (BMJ, Sexually Transmitted Infections, Sexually Transmitted Diseases, JAMA, Journal of Epidemiology and Community Health and International Journal of STD and AIDS). Given an aim of this thesis was to assess the feasibility of screening in non-medical settings, the literature was reviewed from the perspective of setting-specific issues because non-medical settings do not have the same infrastructure in place as clinical settings, such as general practice, GUM and family planning.

Clinical settings

The key clinical sites where chlamydia screening have been offered include GUM, general practice, family planning and termination of pregnancy clinics, as well as in teenage health clinics (predominantly in America, although the Netherlands and the UK have such services). Such studies constitute the overwhelming body of the screening literature.

⁶ This figure will increase by 31 December 2006.

⁷ The literature has been searched in 2006 for any relevant articles but this was not part of the original review.

Persons who may have chlamydia infection may present in many different medical settings (GUM, general practice, family planning, obstetrics & gynaecology and other hospital departments). The prevalence of infection found in clinical settings has a wide variation, from 2.6% among women aged 18-35 years attending general practice for a smear test (Grun et al. 1997), to 31.2% females attending GUM clinics (Burstein et al. 2001). In addition, the number of individuals tested in each setting varies, from 20 (Barlow et al. 2001) to 42,944 (Scoular et al. 2001a). Prevalence estimates are also largely drawn from female populations, with few data available on the prevalence of infection in men. Women have thus constituted the primary testing or screening populations. Although, since the introduction of non-invasive tests men have been increasingly included in screening studies.

Genitourinary medicine clinic settings

GUM clinics in the UK (or STD or what used to be known as venereal disease clinics) were established following the Royal Commission Report of 1916. These clinics were intended to provide open-access to facilities for confidential diagnosis and treatment of STIs. Today, GUM clinics throughout the UK are primarily responsible for collecting national statistics on STIs: all GUM clinics in England and Wales have a statutory obligation to complete a statistical return (known as form KC60) of all attendances in the previous quarter, and send it to the Communicable Disease Surveillance Centre (CDSC; prior to 1996 returns were sent directly to the Department of Health). In Scotland, data on all completed 'patient-episodes' of treatment at these clinics are sent each quarter to Information Services Division (ISD) Scotland, where they are collated and analysed. National data collection from GUM clinics in Scotland began in 1921/22. In addition, throughout the UK, laboratory reports of STIs provide information on the diagnosis of STIs outwith GUM clinics. In Scotland, Health Protection Scotland (HPS), formerly known as the Scottish Centre for Infection and Environmental Health (SCIEH) until 2004, collates and publishes reports sent from GUM clinics, primary care, family planning clinics and hospital clinics. This provides an overall view of the prevalence of chlamydia infections reported in the population.

The network of GUM clinics in the UK forms the key clinical structure within the health service dedicated to diagnosis and treatment of sexually transmitted infections. Most patients seen at GUM clinics are recorded as 'self-referred' but the proportions who are reported as being referred from different sources vary between the sexes and by diagnosis (Noone et al. 1998). Studies conducted in GUM clinics provide information about the

prevalence of chlamydia infection, in women and men, the risk factors associated with infection, the number of co-infections and the referral rate from other health care services, such as general practice, family planning clinics and termination of pregnancy clinics.

The number of positive diagnoses made in GUM clinics in the UK has been increasing since the 1990s, as reported in national data returns from GUM clinics. Explanations for this increase include the introduction of non-invasive tests methods. The introduction of ligase chain reaction (LCR) to the main chlamydia laboratory in Glasgow, for example, resulted in a four and a half times increase in testing activity between April 1996 and March 2000 (Scoular et al. 2001a). More tests were therefore performed in Glasgow, which led to an increase in the detection rate, from 4.8% in 1996-97 to 7.8% in 1999-2000 (Scoular et al. 2001a). The greater acceptability of urine tests to patients and professionals has been reported in the literature (Fenton et al. 2001a; Gunn et al. 1998; Pimenta et al. 2003b). That urine tests are more acceptable to patients may have increased the numbers willing to be tested. Regardless of the test method, prevalence reports from GUM clinics have traditionally reported the highest prevalence of infection of all clinic-based settings. A high prevalence of infection is diagnosed in these settings, perhaps due to those exhibiting symptoms accessing this service more than those who are asymptomatic. The prevalence of infection found in GUM clinic settings ranges from 9.4% to 19.1% in men (Dixon et al. 2002; Evans et al. 1998; Higgins et al. 1998; Templeton et al. 2001); and 3.0% to 31.2% in women (Burstein et al. 2001; Sudlow et al. 2001).

It has been argued that GUM clinics attenders exhibit higher risk sexual behaviour than those in general population (Catchpole et al. 1997). Younger age, increased number of sex partners and low condom use have all been found to be associated with increased risk of chlamydia infection (Brown et al. 2004; Burstein et al. 2001; Hughes et al. 2000; LaMontagne et al. 2003; Radcliffe et al. 2001; Rosengard et al. 2004; Winter et al. 2000). Using data from the Portsmouth pilot Harindra et al found a large number of co-infections in GUM attendees (Harindra et al. 2002). Patients attending GUM in the Portsmouth pilot site and diagnosed with chlamydia were followed-up for 12 months: of 1075 patients diagnosed with chlamydia, 285 attended the GUM clinic on at least one subsequent occasion, of whom 56 (19.6%) were diagnosed with chlamydia (Lee et al. 2004).

In addition to screening and testing patients who self-refer, GUM also assumes responsibility for many infected persons referred from other clinical services, such as general practice, family planning clinics, colposcopy and termination of pregnancy clinics.

Screening women in colposcopy yields a high prevalence of infection: in one study an 8.3% prevalence was found with only 25% receiving treatment prior to the introduction of a treatment protocol (Blackwell et al. 2003). Norman and colleagues found only 10% of women who tested positive for chlamydia at antenatal, colposcopy and termination of pregnancy clinics actually attended GUM clinics, despite being referred for treatment (Norman et al. 2004). Other studies that have assessed the uptake of referral to GUM clinics have also found low rates of treatment (Groom et al. 2001; McNulty et al. 2004a; McNulty et al. 2004b; Wilkinson et al. 2000). Having a health adviser in community settings to offer infected persons treatment for their infection has been shown to improve the treatment rates of infected persons (Jones et al. 2002). Few studies have been conducted to assess why the referral rate from non-GUM settings is low; however one found poor factual knowledge about the organisation of GUM services, poor professional contact and perceived barriers for patients, such as stigma, reduced the referral rate (McClean et al. 1995). The efficacy of a screening strategy is limited if those diagnosed with infection are not subsequently treated. Prompt treatment for chlamydia infection is necessary to prevent the spread of infection and preventing the development of complications in individuals, as well as the increased costs to the NHS in treating these complications.

An increase in screening practices in non-GUM clinical settings would increase the workload for GUM clinics; however, some observers have commented that *'currently GUM services in the UK are failing to cope with the increasing workload associated with managing STIs and diagnosed HIV infections'* (Djuretic et al. 2001). This pressure on GUM services (in England) was further highlighted in a House of Commons Health Committee Report on sexual health:

'England is currently witnessing a rapid decline in its sexual health... Sexual health services appear ill-equipped to deal with the crisis that confronts them. Median waiting times to services are currently around 10-12 days and some services are turning hundreds of people away each week'

(House of Commons Health Committee 2003).

This is despite the proposal in the *National Strategy for Sexual Health and HIV*, for England, for a 'broader role' for primary care in sexual health management (Department of Health 2001c).

The apparent 'failure' of GUM clinics 'to cope' suggests that any measure to control population prevalence by increasing attendance at GUM may be limited unless there is an improvement in clinic capacity. In addition to GUM clinic capacity issues, tackling infections within GUM might also be limited by the low level of knowledge young 'at risk'

people have about chlamydia. Data is emerging regarding the poor levels of awareness and knowledge among young people about chlamydia. In one study with GUM clinic attendees 51% of men and 60% of women had heard of chlamydia, with the majority (82%) unaware of the potential consequences of infection (Devonshire et al. 1999). Similar findings were found in another study of GUM clinic attendees (Kellock et al. 1999). Devonshire and colleagues concluded by suggesting that *'acquisition of knowledge is important, both to reduce sexual risk taking behaviour and its consequences, and to allow for informed consent for chlamydia screening programmes'*. These studies were with GUM clinic attendees but there is sparse data on the knowledge of chlamydia among young persons in the wider community; therefore, it is unclear how far poor knowledge acts as a barrier to accessing specialist sexual health settings. Nevertheless, raising awareness about chlamydia has been recognised as an important aspect of any proposed screening programme (Devonshire et al. 1999).

In addition to the problem of encouraging young people to attend GUM services, there is the additional barrier of physical access to such services, especially for persons in rural areas. As such, screening and testing being available outwith GUM clinics is important in Scotland as in some rural areas GUM clinics may be inaccessible – for example, there is no GUM service in West Lothian, a largely rural area of Central Scotland, therefore community-based family planning services are key sites for the introduction of chlamydia screening in that area (Sudlow et al. 2001). In addition, the recommendations of the CMO's Expert Advisory Group, included 'Family planning clinics and general practice are key locations where testing for chlamydia could be undertaken with referral to GUM clinics recommended for partner notification and further management as necessary' (Chief Medical Officer's Expert Advisory Group 1998a). This review now considers screening and testing in other clinical settings.

Family planning and general practice settings

Prevalence studies with family planning clinic populations have all found peak prevalence among women under 25 years of age and a similarly high rate of infection in this age group – ranging from 2.2% to 24.1% (Burstein et al. 1998a; Burstein et al. 1998b; Han et al. 1997). A 2.2% prevalence was found in a family planning clinic in which all women attending were offered opportunistic screening for chlamydia (Han et al. 1997). The highest prevalence was found in younger women (age 13-19, 2.7%). Four clinics were involved in this study and prevalence varied by the clinic setting, which shows that

prevalence varied not just by age but also by location. In another study, consecutive adolescent females aged 12-19 years attending a family clinic were offered screening for chlamydia infection; 24.1% of females received a positive diagnosis at their first visit, with the highest age prevalence found in 14 year olds (Burstein et al. 1998a).

Many studies have included all women attending family planning, rather than those aged under 25 years; however, all have found the highest age prevalence in the younger age groups (Han et al. 1997; Howell et al. 1998; James et al. 1997; Marrazzo et al. 1997b; Miller et al. 2000; Sudlow et al. 2001). Other studies, targeting those aged under 25 have found similar high prevalence of infection. For example, in a study of women attending a large Scottish family planning clinic for emergency contraception, an overall prevalence of 5.5% was found, with the highest age prevalence in women aged 24 or younger (7.6%) – prevalence was 5.3% in women aged 25 to 29 and 1.2% in women aged 30 or more (Kettle et al, 2002). A similar UK-based study found a similar prevalence of infection (8.1%) in women under 25 years (Macmillan et al. 2002). Similarly, Noone et al (2004) in a study of women attending family planning clinics in Glasgow, Edinburgh and Aberdeen found a prevalence of 8.2% in those under 25 years (Noone et al. 2004). The Department of Health pilot chlamydia screening project in Portsmouth and Wirral found prevalence of 9.8% and 10.1%, respectively, in family planning clinics (Department of Health 2001a).

If the Scottish Intercollegiate Guidelines Network (SIGN) guidelines were followed then all women under 25 attending family planning clinics would automatically be offered screening. Opportunistic screening of men was not recommended in the SIGN guidelines as there was limited evidence upon which to base recommendations (Scottish Intercollegiate Guidelines Network 2000a). Unsurprisingly, few screening efforts in family planning have reported offering screening to young men under 25 years. As such, unlike in GUM settings, few young men will be offered the opportunity to be screened for chlamydia in family planning settings. As with GUM settings, family planning relies largely on self-referral. Few men use family planning clinics: in Glasgow, for example, only 107 men used family planning services at the Sandyford Initiative clinic (a sexual health service) in 2002/03 (The Sandyford Initiative 2004).

Despite the low reported attendance at family planning clinics by men, a small number of studies that have offered men screening have shown it is feasible to include men in screening in these settings. In one study 905 women under 20 years and 53 men were screened by urine sample in a young people's family planning clinics in Merseyside,

England, with 5.7% prevalence found in men and 8.5% in women (Harvey et al. 2000). The authors acknowledge that whilst it was feasible to include the young men, there were poor rates of attendance for treatment; in addition, 12.5% of men failed to be informed of their positive result because of subjects' 'priorities changing over a short time' (Harvey et al. 2000). A recent study at a young women's health clinic in the USA introduced a male clinic within the same organisation and assessed the volume of attendance at the clinic (Raine et al. 2004). After one year 110 new male patients had accessed the clinic. In addition, the authors reported that three quarters of young men learned of the clinic by word of mouth. Young women attending this clinic were asked to report in self-completed questionnaires their views on men being included in the clinic: 92% believed their care was similar after the male clinic opened. The authors conclude that more 'in reach' efforts (such as increasing clinic attendance) may be required in addition to outreach (extending services in the community) at family planning clinics to reach young men.

However, those who do not access family planning services will not receive the offer of screening: many young women, especially adolescent women who do not attend for cervical screening or contraception, will not receive the offer of screening unless they attend a primary care setting. In addition, many men will not be reached via control efforts initiated in family planning. As such, other clinical settings, especially general practice, which is used by ~80% of persons under 25 years old at least once per year (Boreham et al. 2003), may be important places in which to offer screening.

The first chlamydia screening study in general practice was in 1983 with women attending for a vaginal examination (Southgate et al. 1983). Since then few men have been targeted for screening in general practice settings. Where men have been included, the prevalence of infection found is lower than in women. In general the prevalence of chlamydia infection varies between 0.9% and 14.3% in UK general practices (Oakeshott et al. 2002a; Pierpoint et al. 2000). Prevalence found depends on the population tested; nevertheless, the highest age prevalence found in general practice has been among those aged under 25 years. Among women, the prevalence found ranges from 2.0% among women aged 17-35 years attending general practice for a smear test (Thomson & Wallace 1994), to 14.3% among early-pregnant teenagers attending general practice for a routine appointment (Oakeshott et al. 2002b). The Department of Health pilot studies in Portsmouth and Wirral found 8.5% and 8.7% prevalence among women attending general practice, respectively (Pimenta et al. 2003a). Among men, the prevalence of infection found ranges from 0.9% among men aged 18-35 years attending their general practice after being invited for

screening (Pierpoint et al. 2000), to 6.2% among men aged 25-29 years whom were offered opportunistic screening when they attended their general practice (Kretzschmar et al. 2001). As with other healthcare settings already discussed, the prevalence of infection in general practice varies by age and gender.

The literature suggests problems exist regarding establishing screening within general practice. Essentially, these setting-related issues result in many people not receiving screening or else many GP attendees over 25 years old (the group less at risk of having chlamydia infection) receiving the most screening. Some women in general practice are offered screening during their 'smear' tests; however this targets older women and excludes young teenagers, therefore, many younger women may not be offered screening in this location. Young men may also be overlooked within general practice. In one study it was found that 54.5% of practice nurses in primary care had never tested men (Robertson & Williams 2005). Of 115 persons under 25 years tested via an opportunistic approach in another general practice-based study, only 6 were men (Harris 2005). At the end of the first year of the roll out of chlamydia screening in England, only 10% of tests conducted came from general practice (LaMontagne et al. 2004). In 2004, the Sandyford Initiative in Glasgow received 1,123 referrals (8% of all referrals)⁸ from general practice, which suggests the low screening rate in general practice in England is not context-specific. Whilst many young people making use of general practice might not be offered screening, many who do not use such settings are also not reached through this opportunistic approach. Thus, many young men and women are not reached via general practice-based screening. As such, and as with GUM and family planning settings, opportunistic screening and testing in many clinic-based settings are limited in their reach. Essentially, it would appear that the 'screening net' is being cast short.

In relation to some of these problems raised above, qualitative work has been carried out to explore the reasons for the variation in testing between practices and what barriers exist for healthcare staff that impinges on the testing rates within practices. Such work has suggested low knowledge among many general practice staff, as well as concerns about testing men have been found to be barriers to effective screening in general practice (Gott et al. 2004; Kinn et al. 2000; McNulty et al. 2004a). Focus group research with members of a primary care team in Southwest England identified barriers to a fuller implementation of screening guidelines, which included lack of knowledge of the benefits of testing, when and how to take specimens, lack of time, worries about discussing sexual health, and lack

⁸ http://www.isdscotland.org/isd/files/sehx_gum_table6.xls

of guidance (McNulty et al. 2004a). Concerns about knowledge of sexual health matters has been reported elsewhere in the literature (Humphrey & Nazareth 2001). A questionnaire survey of 233 practice nurses identified similar barriers, including lack of time, lack of training and concerns about not being able to cope with the issues raised by the patient (Stokes & Mears 2000). Training for doctors and nurses in managing sexual health at both undergraduate and postgraduate levels has also been deemed inadequate (Adler 1998). Many commentators, therefore, argue that general practitioners and practice nurses need more education regarding these issues so that screening in these settings are effective in reaching these clinic attendees and controlling infections which are diagnosed (Gott et al. 2004; Kinn et al. 2000; McNulty et al. 2004a).

Other clinical settings

Youth, or teen, clinics are often cited in the literature as being community settings. For example, in a recent literature review, testing initiatives carried out at school-based health centres (SBHCs) were described as community settings (Ford et al. 2004b). However, as stated in the preface to the thesis, youth clinics as well as clinics attached to schools and universities are, in this thesis, considered clinical settings. Most of the literature on screening in school-based or youth clinic settings stems from the USA. In the UK, some studies have been conducted in youth clinics (Armitage et al. 2004; Clements 1999; James et al. 1999). All of these studies have focused on assessing the feasibility of screening in these settings as well as ascertaining the prevalence of infection among this population. As with many family planning and general practice-based studies, young women consist the majority of youth clinic study populations and remain the focus of screening programmes in these settings.

Studies conducted in adolescent clinics in America have found rates of chlamydia infection ranging from 0.5% to 26.0% (Beck-Sague et al. 1998; Debattista et al. 2002b; Marrazzo et al. 1997a); participants' ages range from 13 to 20 years. Prevalence is highest in those accessing youth services who have symptoms: in one study the prevalence among symptomatic young men and women (screened in school clinics and adolescent clinics) was 26.0% and 10.7%, respectively; in asymptomatic youths the prevalence was 5.3% and 7.6%, respectively (Marrazzo et al. 1997a). In another study, screening was offered to young women who attended adolescent clinics; a 20.7% prevalence of infection was found among those aged 13-20 years (Beck-Sague et al. 1998). This high prevalence is perhaps not entirely unexpected among a population who self-refer to a clinical setting for healthcare. Among young women attending youth clinics for the purpose of a smear test,

or general health care who are asymptomatic, one study found an 11% prevalence among women aged 13-19 years (James et al. 1999). Thus, unlike in studies conducted within general practice settings, there appears to be a consistently high prevalence of infection being diagnosed in youth clinic attendees. This is occurring despite the recommendations the Centres for Disease Control and Prevention (CDC) made in 1993 to screen all sexually active female adolescents (those under 20 years) for chlamydia whenever they undergo a pelvic examination as well as yearly screening for those adolescent females considered at risk.

Screening was offered to teenage girls aged 13-20 years who attended a Birmingham-based (UK) teenage health clinic for contraception, a cervical smear or who were being referred for termination of pregnancy. The overall prevalence of infection was 11% (94/857), with the highest percentage of positive cases among those attending for a cervical smear (34%) followed by those referred for termination of pregnancy (23%). This prevalence may be an underestimate of infection due to the use of ELA tests that are not as sensitive as the newer DNA based tests. No other studies in youth clinics in the UK have been reported in the literature. An outreach health adviser was present in one community teenage health clinic to facilitate treatment of chlamydia infected young women and conduct partner notification (Jones et al. 2002). All 62 women who tested positive (12.9% of those who were screened) received their result and were treated. The authors believed this approach to managing infections 'helps to address the need for alternative management strategies' (Jones et al. 2002).

Studies conducted in youth clinics that have included young men find the prevalence of infection increased with age. The target populations at school-based and youth clinics are mostly under 20 years. The prevalence of infection in young men has been found to increase with age, so that the highest prevalence in men is found in those aged 20-24 years (Low et al. 1997). As such, screening and testing in these youth settings may identify more infections among young women than men. A finding from one study, that attempted to include young men under 20 years in screening in a family planning clinic for young people, was that it was '*difficult to hold their attention long enough to complete the process of treatment and contact tracing*' (Harvey et al. 2000). Barriers to screening in youth clinics therefore appear to be more than access, as engaging young men in screening and maintaining their contact throughout the process of treatment and partner notification would appear to also be problematic.

Screening in schools may yield more infections among women and some commentators have suggested that many of these young women may be engaging in sexual activity with men in sexual networks outwith the school (in other words, older men). In comparison, young men in school-based settings are more likely to be part of school-based sexual networks (Cohen et al. 1999). It would seem then that screening is more cost-effective in these youth settings if screening is targeted at young women. However, this would raise issues regarding responsibility for sexual health and perhaps place the burden of responsibility on young women.

Sequelae argument: why only screen women?

Cost-effective analyses have been conducted to assess the best approach to screening for chlamydia (Adams et al. 2004b; Honey et al. 2002). A review of cost effectiveness studies by Honey et al (2002) found that, depending on the model assumptions, screening females for chlamydia infection could be cost effective under various baseline prevalence estimates, especially when age is used to select women and DNA testing methods are used. Cost effectiveness analyses tend to favour screening women with partner notification (the process of contacting partners of infected persons) attached primarily to curb re-infection, thus preventing possible sequelae in women. Cost savings are made by avoiding complications, such as PID, ectopic pregnancy and infertility. However, the case for there being a definitive link between chlamydial infection of the lower genital tract and subsequent ascension resulting in endometritis, salpingitis, tubo-ovarian abscess or general inflammation of the pelvic organs has yet to be convincingly made.

A systematic review of the literature by Honey and Templeton (2002) attempted to assess the link between chlamydia infection and sequelae such as PID. Before discussing this important paper, a brief outline of PID and other associated sequelae is useful. PID is caused by the ascension of chlamydia infection from the lower genital tract. As infection ascends, the inflammation in the cervix causes cervicitis, which is thought to infect the endometrium, causing endometritis. Following from cervicitis and endometritis, PID is thought to occur. The correlation between PID and chlamydia antibodies links the two in the literature (Washington et al. 1991; Westrom et al. 1991). It is difficult to diagnose PID and it often requires a laparoscopy. Moreover, many women can suffer from a mild asymptomatic form of PID but go on to develop serious consequences. With the impetus towards introducing screening for chlamydia, Honey and Templeton (2002) assessed the evidence for the role of chlamydia infection in PID.

Two randomised control trials (RCT) were identified in the review of papers from 1980 to 2000 (Honey & Templeton 2002). The first, by Scholes et al (1996), targeted women enrolled on a health maintenance organisation (HMO) in western Washington, USA. The aim of the intervention was to screen women according to risk factors (age, number of recent sexual partners) whilst leaving the other group to receive usual care. Of the women in the screened group who were tested for chlamydia (645/1009), 7% (44) tested positive. No figures were available for the usual care group for comparison. The respondents were followed-up 12 months later with a questionnaire within which they were asked to report an episode of PID. After comparing the questionnaires with medical records there were 9 cases of PID among women from the screened group whereas 33 were reported from those who received usual care. The screened group, therefore, had a 56% lower incidence of PID than those in the usual care group. Scholes et al concluded that screening at risk women for chlamydia reduces the incidence of PID.

In the second RCT, women accessing a health care facility for termination of pregnancy were invited to participate in screening (Giertz et al. 1987). Women were randomly selected to be screened for chlamydia or be tested if they developed symptoms post-operatively. Of the screened group 14.2% (41/288) tested positive for chlamydia. The case was made for a link between lower genital tract infection and subsequent risk from upper genital tract inflammation.

However, both studies failed to fully detail the randomisation procedures use to allocate women to their respective groups. Furthermore, Scholes et al did not have consistency in the follow-up procedures for both groups: whilst non-responders in the control group received calls and letters encouraging them to participate, those in the usual care group did not. This study also relied upon the women self reporting incidence of PID. This is problematic as it relies upon not just a similar standard of knowledge between all participants but also a particular level of knowledge about a disease that is usually confirmed with laparoscopy.

Since 2000, no further trials on the topic have been conducted. Thus, there currently exists no significant evidence to suggest that after being infected with chlamydia a woman is at risk from upper genital tract inflammation. Despite this, there is an assumption in current literature that screening for chlamydia is cost-saving as it prevents PID. Evidence from non-RCT studies has also suggested an association between chlamydia infection and

subsequent upper genital tract infection. In a cross-sectional study by Wiesenfeld and colleagues women attending a health clinic and subsequently diagnosed with either chlamydia, gonorrhoea or bacterial vaginosis were enrolled to assess whether lower genital tract infection is associated with subclinical PID (Wiesenfeld et al. 2002). The median age of the cohort was 22 years and most participants reported lower genital tract symptoms. Subclinical PID was found to be present in 13% of the women. The authors found that chlamydia infections were associated with higher rates of subclinical PID, since 27% of women infected with chlamydia were also diagnosed with subclinical PID compared with 11% of those without chlamydia infection. However, the women at greater risk already had an infection of the lower genital tract upon enrolment and, as such, it may not prove useful to extrapolate results to asymptomatic women in the general population.

In another study, Whittington et al suggest a link between second or subsequent chlamydial infections and sequelae (Whittington et al. 2001). Their prospective cohort study aimed to identify factors associated with repeat infections of chlamydia. Young women were enrolled from adolescent medicine clinics in various urban sites of the USA; they were screened for chlamydia and followed-up at 1 month and 4 months after completion of treatment. Of 1,194 young women enrolled, 792 completed the first follow-up. LCR tests on first void urine (i.e. the first part of the stream) were performed at the first follow-up which showed 50 of 792 (6.3%) had chlamydial infection. A total of 505 women (68.1%) returned for a second visit. Rates of chlamydia among this group using LCR urine tests was 36 (7.1%) of the 505 women. Overall, 13.4% of women had repeat infections of uncomplicated chlamydia – or 1 in 7 women remained infected or became re-infected. The low numbers of eligible women returning for each visit is problematic with this study and questions the validity of the rates of persistent/re-infection. Definitive determinants of recurrent infection were not conclusively identified with this study. This allows for questions to be raised over the suggested link between chlamydia and sequelae such as PID as the implication of the pathogen remain unclear. Indeed, one recent commentator suggests that despite massive reductions in PID and ectopic pregnancy cases corresponding with decreases in the prevalence of chlamydia infection concomitant with a national chlamydia screening programme in Sweden, it is too early to definitively conclude that screening activities were the cause (Mardh 2002). More research is required to assess the possibility of a link between recurrent infections and sequelae such as PID. This therefore, has implications for cost-analyses of the benefits of screening, especially the targeting of women.

Barriers to the effectiveness of clinic-based approaches

The preceding sections have outlined the prevalence of chlamydia infection found in various clinical settings. The prevalence varies by setting and also by the age and gender of those screened. The data consistently suggests that young people aged under 25 years are at greatest risk of having chlamydia. However, data suggests that not all clinic settings are effectively reaching young asymptomatic at-risk persons. For example, in general practice there are barriers such as screening practices and the knowledge and confidence of healthcare professionals to screen young persons for chlamydia when they access general practice for non-sexual healthcare related matters. It has also been suggested that only around 10% of prevalent infections are diagnosed in GUM settings in the UK (Chief Medical Officer's Expert Advisory Group 1998b; Simms et al. 1997). In a supporting paper accompanying the publication of the draft Scottish sexual health strategy, other barriers to the effectiveness of opportunistic screening in clinical settings are discussed (Scottish Executive 2003b).

The Scott Porter review in 2002 identified accessibility as an important issue for sexual and reproductive health services (Butler & Solomon 2002). Other research also suggests that location is an important factor associated with service uptake (Allaby 1995; Clements et al. 1999). Although there may be a wide range of services (and in different settings) available, they may not always be accessible to those who need the service. For example, opening times, geographical locations and premises could impact negatively on service uptake (Scottish Executive 2003b). Research has also suggested that staff attitudes, knowledge of young persons' rights and user perception of how confidentiality is dealt with are important factors associated with young people accessing services (Burack 2000). This supports the findings of the review of sexual health services in Scotland (Butler & Solomon 2002). Young people being offered a choice of gender of staff may be factors encouraging increasing attendances (Armitage et al. 2004). Stigma associated with GUM clinic attendance has also been reported in the literature as an important barrier to accessing screening (Cunningham et al. 2002; Fortenberry et al. 2002; Scoular et al. 2001b). A further barrier to accessing sexual and reproductive services among young people may also be related to levels of knowledge about STIs. The chapter previously discussed the poor levels of knowledge of chlamydia among GUM and also family planning clinic attendees (Devonshire et al. 1999; Kellock et al. 1999; Piercy et al. 2000). Survey work with school children, aged 13-16 years, has also revealed a poor awareness of chlamydia and, among those who had heard of it, a 'superficial knowledge' (Garside et al. 2001). Garside et al (2001) found that few respondents were aware of the existence of

special services for STIs. These barriers to accessing clinical settings could be significant enough to limit the effectiveness of clinic-control efforts. As such, 'innovative approaches' to target both men and women have been advocated in the government's White Paper *Choosing Health*, so that screening reaches those whom clinic-control efforts currently 'miss' (Department of Health 2001b).

Screening in 'innovative' non-medical settings could be an additional strategy for the control of chlamydial infection among difficult-to-reach populations. However, offering screening in non-medical settings is a recent approach to STI control since it has primarily been since the introduction of urine-based tests that this approach has become more feasible. There may be specific setting-related issues in non-medical settings that require further exploration before they can be recommended as a useful approach to controlling chlamydia prevalence. The next section of the chapter now considers key issues pertaining to screening in non-medical settings (including postal approaches) that might affect the design and, ultimately, the feasibility of this approach.

Non-medical settings

The introduction of tests that can be performed on urine samples has been a pivotal development in the field of chlamydia research as it allows for the possibility of taking testing beyond traditional clinic-based settings, providing an important opportunity to develop screening strategies targeting those at risk who seldom, or never, access primary care or GUM settings. The introduction of these newer DNA-based tests in the mid-1990s means that testing in non-medical settings has become possible in the last decade. A variety of non-clinical settings are cited in the literature, in which chlamydia screening has been offered. Some of these settings have included: military barracks, detention centres, bars; and field settings such as parks and street corners.

Setting-specific issues as well as participation rates, the success of notifying infected persons their results and them receiving treatment have been reported as key issues in the literature concerning screening in non-medical settings. These issues are less commonly cited in studies within clinic-based settings, as there is a different infrastructure in place, such as contact information for patients. This part of the chapter considers these issues in relation to work undertaken in non-medical settings. Some research suggests that,

certainly with effort, infected persons can be successfully treated and partner notification undertaken in non-medical settings.

Since many non-medical screening studies have used convenience sampling, with little baseline information collected on the potential screening population, it is often difficult for participation rates to be reported. Despite this, participation rates in non-medical screening studies have been reported in two ways: firstly, some have reported the proportion of those approached who were tested; and secondly, other studies report the time taken to recruit participants. When researchers have estimated the proportion of those approached who provided a sample for testing, participation ranges from 14% (Gunn et al. 1998) (peer outreach workers approaching adolescents in non-facility settings, such as parks, athletic fields and street corners) to 100%, (McKay et al. 2003) (new recruits to a military barracks). Similar studies report participation to be high: 87% accepted the offer of screening at a further education college (Low et al. 2003) and 60% of men provided samples when approached at a university sports arena (Powell et al. 2005).

In other studies, the time taken to recruit samples was given. In one study by Jones et al (2000) 31 events were held at various non-medical settings in Missouri, USA, such as homeless shelters, soup kitchens and bars, during which presentations were made or tables were set-up and passers-by were recruited (resulting in an average 3.2 hours per screening session). In all, 277 men and women participated (40.8% were male) by providing a urine sample. Outreach workers in a study conducted in Quebec City, Canada were able to test 626 men and women in 6 months (Poulin et al. 2001); in another 31 samples were collected over a 6-week period as the result of a mass media campaign to encourage care-seeking behaviour (Oh et al. 2002). A study similar to that of Poulin and colleagues took 20 months to test 486 young men from facility and field settings in Denver, Colorado (Rietmeijer et al. 1997). The highest participation rates appear to occur when there are staff present to encourage testing uptake and provide further information. In addition, military settings achieve a high participation. This, in part, may be due to the testing being offered as part of the entrance medical examination, during which a sample of urine is provided (Gaydos et al. 1998; Lechner et al. 2002; McKay et al. 2003; Shafer et al. 1993).

Some studies using non-medical settings have also gathered background data on respondents in the field settings. In one study, peer educators were trained to approach young men and women in informal field sites where youths “hang out”, such as parks, street corners and car parks, but also in facilities (such as community/recreation centres),

as part of the Denver Public Health Youth in Action programme (Rietmeijer et al. 1997). Surveys were conducted at the same time and 77% of questionnaires were completed during 486 'screening encounters'⁹. Data such as demographic variables, risk factors and condom use were collected from 376 young men. The authors found that the young men who agreed to provide a urine sample for testing in the field settings, compared with those who gave a sample in facility settings in the study, reported significantly more risk factors for infection, which included: had vaginal sex in the past 30 days, currently dating and number of sexual partners in the past 6 months. The prevalence of infection from field participants was significantly higher than that of facility recruited participants (11.9% compared with 4.4%, respectively).

In a similar study, also conducted in the USA, a brief questionnaire was completed by all participants in settings such as shelters, residence facilities, soup kitchens and bars (Jones et al. 2000). The brief survey elicited demographic data, symptom status, sexual history and written consent. A total of 277 persons were screened at 31 events at 20 different community-based sites. The mean number of reported sexual partners in the last three months was 2, and 69.5% of respondents reported they did not use a condom at last intercourse. Younger age was associated with infection status, with 13.6% of people age 24 or younger infected compared to a 6.1% prevalence overall. However, gender, race, symptom status, and condom use at last intercourse or number of sexual partners in the past three months did not correlate with likelihood of infection.

Few other studies have gathered such information on risk factors; therefore, it is difficult to determine to what extent the 'worried well' are participating in non-medical screening. That a high prevalence of infection is found in asymptomatic hard-to-reach groups of youths suggests that it is not the 'worried well' that are participating.

The prevalence of chlamydia infection found in non-medical settings, among those tested, varies by gender. Among women the prevalence ranges from 3.6% to 28.3% (Jones et al. 2000; Klausner et al. 2001; Oh et al. 1998; Poulin et al. 2001; Stock et al. 2001); among men 1% to 9.8% (Gunn et al. 1998; Jones et al. 2000; Low et al. 2003; McKay et al. 2003; Oh et al. 1998; Poulin et al. 2001; Powell et al. 2005; Rietmeijer et al. 1997; Stock et al. 2001). In addition, multi-site testing studies have shown that the prevalence of infection varies by setting (Jones et al. 2000; Marrazzo et al. 1997a; Rietmeijer et al. 1997; Shafer et al. 1993). In addition to gender and setting, age is also a factor affecting the prevalence of

⁹ A phrase used by the authors to refer to the time spent approaching youths in field settings.

infection detected in testing. Studies testing asymptomatic people in non-medical settings consistently find higher prevalence in the younger age groups, specifically those aged under 20 years.

Notifying persons diagnosed as positive for chlamydia infection poses particular concerns for a non-medical control approach. If young people are approached in settings where there is no access to their contact information then participants would either need to call a number to obtain their result or such information would need to be obtained from the individuals within the setting so that participants could be contacted with their result. Thus, many studies have relied on either requesting participants call for their test results or obtaining contact information at the time the sample is obtained. Of these two approaches, notification appears to be most successful when contact information is provided at the time of screening. In one study, with men who have sex with men (MSM), only 19% of participants who provided a sample, and 22% of those testing positive, contacted the clinic within 6 weeks of the initial contact at the entertainment venues (Debattista et al. 2002a). Other studies, which have collected contact information at the time of testing, report much higher notification of results: in one study those who tested positive were contacted by clinic staff via the contact information given at the time of screening and 100% of people testing positive were contacted (Jones et al. 2002). In similar field based studies 95% of street workers were notified (Poulin et al. 2001) and 97% of young men testing positive were contacted (Rietmeijer et al. 1997) by study staff. In another more recent study, young men were contacted with their results via mobile telephone or by e-mail and all received their results, with 70% choosing to be contacted via mobile telephone (Powell et al. 2005). Thus, obtaining contact information at the time the sample is provided is an important part of any non-medical screening strategy. However, the utility of any chlamydia screening programme lies not solely in identifying infected persons and notifying results, it is crucial to the control of infection that infected persons are also treated.

Most non-medical screening approaches have reported high treatment rates: 97% of persons were treated in an average of 8 days with directly observed therapy in Denver (Rietmeijer et al. 1997), 91.7% were successfully treated in another (Jones et al. 2000), and 100% of infected persons were successfully treated in another study (Gunn et al. 1998). These studies involved opportunistically approaching youths in parks, street corners and other outdoor settings and offered treatment in the field. In one such study, respondents who tested positive for a STI at a mobile clinic were requested to attend a clinic for treatment and 90% were treated (Kahn et al. 2003). Although such studies report a high

percentage of respondents receiving treatment after participating in a community approach to screening, there is variation in the time taken between notification of results and treatment noted in the literature. Three studies in the literature report the testing-to-treatment interval (Rietmeijer et al. 1997). Of these, the shortest times were associated with treatment being provided in the field (Rietmeijer et al. 1997), when test results were faxed to respondents' doctors (Jones et al. 2000), and the length of stay at a juvenile detention centre (Oh et al. 1998). Clearly, these emerging data suggest that ensuring respondents receive treatment is an important consideration in the design of a screening approach. Treatment of potentially infected partners is also a key consideration in the literature and raises methodological questions for non-medical approaches to chlamydia screening.

Partner notification is the process of contacting partners of infected persons and advising them they may have been exposed to an infection and to urgently seek medical attention. Partner notification was recognised as important in STI prevention in 1942 in the UK, under Defence Regulation 33B (Cowan et al. 1996). This health regulation was repealed in 1947. In 1968 the first official document to outline the partner contact process, the National Health Service [Venereal Disease] Regulations, was published, which was superseded in 1974. These regulations are still in place today. In the UK, Health Advisers who are attached to GUM clinics undertake the majority of partner notification. The theory behind partner contact is that pre-and-asymptomatic infections can be identified and treated, thereby preventing the unknowing onwards transmission of infection, and therefore interrupting the chain of transmission. When patients at GUM settings are diagnosed with an infection, they are counselled on the availability of partner notification during their treatment.

Few non-medical screening studies report the number of contacts traced or describe the strategy in place to contact partners of infected individuals. However, in those where information has been reported, a high number of infected persons are counselled on partner notification, with many partners successfully contacted and treated. In one study, despite young men being recruited from parks, alleys and street corners, 75% of the partners of infected male youths were contacted and treated (Gunn et al. 1998). In a population study with postal testing, the partners of women with positive chlamydia tests diagnosed in GP clinic settings were contacted by two methods to assess the most effective method (Andersen et al. 1998). Women in the intervention group were supplied with a home urine test kit to give to their partners (to be analysed subsequently with the PCR method); in the

control group women were asked to provide their partners with an envelope, in which a request to seek treatment at a clinic was made. In the intervention group, 68% of partners were contacted, compared with 28% in the control group. Furthermore, there was a trend for the partners of women in the intervention group to be tested earlier than those in the control group (mean delay time 12.7 days compared with 17.7 days, respectively).

Simms et al suggest that diagnosis is not a valid outcome measure to evaluate sexual health intervention: if patients identified with infection are not treated then they are lost to follow-up, which in turn results in poor rates of partner notification, increased likelihood of further transmission, reduction in the impact of testing on incidence, and increased risk of complications, especially in women (Simms et al. 2001). Treatment and contact tracing is a fundamental part of a screening strategy if it is to be effective in controlling, and ultimately reducing, incidence, and possibly the associated sequelae.

Home testing

Whilst opportunistic approaches to screening primarily target subpopulations, such as clinic attendees and those found using non-medical facilities, population-based approaches have been evaluated as an alternative strategy of controlling transmission of infection. However, few population based systematic screening programmes have been carried out and attempts to validate selective screening criteria have shown poor performance (Macleod et al. 2005b).

Postal testing is the most commonly cited population level approach in the literature. Postal testing has been used as one approach to target populations who do not access specific sites, even non-medical settings. Postal approaches have been made possible due to the introduction of urine-based testing. A number of large-scale studies have utilised a postal approach to screening, such as the large feasibility surveys in the Netherlands, as well as other cross sectional surveys, such as the UK ClaSS study in Bristol (Macleod et al. 2005c; van Bergen et al. 2005). Postal testing has been used to assess prevalence, the willingness to accept the offer of screening via this method, the effectiveness in screening partners of chlamydia infected persons as well as a method of re-screening (Kjaer et al. 2000). The prevalence of infection found in these studies among young men ranges from 1.2% in male undergraduates (Rogstad et al. 2001), to 7.8% from screening that was initiated through advertisements in the media (Andersen et al. 2001); in females, the prevalence of infection found using mailed specimens ranges from 2.5% in a cross

sectional study in the Netherlands (van Bergen et al. 2005) to 14.0% in a pharmacy initiated postal testing approach (van Bergen et al. 2004). The highest age prevalence was in men and women aged under 25 years.

Many postal prevalence studies have relied on recruitment strategies linked to, or based in, clinical settings, for example initiated through GP lists (Low et al. 2004). This has affected the population reached, as firstly these studies have shown varying percentages of 'ghost' addresses, and secondly some 'at risk' persons may not be registered with a GP, such as homeless youth, student populations and those from lower socio-economic backgrounds. The ClaSS study in Bristol achieved a 22.2% uptake among the 16-24 age group after the first postal invitation; however uptake was lower in men in this age group than women, with 18.9% of men compared with 25.3% of women responding to screening by mailing a sample (Macleod et al. 2005a). Other postal studies have been initiated from pharmacies. In one study, 'hard-to-reach' young women who attended their health-centre pharmacy to collect contraceptive prescriptions were opportunistically offered screening by taking a postal kit home with them (van Bergen et al. 2004). In this study, 73% of the women (aged 15-29 years), when offered, did not provide a sample for chlamydia testing. Postal testing relies on motivation for care, knowledge of the importance of screening and self-efficacy. Perhaps, in part, this might explain the low uptake in this setting. Uptake in population-based approached which use postal specimens has been said to achieve '*limited coverage..and [risks] missing those potentially at most risk*' (Lewis 2005).

The second British National Survey of Sexual Attitudes and Lifestyles (Natsal), which was conducted between May 1999 and February 2001, incorporated urinary chlamydia testing with a stratified cluster of 5026 respondents ages between 18 and 44 years (Fenton et al. 2001c). Chlamydia was found in 2.2% of men and 1.5% of women. From interview data with 36 respondents to assess the acceptability of the screening, understanding the test, trust and rapport with the interviewer and whether someone else was present at the time were all found to be associated with willingness to provide a sample for testing (Fenton et al. 2001a). Moreover, the behavioural data collected as part of the Natsal indicated that those who provided samples were found to be at somewhat greater risk of infection on average than those who declined to provide a sample (McCadden et al. 2005).

Whilst the uptake of urine-based chlamydia screening was high as part of the second Natsal, in another study the uptake was low. Between 2002-2004 the Men's Health Forum initiated a study to assess the feasibility of offering men screening for chlamydia by

collecting a 'kit' from colleges and workplaces (The Men's Health Forum 2005). Men at the participating settings in England could collect a kit from a toilet or other 'male-only' area, take it home and supply a sample of urine for postage to a laboratory. Posters and leaflets were distributed in the settings one week prior to the availability of the testing kits, to draw attention to the study. The participation rates were estimated based on those eligible for testing, and number of kits taken from the venue. In the college setting 100 kits were removed and 41 samples (41%) were returned to the laboratory; in the workplace settings 2,359 kits were taken and 285 (12.1%) returned to the laboratory. The prevalence of infection was only reported for the workplace settings (1%), with a 3.4% prevalence found in men under 30 years. In contrast to the Healthy Respect project (described in Chapter 1¹⁰), 77% of kits were used by men. As such, and in contrast to Natsal 2000, that no person was present to motivate young men to seek testing may have been a factor affecting the low uptake of screening in this study. Recent research suggests that single recruiter approaching individuals is less effective at recruiting young people into screening (Ivaz et al. 2006).

As with all research, bias can influence the results of postal surveys. If core 'at risk' groups are under or over-represented then this will impact on results. Postal testing is often initiated from GP lists, so those who are not on lists or who do not access a pharmacy are not included (Bates & Rogstad 2000). This potentially adds bias to such studies as they may be under or over-representing at risk 'core' groups, which will affect results and make it difficult to extrapolate to the general population.

Other non-medical settings

With regards to other non-medical settings, screening has been offered to new male and female military recruits, with a high prevalence of infection found – ranging from 2.7% to 15% (Brodine et al. 1998; Fioravante et al. 2005; Gaydos et al. 1998; Lechner et al. 2002; McKay et al. 2003; Shafer et al. 1993; Stary et al. 1996). Screening of female recruits has revealed a high prevalence of infection, ranging from 2.7% to 15.0% (Brodine et al. 1998; Lechner et al. 2002); in men 3.4% to 11.0% (Brodine et al. 1998; Lechner et al. 2002). A high percentage of these recruits were asymptomatic, for example, in one recent study with 798 male military recruits who were screened as part of their routine medical examination, 9.8% were infected with chlamydia and 88% were asymptomatic (McKay et al. 2003). Re-

¹⁰ Healthy Respect is a Scottish Executive funded Demonstration project, within which chlamydia screening has been piloted at further education colleges in Lothian, Scotland. Postal testing kits have also been made available in High Street stores, such as Boot and Fopp, which persons can take home, provide a urine sample and post themselves to a laboratory for testing.

infections have also been assessed, with a high rate of re-infections found in one population of military recruits: of 11, 771 initially diagnosed with chlamydia, 879 became re-infected within the four year study period (or until they ceased service) (Barnett & Brundage 2001).

Screening has also been offered to juveniles in young offenders institutions in the UK and USA (David & Tang 2003; Mrus et al. 2001; Oh et al. 1998; Pack et al. 2000). A high rate of infection has been found in these settings of between 8.8% and 28.3% (Oh et al. 1998). Chlamydia prevalence among male detained youth under 20 years of age has ranged from 8.8% to 12.4%, which is as high as the prevalence found in GUM settings (David & Tang 2003; Oh et al. 1998). The high rates of infection found in both female and male detained youth suggest an urgent need to detect and successfully treat these infections before the youths are released and possibly spread the infection. The high risk sexual behaviour reported by many respondents suggests that further transmission is a significant possibility (David & Tang 2003). Indeed, David and Tang (2003) suggest detained youth populations bear similarities with young male GUM populations, with regards to prevalence of infection detected, high risk reported sexual behaviour and previous history of STIs.

There are, however, setting specific issues with screening for chlamydia in young offenders institutions: transfers and court cases often become problematic for successful treatment, partner notification and follow-up. In addition, confidentiality is not always possible during partner notification sessions due to the presence of a guard (David & Tang 2003). Nevertheless, a high rate of asymptomatic infection has been found among incarcerated youth: Pack et al (2000) found 84% of persons testing positive for chlamydia were asymptomatic. A self administered survey was conducted with 87 male youths in one study to assess the level of knowledge of chlamydia and the factors associated with a reported willingness to be screened for chlamydia (Blake et al. 2003a). Forty-one per cent thought it was possible to die from chlamydia but 90% were willing to be tested for chlamydia using a urine test. The authors concluded that dispelling the myths and providing young people with more information about chlamydia may be necessary to motivate male youth to seek testing.(Blake et al. 2003a) In a similar study, the authors also suggested that education and community services are necessary to break the cycle of infection for this high-risk population (Kelly et al.).

Chlamydia screening has also been offered to student populations; the prevalence found among young males tested in college or university settings varies from 2.2% to 8.4% (Lee

et al. 2005; Stock et al. 2001); in women the prevalence ranges from 2.2% to 10.6% (ka et al. 2005; Lee et al. 2005). The method of approaching students and inviting them to participate in screening differs. Some studies have contacted students by mail and offered them screening by attending a lab or clinic facility to provide a sample of urine for testing (Stock et al. 2001). Others have offered health promotion sessions in further education colleges followed by screening (Low et al. 2003). In the study by Low et al (2003) only those who attended the sessions were offered screening; therefore those who lacked the motivation or understanding to attend the health promotion event were not reached; however, the 9.2% prevalence found by Low and colleagues may suggest that those who considered themselves to be at risk of infection did in fact attend the events. With no information collected on non-attenders, this remains conjecture. Postal initiated testing with male undergraduates yielded a 29.1% uptake in another study (Rogstad et al. 2001). In contrast, a large community programme, which involved 158 sites, including further education colleges and universities (n=16), in which young men and women were approached in each setting and offered opportunistic screening, reported a high uptake of screening in the educational settings (Bauer et al. 2004). Bauer et al also reported a high treatment rate of 93.8%, with an atypically higher prevalence of infection found in young men (4.8% compared with 3.6% for women).

Summary

‘Innovative’ approaches to offering screening have been suggested (Department of Health 2001b). The review of chlamydia screening discussed the potential for clinic-control efforts to be ineffective in reducing and/or eradicating chlamydia. Various barriers to the effectiveness of opportunistic approaches and population-based approaches were discussed including accessibility, knowledge and the extent to which various approaches effectively reach at-risk persons. Offering screening to key at-risk groups, such as those under 25 years in clinical settings, will obtain a large coverage. GUM and family planning clinics as well as general practice have detected a high prevalence of infection among persons under 25 years. Despite this, there will inevitably be those who are ‘missed’, whether this is due to their lack of care-seeking behaviour, poor access to services by virtue of geography or not receiving the offer of screening when attending health care settings. Given the weight of focus of screening upon women, many of these persons could be young men.

The CMO’s Expert Advisory Group acknowledged that the lack of evidence on the effectiveness of screening in heterosexual men, male attitudes about reproductive health,

and the difficulty in accessing young men influenced their recommendations on screening (Fenton 2000). Young men especially are widely believed to be an intractably difficult group to reach and engage. However, the results of research using non-medical settings and outreach strategies have shown that young men are contactable and it is feasible to offer them screening via alternative routes. Some of this work has required flexible approaches to engaging with young men and women, who may never have heard of chlamydia, or at least have a poor knowledge about the need for prompt testing and treatment to reduce the possibility of developing complications and spreading asymptomatic infection. Nevertheless, emerging findings are promising and suggest that there is willingness among these 'hard-to-reach' groups and that more 'innovative' methods are feasible.

There is still, however, a lack of data on young men and women's views towards screening being offered in non-medical settings, especially young men's. Qualitative work has largely been conducted with female GUM clinic attenders. These study populations may have different views and needs than their female peers who may not access GUM clinics. Neither might the views of women be extrapolated to those of young men. Whilst continuing to assess the best method, approach and setting in which to offer screening is important to strengthen the evidence-base, there is also a strong case to obtain young men and women's views regarding the actual experience of being offered screening in non-medical settings.

This study aims to establish screening in various non-medical settings. The views of young men and women were also obtained to contextualise the uptake of screening and assess the barriers and supports to screening in the study settings. Understanding young people's care-seeking behaviour, willingness to participate in chlamydia screening, as well as their views towards screening could be crucial to the design and ultimately success of screening approaches. The next chapter outlines the methodology and methods chosen for this study as well as a description of establishing screening in the pilot setting and the approach made to the non-medical settings for the purpose of establishing the main study settings.

Chapter 3

The Research Methods

This study was designed as a mixed-methods study, using both quantitative and qualitative methods. The chapter gives an account of the choice of methods within a discussion of their appropriateness for use in sensitive research. The chapter then goes on to outline the reasons for choosing the fieldwork settings and method of data collection. The ethical considerations this study raised are discussed, including the importance of informed consent. In addition, throughout this chapter a consideration of the implications of the sensitive nature of this research is discussed in relation to all aspects of design, implementation and analysis.

Aims and research questions

Although screening for chlamydia is currently offered in a variety of healthcare settings, a large number of young at-risk persons may not receive testing or screening. The previous chapters outlined barriers to clinic-based approaches, including problems with access. How best to establish screening in non-medical settings remains unclear as the data available in the literature is limited. However, the current climate supports more innovative approaches to offering screening to those persons at risk but currently not receiving the offer of screening. The purpose of this study was to assess how feasible it would be to establish chlamydia screening in non-medical settings and, if successful, to assess how willing young men and women would be to accept the offer of screening in these settings by providing a urine sample.

The main aims of the study were to determine the feasibility of offering testing for chlamydia in non-medical contexts; to assess the relative willingness to be tested for chlamydia in non-medical settings; and, ascertain the knowledge and understanding of chlamydia on the part of young men and women.

The study examined the following research questions:

- Is offering chlamydia testing in specific non-medical settings feasible, in relation to access to settings and ease with which participants can provide a sample in non-clinical locations?

- What proportion of young men and women, in each study setting, accept the offer of a chlamydia test (by urine sample)?
- What is the extent of young men and women's knowledge of chlamydia?
- What are young people's views towards chlamydia screening being offered in non-medical settings?

Methodology

The design of this study was driven by the research questions. As such, the methodology and methods employed in this study were arrived at via a pragmatic decision-making course. The pragmatic approach considers the research question to be more important than either the method or the worldview that is supposed to underlie the method; in other words, such an approach uses "what works" (Howe 1988). As Howe (1988) explains:

'...why should paradigms determine the kind of work one may do with inquiry any more than the amount of illumination should determine where one may conduct a search? ...Eschewing this kind of "tyranny of method" (Bernstein, 1983) – of the epistemological over the practical, of the conceptual over the empirical – is the hallmark of pragmatic philosophy.' (p.13)

Part of employing this process in this study included considering the use of both quantitative and qualitative methodologies as being appropriate for use in this study. Prior to the emergence of a pragmatically oriented methodology, two dominant social science paradigms or models vied for superior position. The quantitative-qualitative debate, or 'paradigm wars', in social science research, which came to prominence in the 1960s is often described as centring on the different theoretical, ontological, epistemological and logical underpinnings of each paradigm (Bryman, 1988). Each research method is based on a particular paradigm, a patterned set of assumptions concerning reality (ontology), knowledge of that reality (epistemology), and the particular ways of knowing that reality (methodology). Rich and Ginsburg (1999), however, argue that the presentation of quantitative and qualitative research being diametrically opposed is artificial. This position underlies a general debate in the methodology literature about combining approaches (Tashakkori & Teddlie 1998). Essentially, despite the apparent polarised epistemological positions of quantitative and qualitative approaches, there is now support for combining quantitative and qualitative methods in research (Bryman, 1988). Combining methods can capitalise on the strengths of each approach whilst at the same time compensate for the weaknesses of each: as Punch (1998:243) suggests, combining approaches can often increase the '*scope, depth and power of research*'.

This study used a combined methodology. The aims were to assess the feasibility of offering chlamydia screening in various non-medical settings and it was felt important to attempt both breadth and depth, as Punch (1998) has argued. In the first instance, it was important to gain a broad profile of the individuals in each of the three settings, the percentage willing to provide a sample and their general views of the appropriateness or otherwise of the settings. Additionally, it was recognised that in public areas individuals may not feel comfortable to discuss in any depth their views towards chlamydia screening being offered in various non-medical settings, the relevant aspects of their sexual history and reasons for being willing or otherwise to provide a urine sample for chlamydia testing. Studies of sexual behaviour have often used a mixed method approach because assessing sexual behaviour can be challenging due to its sensitive and private nature, as well as the complex interplay of factors that produce individual behaviour (Fenton et al. 2001b; Rich & Ginsburg 1999). Thus, following examples such as Natsal (Johnson et al. 1994), which employed a multi-method approach, it was felt that the different research questions could be answered using the appropriate quantitative and qualitative methodology.

A quantitative approach was considered useful in this study as the type of data required in this study permits the use of predetermined categories of measurement using closed questioning. Questions could therefore be collected in a standardised way that would permit comparisons both between and within the settings. Some commentary made about the relative strengths and weaknesses of the different settings could be made. Although this study was exploratory in essence, due to a lack of existing data on the topic, and was therefore bereft of hypotheses, a quantitative approach would nonetheless prove useful in this study in a variety of ways. Firstly, obtaining numerical data, or quantifying the data, would permit setting comparisons across settings as well as quantifying factors which are associated with willingness to be screened for chlamydia, such as sexual lifestyles. In essence, using a quantitative approach for the purpose of describing participants could then say something about the type of individual such an approach to screening could reach. Secondly, data collected using quantitative methods are mostly analysed using statistical analysis. The resultant data is used to make deductive generalisations about a phenomena (Sarantakos 1998).

Whilst it was an objective of this study to compare views across and within the settings, there was also a concern to gain a deeper understanding of the effect the settings may have upon individuals and how beliefs about behaviour, knowledge and screening could affect individuals' participation in the offer of screening in these non-medical settings. The study

was specifically concerned to gain a deeper understanding of young people's sexual lifestyles, attitudes and views towards screening and a qualitative approach would allow for such data to be collected. Obtaining this data from respondents is an important route to considering the meanings that the young people placed on the request for screening in non-medical settings. What information that does exist has involved from GUM attendees, women, and men who have sex with men (Duncan et al. 2001b; Lambert et al. 2005; Scoular et al. 2001b). By exploring with men and women factors associated with their participation (or not), the study would result in important findings that could bolster the evidence-base. A key feature of qualitative research is that it seeks to '*study...the social world...from the point-of-view of those being studied*' (Bryman, 1988: 46). Using a qualitative approach in this study would therefore complement the quantitative data.

Recent studies that have utilised a combined approach include those that are primarily concerned with assessing the most appropriate method to understand sexual behaviour (Plummer et al. 2004); those exploring the best method to gain reliable and valid data on sexual behaviour (see for example, (Coxon 1999; Plummer et al. 2004); (Copas et al. 2002; Johnson et al. 2001a); and, prevalence and attitudinal studies with various populations (Bachmann et al. 2003; Burstein et al. 2001; Johnson et al. 2001b).

The most common approach to mixing methods is the triangulation design, which is '*to obtain different but complementary data on the same topic*' (Morse, 1991, p. 122) to best understand the research problem. Triangulation design brings together the strengths and weaknesses of quantitative and qualitative methods. Combining methods can either enable a comparison of findings, such as statistical results with qualitative findings, or expand quantitative results with qualitative data.

According to Creswell (1998), triangulation design has four variants: the convergence model, the data transformation model, the validating quantitative data model, and the multilevel model (as described by Tashakkori and Teddlie, 1998) (Creswell 1998). The differences between each of these variants rest upon firstly, how the data is collected, secondly, the reason for the particular process of data collection, and thirdly, how the data is then treated. In this study, the convergence method was used. This more traditional model of combining methods involves collecting and analysing data on the same phenomenon separately then converging the results during the interpretation. The analysis of study data collected from both approaches would be conducted separately and then

brought together during the interpretation phase. More detail regarding the analysis of data will be given later in this chapter.

Regarding the timing, or sequence, of the data collection in this study, a concurrent rather than a sequential approach would be the most pragmatic choice since the study involved recruitment from various field settings in which both types of data would be collected. The weighting of each method in a mixed method design can vary: either quantitative or qualitative data can be accorded relative priority or importance or both can be accorded equal status. Both quantitative and qualitative data would be used in this study to draw conclusions about the research questions, and both were given equal status in this study. In other words, where as in some studies a qualitative approach is used to inform the development of a quantitative approach, or vice versa, this study accorded each approach equal status for the purpose of exploring a phenomenon (Tashakkori & Teddlie 1998).

Gathering the data

The methods literature acknowledges the difficulties with studies of sexual behaviour and this was borne in mind when the study methods were designed. Both the quantitative survey and qualitative interview were chosen for use in this study. The decision to employ participant observation techniques during data collection in each of the study settings was as a consequence of conducting the pilot. This finding as well as the development of these instruments will now be outlined in this section of the chapter.

Choosing and developing the survey

For reasons of practicality as well as methodology, the SAQ was considered the most appropriate method to use in this study. Self administered questionnaires (SAQ) are a commonly used method of eliciting information on sexual behaviours. SAQ have been used in large-scale probability sample surveys, such Natsal 1990 and 2000 and the USA-based National Health and Social Life Survey (Couper & Stinson 1999) and state-wide cross-sectional survey (Torkko et al. 2000), as well as in smaller surveys using convenience sampling (Shafer et al. 1993; Slonim et al. 2005). The SAQ was used in this study as it would allow for the collection of standardised information in a way that would enhance privacy for respondents, and also encourage participation in this potentially sensitive study.

Further reasons for using SAQ in this study include the higher response rate than mailed questionnaires (Oppenheim 1992; Robson 1993), in part due to the positive influence researchers can have upon respondents' motivation to participate in the survey, by conveying the importance of the study, the 'legitimacy', as well as encouraging hesitant respondents (Arber 1993). Given the emerging evidence from the literature regarding the poor knowledge of chlamydia among young people, the presence of a researcher to motivate respondents to participate could be important to successful uptake; therefore SAQs were chosen.

It was decided that the pen and paper (P&P) method of SAQs would be the most appropriate for use in this study. Although other, more newer methods, such as internet-administered and CASI, also enhance privacy, there were issues specific to this study such as time limitations, costs and lack of availability of computer software which precluded their use in this study. The study was not designed as a postal study. Instead, respondents would be approached in each setting and asked to participate in the study by completing a questionnaire and provide a sample for testing (they could choose not to provide a sample and remain in the study – more of which shall be detailed later in the chapter).

The questionnaire was developed to assess a range of aspects including knowledge, beliefs, views and experiences (see Appendix 3). When developing the questionnaire, it was borne in mind that it would be administered at the same time as the offer of screening was made to respondents. The survey would also collect data from all study participants and so key issues pertaining to the feasibility of non-medical chlamydia screening could be collected from all people in the study. This was borne in mind when developing the questionnaire. In addition, there was also a qualitative component to the study planned. As such, important concerns during the design of the questionnaire centred upon the practicality of conducting a survey in the non-medical settings, the willingness of respondents to engage with both a survey and screening as well as collecting reliable and valid data on the phenomenon.

Reliability concerns in quantitative research refer to the degree to which a measurement, given repeatedly, remains the same; or the stability of a measurement over time (Kirk & Miller 1986). Reliability then is a measure of consistency. If a test is reliable the results of its repeated administration will differentiate members of a group in a consistent manner. Usually, reliability in quantitative research is evaluated by calculating the correlation coefficient between the two administrations of the test in the same groups of people

(Tashakkori & Teddlie 1998). In this study, however, such measures were not planned as the quantitative approach was being employed as a means to describing the participants in screening.

The reliability of data collected in this study could potentially be low due to the many potential environmental factors that could prohibit the replicability of the study findings, such as the interviewer effect and bias in the sample. Nevertheless, the author planned to administer the survey in a consistent manner with all respondents in each setting. In other words, the study was planned so that the author would approach young people in each non-medical setting to invite them to participate in the study by providing the same information in the same way to all young people approached. Further the author planned to approach all persons whom appeared age-eligible and not simply 'friendly-looking' persons or those who were located the most conveniently in the study space.

Validity in quantitative research refers to the degree to which the research truly measures that which it was intended to measure and actually reflects the concept to which it is supposed to be referring; in other words, how truthful the research results are. It is imperative in sexual behaviour research, as indeed it is with many other topics, that the use of language, the topics of questions and the topic of the study are understood by subjects on a level that the researcher intended. What people understand by sexual intercourse may differ and if this occurs then the validity of the instrument could be compromised. In this study due attention was paid to existing work that has piloted sexual behaviour questions, such as the Natsal and ClaSS studies, so that questions put to respondents in this study could be used with confidence regarding their validity (Fenton et al. 2001a; The ClaSS Study Group 2001).

Reliability and validity issues were considered alongside the importance of the sensitivity of the topic of this study, and how that could affect the design of the study. In this study, young people would be asked to provide information about their sexual behaviour but they would be asked for this information in public settings. How far the setting itself would affect the sensitivity of this study remains largely unknown as there is little information in the data to suggest the impact. That which does exist certainly suggests that with effort and information provision young people do participate in screening in less than private circumstances, as the literature review chapter outlined (Gunn et al. 1998; Poulin et al. 2001; Rietmeijer et al. 1997). Fenton et al (2001), for example, found that participants in

the second NATSSAL were less likely to provide a urine sample for chlamydia testing if there was a person present in the room, other than the researcher.

Choosing and developing the interview

A variety of qualitative approaches have been used in sexual behaviour and STI research: participant observation techniques, semi-structured interviews and focus groups, to name just a few, have been used in research on STIs and have highlighted the importance of lifestyle, contextual and social behavioural factors as being crucial determining factors on risk behaviour (Power 1998). Qualitative research is particularly appropriate in examining sensitive issues as it is considered non-intrusive and subtle (Power 1998). In addition, complex issues such as perception of risk, meaning of sexual health to young people, as well as factors affecting uptake of screening can be explored in depth using qualitative methods. Interviewing remains the most common method used in qualitative research. The semi-structured interview, in particular, is one of the most frequently used qualitative methods as it allows comparability across interviews but also scope to probe responses and thus elicit deeper and richer information. An advantage of the semi-structured interview for sensitive research is that it guarantees the confidentiality of respondents' responses. Focus group interviews were considered inappropriate in this study, as they cannot guarantee confidentiality for the individuals in the group, an issue that could be crucial in the respondent's decision to participate in a situation where their sexual experiences are being discussed. Focus and group interviews are useful methods with which to explore '*people's experiences, opinions, wishes and concerns*' (Kitzinger & Barbour 1999), but in this study it was important that respondents be offered an environment to discuss potentially sensitive topics that was more private than the study setting. In this way, assessing why young people participate (or not) in screening could be ascertained.

Semi-structured interviews are a useful technique to explore lifestyle and contextual issues. Whilst semi-structured interviews follow a thematic guide and are flexible enough to allow probing beyond the answers, they are less structured than face-to-face survey interviews, which ask each person the same question in the same way. Semi-structured interviews are said to allow interviewees to answer on their own terms provide a structure for comparability that unstructured interviews do not offer (May 1997). Semi-structured interviews were also used as they offer confidentiality for interviewees, which may facilitate rapport and encourage the interviewee's willingness to report sensitive behaviours. Interviews have been used to explore people's experiences of taking part in a

chlamydia screening feasibility survey (for an updated Natsal) (Fenton et al. 2001a) as well as to explore people's attitudes and views towards screening and follow-up in clinical settings (Pimenta et al. 2003b). Each of these approaches has been used to collect data on experiences, views, beliefs and meanings. This is the strength of qualitative research: it enables an exploration of the '*subjective experiences of social actors*' (Power 2002).

The interview guide developed for use in this study was designed to address the main research questions, concerning the extent of young men and women's knowledge of chlamydia, young people's views towards chlamydia screening in non-medical settings and factors associated with their willingness to provide a sample in these community settings (see Appendix 3). In addition, the interviews also addressed the wider factors that may have affected respondents' views towards their sexual health, to contextualise their views and beliefs.

The decision to incorporate participant observation

During the pilot phase, the author gained invaluable information from both participants and non-participants in the settings from the numerous verbal interactions. Views towards screening and opinions on the utility of this approach were offered by a variety of young people in the pilot phase. It was felt by the author that this data could be an invaluable source of additional setting-related information, which could be used in an assessment of feasibility. As such, although participant observation was not originally incorporated into the design of the study, a decision was taken after the pilot phase to use fieldnote diaries as an additional data source.

Despite the advantages of both questionnaires and qualitative interviews, they both rely on self-reported data. Observational methods, such as participant observation, whereby behaviours or events are observed in their natural setting and recorded, negate the need for a reliance on the participant's viewpoints and/or perceptions. Rooted in social anthropology, and stoked by the Chicago School of social research in the 1920s and 1930s, participant observation is said to lead to 'an empathic understanding of a social scene' (May, 1997: 136). The variety of interactions the author would have when conducting the field research, as well as the circumstances experienced, could contribute to a deeper understanding of actions within the social context of offering screening in non-medical settings.

One of the main advantages of participant observation is its flexibility: a myriad of questions can be asked by a researcher of a research setting. According to Jorgensen (1989) *'the methodology of participant observation seeks to uncover, make accessible, and reveal the meanings (realities) people use to make sense out of their daily lives'* (Jorgensen 1989). Conversations with both age eligible users and those out with the target age range could provide invaluable insight into attitudes towards chlamydia screening and sexual health issues. As such, these naturally occurring conversations could be a potential source of rich and illuminating data on people's views, beliefs and knowledge. In each setting fieldnotes were taken, focusing primarily on the experience of establishing the screening in the settings, the response by young men and women to being approached and other comments made to the researcher during her time in the settings. The researcher subsequently made a conscious effort to ascertain the views and beliefs of all settings users and make use of the time spent in the settings by also observing behaviours. A count was also taken of each person with whom the author approached. If this approach did not result in study participation (even if the person approached did not even stop to listen to the author) then a tally mark was put in the diaries to represent a non-participant. The participation in this study, as the next chapter details, was based on the fieldnote tallies kept throughout the study. If any reason was offered at this point for the non-participation, such as 'I don't have time right now' or 'I have to go to a class' then the reason was also recorded in the fieldnotes. Despite the quantification of data in this way, the fieldnotes were used primarily to record the author's experience of establishing screening in three non-medical venues. As the 'here and now of everyday life' unfolded within the settings, the author began to witness patterns of behaviour associated with the response to the offer of screening. These patterns were recorded in the fieldnotes.

Data analysis

It is important to note that this is not a prevalence study, but rather one exploring the feasibility of offering young people screening in settings where they can be found in large numbers. From the outset, the purpose was to make an assessment of feasibility whilst exploring young people's willingness to be tested. Prevalence of chlamydia infection in this study will be noted; however, given the non-representativeness of the sample population, there is no attempt to generalise to the wider population of young people. Subsequent chapters will, however, offer a comparison to existing studies of prevalence in similar clinical and non-clinical sample populations in order to contextualise the findings.

Quantitative analysis

Statistical analyses on the questionnaire data were carried out using the SPSS statistical package. Chi-square tests of independence were used with categorical data, and constitute the bulk of the analyses performed on the quantitative data in this study. Significance was set at $p < 0.05$ and where associations are highly significant the p-value will be reported as $p < 0.001$. Tables that present data from chi-square analyses will provide the p-value to note the level of significance. Interactions between setting, gender and age were also assessed using binary logistic regression. Odds ratio analyses were performed to assess the odds of being willing to accept screening, by setting, gender and age.

Survey respondents were asked to report their knowledge of the clinical features of chlamydia, as well as subsequent associated sequelae and testing methods. The self-administered questionnaire included five questions about knowledge of chlamydia, including: how infection occurs, symptoms associated with chlamydia infection in women and men, associated sequelae and testing method (see Appendix 3). In addition, all respondents were then asked to answer 'True' or 'False' to a series of eleven statements, with a 'Don't know' option provided. The true or false statements referred to the same topics as the five questions described above, only in more detail. Responses to the true or false questions were allocated a score (one point for a correct answer, and one point for not choosing a wrong answer, 0 for an incorrect answer). The maximum score achievable was 11.

Respondents' views towards chlamydia screening were assessed in the survey using Likert scales, with available responses ranging from 'Very acceptable' to 'Not acceptable'. Logistic regression was used to compare groups who were willing or unwilling to provide a sample, and odds ratios (ORs) were calculated controlling for age, gender and setting. Factors associated with willingness were also explored using Chi-square tests of independence. Analyses of willingness to provide a sample for testing (Chapter 6) excluded respondents who reported they were not sexually active. Analyses of knowledge and other factors included all respondents.

Qualitative analysis

Interviews were audio taped and transcribed verbatim. Interviews lasted between 25 minutes and 1 hour 40 minutes. The men and women who took part in interviews

constituted a heterogeneous group, with regards to their sexual experiences: they reported a variety of sexual experiences in their questionnaire responses, from number of lifetime sexual partners to the type of relationships they have tended to experience, thus far in their lives. Interviewees also constituted those who had either provided a sample for testing or declined the offer. Thus, although every individual has their own narrative, and therefore individual experiences, the accounts of these young people, with their differing sexual experiences, views and behaviours, were nevertheless congruous in the ways that knowledge and experiences are drawn from socially constructed realities.

Transcripts were read repeatedly before being coded in Atlas. Ti. Analysis was carried out both 'horizontally' to suggest themes or concepts, as well as 'vertically', to indicate individual differences in values, rhetoric or explanations. Individual transcripts were initially read repeatedly and codes to identify emerging themes. Subsequently, the recurring themes were identified across the transcripts. The study supervisors read a subsample of transcripts and emerging and recurring themes were discussed. The analysis of the interviews was therefore thematic (Aronson 1994). For example, transcripts were read to identify reasons for participating or otherwise in the offer of screening in the non-medical settings in which they were a user. The emerging patterns were then grouped under a heading of willingness to participate. At the same time, other themes that were emerging from the data could then be linked with willingness to be screened, such as knowledge and understanding of chlamydia. This gathering of themes and sub-themes continued to obtain a comprehensive view of the information. At this point the author referred back to the literature to provide valid arguments for the chosen themes. Once the themes were collected and the literature was been studied, the author formulated theme statements to develop a story line.

The participant observation data was part of a continual process of data collection and analysis. Jorgensen (1989) refers to the 'analytic cycle' to refer to the lack of a distinct stage of data analysis when using participant observation technique. During the early stages of this inquiry, the collection of information focused on gaining entrée, observing and gathering information. The analysis at this early stage was tentative and consisted largely of uncovering problems associated with the practicalities of establishing the screening opportunities as part of a research study. As the issues pertaining to this became more defined, the author was able to focus on data collection as a primary activity. With this amassing of materials, the need for additional material became less important than the need to concentrate on the analysis of these materials. Analysis was then performed on the

fieldnotes in the first study setting prior to moving to the second study setting. Common themes that were emerging from the data, such as a gendered response to the offer of screening, were further explored before leaving the first setting and continued into the second setting. Where possible, the author asked questions of respondents (and where necessary from setting staff) to clarify emerging issues or steer a line of enquiry that had emerged. So the analysis and data collection were cyclical.

Ethical considerations

Given the sensitive nature of the study and the fact that young men and women would be offered a test for a STI, which could return as positive for chlamydia infection, there were various ethical considerations prior to the commencement of pilot work. The 2000 'Declaration of Helsinki' provides a set of principles for all medical research, within which informed consent constitutes a basic principle of the Declaration. Rule 22 states that subject should understand the research, anticipated risks and benefits. The principles in the Declaration require that the benefits, risks and justifications for any research are both scrutinised by external review and evaluated by autonomous, informed participants who have had the opportunity to reflect upon the implications of the research and to request clarification of any issue(s) where necessary (Singleton & McLaren 1995). Ethical approval for this study was sought and obtained from the University of Glasgow Faculty of Medicine ethics committee (see Appendix 1).

Informed consent

Informed consent as been defined as a '*voluntary uncoerced decision made by a sufficiently competent or autonomous person, on the basis of adequate information and deliberation, to accept or to reject some proposed course of action which will affect him/her*' (Singleton & McLaren 1995). Subject recruitment was carried out in accordance with this definition and the elements of informed consent as outlined by Singleton & McLaren (1995). Guidelines for medical professionals regarding informed consent were also useful in this study and so they were referred to during the process of designing this study. Although the author is not a medical student or health professional, care was taken to act in accordance with current guidelines regarding obtaining consent, especially with regards to screening. The GMC recommends that medical professionals '*work on the presumption that every adult has the capacity to decide whether to consent to, or refuse,*

proposed medical intervention, unless it is shown that they cannot understand information presented in a clear way' ¹¹. This was the approach used in this study.

Regarding capacity to provide consent, the Age of Legal Capacity (Scotland) Act 1991 states that young people have full (or 'active') legal capacity at 16 years. Young people aged 16 years or older were invited to participate in this study. Chlamydia infection has been increasing extensively in those aged under 25 years. This study therefore targeted men and women aged 16 – 24, inclusively. All age-eligible subjects were given clear written information regarding chlamydia and the study before they were asked to give consent to participate in the study.

The sensitive nature of this research suggested that there was the potential for interviewees to either reveal or request information for which the author was not sufficiently trained to deal with or provide. For example, an interviewee could reveal they have been sexually assaulted and become distressed recounting this experience. As such, a decision was taken that in the event that such an occasion should arise the author would have information leaflets to hand on appropriate services to pass on to the interviewee. On a different level, it was also anticipated that there could be interest from respondents about GUM clinic locations, information about other STIs as well as how to obtain condoms ¹². Information sheets were therefore collected from the Sandyford Initiative in Glasgow (a large sexual health service in Glasgow city centre) to be made available to respondents who may request such information from the author.

Study protocol

This section of the chapter details the approach the author made to young people to recruit them into the study, as well as the various materials designed and used in the recruitment of subjects into the study. The protocol for contacting men and women with their test results is also outlined. The planned approach and possible involvement of respondents in the study are illuminated in Figure 2.

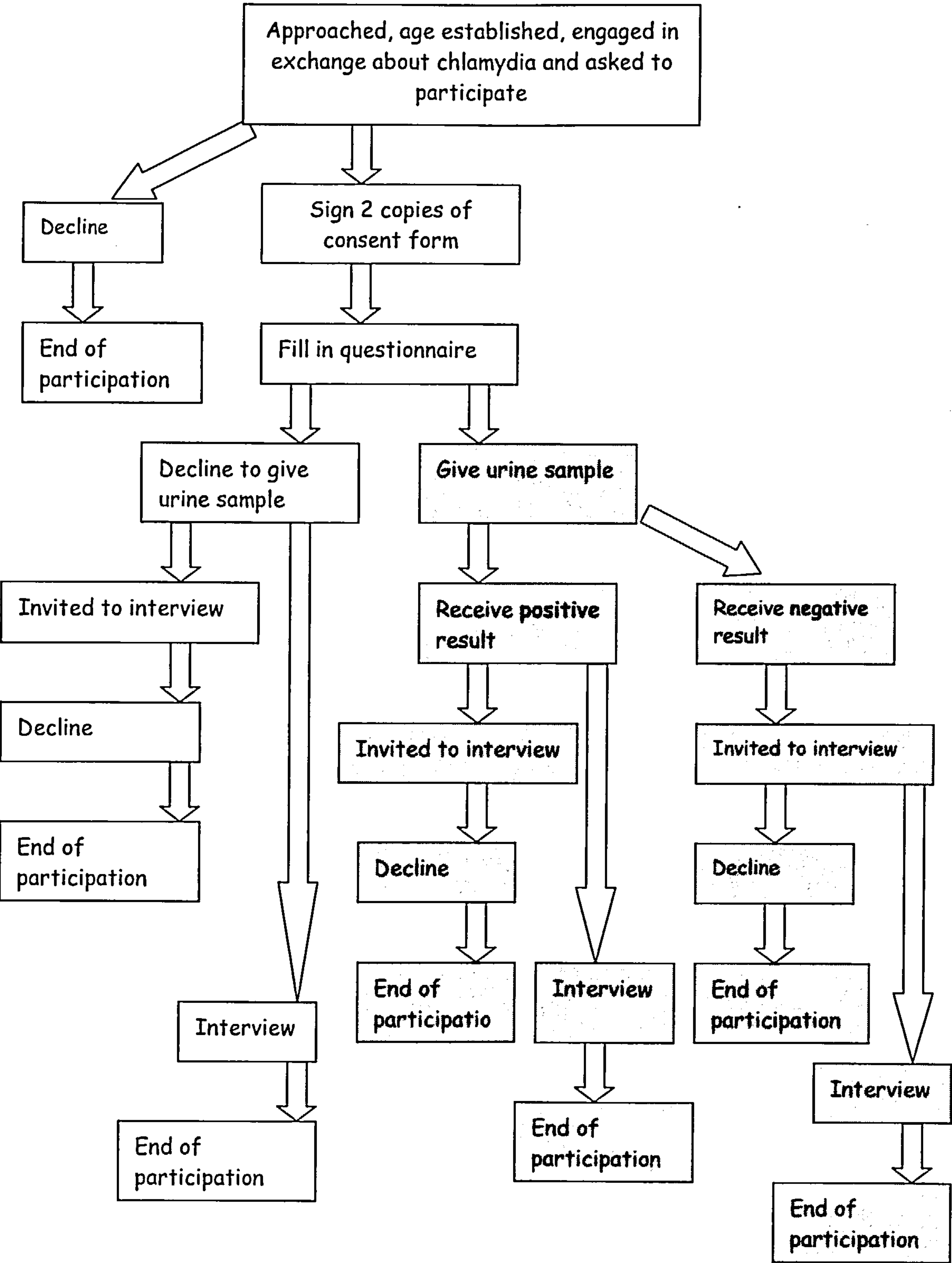
¹¹ <http://www.gmc-uk.org/guidance/library/consent.asp>

¹² At the time this study was being conducted Greater Glasgow Health Board were promoting the C-Card scheme, from which young people can obtain condoms from more than 50 venues across the NHS Greater Glasgow area, including health centres, clinics, pharmacies and many more venues throughout the community.

Approach and recruitment

All young men and women aged between 16 and 24 years whom were using the study settings at the time the researcher was present consisted the target study population. The researcher planned the study as an opportunity for young people to participate in chlamydia screening. In each study setting a desk would be positioned in a main area so as to attract attention to the presence of the screening. The researcher would approach all age-eligible men and women to invite them to participate in the study by first completing a survey and secondly to choose whether or not to provide a urine sample to be screened for chlamydia.

Figure 2: Levels of possible involvement in the study for participants



Various literature were designed to assist the researcher in providing young people with information about the study, chlamydia and of the screening opportunity. These literature were to be displayed on the study table and given to potential participants as part of gaining consent to participate.

The author planned the approach as a consistent one in that it would be similar across all interactions, regardless of gender, age or setting. For example, all young people who were approached by the author were asked to complete the survey at that moment, rather than take away with them to return at a later stage. The author was also aware to maintain a consistent manner when approaching people so that, as far as is possible with human interaction, the approach would be similar for all those approached. In this way, any one not wishing to take part would be doing so for a reason beyond the author's demeanour or dress. As the next chapter will describe and discuss, the experience of approaching young people revealed a particular gendered response that in turn affected the way in which the author approached men and women in the study settings. Nevertheless, and despite this, the intention was to maintain a consistency of approach throughout the data collection.

Gaining consent

The initial study literature consisted of two leaflets: one gave information about the study and the other information about chlamydia (see Appendix 2). These leaflets invited men and women to consider carefully the implications of participating in the study, including, if they were to agree to testing, how they would feel if they were to receive a positive test result. Respondents were informed in the leaflets, and verbally by the author, that they could withdraw their participation at any point in the study. Once agreeing to take part in the study men and women were then asked to sign two consent forms (one for the author to keep and one for the respondent to keep) to indicate they understood the nature of their participation and the implications of taking part (see Appendix 2). Respondents were informed that the study was a chlamydia screening study and that they could be screened for chlamydia as part of the study, by providing a urine sample. Respondents could take the time taken to complete the questionnaire to consider their response to the offer.

Offer of screening

During the initial approach with respondents, the issue of screening was raised. Respondents were informed that this study included the offer of screening; also that they could decline the offer of screening and remain in the study. The information leaflets given to all persons at this point clearly conveyed the following information: the purpose of the screening; the uncertainties and risks attached to the screening process; any significant medical, social or financial implications of screening for the particular condition or predisposition; follow up plans, including treatment if the test result was positive. The emphasis at this stage was placed upon completing the survey and ‘think about it’. When possible, respondents were shown the ‘test kit’ at this stage to present the ‘idea of screening’ to them visually. This method allowed respondents time to consider their response to the offer of screening. Pilot experience had also highlighted the value in this approach as often respondents who expressed immediate reluctance to providing a sample reconsidered once they had completed the questionnaire and had the opportunity to reconsider the offer. In addition, this often offered respondent who were accompanied by a friend to discuss the issue: many respondents in the pilot setting were overheard asking their friend: “*Are you going to do it [screening]?*”

When returning the questionnaire all respondents were offered chlamydia screening and could accept by providing a urine sample. The author could often immediately see the response to this offer as the last question on the back page of the questionnaire asked if they were willing to be screened. The author confirmed willingness with respondents who ticked ‘Yes’ and engaged in a dialogue with those who ticked ‘No’ (for example, asking if they had recently been tested) and also with those who responded ‘Not sure’. Those who were not sure were again shown the ‘kit’, which was on a study desk and informed about the process of providing a sample and receiving the result. The emphasis was placed on how quick and easy the process was, that results could be sent however they chose, and that a test was often the only way people know they have chlamydia as it is often symptomless – the phrase ‘you can’t tell by looking’ was frequently used.

Respondents were at this point offered the opportunity to ask questions prior to giving their consent to screening. The opportunity to clarify the offer of screening, or to answer any questions respondents may have at this point in their participation in the study was important as it is important that all persons agreeing to undertake screening for a STI are able to make a properly informed decision. Screening healthy or asymptomatic people to

detect chlamydia infection carries with it uncertainties including the risk of false positive or false negative results. Some results may have social consequences, not only for the individuals but also for their partners. In some cases the fact of having been screened may itself have serious implications.

Respondents who were willing to be screened were given a test kit, consisting a standard 20ml container to collect their first void urine (the first part of the stream), a clear plastic bag in which to place their sample, and a white 'jiffy' bag in which to place both these items (see Appendix 4). The jiffy bag was to protect the sample during storage and transport and also concealed the sample from public view (an important finding from the pilot study).

Collected specimens were labelled (study identifier, individual number, date, age and gender) and stored in a cool box container. Samples were couriered within 24 hours to a testing laboratory for LCR testing. Respondents were given a leaflet containing information about local GUM services and a tailored information sheet that informed them what would happen in the even of a positive result (see Appendix 5). In addition, each respondent was given a card with the author's contact details should they wish to obtain any further information or ask a question in the interim period of awaiting their result. Respondents were informed that they should expect to receive their result (by the method they chose on their consent form) within one week. All respondents were informed that they would be contacted with their result even if it were negative; therefore they were advised to telephone the author if they did not receive their result within one week. The laboratory sent results to the author. An example of the message respondents received by text message is shown in Figure 3, below.

Contacting people with their test results

Respondents who accepted screening agreed, as part of the consent procedures, to be contacted with their test result. In Chapter 2, the literature review found that obtaining contact information at the time samples are obtained results in higher numbers receiving test results and subsequently treatment for infection. As such, in this study respondents were asked on their consent form to provide two forms of contact, which could be postal address, e-mail address, and mobile or landline telephone number (see Appendix 2). This information was checked and verified by the author with respondents who agreed to provide a urine sample.

Prior to the pilot study the protocol for contacting people with their results was that the author would contact people who tested either positive or negative. As the next section of the chapter on the pilot results illuminates, there were difficulties for the author with this protocol, as well as ethical concerns regarding participants' welfare. As such, the main study protocol became that in the event of a positive test result, participants would be contacted by a Health Adviser (HA) from a local GUM clinic (with whom the protocol had been agreed) and informed via the HA. In this way, the men and women would receive 'normal' care, in that they would be part of the same system of care as those who are tested for chlamydia in GUM clinics. The consent procedures were changed accordingly, to ensure that participants were fully aware that their contact details may be passed to a HA in the event of a positive test result. With the study designed and ethical approval sought, the practical realities of establishing this study was tested in pilot work.

Figure 3: Example of text message used to inform respondents of a negative test result



Invitation to participate in a follow-up interview

After returning their urine sample, or when returning their survey if they declined screening, respondents were asked if they would be willing to take part in an interview. Thus, some respondents were asked when they returned their questionnaires, others when they returned their samples. The interview was briefly explained to respondents as a second part, but continuation, of the study. Respondents were verbally informed of the interview topic areas and assured it would take place in a private location and their responses would be completely confidential. Where possible, interviews were arranged immediately with respondents who gave initial impressions of agreeing to participate in an interview. In relation to those respondents who agreed but were unable to arrange a time to take part in an interview, their telephone and/or e-mail details were confirmed by the author and respondents agreed to be contacted with a view to arranging their participation in an interview.

Pilot study

Following receipt of ethical approval (see Appendix 1), a letter was sent to a youth internet café organisation in Glasgow, which provided a short explanation of the study and requesting access to the setting in order to conduct a pilot study. This setting was chosen at the suggestion of a 'gatekeeper', who at the time worked as a Men's Sexual Health Worker, who was known to the author. The setting Manager was then contacted by the author via telephone to further discuss the proposed study and request access. The Manager was enthusiastic about the study and access was granted. The pilot study commenced 10th November 2003 for two weeks.

The pilot, as a small-scale version of the main study, was conducted largely to assess whether the research protocol worked, to test the appropriateness of data collection methods and to test whether the sampling frame and techniques were effective. A total of 10 days screening were offered, resulting in around 20 hours' screening. Twenty-six men and women aged 16-24 years participated in the pilot study. A number of barriers to participation in the study as well as screening in particular emerged. In addition, problems regarding how to approach young people and how best to present the 'test kit' and how best to inform respondents of their test result emerged. The lessons learnt will now be discussed.

A key lesson learned from the pilot study was how best to inform respondents of their test results. During the pilot phase of the study, the author obtained contact information from respondents on the consent form. The author contacted all respondents who provided a sample for testing by the method chosen on their consent form, to convey their results. Arrangements were made with a GUM clinic located nearest to the pilot setting to treat any persons who received a positive result. The protocol in place was that in the event of a positive result the author would contact the respondent to inform them of their result, provide information regarding their nearest GUM clinic and recommend prompt treatment.

However, the pilot revealed difficulties with this approach. Firstly, this approach proved problematic to the respondents in that they were being asked to arrange their own appointment at a clinic. Secondly, not only were there problems with this approach for the author as this protocol created more work, more importantly, communicating positive test results was difficult when no training had been given to undertake such a task. The pilot experience therefore raised the issue of both practical and ethical considerations with this approach. To illuminate this: on one occasion a female pilot respondent was contacted by telephone by the author and informed of her positive test result. Her male partner had participated in screening with her, but had requested he be contacted by letter. After speaking to the female respondent, the author was immediately telephoned by the male partner for his result, which was negative. The male respondent questioned why his girlfriend had chlamydia but he did not. This was a difficult situation for the author.

Thus, after the pilot phase, and prior to commencing the main study, the protocol for communicating test results was altered. The new protocol was arranged and agreed with Health Advisers at a GUM clinic in Glasgow. In the main study, the author contacted only respondents who tested negative for chlamydia; the contact details of those testing positive were passed to a Health Adviser at the GUM clinic. Respondents were advised during the consent procedures that in the event of receiving a positive result they were consenting to their contact details being passed to the GUM clinic. The Health Adviser then contacted these respondents and informed them of their positive result and treatment. Respondents would then be offered regular care from the GUM clinic, as regarding treatment and partner contact processes. The author later obtained information (via telephone) from the Health Adviser as to whether the respondents were successfully treated.

Further lessons learned from the pilot study concerned the packaging of the 'test kit' (a sample container inside a clear plastic bag to prevent leakage). On a number of occasions,

young women were observed hiding their samples from public view, with some placing them inside their jackets or popping their head out from behind the toilet door to check who was around in the setting. The author noted this behaviour and upon reflection it was felt that more discreet packaging might reduce some of the observed anxiety, especially for the young women. When asked how they felt about the packaging, these young women confirmed the researchers' suspicions regarding the packaging by stating they felt '*pure mortified comin' out with that [sample] in yer hands*'. A white 'jiffy' (bubble) envelope was subsequently given to respondents, within which was the sample container and clear plastic bag, and this was seen to be more acceptable. The pilot also revealed stylistic problems with the appearance of the questionnaire. Initially the font Times New Roman was used; however after the document was described on a few occasions by setting users as looking 'like an exam' this was changed to Comic Sans MS. A less 'exam like' front cover was added.

As the example of the sample packaging and style of questionnaire begins to illuminate, there were data from the experience of conducting the pilot, which suggested there was a wealth of rich data to be had from the verbal interactions between the researcher and setting users. The decision to incorporate the participant observation technique was a direct consequence of the pilot work. As was noted earlier in the chapter, this technique does not rely on self reports, compared with the SAQ's and interviews. As such, observational data could be a potentially rich source of information about setting and social group effects to this approach to chlamydia screening, which could add to those data collected via the SAQ and interview.

Main study settings

Choosing non-medical settings in which to explore the feasibility and acceptability of screening for chlamydia has been discussed in detail elsewhere in this thesis. The idea behind this study was to take screening to where young people 'already are', as a means of exploring the willingness of young people to accept the offer of screening in these settings and to assess how feasible it is to establish screening. Three non-medical locations in Glasgow were chosen: 'Education' (a large further education college), 'Health and Fitness' (three local authority leisure centres), and 'Workplace' (two contact centres).

These three non-medical settings were chosen, as they are places where large numbers of both men and women can be found. College populations attract a younger and more local

population than universities, since many students attend college immediately upon leaving school. Local authority health and fitness settings were considered, as private gyms require the payment of membership fees, which inhibits the use of these settings by young people under 20 years. The average age at contact centres in Scotland is 24 years ¹³, but this can vary by industry sector, with healthcare and entertainment and leisure industries recording the lowest average age of contact centre operators (Department of Trade and Industry 2004). Thus, all three settings could offer access to young populations, but in settings where they would be in large numbers. Furthermore, the settings are less open than shopping malls, supermarkets and parks (as were used in one study by Rietmeijer et al (1997)), and would be more secure environments for the author, given that this study would be a one-person approach.

A large further education college in the centre of Glasgow was chosen and contacted with a view to gaining access. This was the first setting to be contacted. After the study was conducted from the education setting four health and fitness settings around Glasgow were contacted. One college setting was involved in this study as there were large numbers of age-eligible men and women who frequented the college each day; in contrast, background investigation of the health and fitness settings (sitting in a café in the main foyer of one setting in Glasgow for a few hours on two occasions observing the age of setting users) suggested that recruiting the required number of young people into the study would be enhanced if more than one setting were used concurrently. One setting was planned for the workplace but once the study was established it became apparent that another setting would be required to increase the number of participants for the workplace setting overall. The next section describes the process of accessing the settings chosen and the response from 'gatekeepers' to the request that a screening study be established in the settings.

Accessing the setting

Education

Access to the education setting was arranged with the assistance of a Welfare Adviser (WA) at the setting. The initial contact with the WA occurred at a sexual health event; therefore, the origins of the approach made to request access to the further education (FE) setting for the purpose of carrying out a study was not a considered approach; rather it occurred naturally. The author was requested to forward a detailed outline of the proposed

¹³ http://www.manpower.co.uk/about_manpower/main_equality_diversity.asp

research to a Management Group at the further education setting, for consideration. Access to the FE setting was subsequently granted and arrangements on the precise nature of how the study was to be conducted were discussed with the WA.

One notable feature of the approach was the ease with which the author was granted access for the purpose of conducting a study to offer screening for a STI. The author was not asked by the FE settings' management to attend any meetings to present or discuss my proposed study; rather, my proposal was accepted promptly and feedback of access being granted to me was made via the WA. Subsequent discussions with some setting staff revealed a high level of support among college management for sexual health matters to be discussed and promoted within the FE setting – indeed, this was why the WA was in attendance at the sexual health event on behalf of the FE setting. Throughout the duration of the study in this setting, the WA offered continued support by informing me of conversations she had with students about the study as well as informing me of the views of staff, as she encountered them. A memo was also sent round the setting to all staff informing them as to the study. This information was recorded in the fieldnote diaries.

Health & Fitness

Unlike my informal access to the college setting, the author was required to seek permission from a senior member of Glasgow City Council (GCC) prior to approaching individual local authority funded leisure settings, with a view to gaining access to the setting to conduct the study. Despite this, permission was granted from GCC with few difficulties (one letter, see Appendix 1, and two telephone calls were required). No concerns were raised and no further information was requested regarding how the screening would be conducted. GCC advised that permission from each facility should be sought from the facility manager.

The facility manager at each health and fitness setting was contacted first by letter (see Appendix 1) and permission to use the facility was established during follow-up telephone calls. Although there were many 'gatekeepers' with whom to liaise, gaining access to each health and fitness setting was straightforward. One facility manager expressed his surprise that the study had been granted permission to be conducted from GCC and suggested that the funding source (Scottish Executive Health Department) may have influenced this decision to grant permission because it 'legitimised' this type of research being conducted in local authority settings. As he commented:

“They [GCC] can hardly decline access if the Scottish Executive have funded this type of research”

(Fieldnotes, Manager, Health & Fitness setting)

Once access to each facility was granted, all staff, from managers to cleaners, were helpful, curious, friendly and supportive towards the study and author. At each setting, the manager informed the staff about the study via internal memos, prior to the study commencing. Thus, when the study commenced at each setting, the staff was prepared for the presence of the study:

The staff are friendly as I come in each day – they say hello...the younger guys tend to smile at me as they go past or make a comment like ‘how are things going?’ or ‘Had many people?’ Female staff who walk around tend to keep themselves to themselves.

(Fieldnotes, Health and Fitness, 20th May 2004)

In two of the three settings, during the first days of the study, male staff members joked loudly with male colleagues about testing, which drew negative attention to the study. For example, in the first health and fitness setting one male employee said in a loud voice: *“Roll up, roll up get your chlamydia testing here today!”* as a young woman was sitting nearby completing a study questionnaire. This female respondent later discussed this incident during an interview:

“I thought that was out of order, I mean I was sitting filling in a questionnaire and they were all standing about treating it as a big joke, making comments...if I wasn’t such a confident person I might have just walked away, I can see how that sort of behaviour could be really off putting for other people...but that’s guys for you!”

(Interviewee #159, Female, Age 22, Health and Fitness)

In another health and fitness setting, the assistant manager commented, during an informal conversation with the author, that she had joked to male staff members that she ‘had’ to be informed if they tested positive for chlamydia – indeed, she was later heard by the author joking with staff that she knew one employee had tested positive for chlamydia (even though at this point there were no positive results for this setting). Two male employees later informed the author that they were initially cautious about participating for fear this was true and it was not until both were reassured by the author of confidentiality (and requested the assistant manager inform her staff she had been joking with them) that they agreed to participate. In the third health and fitness setting the staff were helpful and polite but maintained their distance from the author, with the exception of two female staff members who regularly stopped to talk about the progress of my study.

Workplace

Compared to the education setting and three leisure facilities, the workplace setting proved more difficult to access. A search on the Internet, using the search terms 'contact centre Glasgow' found a website (the Call Centre Association)¹⁴ for contact centres, based in the Glasgow area. Contact with contact centre organisations listed on this website was made initially via the main information e-mail address for each organisation given on the website (www.cca.org.uk). Only one of four contacted replied. However, once contact was made, access was straightforward. A second contact centre was approached after a colleague working in Public Health & Health Policy supplied information. An e-mail was then sent directly to the manager of this organisation.

Once initial contact was made to both organisations via e-mail, the author was invited to discuss the study with senior management prior to commencing the study. Management at both workplace settings did not query why contact centres were being approached as part of this study but did express the view that no employee would wish to accept testing in their workplace. Despite this, these 'gatekeepers' were supportive and remained curious throughout the study about the willingness of staff to accept screening. A memo was sent to all staff in both contact centres informing them of the study and making clear the point that it was independent research. The management at both contact centres also enquired about the dissemination of study results and requested the organisation remain anonymous.

At both sites, access to conduct the study was granted for two weeks (compared to four weeks at the education and each health and fitness setting). Reasons provided by management were that a longer period of time might be disruptive to the work in the organisation and a perception that this was not a study but a management led initiative. Aside from this, management raised no other concerns about the study-taking place in their contact centres.

Presentation of results

Large volumes of data were generated during this study and the author recognises that these data may be presented in a number of different ways. For example, one way might have been to present the findings by setting, given the importance of the setting to this

¹⁴ <http://www.cca.org.uk>

study. A fourth chapter would have been necessary to pull all of the findings together and compare across the settings. Four result chapters, with each discussing similar result areas would have rendered the presentation of results exceptionally repetitive and therefore ineffectual at illuminating the important trends and themes identified from the quantitative and qualitative analyses.

After various initial attempts to write-up the results of this study, the approach which read well and facilitated effectively illuminating important findings was the results presented according to the three main areas of investigation in this study: feasibility, knowledge and willingness. Attention to settings differences is, however, maintained throughout the presentation of results. The study results are presented in three chapters: Chapter 4 presents the results of the feasibility of establishing screening in the three study settings. Fieldnote diary data constitutes the primary source of data used to explore feasibility and thus much of Chapter 4 involves a descriptive account of gaining access to each study setting and the initial response to screening being offered in the settings. Extracts from fieldnote diaries kept constitutes the main data source in this chapter. Both questionnaire and interview data were used in analyses of knowledge of chlamydia and views towards screening and these are presented in Chapter 5. Similarly, in Chapter 6 data from both questionnaires and interviews are given in an account of the willingness of young men and women to provide a sample for testing. Throughout the data result chapters, extracts from fieldnote diaries will be noted as 'Fieldnotes'; interview data will be references after the quotations as 'Interviewee' followed by the interviewee's identifier number, for example, 'Interviewee #128..'.

Chapter 4

Feasibility of Offering Chlamydia Screening in Non-Medical Settings

It was an aim of this study to assess the feasibility of offering screening for chlamydia in non-medical settings. This chapter describes the process of establishing screening in each of the three study settings - Education, Health & Fitness and Workplace - and the response to the offer of screening. This chapter, therefore, presents data by setting to discuss these issues in relation to each of the three settings. Both men and women were approached in each of these settings, thus emphasis is also placed upon gender differences in the response to the approach.

Conducting the study in each setting

Three non-medical settings were chosen for this study: education, health & fitness and workplace. The education setting was a large further education college; the health and fitness settings were three local authority facilities; and the workplace setting was two contact centre organisations. All settings were in Glasgow.

Education

The approach

The study was conducted at this site over a period of 2-3 hours, Mondays-Fridays for 4 weeks (22nd March – 23 April 2004¹⁵). For the first 3 weeks, young people were approached by the author and invited to participate in the study. In week four, private screening was offered from a room next to the Student Advisory Office for duration of 2 hours per day Monday-Friday. In total, screening was offered over an average of 55 hours at this setting. A total of 145 men and women aged under 25 were approached during the first 3 weeks. Of them, 76 were male and 69 female. In addition, nine respondents self-referred for private testing in week 4.

The study was conducted from the large canteen (situated on level 2) and also the snack bar area (situated on level 5) of the further education setting. A desk was set up, upon

¹⁵ The study was not conducted for one week during this time (12th –16th April 2004) due to the one week Easter break.

which the study material was placed, at the entrance in the canteen and snack bar areas. The canteen was the main area from which the study was conducted because a large number of students used this setting throughout the day, although primarily during their lunch hour, which meant that many young people could be approached in the one area at a time when they were seated for a duration of time that would permit me to strike up a discussion with them. Students in the canteen area were either sitting at tables eating their lunch or playing pool or video games (both facilities provided in the canteen). Students who frequented the snack bar area of the college were also approached, as in this area, in contrast to the canteen, smoking was not prohibited; as such, the snack bar might have attracted students who did not use the canteen facilities.

Students who used the canteen and the snack bar entered and sat in groups (either comprising same sex or mixed sex) or in pairs; few who used these areas were alone. Since students mostly frequented the canteen for the duration of their lunch hour, there was a 'window' of opportunity in which to approach young people in this setting. In the snack bar area, this 'window' was limited to 20 minutes – the duration breaks (which occurred mid-morning and mid-afternoon).

There were two important influences on the approach to education setting users: the gender of students and whether they were sitting in groups or in pairs; these factors were often interlinked. Chapter 5 describes respondents' knowledge about chlamydia and their views about screening. These factors could have had a bearing on respondents' response to the approach and therefore could be an important aspect of the feasibility of offering screening in non-medical settings. These factors have been reported separately from the feasibility discussion, as an aim of the study was to assess young people's knowledge of chlamydia.

The influence of gender

Men and women responded in different ways when approached in the education setting. Women conveyed a higher level of awareness about chlamydia, they appeared more comfortable discussing this topic and interacted more with me, asking questions and volunteering information, than the young men. This information was noted in fieldnotes:

When approaching young women in the canteen today I was struck by how at ease they absorbed the topic and did not seem embarrassed when I said the word 'chlamydia' or the phrase 'sexually transmitted infection'...
(Field notes, Education setting, 22 March 2004).

Some women asked why the study was being conducted in the college setting, whereas others were curious as to the author's status (*"Are you a nurse?"*); and others volunteered information about their prior experience of being tested for chlamydia (*"Oh I got that done at my smear a couple of months ago"*) or awareness of chlamydia as a public health issue (*"I read about that the other day in the paper"¹⁶; it's really common now isn't it"*). A few offered opinions about non-medical screening during the approach, for example one female (who subsequently participated in an interview) commented:

"That's really good that you can test for it on a urine sample. It's a good idea to make it easier for people to get tested for this [chlamydia] because it's quite common isn't it?"

(Interviewee #88, Female, Age 22, Education).

In contrast, young men approached often appeared embarrassed when they heard the topic of the study, and few maintained eye contact with the author throughout the entire approach period, with the exception of the initial few second when they appeared curious as to why they were being approached. On some occasions their embarrassment became immediately apparent when the author mentioned the words 'sexually transmitted infection'. This was noted in field note diaries:

*Almost all of the young men whom I approached today seemed uncomfortable with my presence almost immediately after I mentioned the words 'sexually transmitted infection'. Some smiled nervously, others looked away; those who had eye contact with me when I first approached them averted their gaze and blushed; some fidgeted in their seats. One male walked away from the group of male friends he had been standing with saying "F**k sake man, no way!"*

(Field notes, Education setting, 23rd March 2004)

Some young men appeared initially bewildered with being approached and asked to engaged in a discussion about a STI:

Today a few young men standing together in a group turned to look at each other and smiled and laughed nervously when I introduced the topic of the study. One asked me "Why are you doing that in here?" another asked "Are you serious?". I responded, "You seem a little bewildered about this, why?". One replied, "I dunno, it seems a bit strange doing that here." In subsequent discussions with these young men when they were handing back their questionnaires, they seemed less taken aback with the topic and one said "I didn't know it was that common". The ensuing discussion was very different to the initial conversation I had with them as they now seemed open to discussing the topic.

(Field notes, Education setting, 31st March 2004)

¹⁶ A front-page editorial about chlamydia had appeared in a Glasgow-based newspaper the week prior to commencing the study in the education setting.

The greater level of immediate embarrassment, discomfort with the topic and bewilderment at being approached in the college about this topic among men, affected the manner with which the author approached young men. Subsequently, men (especially when they appeared embarrassed) responded positively to gentle humour (*"bet you didn't think a woman would approach you in college today and ask you about sex!"*). The use of humour at particularly tense moments, especially during the initial approach, often appeared to relax the young men and many consequently engaged in friendly 'banter' with the author, as well as with each other (*"he cannae dae it, he's never had a bird!"*). A more 'chatty' approach, whereby a more casual conversation, between young men seated in the canteen and the author, was undertaken to ask them what they knew about sexually transmitted infections. This often appeared to make them more relaxed in the company of the author and also with the topic of the study. Unlike the women, who could immediately be engaged with the topic of the study, the young men often needed a brief period to 'get their heads around' the topic matter, before then being invited to take part in a screening study. Some men initially appeared uncertain if they had heard about chlamydia, for example:

KL: *Have you heard of chlamydia?*
 R: *Eh...I dunno*
 KL: *It's a sexually transmitted infection*
 R: *Oh aye, I've heard of it but that's about it*
 (Field notes, Education setting, 23rd March 2004)

The use of humour was used in one study with MSM in entertainment venues and, based on the feedback with screening staff, the authors concluded that this style of approach had encouraged a positive response from the men targeted for the screening promotion (Debattista et al. 2002e).

In contrast, young women could often be approached in the same manner, with the same information provided in the same way each time. Women almost consistently responded more positively to a factual-oriented approach, and did not respond particularly well to the use of humour. Indeed, when humour was used during the approach with women, this often caused embarrassment rather than alleviated it. During interviews, respondents were asked how they felt when I first approached them; one male interviewee offered a typical view:

"So embarrassed, because I hate talking about sex... I don't like kind of confrontational things like that, especially when it comes to talking about stuff like sex."
 (Interviewee #77, Male, Age 20, Education)

In contrast, this female interviewee offered a typical female view:

"I didn't mind you coming up to us...it's not like you wanted to start asking us to talk about our sex lives there"

(Interviewee #138, Female, Age 18, Education)

So, whilst young men often reacted with bewilderment and embarrassment when approached, young women generally appeared more aware of the subject matter, which seemed to place them at ease with the topic of the study.

The opposite was evident when men and women were offered screening. After survey respondents completed their questionnaires, the topic of screening was raised with them again – depending on their response to the final questionnaire item. Men and women were asked at this stage to confirm their responses given on the final questionnaire item. Whereas the females displayed ease with the topic and a willingness to engage in a verbal exchange with the author when they were initially approached, they behaved contrary to this when their willingness to be screened was raised for discussion. During an interview with one young woman, who did not accept screening, she described how she felt being asked to provide a sample in the college:

"I didn't mind doing the questionnaire but I didn't want people to hear me say "Aye, I want tested for an STI"."

(Interviewee #138, Female, Age 18, Education)

A male interviewee, recruited from the college, offered a different view:

"It wasn't really that embarrassing, because... 'cos there was a group of us, and they were taking it [test], so you were like, you felt comfortable being among friends, talking about it."

(Interviewee #38, Male, Age 22, Education).

There was therefore a gender difference in the social desirability of being heard or seen to consent to chlamydia screening in the education setting. Moreover, during interviews, female respondents from all settings often referred to issues of privacy and the stigma of being seen by others in this public location to want a test for a STI. Females, more than males, considered issues of privacy in relation to screening being offered in other non-medical settings; however, this will be discussed in more detail in chapter 5 in the section on respondents' views towards screening.

Approaching groups

The influence of gender upon the response to being approached was often magnified when respondents were seated in groups. The type of groups approached in this setting included mixed sex groups of varying ages, mixed sex groups of people aged under 25 years and same-sex groups. The response of these groups towards the invitation to complete a questionnaire and participate in screening was similar, but which was also in contrast to the response of individuals.

When mixed sex groups of all ages were approached, their reaction, upon hearing about the nature of the study, tended to be jovial, with older (mostly male) members of the group interceding to encourage their age-eligible companions to participate in the study (“*aye, he’ll dae it, he pulled a bird at the weekend!*”). Men and women older than 25 years often joked that they were within the target age range (“*I’m 24. I’ve just had a hard life!*”). The relaxed reaction to my approach among mixed age groups was in contrast to groups of age eligible mixed sex groups, who often constituted those who refused to participate in the study. One young male, who had declined to participate in screening along with his three other companions (one male and two female), was asked by the author why they had all declined. This conversation was noted in field notes:

A guy who declined to complete a questionnaire the other afternoon (along with three others) came in to the snack bar this afternoon and sat alone. I spoke to him and asked why he and his friends declined to participate the other afternoon. He told me that whilst he couldn’t speak for the others, he felt uncomfortable answering questions about his sex life in front of people he had only recently got to know – they weren’t close friends, only college friends and as such he didn’t want to reveal personal information about himself to them. I asked if he would be willing to complete a questionnaire now and he agreed.

(Field notes, Education, 5th April 2004).

Same sex groups reacted in a different manner to mixed-sex groups. When groups of women were invited to be screened they tended to operate under a ‘consensus approach’: all women would ascertain their willingness to complete the survey through non-verbal communication with each other (such as eye-contact with each other and nod their heads) before communicating their willingness verbally to the author. There often appeared not to be any one individual decision-maker in the group, from whom the rest took their lead. In contrast, groups of young men tended to take their lead from one male, to whom they would look to and base their decision to participate on: if the ‘alpha male’ agreed to participate, so too would the others, and vice versa. It was often prudent during the initial approach to quickly identify the ‘alpha male’ and focus the approach towards him. There were a number of occasions when the ‘alpha male’ refused to participate in screening and

neither did the other men in the group (“*If he’s no dain’ it I’m no*”). Young women, on the other hand, despite the initial consensus approach, did on a small number of occasions provide a sample of urine even if their age-eligible group companions declined. The presence of others in same-sex groups therefore appeared to affect the reaction to my approach and their subsequent response to the offer of screening.

It is important to note the effect researchers can have upon interactions that, as noted above, require significant communication skills and ability to respond appropriately and promptly to situations. In the education setting it was easier to approach females, in part because of the author’s gender, but also due to the consistency of the interactions and dialogue with females. It was, in contrast, often a challenge to approach groups of young men, as there was a great deal of uncertainty as to how they would react; much of this interaction required on-the-spot reactions, especially in situation where the use of humour was received well by young men. Chapter 6 will discuss respondents’ willingness to provide a sample based on the perception that the offer of screening was in itself ‘non-medical’ because the author was not dressed in a manner that signified she was a medical professional. How far an attribute of the author had a negative effect on those who refused to participate in the study is uncertain.

Regarding refusal to participate in the survey part of the study, most men and women in the education setting did not decline participation in the survey when first approached but left their uncompleted questionnaires on the table and left the canteen. No gender differences were detected, with females as likely as males to leave uncompleted questionnaires. However, it appeared to be younger aged respondents (around 16 or 17 years) who declined to participate. An extract from the field notes records the curiosity by the author as to why this was:

I wonder whether these respondents are self-selecting their participation due to their non-sexually active status...there is very little dialogue or eye contact from these students. I wonder whether they are simply too embarrassed to take part because of the subject as well as their young age?

(Field notes, Education, 30th March 2004).

Interviews were conducted with only two education setting respondents who were under 20 years (both male), during which both discussed feeling very embarrassed to have been approached and engaged in a discussion about a STI and then offered screening. Both respondents were approached in same sex groups and completed a questionnaire. One did agree to give a sample at this time, whilst the other declined until a later date when he asked for a ‘kit’ at the end of his interview.

The pilot study highlighted different responses from males and females and this was experienced in the education setting. An additional finding in the education setting was the effect mixed sex and single sex groups had upon young people's willingness to engage in an interaction about this topic and subsequently with providing a sample for testing. Developing rapport, especially with young men, was an important factor that affected the participation in the survey part of this study, and possibly with the offer of screening also; therefore, understanding the appropriate manner with which to approach young people proved important to the success of this study. The interviewer effect was therefore of crucial importance to the success of engaging with young people in this setting.

Conducting the study: setting-specific issues

There were a number of practical difficulties in conducting this study in the education setting. In the canteen area it was common for students to not consider it appropriate to be approached whilst they were eating their lunch. As such, this reduced the 'window' within which an approach could be made. Given that the author was operating alone, and the approach consisted of an informal brief discussion about the study so that informed consent was ensured, this limited the number of students who could be approached over one lunchtime.

Despite this time limitation, students (as well as canteen support staff) became familiar with the presence of the study and the author and this had a positive effect on recruitment: as rapport was developed with many students some informed their friends about the study and encouraged them to come along to the canteen, or snack bar area, to participate. Female students constituted the majority of those who encouraged their friends to participate. The rapport developed between the author and support staff also facilitated recruitment: the canteen support staff knew some student well and were observed chatting to students as they cleared their tables. Two women staff in particular often helped 'break the ice' for the author by asking students, when they were approached by the author, '*have you taken part in this lassie's study yet?*'.

The emerging findings from fieldnote data suggested some young people did not accept the offer of screening because of the public nature of the setting; therefore, in week 3 of the four weeks in the education setting, posters were placed around the setting advertising the availability of 'private testing' in a private location within the college where young people could come and be tested for chlamydia. Prior to this, there were a few occasions where

young women asked the author why they had to return their sample to the author in the canteen, and stated a preference to pass their sample to the author in private. Some men gave this view also. So whilst these young people intimated their desire to be tested, they did not want to hand over their sample in the public area of the canteen. Neither did they wish to meet the author in a private area that day, when this was suggested. As such, the author explored the possibility that young people were put off providing a sample because of the public nature of the screening approach.

‘Private testing’ was offered in the final week of the study for five days (Monday to Friday) in a private interview room next to the Student Advisory, where students could come to self-refer for testing. Nine students attended this area in five days seeking testing (5 males and 4 females). Three young men, who attended together, commented that they were aware of the study in the college but that they were too embarrassed to take part in the public areas. The two other young men reported that they were too embarrassed to seek testing in front of their friends. One female was a young staff member who reported symptoms and was self-conscious about being seen seeking testing by students. The other three females reported not wishing to be seen seeking testing as the reason they came along to the ‘private testing’ session. All nine students, when asked, confirmed they would not have given a sample except in this private area. This approach had reached nine young people but it is a low number and it is possible that more could have been tested if screening had been offered in the canteen in week 4.

Health and fitness

The health and fitness setting was the second of the three study settings the study was conducted from. Accessing the setting, approaching young men and women and offering screening for chlamydia by urine sample was experienced differently in this setting than the education setting due to setting-related issues. Three health and fitness settings were involved in this study.

The approach

Screening sessions were conducted at each site over 2/3 hours each time for a total of 4 weeks for two of the three health and fitness sites (17th May – 11th June 2004; and 16th August – 10th September 2004). In the other site, screening was offered for 2 weeks (21st June – 2nd July 2004); this was primarily due to the sparse numbers of young people under 25 accessing this setting. In total, screening was offered over an average of 120 hours from all three health and fitness settings. A total of 158 men and women aged under 25

years were approached and asked to participate in the study by completing a questionnaire and offered screening (65 males and 93 females).

Unlike in the education setting, it was rare to approach groups of setting users in the health and fitness setting. Individuals, or people using the setting along with a friend, consisted the majority of those who were approached by the author. This was primarily because the study desk in these settings was set up in the reception areas of each setting (see Appendix 4 for an image of the study desk in situ). Young people were therefore approached as they entered the reception area, after paying at the main desk, and they predominantly entered in pairs or alone. As in the education setting, there were gender-specific behaviours in response to the approach and offer of screening.

The influence of gender

As in the education setting, the length and manner of my approach differed according to whether women or men were approached. Preliminary descriptive analysis of the questionnaire data from the education setting revealed men had a poor knowledge of chlamydia compared with women. In addition, questionnaire data and fieldnotes from education setting also suggested women had more prior experience of being offered screening than men. This was also apparent in the health and fitness settings. When approaching men and women, more information about chlamydia was often required to be provided to young men than women. Two separate groups of young men commented that they believed chlamydia to be a 'woman's disease'. The response of men and women to being approached in the health and fitness setting was similar to that described in the previous section regarding the education setting.

As such, and as in the education setting, young men often responded well to gentle humour to overcome their embarrassment to be approached and asked to participate in a chlamydia study. In contrast, young women were often relaxed when first approached – perhaps due to their familiarity with the topic - the rapport being quickly established, but became embarrassed when offered screening.

After respondents took part in the study they often spoke to the author when they were next in the setting; the author, when in the education setting, did not experience this. There was a general curiosity among in the health and fitness users as to how willing people were to take part in the study ("*Have you had many takers?*"). Employees in the health and fitness settings were encouraged to participate in the study by the author and most did, at some

point in the four week duration. On one quiet evening a group of young male employees (who had not yet participated) approached the author and initiated a conversation about sexual health issues. Sensing that some wanted information but were afraid to appear ignorant in front of their male peers, '*a quiz to see if you can catch me out*' was suggested by the author. This prompted enthusiastic questions, ranging from '*what is the most common STI?*' to '*what is the worst one to get?*'. Such conversations were often experienced with young male employees in the health and fitness settings, (and also in the workplace setting as will be discussed below). These young men were often more enthusiastic to receive information about sexual health than female employees. In addition, other male setting users were also more willing to engage in such conversations than women. The reasons behind these behaviours were explored during subsequent interviews with men and women, and this data is presented in Chapter 5.

Many interesting conversations occurred with setting users who were older than 25 years, for example parents waiting in the foyer to collect their children from gymnastics class. Many offered positive comments in support of the study. An example from field notes is:

Female parent: I think this is a good idea because it's not like in my day when you just didn't have sex, not like now anyway. Teenagers today just don't always know what they're doing or what's out there.

KL: what do you think about young people being offered information about sexually transmitted infections?

Parent: If it helps them not catch anything then that's good. I think sex education could be a lot better, I mean that's where they should be getting information but if they're not then it's better to know isn't it.

(Field notes, Health & Fitness setting, 24 June 2004) ¹⁷

Others, like this mother, spoke of concern for their teenage daughters and framed this concern as something they believed most parents experience today, given the pressure on young people to become sexually active. Although it was mostly women who engaged in conversations with the author, fathers and grandfathers who were waiting to collect their children/grandchildren also volunteered views. Typically, they expressed similar positive comments, with fathers, especially, discussing concern for their teenage sons' sexual health. One in particular, asked to take some condoms for his son – he did not ask for an information leaflet. In contrast, mothers requested leaflets for their children and tended to express a desire for their children to gain as much knowledge as they could about STIs to 'protect themselves', as one mother commented; despite this, no mother took away condoms. So, whereas mothers tended to view raised awareness as protecting their

¹⁷ Conversation was recorded from memory immediately afterwards.

children from STIs, fathers generally considered condoms as a method of protection for their children. All, however, offered positive comments about the study and supported non-medical testing for sexually transmitted infections in general. Gathering the views of setting-users older than 25 years was specific to the health and fitness settings as in the education and workplace settings; the overwhelming majority of users were aged under 25 years.

Conducting the study: setting-specific issues

Unlike in the education setting, there was rarely a large volume of age-eligible young people using the health and fitness settings at any given time. Even immediately prior to an exercise class, martial arts class or other timetabled activity there were still only a few whom could be approached. In one health and fitness setting, a weekly ladies only evening attracted more age-eligible users through the setting at the one time. In addition, young men often entered in groups prior to using a football court. However, with both groups, there was often not the opportunity to approach all of these young people at the same time and as such there were often missed opportunities to approach the others. In addition, as was discussed in the previous section, it was predominantly individuals or young people who were accompanied with a friend who were approached. As such, it took longer to recruit young people into the study in the health and fitness settings. This, in part, explains why three health and fitness setting were involved in the study rather than one.

Unlike the other two study settings, the health and fitness settings were used by people of all ages. As such, the author was often asked questions by young children (*"What is that [chlamydia]?"*), as well as elderly persons. No parent appeared unhappy with my presence and many smiled at me when I replied to their child *"It's something that can affect your health."* On many occasions, parents holding toddlers approached the table in the foyer to ascertain the topic of the study. Not one negative response was noted in the fieldnotes when they realised the study concerned a sexually transmitted infection. On two occasions in health and fitness settings the author was approached by GPs who commented that this was the first time they had seen screening being offered outwith clinic-based settings and added that they considered this a good thing that might reduce the prevalence in young people as well as raise awareness of the infection. One GP asked if there were any plans to 'roll-out' this approach throughout Scotland and appeared very keen that this occurred. Each facility manager informed me at the end of the study whether any feedback cards, which the settings asked users to complete, contained any negative comments regarding the study. No cards offered negative comments on the study; two offered positive

comments, with one reading *'The STD screening is a really good idea. Will it be here regularly?'* and the other stated, *"I think a lot of different health checks should be offered more often here. The chlamydia testing here made it really convenient for me to have got tested."*

Although the process of gaining access to the health and fitness settings was longer than the education setting, it was straightforward to establish screening in the settings. The layout of each health and fitness setting meant that toilet facilities were in close proximity to the study area, which might have encouraged many young people to accept the offer of screening. The reaction of staff within each setting in the initial few days of the study was interesting, with men, in general, often displaying boisterous behaviour, which impacted negatively on young people's willingness to participate in the survey.

Workplace

The workplace was the third of the three settings used in the study. Approaching young men and women and offering screening for chlamydia by urine sample was experienced differently in this setting than the education and health and fitness settings due to setting-related issues. Two workplace settings were involved in this study.

The approach

Two contact centres were recruited to this study. Screening was conducted at both sites over 2/3 hours each session (five days per week) for 2 weeks at each site (11th October – 22nd October 2004; and 11th April – 22nd April 2005). In total, screening was offered over an average of 55 hours at these settings. A total of 128 men and women aged under 25 were approached during this time (48 males and 80 females). Screening was offered from a 'chill-out' zone in one contact centre (an area of the contact centre where kitchen facilities were provided within an eating area), and from a kitchen/eating facility at the second contact centre. All staff were given three 20 minute breaks during an eight-hour shift at both organisations. This affected the approach and recruitment to the study, which will be discussed below.

Of the three study settings (education, health & fitness and workplace), the least differences between men and women regarding their initial response to being approached as well as towards the offer of screening, were detected in workplace. The author's approach made to women and men was therefore similar, compared with the factual

approach versus the use of humour with female and male respondents, used in the other two settings. The response of men and women to this approach in the workplace was also similar: both men and women appeared to be aware of chlamydia to similar degrees and lacked surprise to be approached and invited to take part in a chlamydia study. Later, chi-square analyses of the questionnaire data from workplace respondents showed they had the highest knowledge of chlamydia of the three settings, and there was no significant difference between male and female workplace respondents (although the numbers are small and statistical significance must be viewed with caution). This may explain why there was no difference by gender in the reaction to my approach in the workplace settings. In contrast, the next chapter will describe how knowledge of chlamydia among the other two setting respondents differed by gender.

Unlike in the other study settings, the study was established in smaller, more intimate areas of the contact centres ('chill-out zones'). Staff would frequent the study area and leave after 20-minutes (the duration of their break). The room would remain empty of people until the next set of breaks. However, because of the intimate size of these areas it was possible to inform men and women about the study at the same time (in other words, even if one small group of men and women were approached, another group in the area would overhear the discussion). This reduced the time taken to approach young people when they were present in these areas.

In addition to the smaller study area positively affecting the nature of the approach made to young men and women, the pre-existing relationships between these young employees also facilitated the process of recruitment. Men and women in the workplace settings were relaxed around each other, appeared to be friendly towards each other and knew each other well. Some, during subsequent interviews, commented on this. For example, one young man said:

"No, I didn't mind you coming up to talk to me at all...I mean I know everyone there, it's like you're with your friends and anyway we all know each other so it's not really embarrassing or anything and they were all doing it too so no I was fine with it [being approached]."

(Interviewee #308, Male, Age 22, Workplace)

The similarities in age between the author and the respondents perhaps facilitated the development of rapport. Since the dynamics of the workplace settings resulted in frequent close contact with respondents, one male respondent quipped to the author: *"You should get a couple of shifts and make yourself some money while you're here!"*. It was also possible to converse with men and women on a less formal level because of the relaxed

atmosphere and the continuing familiarity. Indeed, on the final day of the study in one workplace setting a group of respondents gave the author chocolates; one commented "*It'll be strange coming in here on Monday and you're not here!*" The familiarity developed with these setting users, the relaxed conversations and the frequency with which they saw the author might have been a positive factor associated with being able to recruit 104 participants in twenty days. It was possible to approach most age-eligible users in the two-week period at each organisation and therefore any additional time allowed to conduct the study would not have been necessary.

There was also a 'group effect' present in this setting, similar to the experience of approaching mixed gender groups in the education setting. It was often the case that when one or two men or women agreed to complete a survey then others would also agree. Some of these respondents often commented: "Well if he's doing it I might as well do it too". Chapter 6 describes this in more detail.

After men and women participated in the survey and/or screening, there were often lively conversations about sexual health. At times, these conversations did not involve the author but occurred between setting users themselves. The ease with which many discussed sexual matters may in part be explained by the familiarity and trust they had already established from working closely together. The smaller, more relaxed area from which the study was conducted facilitated a greater number of conversations in this setting. It was possible for the author to 'blend in' more so than in the other two study settings. Interviewees also mentioned the 'relaxed' nature of the screening being offered: "*..you're more generally relaxed, basically, aye, more relaxed in your own kinda safe environment..*" Other workplace interviewees commented positively on the screening not being 'private' and were motivated to participate because they saw others doing so. This was in contrast to the other two study settings, within which some respondents mentioned the public nature of the screening as impacting negatively on their willingness to participate in the study.

Of the 16% of workplace respondents who, when approached, did not complete a questionnaire, all gave the reason of time constraints and most were smokers who did not frequent the 'chill-out zone' but instead went outside the building to smoke a cigarette. Chapter 6 illuminates this in more detail.

Conducting the study: setting-specific issues

Since access was granted for two weeks in the contact centres compared with four weeks for each of the other study settings, the window of opportunity in which to approach age-eligible setting users was reduced in the workplace setting. Furthermore, employees received three 20-minute breaks per shift, which limited the time available to approach people, engage in a conversation, ensure informed consent and await questionnaires to be completed and samples to be given. However, most employees tended not to leave the building during this time (except the few who left to smoke a cigarette) and frequented the study area to make coffee, use the microwave oven or sit and read or chat with other employees. These young men and women frequented this area on each of their breaks and so there were opportunities to approach persons 'missed' earlier. This was an advantage in this setting as employees were not allowed or able to complete questionnaires at their desks. Often young men and women completed a questionnaire on their first break and on their second would return a sample of urine. The staggered nature of the interaction with these settings users did have its limitations to offering screening but there were advantages, which included offering respondents time to consider whether they wanted to be screened for chlamydia. Indeed, on a few occasions, respondents who had completed a questionnaire had initially declined the offer of screening only to return on their next break requesting a 'kit', having reconsidered. Field notes recorded the reason given by one young man for this change of mind:

..he said he'd thought about who he'd had sex with without a condom and that some of the other guys were discussing who was going to get tested. It seemed that these guys [the other two males came back for a 'kit' too] approached the offer of screening as 'musketeers': all for one and one for all.
(Field notes, Workplace, 13th October 2004)

Employees who smoked did so outside at the rear of the building. They mostly consisted young men, and they were often in groups. As a smoker myself (at the time) I was able to approach employees who smoked at the rear of the building in an informal manner and inform them about the study. Indeed, often when frequenting this area, men would initiate conversations ("so what is it you're doing this [study] for then?"). Some of these young men agreed to be given a questionnaire when they returned to the office and return it at a later date, since they often did not have time to complete the questionnaire during their 20-minute break as well as smoke a cigarette. Not all, however, returned the questionnaire or were available for screening. The approach to young men and women in workplace settings was therefore tailored to accommodate their break activities, and the changing nature of their willingness to accept the offer of screening in order to maximise the number of young people it was possible to encourage to participate in screening.

Feasibility of conveying results and arranging treatment by referral to GUM

Offering screening in non-medical settings is worthless, from an infection control point-of-view, unless those who receive a positive result are contacted with their result, treated and partner notification procedures are performed. In this study all survey respondents were asked for two methods of contact. These details were verified if they went on to provide a urine sample. In the event of a positive result, respondents' contact details were passed to a health adviser at a local GUM clinic in Glasgow who would then inform the respondent of their result and follow the usual clinic protocols for treatment and partner notification.

Views of contact method

Obtaining contact information at the time samples were provided was implemented in this study based on evidence from previous studies, which indicated that this is the most effective way to ensure all persons are notified of their result (Debattista et al. 2002a; Jones et al. 2002; Poulin et al. 2001; Powell et al. 2005; Rietmeijer et al. 1997). Ninety-five percent of all respondents, when offered the choice between a letter, e-mail, landline telephone or mobile telephone as the method of contact, chose mobile telephone. Three (1 male and 2 females) requested they be contacted by letter and others by e-mail. Although respondents were asked to provide two forms of contact, all who provided a mobile telephone number requested this be the first choice for contact, with the majority of those asking to receive their results via text message.

During interviews, respondents who provided a sample of urine for testing were asked for their views on being asked to choose their method of contact. All commented positively on being offered a choice and also preferred to be contacted, rather than asked to telephone for their results. One young man said:

"I thought the mobile thing was really good, I mean no one's going to read it, it's private and it's quick, y'know, no waiting around for a letter which might go missing in the post and then you're sittin' like left wondering about your result, so aye that [text message] was good."

(Interviewee #364, Male, Age 23, Workplace)

No respondent offered a negative comment on being offered a choice of contact methods, or for waiting for their results, rather than telephoning for them themselves. This method

was acceptable to all respondents in this study. Further, all 113 screening participants, whether testing negative or positive, were successfully contacted with their result.

Views on awaiting results

In a recent study, women who were diagnosed with chlamydia described feeling anxiety over disclosure of the condition to others (Duncan et al. 2001b). The authors of the study comment on the paucity of information on the psychosocial implications of a diagnosis of chlamydia. Some evidence is emerging regarding men's feelings about being diagnosed with chlamydia (Darroch et al. 2003). However, very little known about men's feelings when awaiting results; in other words, among men who participate in screening but who test negative for infection. These feelings of anxiety of partner notification may be anticipated by young men and affect willingness to participate in screening. As such, it could be important to assess these views so that a screening approach can be developed with these factors understood. In this study, male interviewees were asked to discuss their feelings when awaiting results.

No female interviewee in this study, who provided a sample to be tested, commented on feeling anxious during the period they were awaiting their test result. In contrast, many young men, in interviews and also in conversations in the settings, described feeling anxious. Although not statistically significant, young men who reported in their questionnaire they considered themselves to be at risk of having chlamydia tended to report feelings of anxiety when awaiting their results. One young man commented:

"I was thinking about the lassies I'd been way and if I could have caught anything from them and I wis just thinking about all that you know...I was pure stressed sitting in my house thinking about it actually, I wis really stressed until I got the result."

(Interviewee #190, Male, Age 21, Health & Fitness)

A few young men described feeling anxious about potentially having to inform partners of a positive result:

"Aye, I was thinking what if I have it and I need to tell people. That was a nightmare. I'm glad it was negative 'cos that would really have been a nightmare."

(Interviewee #194, Male, Age 21, Health & Fitness)

The anxiety among the young men when awaiting their results often stemmed from worrying they would test positive and the subsequent implications they perceived regarding informing partners of their result. One male commented:

"If the results were to come back, like positive kinda thing, you know like coming back and having to discuss, I don't think I could do that."

(Interviewee #258, Male, Age 22, Health & Fitness)

No male discussed attributing blame to a female sexual partner or lacked self-blame, as was found in one recent study with heterosexual men who were diagnosed with chlamydia (Darroch et al. 2003). Another, who tested negative, said: *“I was happy not to be having a conversation with anyone!”* (Interviewee #308, Male, Age 22, Workplace). Another expressed similar concerns: *“A lot of people won’t want to come back and have a discussion with anyone here that’s the thing”* (Interviewee # 258, Male, Age 22, Health & Fitness). This young man replied to his text message result (which was negative) with the message *‘Thanx 4 that. Good 2 no im safe. All the best 4 rest of study [sic]’* (Interviewee #258, Male, Age 22, Health & Fitness).

These comments raise the issue of how successful ‘in the field’ treatment would have been in this study, had that been the protocol. However, similar studies, as chapter 2 reviewed, were able to successfully treat the large majority of infected persons in community settings: 91.7% were successfully treated in one (Jones et al. 2000), and 100% of infected persons were successfully treated in another study (Gunn et al. 1998). The views of the young men in this study suggest that men experience feelings of anxiety when awaiting results as part of screening. Their concerns tended to be focused on the possibility of having to engage with a treatment process and informing partners of their positive result.

Treatment of positives

Screening participants in this study who tested positive for chlamydia infection had their contact details passed on to a Health Adviser at the local Gum clinic that had agreed to manage any persons who may test positive from being screened as part of this study. Verbal feedback from the Health Adviser was provided to the author, followed by written confirmation, regarding whether contact with respondents who tested positive was successfully made and also whether respondents attended the clinic for treatment. Of the five respondents who tested positive, four attended the GUM clinic for treatment. The Health Adviser commented that obtaining a mobile telephone number for these respondents had made contact with these respondents easier (personal communication, 23d April 2005). One male, who did not attend for treatment, was successfully contacted on three separate occasions, following the clinic’s standard protocol. Despite the Health Adviser engaging in a conversation with this respondent on each of the three occasions that contact was made, the respondent (to date) has not received treatment for chlamydia at this clinic. The Health Adviser stressed to the author that it is possible the respondent sought treatment from his GP, as he had mentioned this during a telephone call.

During interviews, one respondent, who tested positive, was asked for her experience of being referred for treatment after testing positive for chlamydia in this study. Her comments focused largely on her experience within the clinic. She offered little commentary, even when probed, on how she felt being referred to a clinic after having been tested in a non-clinical setting. Her account of her experience was thus:

*R: [my boyfriend] was taken away first and I'm sitting there a bit sort of scared, sitting there myself, but I wasn't really minding cos I was getting out of work...the staff, most of them were quite pleasant but I found the guy that worked on reception was a bit sort of snidey, I didn't like him..he was bitching about someone and I could hear it and I didn't like that, he was talking about someone as though they were a f**king wain*

KL: A bit condescending?

R: Mm mm and then I noticed that I could hear everything people were saying when they got up to the reception bit and I mean it's no exactly confidential, I mean fair enough we're all in for the same thing...and I got told different things from my boyfriend, like he was told not to take the tablets on an empty stomach whereas I was told to take the tablets now, so the way we were treated, I thought it was a bit off y'know being told different things.

(Interviewee #128, Female, Age 23, Education).

Interview recruitment

Although it had been intended to interview 20 individuals per setting, in practice this proved difficult. The author was only in each setting for a relatively short time, which meant there was a limited opportunity in which to discuss all aspects of the study with young people. Given the one-person approach, there was a lot of information to convey to respondents and sometimes discussing their willingness to participate in an interview was overshadowed by discussions of informed consent and methods of contacting them with their results. Being conscious to ensure that all persons who provided a sample for testing received their diagnosis and understood the importance of seeking treatment in the event of a positive result therefore often took precedence over a discussion of participating in an interview.

Among those whom it was possible to discuss interview participation with, more respondents agreed to the interview than eventually turned up and with the move to another setting, following up non-attendees proved difficult. Respondents who agreed to interview were offered the choice of the setting or university as the location for the interview. Most respondents who agreed to take part in an interview wished to do so in the university, rather than in the setting. However, it proved difficult to arrange interviews with these

people, and few eventually participated in an interview. Conversely, the majority of those who agreed to participate in an interview in the study setting eventually participated. In the workplace setting, respondents received three twenty-minute breaks per shift and so some interviews in this setting were conducted in two parts. In the health and fitness setting some respondents suggested it was difficult to arrange to take part in an interview because they received transport home from a friend and did not want their friend to wait for them. No incentive to take part in an interview was provided and this may have affected the uptake of the interviews.

Table 3 provides information on the 24 respondents from all settings who participated in an interview (10 males and 14 females). Of them, 20 had provided a sample for testing, 4 did not take part in the offer of screening. Two of five respondents who tested positive for chlamydia participated in an interview.

Table 3: Interview participants

Study ID	Gender	Age	Setting	Provide a sample?	Result
38	M	22	Education	Y	neg
75	M	17	Education	Y	neg
77	M	20	Education	Y§	pos
128	F	23	Education	Y	pos
138	F	18	Education	N	-
159	F	22	H & F	Y	neg
181	F	23	H & F	N	-
190	M	21	H & F	Y	neg
194	M	21	H & F	Y	neg
230	F	24	H & F	Y	neg
237	M	24	H & F	Y	neg
255	F	22	H & F	N	-
258	M	22	H & F	Y	neg
294	F	24	H & F	Y	neg
308	M	22	Work	Y	neg
309	F	20	Work	N	-
310	F	20	Work	Y	neg
311	M	20	Work	Y	neg
322	F	21	Work	Y	neg
352	F	21	Work	Y	neg
354	F	23	Work	Y	neg
355	F	23	Work	Y	neg
364	M	23	Work	Y§	neg
370	F	24	Work	Y	neg

‘H & F’ is Health and Fitness setting; ‘Work’ is workplace setting.
§ These respondents did not provide a sample when first approached in the setting, but gave one at their subsequent interview.

Baseline characteristics of the sample

Prior to discussing what respondents knowledge of chlamydia was (Chapter 4) and their willingness to accept the offer of screening by providing a sample of urine (Chapter 5), this chapter concludes by providing an overview of the study respondents: the numbers approached, those who completed questionnaires and those who subsequently provided a sample for testing are detailed by setting and gender.

A total of 431 young people aged 16-24 years were approached about the study. When approached, young people were informed about the nature of the study and asked if they wished to participate by completing a self-administered questionnaire. Of those approached, 84% (n=363) agreed to participate by completing a questionnaire (see Table 4). The choice of being screened for chlamydia was raised at this point in the approach, but respondents could choose to use the time taken to complete the questionnaire to consider their response to the offer of screening. After completing the questionnaires, young people returned them to the author. At this point in their participation respondents were offered screening for chlamydia and they could accept by providing a urine sample. Of the 363 who completed a questionnaire, 113 (32.6%) provided a sample for testing (see Table 5). No respondent provided a sample without completing a questionnaire.

The study sample consisted 158 males and 205 females (mean age, 20 years; interquartile age range 18-22). Approximately half of education respondents were teenagers, compared with one quarter of both health and fitness and workplace respondents (see Table 6). The mean age of respondents by setting is presented in Table 6.

Table 4: Sample size and response rate, by setting and gender

Study setting	Gender	Numbers approached	Numbers completing survey (%)	Response rate %
Education	All	145	126	86
	Male	76	62 (49)	82
	Female	69	64 (51)	93
Health &	All	158	133	84
	Male	65	56 (42)	86
	Female	93	77 (58)	83
Workplace	All	128	104	84
	Male	48	40 (38)	83
	Female	80	64 (62)	80
TOTAL		431	363	84

Table 5: Numbers of respondents accepting screening, by setting and gender.

Setting	Gender	Number of respondents	Number accepting screening (%)	X ² test
Education	ALL	115	22 (19.1)	0.07
	Male	59	15 (25.4)	
	Female	56	7 (12.5)	
Health & Fitness	ALL	127	62 (48.8)	0.01
	Male	53	33 (62.3)	
	Female	74	29 (39.2)	
Workplace	ALL	104	29 (27.8)	0.40
	Male	40	13 (32.5)	
	Female	64	16 (25.0)	
TOTAL	ALL	346†	113 (32.6)	0.009
	Male	152	61 (40.1)	
	Female	194	52 (26.8)	

† 17 of 363 respondents stated they were not yet sexually active and were excluded from analysis; Significant relationships between gender and providing a urine sample are indicated by bold p-values.

Table 6: Age of respondents, by setting.

	<i>Age of respondent (years)</i>		
	16-19 (%)	20-24 (%)	Mean age
Education	66 (53.7)	57 (46.3)	19.6
Health & Fitness	39 (29.3)	94 (70.7)	21.1
Workplace	24 (23.1)	80 (76.9)	21.1

Summary

During the study 431 young men and women under 25 years were approached in three community settings and asked to participate in the study by completing a questionnaire. A total of 363 (84%) of those persons agreed. Of them 113 (32.6%¹⁸) provided a sample of urine to be tested for chlamydia. A time of ~ 230 hours was taken to recruit these young men and women into the study. This results in an average screening rate of one sample every 2 hours. This number seems small; however, in each setting there were periods when there were no age eligible persons with whom to approach. On the other hand, there were also many occasions when more than one sample was collected by the author during the one screening session. For example, on the second day of screening in the education setting, 31 persons completed a questionnaire, of whom 8 provided a urine sample for testing; on day 20 in the first health and fitness setting, 6 persons completed a questionnaire, of whom 5 provided a sample for testing. Despite attention given to the times and days most appropriate to the age-eligible clientele at each setting, there was, nevertheless, variability both in the numbers of age-eligible young people accessing the setting, and in the numbers of respondents who were willing to provide a sample for testing.

The opportunistic nature of this screening approach renders it difficult to accurately assess the total potential screening population. However, this study was concerned with screening in non-medical settings as an approach to exploring the feasibility of doing so but also to collect data on the response by young people to the offer. The one-person approach affected the size of the sample recruited. For both of these reasons this study has placed little emphasis on the coverage of screening using this approach. Both the numbers

¹⁸ 17 persons reported they were not yet sexually active therefore 113 of 346 persons accepted the offer of screening.

who participated when approached and the time taken to recruit samples was recorded in this study. In contrast, most screening approaches in non-medical settings describe using one of these two methods of reporting participation rates. There were a number of barriers to recruitment, which were often setting-specific. This information, which was recorded in fieldnote diaries, provides useful data upon which to assess the feasibility of offering chlamydia screening to young populations accessing these three non-medical settings.

Setting-specific barriers included, being restricted to particular areas of the setting from which to establish the screening sessions, which limited the number of persons the author was able to approach. For example, in the education setting, the author was not permitted to enter classrooms and so the study was set up in the canteen area. When possible, the author moved to another venue within the same setting to recruit more individuals (for example, moving from the canteen to the snack bar within the education setting) and also changed the time of day the study was conducted. In the health and fitness setting, age eligible users frequented the settings at various times. Those who did frequent the study area tended to remain for a short period and, given the one-person approach, it was often difficult to approach all users within this limited time. In the workplace setting, the author was only given permission to approach individuals on their own time (during breaks which were 20 minutes each); however, approaching groups of employees meant it was often possible to recruit people at the same time.

For these reasons, approaching individuals was often constrained by the number of eligible men and women coming through the setting over the time period and time limitations. The lower uptake at the education setting, despite a larger potential sample, in particular reflects this difficulty. Despite this, the study had a flexible approach inbuilt, which enabled the approach to change to suit the way in which the setting users frequented the settings.

Gaining access to the study settings was relatively easy and unproblematic. Access was granted with little or no questions or concerns raised by the 'gatekeepers'. Many of the staff at the settings, in particular the health and fitness settings, provided support and useful information (such as busy times when age-eligible users accessed the setting) and also expressed interest in the study during the course of the screening sessions in the settings. Whilst a lack of support from staff may not have prevented the study taking place, nevertheless, the absence of disruption facilitated the screening sessions.

The *National Strategy for Sexual Health and HIV* pays little attention to the question of how gender may affect the approach and how screening is offered. Practical issues, such as how samples are stored as well as treatment and partner notification are commonly discussed in the screening literature. Indeed, the proposed screening strategy for England focuses on issues of practical implementation. Further, risk factors associated with positive results are often analysed in both clinic and non-medical screening studies. Few studies assess and/or report the influencing factors upon uptake of screening in non-medical settings. When factors affecting participation in screening have been discussed in the literature, interesting findings are emerging, such as the effect of the interviewer, confidentiality, the perception of risk and who is around at the time people are asked to provide a sample (Debattista et al. 2002d; Fenton et al. 2001a). This study has found that there are important differences in the way men and women responded to the offer of screening. The use of humour as well as culturally appropriate language and dress did much to break down the reluctance of many young men to become involved in this study. This has been reported elsewhere in the literature in relation to screening studies with MSM who are approached and invited to be screened in entertainment venues (Debattista et al. 2002a).

Regarding the practical issues of establishing screening in these settings, this study demonstrates that it was feasible to offer screening. Testing was carried out in these settings with little problems and respondents were all successfully contacted with their results. All respondents who tested positive were successfully contacted by the clinic and all except one respondent attended the GUM clinic for treatment and were subsequently managed according to the clinic's usual procedures. The uptake of screening among young men in non-medical settings varies by screening setting in existing studies (Ford et al. 2004b); however, all have been shown to be feasible. Other studies have identified accessibility as well as access to information about chlamydia as two key facilitators among young men of willingness to accept the offer of chlamydia screening in community settings. These studies have predominantly occurred in the USA; this is the first study in the UK to consider the feasibility of screening and willingness of young men to accept the offer of screening in a health and fitness setting.

The stability offered by non-medical settings within the community may facilitate successful patient follow-up evaluation by providing healthcare workers with venues and access points to reach persons who may otherwise be inaccessible for notification and treatment. Additional benefits may include an increased sense of partnership between

researchers and GUM healthcare workers. Respondents' views on these, and other, issues will be discussed in greater detail in chapters 5 and 6.

This chapter described the process of gaining access to the study settings and establishing screening in them. The next chapter presents data on what the young people who participated in the study know about chlamydia as well as their views towards screening being offered in these settings.

Chapter 5

Young People's Knowledge of Chlamydia and Views Towards Screening for Chlamydia

This chapter is in two parts: the first part of this chapter details what young people taking part in this study know about chlamydia; the second part describes their attitudes towards screening for chlamydia in both medical and non-medical settings in general. Their attitudes towards being asked to participate in chlamydia screening study will also be explored.

For this study, both the questionnaire and the semi-structured interviews collected data on knowledge of attitudes and attitudes towards screening for chlamydia. 'Don't know' responses were included in analysis of questionnaire data to ascertain the level of uncertainty among respondents regarding their knowledge of chlamydia. Non-sexually active participants were included in analysis of knowledge but excluded in analysis of willingness to accept the offer of screening (see Chapter 6).

Respondents' awareness of chlamydia

Respondents were asked if, prior to taking part in this study, they had ever heard of chlamydia and also to identify what chlamydia is. The majority (93%) of respondents had heard of chlamydia before taking part in this study, with no significant gender differences. Setting was significantly associated with participants having previously heard of chlamydia, with education and workplace setting participants more likely to have heard of chlamydia than health and fitness participants. All respondents, except one, correctly identified chlamydia as being a sexually transmitted infection (99.2%).

The survey data revealed a large majority of respondents had heard of chlamydia prior to taking part in this study. Data from interviews with respondents and also from fieldnotes revealed a greater certainty of awareness of chlamydia among women than men. Many young men spoke with uncertainty about their awareness of chlamydia than the young women and were less able to elaborate their knowledge: *"I'd heard of chlamydia but I didn't know what it was, really..."* (Interviewee #75, Male, Age 17, Education). Another said: *"I've heard aw it but a've no, I don't know aboot it..."* (Interviewee #190, Male, Age 21, Health & Fitness). In contrast, young women, when approached, often responded confidently and with certainty when asked if they had heard of chlamydia before, for

example, “*Oh, yes, uh huh, I’ve heard of it*” and “*Chlamydia yes I’ve heard of it..*” (Fieldnotes, Education, 24th March 2004). It is possible to have heard about an infection and yet know nothing more about it; therefore, survey respondents and interviewees were also asked for their knowledge of chlamydia.

Knowledge about the clinical features of chlamydia, associated sequelae and testing method

The survey asked men and women to respond to a series of knowledge questions, including: how infection occurs; the symptoms of chlamydia in men and women; the long-term health consequences for men and women who had chlamydia; and, the asymptomatic nature of chlamydia infection. The majority (99.4%) of all study respondents correctly identified unprotected sex (no condom) as how chlamydia infection occurs. Chi-square analyses found no significant relationships between gender, age or setting and knowledge of this item ($p>0.05$).

Regarding knowledge of symptoms of chlamydia, respondents were to choose the ‘correct’ symptoms from a list (see Table 7, and also Appendix 3). First, there were a number of misconceptions in relation to female symptoms. The greatest number of misconceptions among both male and female respondents were observed for the item assessing knowledge that women might develop pain in the lower stomach, with 80% of all respondents providing an incorrect answer. Of all respondents, 61% believe unusual discharge, 51% believe pain or stinging when urinating and 57% believe pain during sex not to be associated symptoms of chlamydia in women – all of which are symptoms of chlamydia in women. Chi-square analyses found significantly more males than females answered incorrectly to the items unusual discharge (female symptom) ($X^2=72.030$, $p<0.001$) and pain in lower stomach (female symptom) ($X^2=20.991$, $P<0.001$). In addition, Chi-square analysis found significantly more women (60.0%) than men (24.7%) knew chlamydia could be mostly asymptomatic in women ($X^2=45.540$, $p<0.001$).

Second, in relation to symptoms of chlamydia in men, the greatest number of misconceptions were observed for the item assessing knowledge that chlamydia might cause pain and/or swelling in the testicles of men, with 75% of all respondents providing an incorrect answer. Of all survey respondents, 51% believed unusual discharge and 46% believed pain/burning when urinating not to be associated with chlamydia infection in men – both of which are symptoms of chlamydia in men. Chi-square analysis found

significantly more males (40%) than females (20%) answered the item ‘unusual discharge’ (males) – a common symptom among men who develop symptoms of chlamydia – incorrectly ($X^2=6.326$, $p=0.042$).

Chi-square analyses were performed to assess whether there were any significant differences in knowledge of symptoms were reported between the three study settings (see Table 7). Workplace respondents answered incorrectly less so than either education or health and fitness respondents. The highest misconceptions, by setting, were observed for the symptom ‘Pain in lower stomach’ (female symptom) with 70% of workplace, 80% of health and fitness and 85% of education respondents failing to identify this as a correct symptom. Thus, although the workplace respondents answered least incorrectly, there were nevertheless a large percentage of all respondents who could not identify this symptom in women. However, many respondent from each setting chose to respond ‘Don’t know’ to this item (see Table 7) therefore the significant association between setting and knowledge of female symptoms should be treated with caution due to the small numbers involved.

Table 7: Percentage of respondents answering questions of symptoms of chlamydia in women and men incorrectly, by setting.

<i>Symptoms in women §</i>	<i>Education</i>	<i>Health & fitness</i>	<i>Workplace</i>	<i>X² test p</i>
Unusual discharge	37.3	49.2	28.8	<0.001
Pain or stinging when urinating	50.0	55.3	39.4	<0.001
Dizziness	0	0	5.8	<0.001
Headache	0.8	0.8	2.9	0.002
Pain during sex	54.2	59.1	51.0	0.004
Pain in lower stomach	84.7	80.3	70.2	<0.001
Itch and/or rash	19.5	10.6	30.8	<0.001
	%	%	%	
Don't know	22.0	27.3	21.2	0.003
<i>Symptoms in men</i>				
Unusual discharge from tip of penis	50.8	58.3	42.3	0.088
Pain and/or burning when urinating	47.5	50.8	36.5	0.127
Dizziness	0	0	1.0	0.294
Headache	0.8	0	1.0	0.514
Pain/swelling in testicles	71.3	76.5	76.0	0.457
Itchiness around groin area	13.9	12.9	15.4	0.594
Rash	13.1	8.3	17.3	0.143
	%	%	%	
Don't know	29.5	33.3	30.8	0.577

Correct symptoms are indicated by bold typeface. Significant relationships between setting and knowledge of symptoms are indicated by bold p-values. § 9 missing values.

Regarding male symptoms, Chi-square analyses found no statistically significant associations ($p>0.05$) between setting and knowledge, with a similarly high percentage of survey respondents in each setting answering incorrectly (see Table 7). Again, ~one third of respondents stated ‘Don’t know’ to this knowledge item which reduces the overall number in each setting providing a ‘True’ or ‘False’ answer.

In addition to these setting-related differences in knowledge of symptoms, Chi-square analysis of the survey responses revealed significant differences in knowledge by age of respondent. Respondents aged 20-24 years provided significantly fewer incorrect responses than respondents aged 16-19 years (see Table 8). On three of the four true symptoms of chlamydia in women, survey respondents aged 16-19 years answered more incorrectly than those aged 20-24 years. On one of the three correct male symptoms, survey respondents aged 16-19 years answered more incorrectly than those aged 20-24 years. However, whilst survey respondents aged 20-24 answered least incorrectly on both female and male symptoms, there is nonetheless a large number who appear unable to identify the most common symptoms of chlamydia in women and men, with between 36.6% and 71.0% of those aged 20-24 years answering symptom questions incorrectly.

Table 8: Percentage of respondents answering questions of symptoms of chlamydia in women and men incorrectly, by age group.

<i>Symptoms in women</i>	<i>Age of survey respondents</i>		<i>X² test</i>
	<i>16-19 years</i>	<i>20-24 years</i>	
Unusual discharge	44.5	36.6	0.078
Pain or stinging when urinating	57.0	44.6	0.023
Dizziness	0	2.7	0.062
Headache	3.9	0	0.002
Pain during sex	68.0	48.2	<0.001
Pain in lower stomach	92.2	71.0	<0.001
Itch and/or rash	17.2	21.0	0.107
Don't know	29.7	20.5	0.034
<i>Symptoms in men</i>			
Unusual discharge from tip of penis	58.6	47.1	0.095
Pain and/or burning when urinating	53.1	41.9	0.099
Dizziness	0	0.4	0.452
Headache	1.6	0	0.127
Pain/swelling in testicles	82.8	69.6	0.021
Itchiness around groin area	15.6	13.2	0.626
Rash	7.8	15.0	0.106
Don't know			

Significant relationships between age and knowledge of symptoms are indicated by bold p-values.

Interactions between setting, gender and age were also assessed using logistic regression. The effect of gender, setting and age had upon knowledge of symptoms was found to be the same; thus, there are no significant interactions in this study population between setting, gender and age. Overall, there appears to be a high percentage of respondents who have a low knowledge about the clinical features of chlamydia, especially males, health and fitness and education respondents and younger respondents.

All survey respondents were asked to consider whether chlamydia could affect men and women's fertility; also whether chlamydia could cause conjunctivitis. Two thirds (66.1%) of all survey respondents believed chlamydia could affect men's fertility, although more men than women responded 'True' to this item (71.5% of men and 60% of women). The majority of survey respondents knew chlamydia could also affect women's fertility (82.6%); and in contrast to the previous item response, significantly more women considered this to be true than men (84.9% of women, 76.6% of men,). Few respondents knew that chlamydia might cause conjunctivitis (15.2%). In contrast, the majority of survey respondents (97.2%) knew chlamydia could be tested on a sample of urine (with blood and saliva as the other available options in the questionnaire); Chi-square analysis found no significant associations between gender, setting or age with knowledge of this item ($p>0.05$).

Regarding the asymptomatic nature of chlamydia, survey respondents were asked to respond to statements including 'I'd know if I had chlamydia' and 'I'd only think about chlamydia if I had symptoms'. Respondents were asked to choose their response from a Likert scale ranging from Strongly Agree to Strongly Disagree. Responses were aggregated into agreement and disagreement with the statements. Regarding the first statement, around 1 in 6 (15.1%) respondents (14.7% of men and 15.3% of women) agreed that they would know if they had chlamydia. Around half of men and women (48.0%) disagreed and believed they might not know if they had chlamydia (42.9% of men and 52.0% of women). Thus, around half of the sample either did not know or responded incorrectly to this item; therefore half of all survey respondents were not aware that chlamydia is often symptomless – a key feature of this infection.

Regarding the second statement, one in three (36.6%) of all survey respondents believed they would only be concerned about chlamydia if they developed symptoms. Again, a high number of survey respondents were therefore unaware chlamydia can run a symptomless course. Chi-square analysis found a gender disparity in this view:

significantly ($p < 0.01$) more men than women agreed with this statement (45.6% of men compared with 29.8% of women). Furthermore, around 1 in 10 of all respondents (8.8%) believed chlamydia is a 'women's problem', with no significant differences between male and female responses to this item ($p > 0.05$). There was therefore a perception among many survey respondents that chlamydia infection would present itself with obvious symptoms and that it is largely a female concern.

Study respondents who agreed to participate in an in-depth interview were again asked about their knowledge of chlamydia during interviews. A list of common sexually transmitted infections was shown to interviewees, with chlamydia at the top of the list. Interviewees were asked what they knew about each infection. Regarding chlamydia, there was a low perception of knowledge among most interviewees, which concurs with the survey findings. A common response from interviewees is illustrated below:

KL: Tell me what you know about chlamydia.

R: I don't know a lot about it to be honest [pause]

KL: Do you know any symptoms of chlamydia?

R: See, I've heard about it, I don't really know, obviously, all the ins and outs of it, but I know what it is, as much as I kinda, I think I know kind of thing, but em...I don't know a lot about it.

(Interviewee #309, Female, Age 20, Workplace).

This female respondent reported a poor knowledge about chlamydia and used a language of uncertainty; however, more male interviewees responded in this manner to this question. The following young man's comment was a common response from male interviewees:

"I think I'd heard of chlamydia before [participating in the study] from somewhere but I'm not sure like I know much about it, I think I'd heard of it from somewhere"

(Interviewee #38, Male, Age 22, Education).

Other interviewees who were able to comment on the asymptomatic nature of chlamydia and the associated sequelae among men and women with long-term infection tended to report that they had acquired this information from the study literature:

R: I'd heard of chlamydia before I spoke to you but I didn't know that you might not know you have it. I'd always thought that with things like this you'd know, like you'd get a discharge or something would just be like funny down there [laughs] but em, yeah I know that that's not always the case now and also that it can cause like problems, women not getting pregnant and stuff, I didn't really know that

KL: You say you know those things from taking part in this study?

R: Yeah, like you don't always know or as you said 'you can't tell by looking'. I remember you saying that to me.

KL: Really. So me talking to you..any other parts of the study you..

R: *..yeah those leaflets you gave me...I did actually read them [laughs] and it had like the symptoms and what could happen if you didn't get it sorted kinda thing. But like I had read the whole no symptom thing on a poster you had up in the toilet...you kept passing it and reading another line each time.*
(Interviewee #364, Male, Age 23, Workplace).

Two women had a depth of knowledge about chlamydia: one had previously worked in a laboratory which tested samples for STIs and the other had experience of working on a sexual health advice line.

Most interviewees offered comments on their perceptions of young people's knowledge about chlamydia. A typical view among the majority of all interviewees was that most young people are aware of chlamydia but have poor knowledge about it. By contextualising their own poor knowledge of chlamydia with knowledge among young people in wider society, respondents were attempting to normalise their own poor knowledge. One young woman offered the following comment immediately after discussing her own perceived low knowledge of chlamydia:

"...but I don't think many, like most people I know, I don't think they know all about this stuff so, I mean they're about my age ...I dunno...I just think it's, there's just hardly any information about this and I think there should be."
(Interviewee #309, Female, Age 20, Workplace).

Most interviewees spoke about their own sex education and offered views on the quality of sex education more generally. A typical view from both male and female interviewees was that their low knowledge about chlamydia was the 'fault' of their perceived poor sex education. A few couched their statements in normative terms:

KL: *what do you remember being taught about sexual infections in sex education?*
R: *No much. I remember it was like AIDS and stuff but that's really all, HIV, that's all I kind of remember. I think we really should have been taught about this stuff, like see the first time really that I've ever went into anything in any detail has been with yourself.*
(Interviewee #308, Male, Age 22, Workplace).

The most common STI interviewees remember being discussed during their sex education was HIV/AIDS. Almost all interviewees commented that they do not remember being taught about chlamydia at school.

The belief that poor knowledge was linked with high-risk sexual behaviour was expressed by some interviewees, although more so from females than males. According to these young people, providing more information about STIs, especially within the school context, would reduce high-risk behaviours and therefore rates of STIs. During these

specific discussions, some of these interviewees went on retrospectively to describe their own sexual behaviour as being high-risk; they believed that their lack of awareness of chlamydia led to them taking risks with their sexual health.

Whilst overall knowledge among this sample population was low, some knew that chlamydia might affect a women's fertility:

"I didn't know any side effects or anything, apart from infertility...it was the only one I knew, and I didn't know what symptoms there was or anything like that."
(Interviewee #255, Female, Age 22, Health & Fitness).

Some respondents knew of the clinical features of chlamydia; however, many discussed learning about these facts from reading the study literature, especially from the posters and conversations with the author. As discussed earlier, one in ten respondents (10.6%) reported 'This study' as their first source of information about chlamydia and some interviewees discussed their knowledge of chlamydia stemming from reading literature given them as part of the study. When asked what they now know about chlamydia from taking part in the study, interviewees most commonly referred to the largely asymptomatic nature of chlamydia infection. Some female interviewees commented that they had heard of chlamydia and knew it could affect women's fertility because they had read about it in women's magazines; however, most, as with males, were largely unaware prior to taking part in this study that chlamydia could be asymptomatic. Many young men commented on being surprised to learn that the majority of people would have no sign of symptoms of chlamydia infection. Some men commented that they believed they would know if they had caught a STI:

"I was quite shocked by that, cos I always thought, well for most things like that, that you'd know, y'know. I always thought I would know, I'd have some sort of symptom, so yeah, I was really surprised when I read that most people don't always know."
(Interviewee #237, Male, Age 24, Health & Fitness)

Perhaps on the basis of their surprise, some respondents, especially men, discussed that they had subsequently informed their friends about how common chlamydia is and of the largely asymptomatic nature of the infection. One man commented:

"Surprisingly a couple of the friends I've got haven't actually had experience with a woman yet as it were so they're not really worried about it. They didn't really know about it like they didn't know it could affect your fertility and it can really affect a woman's fertility and stuff so I was telling them and they were like 'Oh right I thought it was just..you started leaking stuff' (laughs)... I says sometimes you don't know, obviously from reading the poster and from the information you had given us, eh, it was saying you don't always know and if you've had unprotected sex it's a good idea

to get checked out, especially if you don't know the person, even if you do know them but don't know their history."

(Interviewee #311, Male, Age 20, Workplace).

Two female respondents described conversations they had with their respective younger brothers, mentioning specifically the lack of symptoms, the commonness of chlamydia and how simple the test and treatment is, with one requesting a test 'kit' to take home to her brother, as the following field note extract illuminates:

A female respondent who provided a sample the other evening approached me tonight to request a test 'kit' to take home to her brother. She said she had told him that she had been tested for chlamydia and he responded, "What's that?" Their ensuing discussion consisted of her informing her brother about chlamydia, she mentioned the asymptomatic nature of chlamydia to him and how common it was among people under 25 years. She decided that he should be tested and assured him that she would ask for a test 'kit' the next time she saw me.

(Field note, Health & Fitness, 2nd June 2004)

The opportunity for health promotion was an unintentional but apparently inherent aspect of this study. The surprise among many interviewees from learning of the asymptomatic nature of chlamydia infection was subsequently communicated to their friends: *"I was like that "did you know that most people don't know they even have it!" kinda thing, cos I couldnae believe that man! I thought you would know if you had something."* (Interviewee #77, Male, Age 20, Education). Both women and men reported that they had passed on information they had gained about chlamydia from their participation in this study to family and/or friends. The health promotion aspect to this approach, albeit unintentional, has been discussed in the literature concerning non-medical approaches as a possible secondary benefit to this type of approach (Arcari et al. 2004; Debattista et al. 2002a).

Source of respondents' information

Survey respondents were asked to choose the source from which they first heard about chlamydia. The commonest source chosen was 'Teacher/School', followed by 'Friend' then 'Magazine' (see Table 9). Whilst 'Teacher/School' was the most common survey response, around three quarters of all survey respondents did not report an educational source as being where they first heard about chlamydia. This is a young sample with all respondents under 25 years. One might expect the numbers reporting school and or teacher to have been where they heard about chlamydia to have been much higher.

Chi-square analyses of survey responses to source of knowledge found significantly more females (13.4%) than males (4.5%) first heard about chlamydia from a medical source

($p<0.01$) – see Table 9. In addition to a medical source, significantly more female respondents (21.8%) first heard of chlamydia from a media source compared with males (0.6%). Whilst similar numbers of male and female respondents reported an educational source as their first source of information, females reported sources that males tend not to use – doctors and magazines.

Although 93% of survey respondents stated they had heard of chlamydia before participating in this study, one in ten (10.6%) respondents later reported ‘This study’ as their first source of information about chlamydia. This apparent discrepancy is explained by confusion among some respondents regarding the survey question. Some interviewees commented that they became aware of chlamydia from having read study posters and leaflets, which circulated in the settings one week in advance of the study commencing in each setting. This may explain the apparent discrepancy: that they had first heard about chlamydia from reading a study poster and consequently responded ‘Yes’ to the question ‘Had you heard of chlamydia before taking part in this study?’. In addition, the higher percentage of young men than women reporting health information leaflets (14.8% of men compared with 5.0% of women) may also be explained as confusion as to the survey question.

Table 9: Respondents’ first source of information about chlamydia

	<i>Male</i>	<i>Female</i>	<i>All</i>
<i>Source of information</i>	%	%	%
Teacher/School	23.9	22.8	23.2
Friend	25.8	16.3	20.4
Magazine	0.6	21.8	12.6
Doctor/Nurse	4.5	13.4	9.5
This study	12.9	8.9	10.6
Health information leaflet	14.8	5.0	9.2
Television	13.5	5.4	9
Other	1.3	3.5	2.5
Family member	1.9	2.0	2.0
Internet	0.6	0.5	0.6

During interviews both women and men were generally unable to state with confidence or talk definitively about the source of their knowledge about chlamydia. Their responses,

when probed for a source, were vague and assuming; respondents often suggested a source they assumed they ‘must’ have heard about chlamydia from, as one female suggested:

“Em...it’s maybe been, like, in the doctors, or like, reading, like you know how you get those kind of pamphlet things when you’re waiting. I’ll read them when I’m waiting, or...maybe even school I would imagine, I don’t really know, or maybe magazines...”

(Interviewee #159, Female, Age 22, Health & Fitness).

However, two young men were able to state with certainty where they had learned about chlamydia:

“I’d heard of chlamydia before because I remember my girlfriend that always used to watch Sex in the City, and in one episode, eh... the ginger one gets it”

(Interviewee #77, Male, Age 20, Education).

“Yeah em, I didn’t know anything about it [chlamydia], like I don’t even know if I’d heard about it until I got a call from my ex-girlfriend saying she had it and I should get checked out. I was like that “what?”...”

(Interviewee #237, Male Age 24, Health & Fitness).

Certain sources are conspicuous by their absence, for example, doctor/nurse and family member: 9.5% stated doctor/nurse as their first source of information about chlamydia (although significantly more females reported doctor/nurse); only 2% of all survey respondents stated family member.

During interviews men and women were asked about any conversations they recall having with family members about sexual infections, and also contraception in general. Both women and men who described experiencing discussions with family members, during which they learned about contraception and/or sexually transmitted infections, tended to also report consistent condom use and exhibit the broadest knowledge about sexual health matters. A male interviewee stated:

R: Aye my ma drummed ‘use a condom, use a condom’ intae me fae a young age...I think she was terrified I’d come home saying I’d got some lassie pregnant

KL: And have you always used one?

R: Oh God aye...y’know it isnae funny hearing your ma’s voice in yer heid when y’know [laughs] but hey..

KL: [laughs]

(Interviewee #194, Male, Age 21, Health & Fitness)

All of the interviewees who discussed having conversations with family members reported this person to have been their mother; some female interviewees commented that sexual

health was not a subject they considered to be an appropriate topic to discuss with their fathers. As one commented:

"I wouldn't talk to my dad about it [sex] but I would talk to my mum and my sister... 'cos, I dunno, it's different with them, they kinda know what's what."

(Interviewee #159, Female, Age 22, Health & Fitness)

All except two of these interviewees described their experience of discussing sexual matters with their mother as embarrassing. Two females, however, explained their ease with such conversations because they were introduced to these concepts from a young age and believed this has enabled them to feel comfortable today discussing sex and related matters. After describing the nature of the discussions her mother had with her since a young age, I asked one interviewee how she felt having these conversations with her mother:

"Absolutely normal. Totally like anything else, like she would have told me "brush your teeth before you go to bed." I knew it was really a serious matter but I thought it was just... the kind of serious matters that parents talk about, like how you need to use contraception, em, be careful when you drive... things like that. So I thought it was just...not a special thing, just normal."

(Interviewee #370, Female, Age 24, Workplace).

Whilst the numbers are small, and generalisations are therefore unable to be made to the wider population, this ease with discussing sexual matters linked with discussion with family members about sex at a young age was an interesting thematic pattern to emerge across these interviews with young people.

Summary of knowledge of chlamydia

Whilst awareness of chlamydia was high in this sample survey population, level of knowledge declined as questions became increasingly focussed, so that less than half of all survey respondents knew that chlamydia might cause an unusual discharge in women and men, a common symptom of chlamydia in both sexes. There were significant gender, setting and age differences in knowledge about the clinical features of chlamydia infection, with males, health and fitness and education respondents as well as younger respondents responding incorrectly more than females, workplace respondents and those aged 20-24 years.

Around half of the survey sample either did not know or responded incorrectly to the item regarding the asymptomatic nature of chlamydia, which shows they were not aware that chlamydia is often symptomless. Half of men believed they would only be concerned

about chlamydia if they developed symptoms. During interviews, many men and women confirmed their poor knowledge on the symptomless nature of chlamydia; however, as a consequence of the unintentional health promotion aspect to the study, this was a common fact about chlamydia that interviewees believed they had learned from their participation in the study. During interviews, there was uncertainty from many men and women as to what they knew about chlamydia, which confirmed the poor knowledge reported in survey responses. It was a common perception among men and women in the interview, however, that most young people have a poor knowledge about chlamydia. Interviewees therefore believed they were not unique in any way by having a poor knowledge.

One in four survey respondents reported 'Teacher/School' as being where they heard about chlamydia. Few interviewees referred to their sex education as being the source of their knowledge about chlamydia. Indeed, many when probed remembered being taught about HIV/AIDS but they often had no recollection of any other STI being taught. Certainly, recall difficulties may have affected interviewees responses but consistently all interviewees spoke with great uncertainty as to whether they had ever been taught about chlamydia at school. For women, there were a greater number of opportunities to receive information, as more women spoke of magazines and doctors as a source of information on chlamydia.

Views towards screening for chlamydia

This section of the chapter considers survey respondents' attitudes towards being asked to participate in chlamydia screening study, as well as their views on screening being offered in various settings, with a specific focus on non-medical settings. Fifteen settings were given in the questionnaire and men and women were asked to state how acceptable they would consider it if chlamydia screening was offered in the settings (see Appendix 3). The three study settings were included in the fifteen suggested settings. Chi-square analyses were carried out to assess whether there were any gender, setting or age differences in attitude towards screening in the various settings suggested in the questionnaire. Respondents' views towards the acceptability of chlamydia screening in various settings were also explored during interviews. The survey findings on acceptability will be reported first.

Among all survey respondents, there was a high level of acceptability towards screening being offered in medical settings, with 99% of all men and women considering general practice an acceptable setting. In contrast, 90% of all men and women considered a

bookstore an inappropriate setting. The three most acceptable medical and non-medical settings for survey respondents were general practice, family planning clinics and colleges/universities; conversely, the three least acceptable settings were bookstores, Internet cafes and pubs. Just over half (51%) of all survey respondents supported screening for chlamydia in pharmacies.

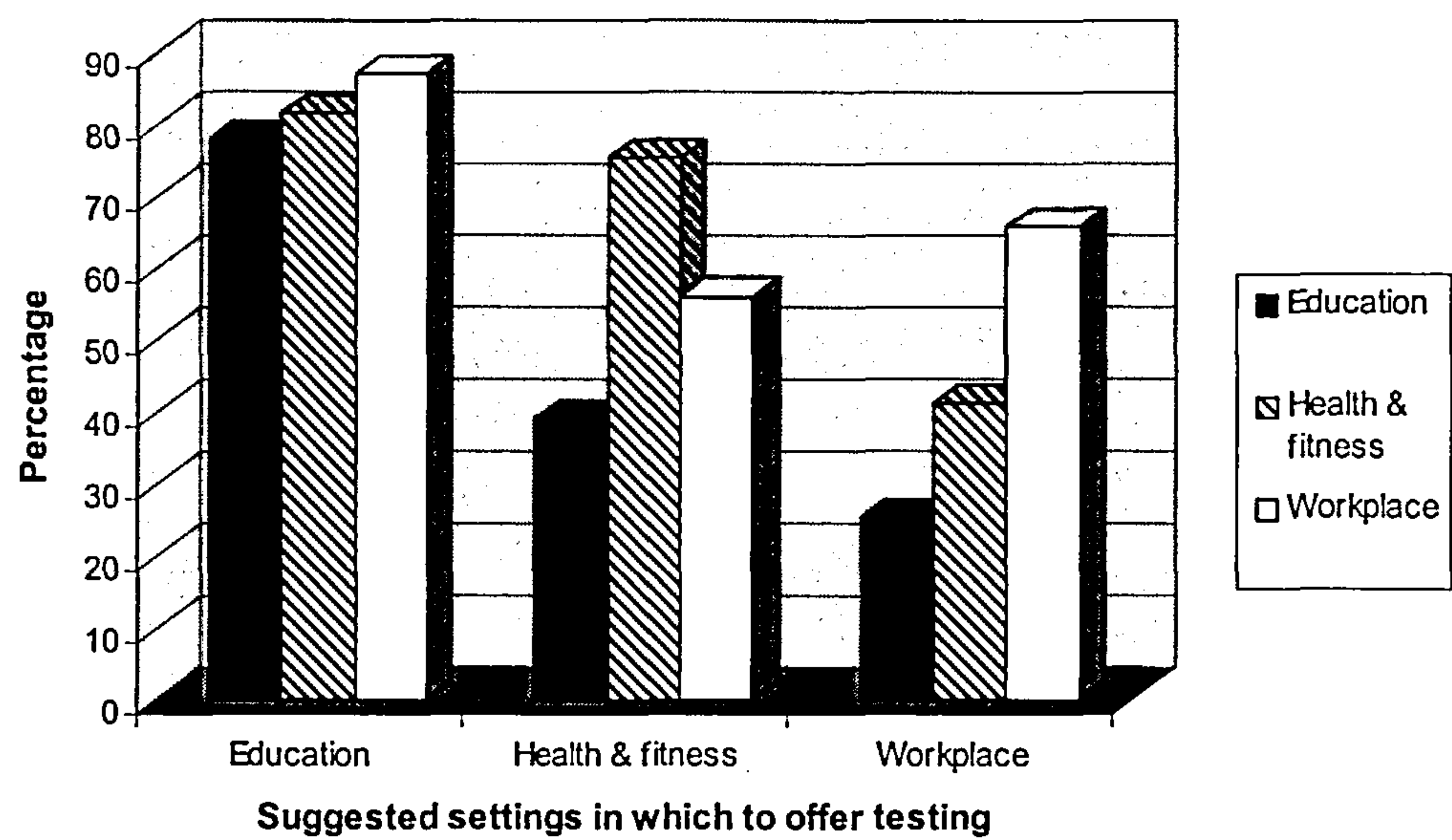
Chi-square analyses found gender to be significantly associated with attitudes of acceptability of screening being offered in non-medical settings, with males considering pubs ($X^2=4.942$, $p=0.026$) and clubs ($X^2=4.942$, $p=0.026$), more acceptable than females; however, significantly more females considered local pharmacies acceptable settings in which to offer chlamydia screening (57% of females compared with 46% of males; $X^2=4.337$, $p=0.037$).

Chi-square analyses were performed to examine whether there were significant differences in acceptability found by setting. Survey respondents in each study setting considered colleges and universities acceptable settings in which to offer chlamydia testing ($X^2=2.484$, $p=0.289$). In contrast, there were significant differences in views of acceptability in relation to the other two settings (health and fitness, and workplace). Significantly ($X^2=33.396$, $p<0.001$) more health and fitness respondents (75.4%) considered a health & fitness setting to be an acceptable setting in which to offer chlamydia testing compared with either education respondents (39.3%) or workplace respondents (56%). In addition, significantly ($X^2=37.256$; $p<0.001$) more workplace respondents (65.7%) considered a workplace setting an acceptable setting in which to offer chlamydia testing compared with education (25.4%) and health & fitness (41.2%) – see Figure 4. So, where all three setting respondents considered education to be an acceptable setting in which to offer chlamydia testing, the health and fitness and workplace respondents tended to favour their own setting more so than the other settings did. Therefore, the setting in which men and women took part appears to have affected their views on how acceptable they consider testing for chlamydia in that setting, with the exception of education.

During interviews, respondents were asked for their views on chlamydia screening being offered in various settings, focusing specifically on non-medical venues. Interviewees were also asked for their views towards being approached and asked to participate in chlamydia screening. Interviewees offered a range of views. Firstly interviewees believed screening in non-medical settings was acceptable if there was a perceived benefit, such as increasing awareness and knowledge or improving accessibility to screening. No interviewee

discussed the benefit being reducing the prevalence of infection. Secondly, non-medical screening was considered appropriate depending on how the screening would be offered: if screening targeted those who ‘should’ be screened, those who ‘would’ or else was offered in health-related non-clinical settings then it was considered acceptable. Thirdly, for some, non-medical screening was not acceptable in all ‘feasible’ settings because of the perception of stigma stemming from the public nature of non-medical settings. These views towards the acceptability of non-medical screening, including how interviewees felt about being approached in non-medical settings will now be discussed in turn.

Figure 4: Comparison of study setting respondents’ attitudes towards testing for chlamydia in education, health & fitness and workplace settings



Non-medical screening would raise awareness of chlamydia

The chapter earlier described survey respondents’ and interviewees knowledge of chlamydia. During interviews it was common for men and women to discuss the effect their participation in this study had upon their awareness or knowledge about chlamydia: *“I know a bit more about it now”; “...it hadn’t occurred to me before you came along...”*. When asked for their views towards the non-medical approach to screening used in this study, many interviewees spoke of the effect such an approach may have had on people’s knowledge: *“...it might have made people more aware about it...”*). A typical view from men and women interviewed was also that many people in the general population have a poor knowledge of chlamydia. Interviewees often linked this perception of wider knowledge with the view that *“there is a need to make people more aware about it”*.

Screening for chlamydia in non-medical settings would, for many of the men and women interviewed, have the effect of raising people's awareness of chlamydia.

Whilst many interviewees perceived their knowledge of chlamydia to be poor they also discussed a desire to learn more about it. Improving their knowledge was therefore something men and women welcomed. One young male, however, stated he harboured no desire to learn any more about chlamydia than he had already learned from taking part in the study: *"... I don't want to know like too much about it, I just want to know like the main symptoms and how you can get rid of it, that's what most people want to know"* (Interviewee #75, Male, Age 17, Education). Despite this, there was little apathy among the men and women interviewed, with almost all acknowledging their own level of knowledge *"could be better"* and expressing a desire to know more.

Attached to the view that personal knowledge improvement was required, many interviewees believed that gaining knowledge was a pre-requisite to behaviour change. Many men and women believed that increasing young people's knowledge about chlamydia would affect behaviour change among young people, in terms of reducing risk behaviours and increasing care-seeking behaviours. More than half of the men and women interviewed believed there was an inverse relationship between increased knowledge and decreased risk-behaviour. As one respondent commented: *"it should be taught in schools 'cos like if people have the information they em, well maybe there wouldn't be so many people getting stuff and like there being a problem y'know."* (Interviewee #309, Female, Age 20, Workplace).

Whilst the view that increasing knowledge would lead to a reduction in risk-behaviour was commonly expressed by both men and women, mostly female interviewees believed that increasing young people's knowledge of chlamydia would affect an increase in care-seeking behaviour. A typical view from women was that if screening for chlamydia in non-medical settings was made more widely available then young people might be encouraged to seek GUM services. For those interviewees, there was a belief that to raise awareness of one STI would encourage a general raised awareness of STIs in general:

"Coming into places like here, y'know it makes people think about it and then they might think about how they could get other things, like if you could get this [chlamydia] then you can get other things too..."

(Interviewee #138, Female, Age 18, Education)

One woman commented that, on the back of her participation in this study, she had been encouraged to seek a full sexual health screen at a local GUM clinic, which she had learned about from the study leaflet:

"I was eh thinking about was going to that place [referring to local sexual health clinic] ... I didn't know anything until you came in and I thought 'Oh aye,' I'll def: I'll go up there. Even, or even down at the doctors... "

(Interviewee #181, Female, Age 23, Health & Fitness).

How far one's desire to seek further screening is replaced with the actual occurrence of doing so remains unknown. Another interviewee offered a similar comment regarding seeking further screening:

"I've kinda thought about it before but...I think it's just laziness y'know, you never get round to it but then you comin' in here it kinda em, no just makes you think but, I dunno, I would like to be tested for everything and I think I definitely will cos it's no as scary now that I've seen it and talked to you about it and you've kinda told me things I've asked you about getting' it done..."

(Interviewee #159, Female, Age 22, Health & Fitness).

These views from female interviewees were in contrast to those of men. A few men were reticent to seek further screening for STIs after accepting chlamydia screening as part of this study: "...I don't want to know any more...", one commented. Another, whilst stating that he would like to be tested for other STIs - having become more aware about them with his participation in the study - would probably not do so in the near future: "...I think that'll do me for now... I know what it's like just to wait for one result, jeez man I don't know if I could do that again.." (Interviewee #190, Male, Age 21, Health & Fitness). Despite this, he expressed a wish that he had been able to be tested for 'everything, no just chlamydia...get it aw done at the same time y'know..'. A few other men and women also commented that it might be a 'good idea' to offer full sexual health screening in non-medical settings, on the basis that one could 'catch' people at the same time; however, few who offered such comments considered the practicalities involved in offering full sexual health screening in non-medical settings.

Non-medical screening would increase access to screening

Barriers to uptake of screening that have been discussed in the literature include issues of accessibility. Taking screening to non-medical settings, which are frequently used by young people, could potentially reduce such a barrier. Although interviewees were not directly asked if they thought non-medical screening would have an effect on accessibility

of screening, many spontaneously spoke about such an approach improving access to screening.

For some, the increased access to screening with non-medical approaches were considered to have the effect of increasing the uptake of screening among young people:

“The more places this [chlamydia screening] is offered then the easier it is for people to seek testing when and where they want it..”
(Interviewee #364, Male, 23, Workplace)

Others referred to people having ‘limited opportunities to be tested’ for chlamydia, or services being ‘out of the way’. One interviewee, raised in the Highlands of Scotland, commented on a dearth of services, in which to seek testing, located in her area. Her positive attitude towards wider availability was based on her belief that it would result in more young people being able to seek testing:

“...in the rural areas you don't have like a [sexual health] clinic or anything like that... the nearest one's about forty, forty-five minutes drive away...maybe if there were more places to do it, I dunno...”
(Interviewee #255, Female, Age 22, Health & Fitness).

Many interviewees offered views on GUM services being inaccessible, either by virtue of location or difficulties in making an appointment. To further evidence this, few respondents were able to state where the nearest sexual health clinic was, or indeed where any sexual health clinic was; others had a vague idea (‘...that place up town somewhere’). One male who had not been offered screening until he participated in this study commented:

“How easy is it to get to one of those places [GUM clinic]? You hear about long waiting times and like where even is that place you mentioned [Sandyford Imitative]? I mean, it's not like it easy...then again it's not that easy to see your doctor either so there you go.”
(Interviewee #258, Male, Age 22, Health & Fitness)

One male described being contacted by an ex-girlfriend who informed him she had chlamydia. The interviewee telephoned a GUM clinic to make an appointment but was unable to obtain one suitable. He stated he was also unable to attend the ‘drop-in’ service at the clinic, as recommended by the receptionist when he was told he could not be given an appointment for two weeks. This respondent was approached by the author in a health and fitness venue a few days after he had contacted the clinic and he participated in the study by providing a sample for testing. During his subsequent interview, this young man's views towards non-medical screening appeared to be influenced by his previous experience with the GUM clinic:

"...with this [non-medical screening] you cut out all that no appointment or wait around for hours, when you can't even get there 'cos you have to work, nonsense...I got tested somewhere I didn't need to go out of my way to get to...I mean it was luck I suppose that you turned up when you did but what about those people who think about it but don't do it, how do you know that doing it [screening] in this way won't be of benefit to people who find it hard or whatever to get to clinics?"

(Interviewee #237, Male, Age 24, Health & Fitness)

The perception among many interviewees (whether they had experience of attending a clinic or not) was that GUM services were not accessible; therefore, screening for chlamydia being made available in various non-medical settings was considered in a positive light, as it would enable people to actually seek testing, or at least be presented with an opportunity to be tested. The following field note extract is an example of comments made by some education respondents:

"During a discussion with two female students, one commented that she was in support of a testing service being available in the college after this study. She thought it would be good if there were a service like this in college every day, or even once a week that students could go and use. When I asked why she thought this should be introduced here she replied that it would make it easier for people to get tested, especially those who wouldn't want to go to a clinic."

(Field note, Education setting, 24th March 2004).

Another barrier to accessing GUM clinic settings that a few respondents raised related to the stigma of being seen attending the clinic. Four women and two men commented on the negative associations with GUM attendance:

"Who'd want to go somewhere like that [GUM clinic] y'know like especially if you didn't have to...I don't see people going there unless they have to, I mean who'd sit in the waiting room with people pure staring at you thinking 'I know what she's her for' or whatever.."

(Interviewee #230, Female, Age 24, Health & Fitness)

When asked if she thought the same issue of stigma applied to non-medical approaches she believed:

"no because like that's not why you're here, y'know I'm here to go to the gym no to come in for a test...aye I did it but, it's kinda different as people don't just automatically think 'I know what she's here for' y'know.."

(Interviewee #230, Female, Age 24, Health & Fitness)

Stigma acts as a barrier to uptake of screening in non-medical settings

The stigma of being seen attending a clinical service for a STI test was discussed by some male interviewees. In contrast, more women discussed the stigma of being seen to want a

STI test in non-medical, public settings than men. Stigma acted as a barrier to uptake of screening in this study, but this will be discussed in more detail in the next chapter, which describes the various barriers and supports to willingness to be screened in this study. Here, the views of interviewees to non-medical screening in general are detailed.

Stigma as a barrier to accessing clinical settings for a STI test was a common view among women when they spoke of their views towards non-medical screening in general. More women than men expressed the view that many young people in general might not be tested for chlamydia in public settings because they would not want to be seen having a test for a STI. Women, in particular, believed that being seen to accept screening for a STI was off putting, as they did not want people to know they were seeking screening. The public nature of screening being offered in non-medical settings was not conducive to their acceptance in many cases, such as for pubs, clubs and bookstores. In addition, women also considered the implication of accepting screening in local pharmacies and large high street pharmacies (such as Boots or Superdrugs), in relation to the public nature of the setting. As one commented when considering whether she would accept screening for chlamydia in these settings:

"...But a chemist or Superdrug, I wouldn't, probably not. It just depends what way you are doing it. ..Boots is like, it's just so public... Local pharmacies again, same idea, maybe not as bad because it's quieter, em, and so they're probably not going to have a big queue of people like there would be in the middle of Glasgow kind of thing, you know what I mean? So I mean if that way you are just going in and you're speaking to a consultant or just picking up a thing, not as bad..."
(Interviewee #128, Female, Age 23, Education).

One women who refused screening as part of this study considered whether she would accept chlamydia screening in local pharmacies:

"I don't think I would do that, em because it's busy, like, in a pharmacy it's not as if there's any, they maybe were..like when you were doing it up there it was kinda open but you were asking everybody kinda individually if they wanted to do it whereas I think it..I'm thinking what my pharmacy is like in [place name], and it's small, em, it's just a counter so if I'm going up to the counter and they say 'oh do you want a chlamydia test?' and everybody's looking at you thinking "oh yeah"..."
(Interviewee #309, Female, Age 20, Workplace).

Of the female interviewees who gave a sample for testing in this study there was a general belief that they were not like other women, in the sense that most women would not be willing to be tested in public non-medical settings. One commented:

R: I just don't think many [women] would do it in those sorts of places [non-medical].

KL: Why is that do you think?

R: Well, it says something about you, I mean for a woman, I think its different for guy y'know it's OK to get tested 'cos that means you're a guy and had sex and all that but I don't think women would really want to let the world know 'Hey I think I might have an STI'.

KL: Why wouldn't they want people to know if it's OK for guys?

R: 'Cos women can't do that, it's different. I'm getting a bit feminist now [laughs] but it's true. It's wrong, but it's true... women have to think about what people might say about them but guys don't have the same things to worry about like that.

(Interviewee #322, Female, Age 21, Workplace)

Men, in comparison, did not hold the same views about non-medical settings such as local pharmacies or the large high street stores (Boots or Superdrug); neither were their negative views towards screening being offered in pubs, clubs and bookstores based on this consideration of others; rather males simply did not wish to consider sexual health matters in these settings because they were setting in which they would socialise with friends. Men therefore did not want to be interrupted when socialising. Thus, men considered the response of their peer group rather than persons in the setting who are unknown to them. In addition, young men often mentioned the effect being seen to have a STI test in a pub or club on their chances with the opposite sex:

R: You'd never pull a bird man if she saw you get a chlamydia test!

KL: Why not, might she not think wow he's a healthy guy, looking after his health?

R: No way man! [laughs] She'd think 'he's pure diseased! Don't come near me.'

(Interviewee #190, Male, 21, Health & Fitness).

One male when considering being interrupted when on his leisure time offered the following view:

"If I'm in a pub, even those f---ers who come in and try and sell you the roses, I hate them, I hate being asked questions about stuff like that in a pub where I'm out to socialise. If I'm out socialising I don't want to talk about bills and everything else, I just want to talk about fun stuff. I wouldn't talk about sexual health to somebody in a club."

(Interviewee #311, Male, Age 20, Workplace).

Another when asked how he would feel being asked to take part in chlamydia screening in a pub or club commented: *"No, I'm out to have a good time. No, don't want to start worrying about things like that"*. (Interviewee #194, Male, Age 21, Health & Fitness).

The views of men and women were contrasting in relation to perception of stigma. Women considered non-medical settings to create barriers for women; in contrast, few men expressed this view.

These views from interviewees may explain why survey responses showed more men considered non-medical settings appropriate in which to offer screening than young women. Although some men did speak of the stigma of having a test for a STI in a public place, often this was because they considered the effects upon their chances with the opposite sex. Women, on the other hand, believed that having a test for a STI in a public place in view of 'others' showed their active sexuality, which they believed they should not show because of the perceived moral connotations. The exception is with pharmacy settings: survey responses revealed women considered this setting acceptable in which to offer chlamydia screening more so than men (57% of females compared with 46% of males); however, interview data suggests men were less reticent about screening being offered in pharmacy settings than women.

Conflicting views expressed in the survey and interview data may be explained by the inherent differences in the two methods used to collect data on views towards the acceptability of chlamydia screening. Whilst the survey asked respondents for quick superficial answers - to tick boxes or write numbers – the interview offered the opportunity for men and women to consider phenomena or situations in more depth. Neither results are necessarily 'wrong', but the contradictory finding does highlight the strength of the qualitative method in collecting more in-depth responses to views on acceptability. In many of the interviews women began by stating they considered pharmacies acceptable settings in which to offer chlamydia screening; however, some went on to discuss their reservations. Interviewees were allowed time in interviews to consider their views towards acceptability and often women returned to the topic later in the interview; in other words, their views on a topic they might not have previously considered were being refined throughout the process of the interview. The following excerpt from an interview highlights the fluidity of views:

KL: Is there any setting you think, um, that it's just not appropriate to offer chlamydia testing?

R: Mm... I can't think of anywhere that would be inappropriate. Ehm... [laughs] (pause) I don't really have a problem with any place, em, I can't really think of anywhere I'd, like that's inappropriate. Probably in a wee while I'll think of something.

[later in the conversation]

R: I don't know, a big place like Boots and things, I could imagine a lot of kids – you know, like places like Boots and Superdrug have things now, where they, where they provide it, free pregnancy kits to under-twenties and things like that, so places like that would probably be quite good because they're big and they're kinda already... but I suppose at a local pharmacy, a lot of kids even don't want to go in

and buy condoms and things from local pharmacies because they're embarrassed, and they know people that work there and things. Actually, I'm not sure I'd do it there 'cos it's a bit em, like in full view of people, y'know what if you were to go into your local pharmacy and your neighbour walks in and sees you asking for a chlamydia test, oh my god [laughs]. No, perhaps not pharmacies...oh and earlier I'm pure like 'yeah yeah anywhere' [laughs].

(Interviewee #354, Female, Age 23, Workplace).

Non-medical screening is appropriate if it is targeted to key groups:

The views from men and women, who participated in an interview and asked how they felt about non-medical screening described above, were often in contrast; however, there were strong views expressed by both men and women regarding who best to target non-medical screening towards. These common views will now be described.

Those who 'should'

During interviews, the majority of men and women referred to the 'type' of person they perceived to be 'at risk' of having and/or contracting chlamydia. A number of interviewees spoke about these 'type' of persons in relation to the appropriateness of screening in non-medical settings. For example:

"...students do a lot of sleeping around and stuff like that so, if anything 's going to happen, it's going to be students, and a college is a great place to do it..."

(Interviewee #77, Male, Age 20, Education)

Targeting screening to perceived 'at risk' populations, by using non-medical settings in which such groups could be found, was a common view associated with a setting being seen as an appropriate one in which to offer chlamydia screening. In other words, a setting was considered appropriate if it brought screening to populations who 'should' be screened.

High schools were also considered appropriate settings because such settings were also where interviewees considered 'at risk' populations of young people could be found:

"I think in schools it [testing] would be good to make people more aware about it..there's a lot of young people getting pregnant these days...even the fact that they're getting pregnant means they don't know what they can be catching."

(Interviewee #309, Female, Age 20, Workplace).

However, whereas colleges and universities were mentioned in relation to students perceived promiscuous behaviour, schools were mentioned in relation to both the perceived promiscuous behaviour of many young teenagers but also because interviewees believed many school pupils lacked knowledge about the consequences of their promiscuous behaviour – in other words contracting sexually transmitted infections. For example:

“I know a girl who fell pregnant at fourteen so I think a lot more things should be made aware...she obviously didn't know very much about this sorta thing and people should because otherwise how do they know what they're doing, like what danger they could be doing to themselves.”

(Interviewee #237, Male, Age 24, Health & Fitness).

So whilst offering screening in colleges and universities was considered appropriate because it could offer these at risk populations the convenience of screening, in schools it was seen as having the dual benefit of offering convenient screening and raising awareness of the risk of contracting sexually transmitted infections. (More will be given on these views towards raising awareness and convenience in Chapter 6.)

Those who 'would'

A second view from men and women centred upon whether the setting itself would offer targeted screening at populations who are health conscious. So whereas schools, colleges and universities were perceived as settings where young people 'should' be screened for chlamydia, offering chlamydia screening in settings such as gyms and pharmacies could target young people who 'would' accept screening:

“It's like giving you kinda like a wee health check, sort of thing, so I think people would be more kind of...willing to do it at the gym, yeah, I think they would.”

(Interviewee #309, Female, Age 20, Workplace).

Another commented: *“Yeah, I think people would do it there [gyms] 'cos they're into their health I suppose otherwise why are they going there?”* (Interviewee #237, Male, Age 24, Health & Fitness). Another commented:

“Healthiness is not just about going on the step machine or having a six pack, it's about taking care of your sexual health as well”

(Interviewee #355, Female, Age 23, Workplace).

Men and women interviewed considered young people using gyms or sports facilities to be health conscious, therefore, they would be more willing to accept chlamydia screening as a way of 'trying to keep healthy'. No interviewee who offered this reason for health and fitness settings being an appropriate setting in which to offer chlamydia screening

mentioned 'at risk' sexual behaviour as a reason why this particular population 'would' or 'should' be screened. Rather the focus was the perceived health-seeking behaviour of this group of young people.

Screening should 'fit' with the setting

A third view commonly expressed by men and women concerned whether a setting was perceived to be one in which discussing health-related topics would not appear 'out of place'. Thus, gyms and chemists were most commonly referred as settings that would be appropriate because these settings were ones in which respondents considered discussing health (as most respondents referred to rather than sexual health) as already taking place.

"Places like Boots and Superdrugs I think yeah go for it because they're [people] there for a health related reason anyway, so while they're there..."
(Interviewee #311, Male, Age 20, Workplace).

Conversely, settings were not considered appropriate if health issues could not reasonably be considered to already be discussed, such as in bookstores, pubs and clubs. As one noted, *'It should maybe be tied in with health sort of thing'*.

Whilst medical settings such as doctors and family planning were considered 'obvious', 'traditional' and 'where you would expect something like that [chlamydia screening] to be', local pharmacies and high street chemists were considered almost logical extensions of these medical settings. As one respondent put it *'[it's] a public sort of medical place'*. Another noted:

"...a chemist is where you get your prescriptions and stuff...well wouldn't you get your tablets for chlamydia there anyway so it's all the same, it's like the doctors in a way, you get your Pill and pregnancy tests and stuff...and there's a pharmacist there to speak to so yeah it's kinda the same...well not like totally but in a way..."
(Interviewee #159, Female, Age 22, Health & Fitness).

Another offered a similar view:

"I think maybe even Boots 'cos like there's a lot of like weight testing stuff in there, and you can diabetes testing and stuff...cholesterol and all that..."
(Interviewee #237, Male, Age 24, Health & Fitness).

During interviews respondents were shown a test kit developed and used as part of the chlamydia screening component of the Healthy Respect demonstration project. This consisted a small purple drawstring bag within which there was a sample container and

laboratory forms as well as an envelope for the person to send their sample to the laboratory. This enabled me to show young people what a kit might look like in order to strike up a conversation about their views on community screening. Some interviewees modified their opinion on community screening once they held and inspected this 'kit', as though they could visualise the testing being offered in these settings. One male commented:

R: Well if this [test kit] is all it is then I don't see how it couldn't be made available in lots of places, even schools cos it's quite discrete and I don't think people would have a problem with things like this being in the setting.

KL: Do you think people would use them to get tested though?

R: Yeah, uh huh, 'cos as I say it's discrete and especially if people are embarrassed by stuff like this it's not going to draw much attention to them is it so maybe they'd be more likely to do it if something like this is made available.

(Interviewee #237, Male, Age 24, Health & Fitness)

Some interviewees, especially men, appeared intrigued with this particular chlamydia test kit. Many young men considered it a 'good idea' and suggested that men might be encouraged to be tested if more of these kits were available in various community settings. Young women, however, often identified concerns about people seeing them picking up one of these kits:

"I don't think I'd pick up one of these in Boots and then stand in a queue to pay for my make-up holding this (laughs)...like, hello, yes I think I might have an STD!"[Sic]
(Interviewee #138, Female, Age 18, Education).

Another female, whilst having reservations about how she might react to these test kits becoming more widely available nevertheless believed they were a good idea:

"Younger people just don't really want to talk about something like that [chlamydia] so if they could pick up a test and take it home then maybe a lot more people would do it... I think like having to go to a clinic isn't something younger people, like teenagers would want to do unless they had to kinda thing."
(Interviewee #128, Female, Age 23, Education)

Only two interviewees (both female) who spoke about schools being appropriate because young people there 'should' be screened considered whether it would be feasible to offer chlamydia screening in schools:

R: I think it's a good idea to kind of do it in a school... but I know you need to have permission from them really

KL: permission from..

R: like the school and probably parents as well, y'know you might, like there might be a lot of parents who wouldn't want that sort of thing in their kids school, which is, I think it's like, em, it's, that's not being realistic...

(Interviewee #309, Female, Age 20, Workplace).

The other woman who considered the feasibility of offering chlamydia screening in non-medical settings, did not consider any setting inappropriate per se but focused upon how willing she considered people would be to accept screening in such settings:

"But if people were willing to go in, then I don't see why it would be inappropriate to... I kind of feel like that with everything: if people are willing to, I don't see how any of them are necessarily inappropriate; it's just whether people would be as willing to take part..."

(Interviewee #354, Female, Age 23, Workplace).

A few interviewees spoke of the normalising effect community screening could have if it were made more widely available:

"...making people familiar with medical issues has to get out of medical settings, has to speak to people's everyday life because that is the only way that people are going to become aware of the responsibilities they have to take...if it takes place in your everyday life, they're probably going to think of it a lot more and it's going to become an everyday concern."

(Interviewee #370, Female, Age 24, Workplace).

"I think it's an idea that it shouldn't be a taboo, you know, you should try and bring it more into the kinda public eye, and we shouldn't be hugely embarrassed about it, or not willing to discuss it."

(Interviewee #237, Male, Age 24, Health & Fitness).

Discussion

Awareness of chlamydia was high (93% of survey respondents had heard of it and 99% successfully identified it to be a sexually transmitted infection); however, this level of knowledge may have been influenced by the approach and consent procedures: all study participants were provided with information leaflets about chlamydia during the initial approach and were introduced to the fact that chlamydia is a sexually transmitted disease as part of this initial approach (as detailed in chapters 4 and 5). Although this was a necessary and unavoidable aspect of gaining informed consent into the study it may have had the unintended effect of influencing the responses to two questionnaire items: 'have you heard of chlamydia?' and 'what is chlamydia?'

Level of knowledge declined, however, as survey questions became increasingly focussed: many respondents were unaware of how common chlamydia is among people under 25 years and of the largely asymptomatic nature of chlamydia infection. The awareness of chlamydia in this study is disproportionate to the prevalence, as compared with HIV/AIDS and has been noted in a study with higher-risk populations (Kellock et al. 1999).

As all study participants were aged under 25 years, 1 in 4 survey respondents reporting school as their source of information about chlamydia is perhaps a surprisingly low proportion. There was certainly a high degree of uncertainty among interviewees regarding the source of their information about chlamydia; therefore, it is possible that more were actually taught about chlamydia at school. The ability for people to recall events decreasing with time is discussed in the literature (Fenton et al. 2001b); as such, interviewees may have experienced difficulty recalling with accuracy their source of information about chlamydia.

Young men, especially, commented during interviews that their knowledge about chlamydia was limited to having heard about it. They often knew very little else, even when prompted. In contrast, young women engaged in detailed discussions about their knowledge, including the source of their more detailed knowledge, which were often obtained from sources young men did not report having heard about chlamydia from, such as magazines and doctors. Young women spoke of reading about STIs in magazines, for example in 'real life stories' or on the problem pages; they were able to recall particular stories and some described their feelings towards learning about the implications to women's fertility once catching a STI. No male interviewee discussed reading about chlamydia and none offered an account of how they felt about the threat STIs pose to male fertility.

Women's exposure to and engagement with specific forms of sexual health discourse stands in stark contrast to the lived realities of the young men's lives. At each stage of a female's life there is an instruction guide in sexuality: from pre-teen and teen magazines, through women's glossies to women's general interest publications. The 'true story', popular editorials among many of the young women interviewed, often promotes a moral discourse, which discourages 'deviant' sexual behaviour (that which end in unplanned pregnancy and STIs). Young men do not experience, or have access to, a linear range of magazine publications as young women do; neither have they been subjected to the same scrutiny of their sexual behaviour, given the disproportionate weight that public, medial and moral discourse concerning teenage pregnancy and sexually transmitted diseases place upon women's sexuality. Young men, therefore, perhaps do not experience the same medical and moral intrusions in their lives as young women do. As such, gender, in this study, often acted to constrain as well as enable screening in community settings.

Most interviewees, who knew about the clinical features of chlamydia, spoke of gaining this knowledge from reading the study literature. The health promotion aspect of this study was unintentional but present nonetheless as a consequence of the study literature (including posters and leaflets) as well as conversations the author was often able to have with young people, during which the author was able to answer questions. Chapter 4 described young men in the health and fitness setting enthusiastically embracing the opportunity to have their questions regarding sexually transmitted infections answered. Studies have shown knowledge of sexually transmitted infections among young people increasing after behavioural interventions (Arcaari et al. 2004). How far increased awareness and knowledge about chlamydia effects behavioural change varies in the literature, as one recent review concluded (Robin et al. 2004).

A low level of knowledge about chlamydia could have potentially negative consequences for chlamydia screening programmes: without knowledge, young people might not understand the implications of screening, as has been suggested in the literature (Kellock et al. 1999). In addition, without a baseline understanding of the nature of chlamydia infection young people have little foundation on which to base their 'choice' of accepting screening when it is offered. How far knowledge impacted on willingness to accept screening will be discussed in more detail in the next chapter. However, it has been argued that improving knowledge may positively affect individuals' participation in screening programmes, and improve the effectiveness of such programmes (Devonshire et al. 1999). Indeed, it was a common view among both young men and women who participated in an interview in this study, that information about the effects of chlamydia and the highly asymptomatic nature of infection should be made widely available to motivate more young men to seek screening or accept screening. Indeed, some young men and women suggested screening for all STIs be made available in the study settings on a regular basis.

Despite young men showing lower knowledge about chlamydia than women they, nonetheless, expressed more relaxed attitudes towards screening being offered in non-medical settings than women, they exhibited a greater willingness to learn more about chlamydia and pass on this newly acquired information to family/friends and, as the next chapter will show, were more willing to accept screening when offered to them in this study.

Respondents who commented on settings themselves being appropriate in which to offer chlamydia screening focused their comments around the three areas of whether people 'should' be screened, whether people 'would' be screened, and whether the setting was health-related, such as gyms and pharmacies. Just over half of all survey respondents considered local pharmacies acceptable settings in which to offer chlamydia screening. However, offering chlamydia screening in local pharmacies was significantly more acceptable to female survey respondents than male, although a large minority of men considered it acceptable. Interview data then revealed reservations from many women about how willing young people might be to accept the offer of screening in pharmacy settings. At the same time, many male interviewees suggested that pharmacies might be acceptable settings in which to offer chlamydia screening because they were, for these men, extensions of 'traditional' health services; these settings were 'health-related' and so the idea of offering a test for a STI in pharmacies was acceptable to these men. Neither quantitative nor qualitative results are necessarily 'wrong', but the contradictory finding does highlight the strength of the qualitative method in collecting more in-depth responses to views on acceptability.

Pharmacy-based chlamydia screening has already been considered in Scotland (the Healthy Respect demonstration project made available screening kits in high street branches of 'Boots' in Edinburgh and this is being further explored in England through the same national pharmacy chain). Early evaluation has suggested this approach to screening was more successful at reaching young men, with more young men being tested using the postal testing kits than women during Phase 1 of the Health Respect project (Williamson et al. 2006). Certainly in this sample population, half of male and female survey respondents and many interviewees had reservations about the feasibility of pharmacy-based screening.

Although men and women spoke of the stigma of having a test for a STI in a public place, nonetheless, many spoke of the potential for screening in non-medical settings to 'normalise' screening, to make it increasingly visible so that it is not 'hidden' behind clinical walls. There is potential, for many of these men and women, for a 'de-stigmatising' of screening if it were made more widely available in non-medical settings. Some women, however, retained some reservation about the extent of this for women.

The next chapter considers how willing young people were to accept the offer of screening by providing a urine sample. Factors associated with their willingness will be discussed, with their views towards non-medical screening taken into account.

Chapter 6

Willingness of Young People to be Screened for Chlamydia in Non-Medical Settings

This chapter discusses how willing young men and women in this study were to accept the offer of screening for chlamydia. The chapter begins with an overview of the numbers of respondents who agreed to provide a sample for testing, by gender, setting and age. Various factors associated with respondents' willingness to accept screening when offered are then explored, including: sexual lifestyles, prior experience of being tested for chlamydia and perception of risk. Men and women's willingness to provide a urine sample for chlamydia screening was recorded alongside their survey responses, so that Chi-square analyses could assess the factors associated with willingness, such as knowledge, sexual behaviour and views. Analysis of interview data suggested there were various barriers and supports to willingness to accept screening in non-medical settings. As with chapters 4 and 5, differences, where identified, are highlighted by setting, gender and age.

Numbers accepting screening by setting, gender and age

Screening was offered in six settings over an 18 week period, which resulted in ~ 230 hours of screening in total. In this time, 431 young people were approached and invited to take part in this study by completing a questionnaire and providing a sample for testing. Of the sexually active respondents who were willing to participate in the study (n=346), 113 (32.6%) accepted the offer of screening for chlamydia in the three study settings and provided urine samples to be tested for chlamydia. Table 10 shows the number of respondents accepting screening by setting. Of the 113 samples tested, five were positive for chlamydia (4.4% prevalence). Disease prevalence was 4.9% in men and 3.8% in women.

The highest uptake of screening was observed in the health and fitness setting, with 48.8% of survey respondents agreeing to provide a sample compared with 19.1% of education respondents and 27.8% of workplace respondents. Thus, the health and fitness respondents were more willing to accept screening by providing a urine sample for testing than either education or workplace respondents.

Of the 113 men and women who gave a urine sample for testing, the majority were male (53.9% were male and 46.1% were female). Of all men offered screening 40.1% were

willing to provide a sample compared with 26.8% of women. Thus, of all men approached in the settings more were willing to provide a sample for testing than the women approached. By setting, men recruited in the health and fitness settings were more willing than either men in education or workplace, or women in each setting to provide a sample, with around two thirds (62.3%) participating in screening. However, women in the health and fitness setting were more willing to provide a sample than women in either of the other study settings (see Table 10). Thus, both men in this study and also health and fitness respondents were the most willing to participate in non-medical screening.

Table 10: Numbers of respondents accepting screening, by setting and gender.

<i>Setting</i>	<i>Gender</i>	<i>Number of respondents</i>	<i>Number accepting screening (%)</i>	<i>X² test p</i>
Education	ALL	115	22 (19.1)	0.078
	Male	59	15 (25.4)	
	Female	56	7 (12.5)	
Health & Fitness	ALL	127	62 (48.8)	0.010
	Male	53	33 (62.3)	
	Female	74	29 (39.2)	
Workplace	ALL	104	29 (27.8)	0.407
	Male	40	13 (32.5)	
	Female	64	16 (25.0)	
TOTAL	ALL	346 §	113 (32.6)	0.009
	Male	152	61 (40.1)	
	Female	194	52 (26.8)	

§ 17 of 363 respondents stated they were not yet sexually active and were excluded from analysis. Significant relationships between age and providing a urine sample are indicated by bold p-values.

Considering which age of respondent was most willing to participate in the offer of screening, respondents were split into two age groups: 16-19 and 20-24 years. All study respondents were aged between 16 and 24 years, inclusively. Respondents aged 20-24 years were more willing than those aged 16-19 to provide a sample for testing: of the 113 who provided a sample, 80% were aged 20-24 years (see Table 11). This table also shows there is a consistent difference in willingness to accept screening between the age groups in each setting; however, the only statistically significant difference exists within the health and fitness setting. Thus, older respondents in the health and fitness setting as well as men in this study were the most willing to participate in the offer of screening in non-medical settings.

Table 11: Willingness to accept screening, by age and setting.

	<i>Number of respondents</i>	<i>Number accepting screening (%)</i>	<i>X² test p</i>
Education§			0.449
16-19	66	10 (15.1)	
20-24	57	12 (21.0)	
Health & Fitness			0.004
16-19	39	9 (23.0)	
20-24	94	53 (56.3)	
Workplace			0.055
16-19	24	3 (12.5)	
20-24	80	26 (32.5)	
Total§			<0.001
16-19	129	22 (17.0)	
20-24	231	91 (39.3)	

Significant relationships between age and providing a sample are indicated by bold p-values.
§ 3 missing values.

The age of respondents in each of the three study setting groups differed so that almost half of education respondents were aged 16-19 years, whereas around one quarter of both health and fitness and workplace respondents were teenagers; three quarters were therefore aged 20-24 years. The greater willingness to accept screening among respondents aged 20-24 years may be a true age effect but it may be a setting effect. This was explored with binary logistic regression analysis to test for the effect of each of setting, gender and age after adjusting for each other. Odds ratios and 95% confidence intervals (CIs) were calculated (see Table 12): there were significant differences in willingness to accept screening by setting, gender and age: the odds of providing a sample for testing were greater for men, health and fitness respondents and those aged 20-24 years.

Interactions between setting, gender and age were also assessed using binary logistic regression. The effect being male or female has upon willingness was not significantly different in all three study settings; the effect of age upon willingness to accept screening was also not significantly different in each study setting; and the effect of gender on willingness was not significantly different in both age groups. Thus, there are no significant interactions in this study population between setting, gender and age that may affect analyses of willingness to provide a sample.

Table 12: Odds of being willing to accept screening, by setting, gender and age

<i>Accepting screening by:</i>	<i>Odds ratio</i> <i>(95% CI)</i>	<i>p</i>
Setting		
Education	0.7 (1.46 – 3.97)	0.399
Health & fitness	2.6 (1.51 – 4.77)	0.001
Workplace	1.0	
Gender		
Male	2.4 (1.46 – 3.96)	0.001
Female	1.0	
Age		
16-19 years	0.3 (0.20 – 0.64)	<0.001
20-24 years	1.0	

Significant relationships between setting, gender and age, and providing a sample are indicated by bold p-values.

Respondents’ reported sexual behaviour

STI screening studies are often concerned to assess how effective various screening approaches are in screening at-risk populations. The definition of ‘at-risk’ varies depending on the population, for example, MSM, drug-injectors or heterosexuals under 25 years. In this study, various sexual behaviour variables were included in the questionnaire, based on the ClaSS study questionnaire. Information on total number of lifetime sexual partners, number of sexual partners in the past six months, as well as the nature of their most recent relationship and age and condom use at first sex, was collected. This part of the chapter presents data on survey respondents’ reported sexual behaviour. Chi-square analyses were performed on the data (except where indicated otherwise) to assess whether there were any differences in sexual behaviour of respondents who accepted opportunistic screening (n=113) and those who did not (n=233), to determine whether ‘at-risk’ respondents provided a sample or not.

Sexual lifestyles

Sexually active respondents

Among all survey respondents, 95.3% (346/363) reported that they had experienced sexual intercourse; 6/158 males (3.8%) and 11/205 females (5.4%) stated they had never experienced sexual intercourse; therefore 17/363 respondents (4.7%) were excluded from

analysis of sexual lifestyles¹⁹ as well as from analyses of willingness to provide a urine sample. Of these 17 non-sexually active respondents, 11 were from the education setting (3 male, 8 female), and 6 from health & fitness study setting (3 male, 3 female). All workplace respondents reported they had experienced sexual intercourse.

Age and use of barrier contraception at first sexual intercourse

Table 13 shows the age and use of barrier contraception of sexually active respondents, by gender. The median age for first intercourse for all respondents was 16 years. Just over one third (36.0%) of respondents reported their first intercourse to have occurred below the legal age of consent (16 years in the UK)²⁰. The age by which 50% of respondents experienced first sexual intercourse was between 15 and 16 years. Significantly more male respondents reported experiencing first intercourse before they were 16 than females (43.7% of males v 30.4% of females). The proportion of male and female respondents from both age groups (except females 20-24 years) having intercourse before age 16 years was higher than those reported by the equivalent age-groups in Natsal 2000 (see Table 15). The rising prevalence of first intercourse before age 16 years has been reported elsewhere in the literature (Johnson et al. 1994; Wellings et al. 2001a).

Of those who reported first sexual intercourse before age 16 years, the highest percentage was among female respondents aged 16-19 years. Chi-square analysis found significantly ($p<0.001$) more females aged 16-19 reported they were not sexually active than females aged 20-24 years. Contrastingly, 20-24 year old females had the lowest percentage reporting first sexual intercourse before age 16. Thus, among female respondents there is an increase in the percentage reporting first sex before age 16 with decreasing age (see Table 13). This is also a trend highlighted in comparisons made between Natsal 1990 and the recent Natsal 2000 survey (Wellings et al. 2001b). In contrast to this trend among females, similar percentages of male respondents from both age groups reported having sex before they were 16 years old. The proportion of men having intercourse before age 16 years has also remained fairly constant across all age groups (16-44) in Natsal 2000. Thus, the age at first sexual intercourse, by gender, of study respondents shows broadly similar trends with a national probability sample (Natsal 2000).

Chi-square analysis found study setting was not associated with age at first sex ($p=0.343$), with around 1 in 3 respondents in each study setting reported first sexual intercourse

¹⁹ With the exception of Table 13, where non-sexually active respondents were included.

²⁰ Except in Northern Ireland where 17 is the legal age of consent.

occurring before the age of 16 years: 31.4% of education respondents, 35.7% of health & fitness respondents, and 41.2% of workplace respondents reported first sex under the age of 16 years.

Table 13: Age, use of barrier contraception of sexually active respondents at first intercourse, by gender.

	<i>Males</i>		<i>Females</i>		
	<i><u>Current age (in years)</u></i>		<i><u>Current age (in years)</u></i>		
	<i>16-19</i>	<i>20-24</i>	<i>16-19</i>	<i>20-24</i>	<i>All</i>
No. of respondents in age group	61	95	68	136	363
Sexually active	95.1%	96.8%	85.3%	99.3%	95.3%
<i>n</i>	58	92	58	135	346 §
Age at first intercourse					
Median age	16	16	15	17	16
10 th , 90 th percentile	(14-17)	(13-18)	(14-17)	(15-19)	(14-18)
Aged <16 years* (Natsal)‡	42.9% (29.9%)	44.2% (25.8%)	56.1% (25.6%)	19.5% (28.4%)	36.0%
Use of condom ¥					
Used a condom	77.2%	60.4%	68.4%	77.4%	71.4%
No condom used	22.8%	37.4%	31.6%	22.6%	28%

§ Numbers do not total 346 as 3 respondents did not give their age.
* Percentage of age group reporting first sexual intercourse before the age of 16 years.
† Percentage of respondents reporting first intercourse before age 16 years in Natsal 2000.
¥ 1 (0.3%) respondent did not answer this question.

Table 13 also shows the use of barrier contraception at first sexual intercourse, by gender. Whilst the majority of respondents reported using a condom at first sexual intercourse (71.4%), just over a quarter reported unprotected first intercourse. More of the older male age group reported not using a condom at first sexual intercourse than the younger male age group (37.4% v 22.8%). In contrast, the opposite was true for the female age groups where 22.6% of females aged 20-24 reported condom use compared with 31.6% of 16-19 year old females. Thus a trend towards increasing condom use at first sex with decreasing age of respondents was only seen in males. In addition, significantly (p=0.010) more men aged 20-24 reported no condom used at first sex than females aged 20-24.

Number of lifetime sexual partners & in past 6 months

Table 14 shows there was heterogeneity in reports of numbers of lifetime heterosexual partners; 87.6% of men and 78.2% of women reported more than one lifetime partner whereas 34.3% of men and 16.2% of women reported at least ten lifetime partners. The skewed nature of the distribution of lifetime number of sexual partners is emphasised by

the high value of the 90th percentile (25 for men, 12 for women) compared with the median (5 for men, 3 for women). As might be expected, age is significantly associated with having 10 or more lifetime sexual partners, with around one third (31.9%) of 20-24 year olds compared with around 1 in 10 (11.9%) respondents aged 16 – 19 years reporting 10 or more lifetime sexual partners. However, a significant majority (59.5%) of respondents who reported 10 or more lifetime sexual partners were male. There was no significant association between setting and respondents reporting ten or more lifetime sexual partners.

However, of those respondents who reported ten or more lifetime partners, 33.3% were workplace respondents, compared with 22.7% from health & fitness and 19.2% from education. As detailed above, a larger proportion of workplace respondents were aged between 20-24 years compared with education respondents. This further emphasises the link between age and a higher number of lifetime sexual partners.

Table 14: Distribution of number of heterosexual partners over lifetime and in the past 6 months, by gender

	Men	Female	All
No. of respondents in age group	158	205	363
Item response*	131	186	317
Number of partner†	(%)	(%)	(%)
Lifetime			
0	6 (4.4)	11 (5.6)	17 (5.1)
1	11 (8.0)	32 (16.2)	43 (12.9)
2	13 (9.5)	34 (17.3)	47 (14.1)
3-4	30 (21.9)	48 (24.4)	78 (23.4)
5-9	30 (21.9)	40 (20.3)	70 (21.0)
10+	47 (34.3)	32 (16.2)	79 (23.7)
Mean (SD)*	9.9 (10.3)	5.8 (8.0)	7.5 (9.2)
Median (90 th percentile)*	5 (25)	3 (12)	4 (18)
Past 6 months‡	(%)	(%)	(%)
0	11 (7.8)	18 (9.6)	29 (8.8)
1	76 (53.0)	139 (74.3)	215 (65.5)
2	23 (16.3)	17 (9.1)	40 (12.1)
3-4	21 (14.9)	8 (4.3)	29 (8.8)
5-9	8 (5.6)	3 (1.6)	11 (3.4)
10+	2 (1.4)	2 (1.1)	4 (1.2)
Mean (SD)*	1.4 (0.4)	1.1 (0.3)	1.2 (0.4)
Median (90 th percentile)*	1 (2)	1 (2)	1 (2)

†Excluding 17 respondents who were not sexually active and 6 did not answer whether they had ever had sex (n=340). ‡12 respondents did not state the number of sexual partners in the past 6 months (n=328).

Survey respondents were asked to state the number of sexual partners they had in the past 6 months (see Table 14). The mean number of new partnerships in the past 6 months for all

respondents was 1.2 (1.4 for males, 1.1 for females). The majority (74.3%) of all respondents reported fewer than two sexual partners in the past 6 months; thus, around 1 in 4 (25.7%) reported two or more in the same time period. Chi-square analyses found significantly ($p < 0.001$) more female than male respondents reported less than two sexual partners in the past 6 months (83.9% of females compared with 60.8% of males). Thus, around 1 in 3 male respondents compared with around 1 in 6 female reported two or more sexual partners in the past 6 months. In addition to age group and gender, setting was also significantly ($p = 0.015$) associated with respondents reporting two or more sexual partners in the past 6 months.

Gender, age and setting were included in logistic regression analysis, with two or more sexual partners in the past 6 months as the dependent variable. Only gender and age were found to be independently associated with having had two or more sexual partners in the past 6 months. Males are almost three times more likely than females to report two or more sexual partners in the past 6 months (OR 2.6 95% CI 1.52 – 4.56); 16-19 year old respondents are more likely to report two or more sexual partners in the past 6 months than 20-24 year olds (OR 1.2 95% CI 0.71 – 2.25). Those who reported their most recent partner not to be their regular partner were around three times more likely to report two or more sexual partners in the past 6 months (OR 3.1 95% CI 1.77 – 5.69).

Is sexual behaviour associated with willingness to accept screening?

Chi-square analysis found no significant difference between those who accepted screening and those who declined and their reported age at first sexual intercourse (see Table 15). Around one third of both groups of respondents reported age at first sex below the age of 16 years.

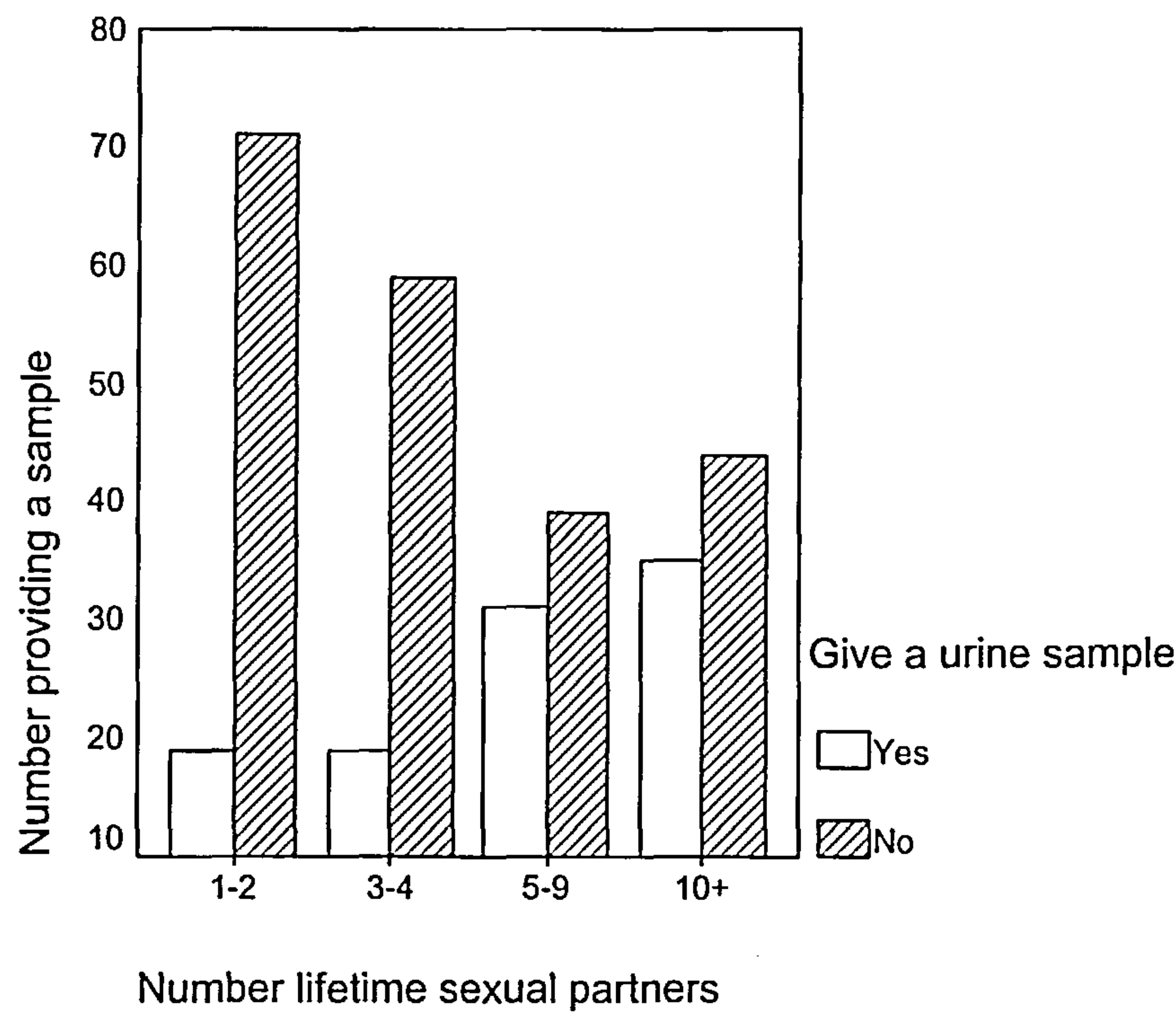
Significant differences were found between those who provided a sample for testing and those who did not and reporting either 1-2 or 3-4 sexual partners (see Table 15 and Figure 5). More respondents who accepted screening reported two or more sexual partners in the past six months. In addition, respondents who provided a sample also reported never using a condom with their most recent partner significantly more so than those who did not provide a sample. Three significantly different risk behaviours were found between both groups of respondents, with those who provided a sample reporting more lifetime sexual partners, more recent partners as well as non-use of barrier contraception with their recent partner.

Table 15: Comparison of sexual behaviours between those who accepted screening and those who declined

	<i>Willingness to accept screening</i>		
	<i>Accepted screening %</i>	<i>Declined screening %</i>	<i>X² test p</i>
Age at first sex §			0.946
<16 years	32.5	67.5	
≥16 years	32.9	67.1	
Condom used at first sex ¥			0.064
Yes	29.8	70.2	
No	40.2	59.8	
Number of sexual partners:			
<u>Lifetime</u>			<0.001
1-2	21.1	78.9	
3-4	24.4	75.6	
5-9	44.3	55.7	
10+	44.3	55.7	
Mean (SD)	9.89 (11.67)	6.36 (7.48)	
Median (90 th Percentile)	7 (23)	4 (16)	
<u>Past 6 months</u>			0.002
≤1	63.9	36.1	
≥2	79.5	20.5	
Mean (SD)	1.96 (1.89)	1.24 (1.31)	
Median (90 th Percentile)	1 (4)	1 (2)	
Relationship with most recent/current partner			0.492
Cohabiting	33.0	67.0	
Non-cohabiting	29.4	70.6	
Always using a condom with recent/current partner			0.009
Always	24.7	75.3	
Inconsistent	31.1	68.9	
Never	45.6	54.4	

Statistically significant differences between negative and positive test results are indicated by their p-value in bold font; § 13 missing responses; ¥ 7 missing responses.

Figure 5: Number of lifetime sexual partners, by willingness to provide a sample



Comparison of sexual behaviours between those who tested negative and those who tested positive for C. trachomatis

Although numbers were small, with 5/113 tests returning a positive result, I was interested to assess whether there were any differences between the sexual behaviours of the two groups of respondents who provided a sample and test result. The variables considered in Chi-square analyses included, age at first sex, condom use at first sex, number of lifetime sexual partners, number of partners in the past six months, relationship with most recent/current partner (living together or non-cohabiting) and ‘Always’ use a condom with recent partner. Statistically significant differences ($p=0.033$) were found in only one of these six sexual behaviour variables: respondents who tested positive for chlamydia reported significantly less condom use at first sex (10.5% of those who tested positive reported no condom use at first sex, compared with 1.4% of those who tested negative).

Prior experience of having been tested for chlamydia

As a consequence of screening guidelines in Scotland, which recommend that women under 25 years be opportunistically offered chlamydia screening when they attend primary care, screening is currently offered in a number of NHS settings. This may affect the uptake of screening, as part of this study, as some respondents may have already been presented with screening opportunities, and if accepting, would then decline screening when offered in non-medical settings. Thus, young people were asked in the survey if they had ever been tested for chlamydia, and to state how recently they were tested.

Chi-square analysis of questionnaire responses found one in four (24.9%) of all sexually active respondents had previously been tested for chlamydia (see Table 16). Of these significantly ($p < 0.001$) more were female than male (34.0% of females compared with 13.2% of males). Having prior experience of testing was therefore explored as being associated with declining the offer of screening. Eighty per cent (64/85) of respondents who had been tested for chlamydia before declined the offer of screening. In contrast, a minority (35.4%) of respondents who reported they had never been tested for chlamydia before then provided a sample as part of this study.

The significant association between having been tested before and not providing a sample suggests that experience of testing was a significant factor associated with not providing a sample when approached in non-medical settings. However, not all respondents who reported having never been tested before then gave a sample. Furthermore, there were significant gender differences in willingness to give a sample and the experience of prior testing.

Regarding gender differences, one in three females (33.3%) of females compared with less than one in ten males (6.6%) who provided a sample had ever been tested for chlamydia. In addition, of those respondents who declined screening when it was offered to them, around 1 in 3 females reported they had previously been screened for chlamydia compared with fewer than 1 in 5 males. Therefore, in both groups of respondents, those who accepted and those who declined screening, females were more likely than males to have been previously screened for chlamydia. Thus, the large majority (93.4%) of men who were screened for chlamydia in this study had never been tested before. Women, on the other hand, although reporting prior experience of being tested for chlamydia before, were willing to provide a sample when approached in these non-medical settings. This perhaps

suggests a willingness among some women to be screened for chlamydia in non-medical settings even though they may not consider themselves to be at risk of having chlamydia.

Table 16: Respondents' reported experience of previously being tested for chlamydia, by gender

	<i>Ever been tested for chlamydia before?</i>		<i>X² test p</i>
	<i>Yes (%)</i>	<i>No (%)</i>	
All study respondents (n=342)§			<0.001
All	85 (24.9)	257 (75.1)	
Male	20 (13.2)	131 (86.8)	
Female	65 (34.0)	126 (66.0)	
Respondents accepting screening (n=112)¥			<0.001
All	21 (18.8)	91 (81.2)	
Male	4 (6.6)	57 (93.4)	
Female	17 (33.3)	34 (66.7)	
Respondents declining screening (n=230)□			0.006
All	64 (27.5)	166 (72.5)	
Male	16 (17.8)	74 (82.2)	
Female	48 (34.3)	92 (65.7)	

Statistically significant differences between genders are indicated by their p-value in bold font. § 4 missing values; ¥ 1 missing value; □ 3 missing values.

Female interviewees who reported having previously been screened for chlamydia stated that this was during routine care (mostly during their first smear tests). In comparison, young men reported that they were all tested when they self-referred to a GUM clinic. Only one male interviewee reported seeking routine screening at a GUM clinic despite being symptom free. Thus, female respondents who reported prior experience of chlamydia screening were offered screening through opportunistic approaches in clinic-based settings; in comparison all men who reported being tested before had self-referred to GUM clinics. Young men screened in these non-medical settings were being offered opportunistic screening for chlamydia for the first time more than females. Having never been offered screening before was confirmed from responses by young men in the settings, with many commenting “*I’ve never been asked that before!*”, or replying ‘No’ when asked if they had ever been offered screening.

Whilst almost all men who provided a sample had never been tested for chlamydia before, neither had the majority (82.2%) of men who declined the offer of screening. Similarly, the majority of women who declined the offer of screening reported never having been

tested before. Thus, questionnaire responses and interview data was analysed to find other possible barriers to the uptake of screening in these non-medical settings.

Willingness to accept screening and perception of risk of having chlamydia

Men and women’s perception of being at risk of having chlamydia was included as a survey item. Of all sexually active survey respondents, 45.7% perceived themselves to be at risk of having chlamydia or were uncertain as to whether they were at risk. Chi-square analyses were performed to assess the associated factors with perception of being at risk; these include: include not using a condom at first sexual intercourse ($p=0.003$), aged under 16 years at first sex ($p=0.002$), reporting ten or more lifetime sexual partners ($p<0.001$), reporting two or more sexual partners in the past six months ($p<0.001$), having never been tested for chlamydia ($p<0.001$) and poor knowledge of female symptoms of chlamydia ($p=0.005$).

The survey responses of all sexually active respondents were compared with willingness to provide a sample. Of the 113 men and women who accepted the offer of chlamydia screening and provided a sample to be tested in this study, 62.8% stated in the survey that they perceived themselves to be at risk of, or were uncertain about, having chlamydia (see Table 17). In contrast the majority (62.7%) of those who declined screening did not believe they were at risk of having chlamydia (see Table 17).

Table 17: Respondents’ perception of risk, by willingness to accept screening.

	<i>Respondents’ perceptions of being at risk (n=113)</i>		X² test p
	YES or uncertain (%)	NO (%)	
Respondents who accepted screening	71 (62.8)	42 (37.3)	<0.001
Respondents who declined screening	87 (37.3)	146 (62.7)	

The large number of people who accepted the offer of screening and who considered themselves to be at risk of having chlamydia questions the degree to which it was the 'worried well' participating in screening. Furthermore, as the last section highlighted, the majority (81.2%) of respondents who provided a sample had never been tested for chlamydia before. The positive test results in this study also questions how far those who maintain good sexual health participated.

It is plausible that men and women who were previously tested for chlamydia may not have perceived themselves to be at risk of having chlamydia. Among those who did not believe themselves to be at risk of having chlamydia, 34.6% had previously been tested for chlamydia. Thus, two thirds of those who did not believe they were at risk of having chlamydia had never been tested. The differences between perception of risk and having been tested before were highly significant ($p < 0.001$) in Chi-square analysis. When respondents who had been tested before and those who did not believe they were at risk of having chlamydia were removed from analysis, there were 158 eligible respondents, of whom 71 (44.9%) provided a sample. Thus, among those who had no experience of testing and who considered themselves at risk the majority (55.1%) did not provide a sample.

Table 17 shows that two thirds of respondents who declined screening reported they did not consider themselves to be at risk of having chlamydia; however, just over 1 in 3 believed they either were at risk or were uncertain about their risk of having chlamydia. Thus, respondents who had never been screened before or provided a sample when approached as part of this study nevertheless did not believe they were at risk of having chlamydia. Factors affecting respondents' perception of being at risk of having chlamydia were explored during interviews.

Despite not being a direct question, most interviewees spontaneously offered views on who they considered to be at risk of having chlamydia (as detailed in Chapter 5): whilst there were similar beliefs expressed by men and women, there were also differences in how men and women perceived risk. Most of the beliefs expressed by interviewees were in relation to risk in 'others'. When discussing risk behaviours and persons they perceived to be at risk, both male and female interviewees spoke of school pupils and college or university students as being an 'at-risk' group based on their perceived promiscuous sexual lifestyles:

"I think students are probably the higher risk than anybody else... some of the students have slept with three people in one night and all different people".

(Interviewee #311, Male, Age 20, Workplace).

Thus, risk of ‘others’ acquiring chlamydia, or other STIs, was understood by many of these interview respondents to be due to unprotected sex having occurred.

Some interviewees also discussed their own perception of being at risk of having chlamydia. Both men and women did not consider their risk solely in relation to whether they had unprotected sex. The use of contraception was for women based on the degree to which they ‘trusted’ their partners. One female interviewee, for example, who had never been tested for chlamydia before, declined screening in this study because of her low perception of risk. She spoke about ‘trust’ and ‘I knew who he was’ as reasons for her low perceived risk of having chlamydia. In relation to not using condoms she commented:

I: I wasn't bothered about the fact that he wasn't using them [condoms] because I was on the pill...and I knew who he'd been with

R: He wasn't a stranger to you?

I: Uh-huh. Uh-huh. It wasn't an issue, really.

(Interviewee #309, Female, Age 20, Workplace).

When then asked whether she did not provide a sample for testing in this study because of her low perceived risk she commented: “*yeah well it's [chlamydia] just not something I think I'm at risk of*”. Other females offered similar beliefs based on the status of their relationships: those who reported monogamous relationship histories spoke of trusting their partner as a reason for not using condoms and for their low perceived risk of having chlamydia.

Men also considered the ‘status’ of their female partners in their considerations of personal risk and the use of contraception. One young man referred to his use of condoms to ‘protect myself’, against acquiring STIs; he also spoke of his use of barrier protection, especially when he did not know his sexual partners’ experiences. When discussing having a ‘one-night-stand’ I asked if he used any contraception:

“Aye. Definitely, yes, ‘cos I didn't know her, I didn't know anything about her and I did definitely use contraception that night”.

(Interviewee #311, Male, Age 20, Workplace).

Other young men discussed using barrier protection to prevent acquiring a STI, especially when they were having sex with a “*lassie who has sex way you on the first night – you don't know how many others she's been way; how many others she's slept way*” (#190, Male, Age 21, Health & Fitness). So, men often spoke about why they used condoms, whereas women discussed why they did not, but both men and women contextualised their behaviour in relation to the degree of trust in the ‘other’ person – their sexual partner.

Research has explored young women's negotiation of sexual reputations (Kitzinger 1995). Kitzinger (1995) found that sexual reputation for women still matters today, with the use of the word 'slag' continuing because of its relevance to women's lives and its meaning as a 'descriptor of reality' (Kitzinger 1995). Although both men and women referred to 'trust' issues, women also tended to offer a consideration of their own sexual behaviour and make an assessment of their risk. In contrast men often considered the status of their female partner. Thus both women and men were considering female sexuality in their assessment of risk: females who did not perceive themselves as being 'sluts' also did not consider themselves to be at risk; males who did not consider their female partners as 'sluts' also did not consider themselves at risk.

One female interviewee discussed her sexual lifestyle as one she viewed with regret, based on her perceived 'promiscuous' behaviour; she described 'many' sexual partners – some of whom she had a vague recollection of having sex with as she recalled being severely inebriated – before adding:

"I felt like a freak, I felt like a slut, y'know my friends weren't doing that...I went through a rebellious streak and got drunk a lot...but I'm in a stable relationship now, which is a good place for me to be (laughs), I'm protected." [author's emphasis]
(Interviewee #352, Female, Age 21, Workplace).

This interviewee continued to describe seeking a full sexual health check prior to having sex with her current partner:

"I decided to get tested before having sex with my boyfriend 'cos otherwise I'm gonna put him at risk"
(Interviewee #352, Female, Age 21, Workplace).

This interviewee described assessing her risk status based on her 'promiscuous' behaviour rather than upon having had unprotected sex with her sexual partners – she did not mention contraception in her recollection of sexual partners. This was common among many interviewees: risk-behaviour was not premised upon unprotected sex but upon the 'type' of sex, which was perceived to be risky.

When approaching young people in this study and discussing chlamydia with them, some young women who declined screening responded that they were in a monogamous relationship therefore they 'could' not be at risk of having chlamydia. Some young men commented that they did not have sex with 'dirty girls' therefore they too 'could' not be at risk of having chlamydia, and so declined screening. The attributes of ones sexual partners

were therefore being discussed by respondents as morally acceptable or not. It was on this basis that their perception of risk was often founded.

In the previous chapter, interviewees' views on whom should be offered screening was discussed. University students were often cited as a population who 'should' be offered screening because of their perceived promiscuous behaviour being viewed as placing them at high risk of acquiring STIs. These views clearly highlight an understanding among men and women that 'risky' sexual behaviour places one at risk of acquiring a STI. Despite this, when men and women were asked about chlamydia (in interviews as well as during the approach in the settings) there was sometimes confusion about how chlamydia is transmitted. On two occasions in health and fitness settings, groups of young men questioned why I was offering them screening for chlamydia: *"Isn't that a woman's disease?"*

Among those who understood the transmission process of STIs, their risk-decision-making process was different depending on whether they considered risk in others or themselves. There were strong gender differences found, with male and female interviewees providing different narrative accounts of their risk negotiations and decisions, although both emphasised 'deviant' female sexuality as their source of concern.

That many study respondents who considered themselves to be at risk of having chlamydia were then willing to provide a sample of urine when approached in non-medical settings is a positive finding. This suggests convergence between medical advice and lay responses; in other words, the advice for young people is to be tested for chlamydia if there are risk factors or a perception of risk, and many young people who considered themselves at risk adhered to this general view. However, many who considered themselves at risk did not accept testing in these non-medical settings. During interviews men and women offered narratives of negotiating their risk of having a STI, which for many was predicated on the status of their sexual partners. Although survey respondents knew chlamydia was sexually transmitted, and the views of interviewees confirmed this knowledge, the response to the offer of screening in the non-medical settings in this study suggests there may be further barriers to screening that are either in addition to or instead of perception of risk.

Barriers to screening: the public nature of the settings

How interviewees felt when they were approached and offered screening in non-medical settings was explored during interviews. The effect the public nature of the screening had

upon willingness to provide a sample was a key factor to emerge from interviews, especially from women. Interviewees spoke of feeling embarrassed to provide a sample in these settings because of the non-private nature of the context. The stigma of being seen to want a test for a STI, and the perception among respondents about how this behaviour would be viewed, was discussed more by women than men.

Embarrassment and stigma

As discussed in chapter 5, many survey respondents did not consider screening for chlamydia in non-medical settings, such as bookstores, pubs and clubs, acceptable because of the public nature of the setting. However, men were more accepting of these settings than women. During interviews both men and women discussed the public nature of the setting as influencing their decision to accept the offer of screening: both described feelings of embarrassment towards being offered screening in public. However, there were gender differences in how these beliefs impacted on their subsequent behaviour: many women stated a preference to be offered screening in medical settings; in contrast, men often downplayed their feelings of embarrassment by emphasising their preference towards community screening compared with clinic-based screening – non-medical screening is, as one commented, “the lesser of two evils”.

For these young men, they preferred to be embarrassed in the company of their friends or colleagues than in ‘a clinic full of strangers.’ As one commented:

“For me personally I think some medical places can be quite off putting, they’re quite daunting...whereas in your workplace, you’re in your own safe environment, you know everyone in here, you kinda trust everybody a bit I suppose cos you’re working with them all day.”

(Interviewee #311, Male, Age 20, Workplace)

When considering non-medical settings, young men were typically less concerned about people knowing they were seeking screening, than the young women. Their fears of attending clinics were greater than their embarrassment at being offered screening in non-medical settings. These attitudes were contrary to women’s’, with many discussing issues of privacy and concerns that the testing be ‘discrete’. Others spoke of preferring the toilet in which to provide their sample, to be in close proximity and for few people to be around them at the time they were asked to participate in screening:

R: *I would have preferred to phone up a number and make an appointment to come in...being out there [main foyer] I wouldn’t have come up*

KL: *Why is that?*

R: *I don’t want to stand in front of anybody, and y’know, give my name or be asked questions or anything in front of other people. I don’t know them and I*

don't want them to hear those sorta things about me. That sorta thing is better done in private.

(Interviewee #294, Female, Age 24, Health & Fitness).

This woman waited until the screening was offered in a private location in one health and fitness setting (as advertised on study posters) before being tested for chlamydia in this study, as she did not want to approach the author in the public reception area of the setting.

In the questionnaire, all respondents were asked to state how far the following would influence their decision to provide a urine sample for chlamydia testing: the location of the toilet in which to provide the sample; how many people are around them at the time when they are asked to provide a sample; and, how much time they have when asked to provide a sample. Chi-square analyses were performed on survey responses to assess the difference between these items and gender.

Significantly ($p=0.016$) more female respondents stated they would be influenced by 'the location of the toilet' than male respondents (51.3% of females compared with 35.6% of males). One female interviewee commented:

"...with this location with the toilets being really close as well I think it's okay. You're not having to go through... public or anything to actually get to a toilet, so I think that's okay"

(Interviewee #294, Female, Age 24, Health and Fitness)

Another female suggested an alternative way in which to offer testing for chlamydia:

"I suppose the best place here would be actually in the toilets. That way you could do it there and then. Even if you just pick one up on your way out."

(Interviewee #128, Female, Age 23, Education)

Other female interviewees spoke of their willingness to accept the offer of screening if it were offered 'discretely' or if 'no one knew'. Questionnaire data found that 1 in 3 males (39.6%) and just under half of females (47.6%) believed they would be influenced by how many people were around them at the time they are asked to provide a sample. There was no statistically significant difference between male and female responses to this item ($p>0.05$); nevertheless, there is a high percentage of the total study sample who believed their decision to provide a sample would be influenced by people around them at the time they were offered screening. More women than men reported they would be influenced.

In each study setting young females were observed by the author as producing their samples from within their jacket pockets, or even from their bags, in an attempt to conceal their samples from public view. On one evening in a health and fitness centre, a group of

young females (aged 17-19 years) agreed to the offer of screening. The following field note extract illuminates their embarrassment at handing over their samples to me:

A group of young women came back to give me their samples. They all appeared acutely aware of others around them and were very quiet. One glanced over her shoulder and produced the 'kit' from her bag at the same time as her friends produced theirs from underneath a cardigan, a jacket pocket and from tucked under their arm. I placed their 'kits' in the storage container and sensed immediately that they all relaxed; they appeared happy to chat with me once the samples were out of view.

(Field note, Health and fitness setting, 12th June 2004).

In contrast, no male respondents who provided a sample for testing attempted to conceal their sample from public view. Even though respondents were given a small white jiffy bag (in addition to the clear plastic bag) in which to place their sample, some young men returned their samples only in the clear plastic bag and raised their sample high in view to peer at the colour and comment on it (to either a male companion or to the author). In addition, males who spoke to their companions or me about their samples did not always use quiet tones; some spoke quite loudly and behaved in a confident manner. One male interviewee commented: *"it's more male bravado to talk about their sexual history than it is females..."* (Interviewee #258, Male, Age 22, Health & Fitness).

Chapter 5 discussed women and men's views in interviews towards screening being offered in various settings, medical and non-medical. Young women discussed a greater preference for medical settings. The stigma and embarrassment of attending specialist sexual health services is reported in the literature, mostly in relation to women (Dixon-Woods et al. 2001c; Fortenberry et al. 2002; Scoular et al. 2001b). Many interviewees, especially women, referred to the stigma of sexually transmitted infections. Most commented on the stigma of being seen to want a STI test:

"...see if you could just pick something up and take it away without having to speak to anyone, or so that no one knows what you're doing 'cause you don't really want it to be known that you want to be tested for a sexual infection y'know."

(Interviewee #309, Female, Age 20, Workplace)

Some also commented on the implications on ones 'reputation' by being seen to want a STI test:

"It's the associations that come with STI's. I think there's a sort of stigma around them, like if you might have an STI, it means that you've slept with a lot of people."

(Interviewee #352, Female, Age 21, Workplace).

One young man referred to stigma in relation to STIs being perceived as a sensitive and embarrassing subject:

“Well you know, sort of, as soon as you mention the word sex, you know, not necessarily the word sex, it's much more actually the words, you know, sexually transmitted disease... say sex and then they go, you know transmit they go 'oh, okay, no, no, no, nah it's filthy business.'... It's just not something that people are comfortable with I think generally.”

(Interviewee #308, Male, Age 22, Workplace).

Stigma has been raised as an important factor associated with women's willingness to access services, as well as their willingness to accept screening for STIs (Dixon-Woods et al. 2001a; Fortenberry et al. 2002). Although during interviews young men discussed the public nature of the setting, their embarrassment and being observed to accept screening by others. These concerns were not as great as their fears of attending a GUM clinic for the purpose of screening or testing.

Confidentiality

Men and women's perceptions of the confidentiality of the test result were explored in interviews and noted in fieldnote diaries. No respondent who accepted screening raised confidentiality as a concern at the point of accepting screening and providing a sample. During interviews, one male spoke of confidentiality in a positive light: *“I mean it's confidential anyway so what's the harm in doing it [providing a sample for testing]”*.

Women, however, expressed more concern than men over confidentiality. Women tended to favour medical settings because they perceived them as offering confidentiality more so than non-medical settings. Other studies have shown that women tend to be concerned about issues of confidentiality (Dixon-Woods et al. 2001b). Certainly, all study respondents were assured of confidentiality of their questionnaire responses and test results during the initial approach; therefore, perhaps many accepted these assurances of confidentiality and did not require any further clarification or reassurance.

All study respondents were asked for two methods of contact on their consent forms (collected prior to them completing the survey) so that they could be contacted with their result (if they provided a sample) and/or contacted with a view to arranging an interview. The great majority readily agreed, with only a small minority of respondents, mostly those who declined screening, leaving this section of the consent forms blank. As such, the majority feared no loss of confidentiality or anonymity.

Both the public nature of the setting and how confidential the test result would be were key concerns for many female survey respondents and interviewees in this study. These factors acted as a barrier to their willingness to accept the offer of screening in non-medical settings. In contrast, many young men did not express the same concerns over the public nature of the settings. Rather, men often spoke in interviews about their preference to be screened in these non-medical settings than attend a clinic-based setting. Thus, in addition to setting-related barriers to uptake in this study, there were supports to willingness, which are now discussed.

Supports to non-medical screening

Raised awareness and knowledge

Fieldnote data suggests that views towards acceptability of being approached were often based on welcoming the opportunity to gain knowledge about chlamydia. In one health and fitness setting, the author engaged in a 'quiz' with (and prompted by) a group of male staff. Their enthusiasm to gain knowledge about chlamydia, other STIs and related matters was evident in this exchange. Thus, Chi-square analyses were carried out on survey responses to assess whether there was an association between respondents' perception of their knowledge about chlamydia, as well as their actual knowledge, and their willingness to accept screening. Chapter 5 described the allocation of scores to survey respondents' knowledge about chlamydia.

No significant association was found between survey respondents' perception of knowledge and willingness to provide a sample for testing ($p>0.05$). In addition, no significant differences were found between survey respondents who either accepted or declined screening and their actual knowledge of chlamydia ($p>0.05$). Despite there being no significant associations between either perception or actual knowledge of chlamydia and willingness to provide a sample for testing, interview data suggests there was a health promotion aspect inherent in the study, which appears to have positively affected uptake of screening, especially among the male respondents.

During interviews, I was interested in assessing whether men and women had gained any knowledge about chlamydia because of their exposure to information about chlamydia by taking part in the study. Interviewees were asked to comment on what they knew about chlamydia and were subsequently asked whether that knowledge was the same before they took part in this study. Most commented on having merely heard about chlamydia before this study, but knew more about it having taken part. One male commented:

"I've heard of chlamydia, but I didn't know what it was really...but I know now because of you..I guess knowing how common it is, jeez! ...that's really why I thought about getting tested..."

(Interviewee #77, Male, Age 20, Education).

Another referred specifically to the study literature being where he gained knowledge about chlamydia and influencing his decision to be tested:

"I think it was quite good y' know the way you had all the posters up first...because obviously I had a wee read at them before speaking to you...if I didnae read the posters and you says tae me "want to get tested?"...I wouldnae have done it...everywhere you went there was a poster ... So I think way that, that helped me take part.."

(Interviewee #194, Male, Age 21, Health & Fitness).

Whilst many men in interviews admitted to having poor knowledge about chlamydia and spoke of having learned something about chlamydia as a consequence of taking part in this study, few females offered similar comments. Most female interviewees offered measured answers to questions on their knowledge about chlamydia; whereas young men were often uncertain about their knowledge, with many immediately stating "I don't know".

Chapter 5 described how some young men gained knowledge about chlamydia by virtue of their participation in this study. Whilst some learned about the largely asymptomatic nature of chlamydia, others spoke of learning that chlamydia could be tested for on a sample of urine: *"I didn't know it could be done through a urine sample"*; *"I thought it was blood samples"*. When interviewees were asked whether learning that a urine sample was the testing method had any bearing on their decision to accept the offer of testing, most, to some degree, believed it had:

"I thought it was the cotton bud thing up yer [whistles]! It's great that it's only a urine sample. Much better aye!"

(Interviewee # 237, Male, Age 24, Health and Fitness)

"I just thought where's the harm, and I just thought I could find out more information for myself so where can I go wrong really. If anything happens you're gonna get the right advice to get it sorted so there's no, there's no risk involved for me."

(Interviewee #311, Male, Age 20, Workplace).

Thus, becoming more aware about chlamydia appears to have positively impacted on some male respondents' willingness to provide a sample for testing.

Both male and female interviewees commented more generally about the effect raising young peoples' knowledge about chlamydia would have on their uptake of screening. Various reasons were offered as to why some settings are considered 'appropriate' in

which to offer chlamydia screening. A common thread throughout these interview discussions was the belief that screening being offered in these settings would raise their awareness about chlamydia: *“I think it’s a good idea to bring it to them...to make them more aware about it..maybe more would do it [testing]”* (Interviewee #308, Male, Age 22, Workplace). Both male and female interviewees believed that providing information about chlamydia would increase young people’s knowledge about chlamydia: *“...cos if people have the information...maybe there wouldn’t be so many people getting stuff [STIs]”*.

To summarise, although not all interviewees spoke about their knowledge about chlamydia being increased by taking part in this study, the majority did. Young men, especially, learned about how common chlamydia infection was among young people under 25 years, the largely asymptomatic nature of chlamydia infection as well as the testing method. Increasing their knowledge about these three aspects of chlamydia infection appears to have impacted positively on these young men’s willingness to accept screening when offered to them.

Convenience

A second common reason given by men in interviews for accepting screening when offered in non-medical settings in this study was because it was convenient. The following field note extract illuminates this:

A man approached me as I was setting up the study desk this evening and said, “Are you the lassie doing the testing?”. He said he’d seen my poster in the fitness suite...said he’d had unprotected sex a few times so he’d considered being tested but then when he saw this study advertised on the posters he waited for the study to start as it was more convenient for him “saves sittin’ in a clinic for ages” he said. He took a questionnaire and ‘kit’ there and then and returned it later before he left the gym. (Field note, Health & Fitness setting, 23rd June 2004)

In one interview with a young man, he appeared to be skirting round the issue of convenience. I asked:

KL: So, was convenience a reason you did the test then?

R: Definitely! Because I wouldn’t have gone and got myself tested...but while it’s here, it’s convenient for me...so I might as well.”

(Interviewee #311, Male, Age 20, Workplace).

In contrast, one man stated he had tried to get tested but the offer at the health and fitness setting was more convenient for him:

"I had tried to go and get tested, and I found that I couldn't do that very easily, so when this opportunity came up, I said, 'Oh, I think I'll go for that' 'cos it was just there, and it was no pressure either."

(Interviewee #237, Male, Age 24, Health & Fitness).

Many interviewees, especially men, used the term convenient; others said the test was 'easy', or 'while it's here' and 'it's no effort to do it'. The ease of being tested in these settings appealed to many of the male respondents: it was straightforward and required little effort on their part. In the workplace setting one lunchtime, a group of men and women were completing questionnaires when one young man commented (with a mouth full of chips):

Male 1: "This is great! Eat your lunch, have something to do and while I'm at it get tested for an STI! Bish, bash, bosh!" [Sic]

Male 2: I know it's dead easy isn't it!

(Male 1: Interviewee #311, Male, Age 20, Workplace; Male 2: Interviewee #308, Male, Age 22, Workplace)

Other young men commented on the convenience in relation to the urine sample:

"Aye nae bother, I'll be needin' to go in a minute anyway [to the toilet]"

(Field note with regards to Interviewee #257, Male, Age 22, Workplace).

In contrast, few female interviewees spoke of convenience as being a factor affecting their willingness to be screened. Studies with women who were opportunistically screened for chlamydia in GUM or family planning clinics, have noted that women's experiences of testing and treatment formed an important element of their judgements of the service (Dixon-Woods et al. 2001a). In this study, young men spoke positively about the ease of providing a sample for testing, and of this encouraging them to accept screening.

Male interviewees who spoke of convenience often did so in relation to two associated factors: first, screening was offered in a setting they used regularly, which made it easy for them to be screened; and second, respondents often commented on their disinclination to seek screening at medical settings (such as GUM clinics), therefore, screening being available in a setting they frequented offered them an opportunity to be screened without attending a clinic.

In relation to the first factor, some men offered views in support of chlamydia screening in the non-medical setting in which they participated as it was convenient for them to have a test in a setting they used anyway. A health and fitness interviewee who gave a sample commented:

"I like the fact that I come here [gym] quite a lot, y'know a couple of times a week and if you hadn't been here I probably wouldn't have done it 'cos where else do you go, a clinic? I'm not sure I'd do that, well not unless I thought there was something wrong and although I did a test thinking I was OK, I guess I was just checking 'cos you said you might not always know. I wouldn't go to a clinic to do that, y'know to check kinda thing but because you came up to me in here well that made it easy just to go actually yeah, y'know."

(Interviewee #258, Male, Age 22, Health & Fitness)

Another interviewee from a workplace setting commented:

"...well obviously personally I think it's a good thing because I haven't, it just hadn't occurred to me to have the test done before, and eh, when you were in here you know, sort of, obviously somewhere I come everyday and things, it was like 'Oh cool, well, why not'."

(Interviewee #308, Male, Age 22, Workplace).

Being approached in a location and at a time suitable to them appealed to many of the young men who referred to the convenience aspect of non-medical screening. Another said:

R: Personally I don't think I would have done it if you hadn't been here. If I'd just seen a poster in the toilet like saying contact the clinic I'd have went 'Na', I wouldn't have done it.

KL: And why would you say that was?

R: Pretty much I think just the convenience and a bit of ignorance as well, I mean you're coming in here so you're a bit less ignorant to the fact, just, people coming wanting to speak to you about it rather than you [himself] wanting to go speak to someone about it, if you know what I mean.

(Interviewee #311, Male, Age 20, Workplace).

For this man, the presence of someone offering a chlamydia test in a setting convenient for him, acted as a motivator for him to provide a sample. Such views were offered mostly by male interviewees, both in relation to their own views and also in relation to their perceptions of other males' attitudes towards non-medical screening. As one noted, *'I think guys are more likely to get it [tested] because it's convenient, and girls...are more likely to do it in private places, you know...'*. So where male interviewees often spoke of non-medical screening being convenient for them personally, females who referred to 'convenience' in interviews often did so in relation to 'others': *"I think if it was made more available in places like this and schools and stuff then it's made easier for people y'know, it's easier for them to get tested"* (Interviewee #309, Female, Age 20, Workplace).

For other interviewees who spoke of either their or others' reluctance to access medical services for screening or testing, non-medical screening was considered positive precisely because it enabled them to avoid accessing medical services. Thus, the convenience was

linked with screening, which would otherwise be performed in medical settings, being made available in settings regularly used by these respondents.

Perception of screening as non-medical

Many male interviewees described feelings of apprehension towards seeking screening in medical settings – especially in GUM clinics. This in turn resulted in them holding positive attitudes towards non-medical screening precisely because it meant they would not have to use a GUM clinic. As one man commented:

KL: What do you think about offering testing out with medical services?

R: I think it's, I think it's probably a good idea. Cause I think, I think some, some people would just, as I say, some people would just make, make, I think a lot of people just making that, you know, initial step into the, the medical location would be the big issue for them. You know, a lot, a lot of people don't like going to the doctor full stop... I think it's more men who are afraid of going to the doctor...I wouldn't go to a clinic but I did it [screening] here"

(Interviewee #308, Male, Age 22, Workplace).

One man explained why he would not attend a GUM clinic:

"Because everybody sits and looks at you. 'Like that what are you here for?' 'Nothing, eh sore finger.' Sore finger, eh, in a sexual health clinic? Has it got chlamydia?"

(Interviewee #311, Male, Age 20, Workplace).

Whilst male interviewees spoke of their reluctance to access dedicated sexual health services, or general practice - for the purpose of seeking testing - female only referred to this in relation to their perception of males. No female interviewee discussed being reluctant to access a GUM service. Indeed, when asked in interviews what they would do should they be concerned they had acquired a sexually transmitted infection, all men, with the exception of one, stated they would go to their GP. Whilst many females also stated the same, a few believed they would self-refer to a GUM clinic, primarily because they held negative views towards their current GPs. The reticence that male interviewees commented on, in relation to accessing medical services for the purpose of sexual health screening, is noted in the literature in terms of the stigma associated with GUM clinics: stigma is a recognised barrier to patient access (Scoular et al. 2001b).

During interviews any men perceived the screening offered in the study settings to be non-medical: "I quite appreciated the fact that it was not really medical. It was really relaxed". Another commented: "It's not just a medical issue...it's more of a cultural issue as well...I can see the point of having it in a medical facility, but it's not just a medical problem is it?"

(Interviewee #258, Male, Age 22, Health & Fitness). Few female interviewees expressed this particular opinion; however, one female did comment that sexually transmitted infections are not solely an issue for the medical profession, but they are socially and culturally produced; in other words, STIs are social infections and as such they should be dealt with by wider society.

No interviewee, male or female, spoke of the screening in terms of it being a medical service that was being offered in a non-medical setting; in contrast, the screening was 'de-medicalised' in many of the interviewees' perceptions. Whilst screening in particular settings, such as schools, is labelled within the research community as 'non-medical', 'community' or 'nonclinic-based', interviewees in this study perceived the study settings as non-medical. Factors such as the appearance of the researcher, as well as the fact that the screening was offered in 'less formal settings' - foyers, canteens and 'chill-out zones' - contributed to many male interviewees' perceptions that the screening was non-medical.

Whilst the feasibility study by Fenton et al (2001) for the Natsal 2000 found that some respondents would have preferred to be asked for a urine sample by a medical professional, this was not as strongly emphasised by men and women during interviews in this study, especially not from men. For many of these young men the fact that the author was perceived as 'an ordinary person' - in other words, I was not perceived as being a medical authority figure - was a positive influence on their willingness to accept screening:

"... 'cos you're just like us. You're not trying to be like above us or anything, which a lot of, I suppose doctors and whatever, what have you do..." [Respondents' emphasis]

(Interviewee #311, Male, Age 20, Workplace).

Treatment of those testing positive for chlamydia

Five respondents who provided a sample received a positive result. The prevalence of infection in this study was 4.4% (4.9% in men; 3.8% in women). Feedback from the GUM clinic, with whom the author had arranged for treatment of any positive respondent, confirmed the successful treatment and partner notification for four of the five positive respondents. One male respondent had not attended the GUM clinic, although contact was made with this individual on three separate occasions during which a Health Adviser engaged in conversation with the individual to arrange treatment. The Health Adviser informed the author during subsequent communication that standard clinic protocols had been followed and therefore suggested that the author need not follow this individual up.

Summary

This study screened 113 (32.3%) young men and women who were approached in non-medical settings. Forty per cent of men compared with 25% of women were willing to be screened in these settings. Furthermore, men in each setting were more willing to provide a sample than women. However, it was apparent that women had been presented with screening opportunities more than men prior to this study, as around one third of women compared with 1 in 10 men reported prior experience of being tested. The majority of men who gave a sample for testing in this study had never been screened or tested for chlamydia before participating in this study. This non-medical approach to screening was therefore successful in reaching young men, especially those in health-related settings of whom 60% provided a sample. Furthermore, men reported more high risk behaviours than women; therefore, many of the young men who were willing to participate in screening are exactly the group of young men the Chief Medical Officer's Expert Advisory Group recommended reaching via 'innovative' screening approaches.

Despite many women reporting prior experience of chlamydia screening before taking part in this study, the majority of women had never been tested before but were less willing to provide a sample than men. It stands that this non-medical approach to screening was less successful in reaching young women. Barriers for women included beliefs regarding stigma which negatively affected their willingness to provide a sample in these public settings, which is similar to findings from research with women who were screened in clinical settings (Blake et al. 2003b; Darroch et al. 2003; Duncan et al. 2001b). In addition, and in keeping with other research, many women also had a low perception of risk, which was entwined with emotions about relationship status and the view that their sexual history did not put them at risk (Santer et al. 2003). Many women also considered medical settings more appropriate in which to offer screening and therefore did not consider screening in the non-medical settings appropriate for them.

For young men, providing a sample in nonclinic settings was easy and convenient for them. The non-medical nature of the approach also appealed to many who were reluctant to attend clinics. Few raised concerns regarding the confidentiality of the test result and fewer men were concerned about the stigma of being tested for a STI than women. Many were enthusiastic to learn more about chlamydia and often engaged the author in lively conversation to obtain information. Young men's willingness to accept the offer of screening in public settings combined with their views in support of non-medical

screening, to particular groups, challenges notions that men are difficult to engage in sexual health screening or hold avoidant attitudes towards their sexual health (Darroch et al. 2003).

The views of men and women regarding the acceptability of non-medical screening were similar in a variety of ways. Both men and women believed screening in non-medical settings would be appropriate if targeted at particular groups: those who 'would', those who 'should'. Furthermore, health related settings such as gyms and pharmacies were also considered appropriate settings in which to offer screening as they were considered logical extensions of medical settings. Both men and women recommended that young people be provided with more information about the symptomless nature of chlamydia as well as suggested increasing the availability of screening. Although few men could suggest non-medical settings they considered inappropriate in which to offer screening, some believed 'there are limits'.

The next chapter draws together the findings from this study to address the research questions. The discussion of the results is placed in the context of the current screening debates regarding how best to screen, where best to screen and to whom screening should be offered.

Chapter 7

Discussion

The preceding chapters have described the feasibility of establishing chlamydia screening in non-medical settings as well as men and women's views towards screening. They have also outlined young men and women's knowledge about chlamydia and their willingness to accept the offer of screening as part of this study. This chapter draws together these findings by assessing the aims of the study and providing a summary and interpretation of the results. The chapter is in four parts: the first three address the three main aims of the study, whilst the fourth concludes by considering the limitations of the study, and also implications for policy and future research.

The feasibility of establishing chlamydia screening in three non-medical settings

This study assessed how feasible it was to establish chlamydia screening in various non-medical settings: education, health and fitness and workplace. Gaining access to settings in which to establish chlamydia screening is a specific concern to screening approaches that involve non-medical settings, since clinic control efforts have not needed to address issues of access to sites and instead rely on persons self-referring or being referred from primary care. However, there is increasing interest in going 'beyond the clinic' if we are to make inroads to combating current levels of chlamydia infection. It is therefore encouraging that access to the three non-medical settings in this study was relatively straightforward. Access was granted to settings in which there is no tradition of a screening service, in which 'gatekeepers' and managers had little knowledge of chlamydia, and also to whom limited information about chlamydia was given. The subsequent encouragement and continued support from staff at each setting is suggestive of their positive attitudes towards screening being offered in their settings. Though it is uncertain how generalisable these findings are to other non-medical settings, nevertheless, the support offered from seven non-medical settings approached for this study (including the pilot) raises the possibility that support exists in the wider community for chlamydia screening initiatives to be introduced into their environments.

Whilst accessing non-medical settings is an important aspect of the feasibility of this approach to screening, the review of screening studies in Chapter 2 revealed the

importance of setting-specific issues as well as participation rates, the success of notifying infected persons their results and them receiving treatment as being key issues affecting the feasibility and ultimately the effectiveness of non-medical screening approaches. These issues are less commonly cited in studies within clinic-based settings, as there is a different infrastructure in place, such as contact information for patients. The ease with which the test was administered, results communicated, and respondents who tested positive were treated, was assessed in this study.

The introduction of non-invasive tests for chlamydia has made possible innovative strategies for chlamydia screening. The urine test was easy to administer and all respondents who gave a sample were successfully contacted with their results. Obtaining contact information at the same time as the sample has been recommended in the literature (Debattista et al. 2002c). All respondents in this study who provided a sample for testing were asked to provide two forms of contact and make clear which they preferred. When offered this choice of contact method, men and women overwhelmingly chose to be notified via text message: 95% chose to be informed by text message. The others chose e-mail or letter. Obtaining mobile telephone contact information allowed for easy, rapid follow-up of infected individuals. No individual raised the issue of confidentiality about receiving his or her result, perhaps due to the large number requesting contact via a personal mobile telephone, which facilitates privacy.

The usefulness of offering a choice of contact method, and more specifically, the utility of text messaging results to young people, has also been noted in the literature. When a sexual health clinic in inner London introduced a text messaging service for 6 months to convey results of chlamydia tests, it was discovered that this reduced the median time to treatment as well as saving a total of 46 hours of staff time (Menon-Johansson et al. 2006). The clinic concluded that the text messaging service saved time and money for staff, reduced the risk of "missed" results and reduced waiting times for diagnosis and treatment. Some sites, as part of the Department of Health's phased rollout programme for opportunistic chlamydia screening in England, have also introduced text message results for those with a negative result. In Glasgow, the Sandyford Initiative (a large sexual health service) launched a pilot service in November 2004 sending "all clear" results to patients via text messages to their mobile phones, thus reducing pressure on frontline staff and easing the anxiety of patients who are waiting to hear their outcomes. There is therefore a move towards developing services that 'fit' with young people's current lives, and tailor the delivery of results in a way that is accessible and convenient as well as confidential. In

this study 100% of respondents who provided a sample were successfully contacted and notified of their test result. As such, the choice of contact method and obtaining it at the time the sample is provided is a crucial part of the screening process and will facilitate the prompt treatment of persons testing positive with chlamydia infection.

Whilst this study has shown that offering screening, communicating results and treatment were feasible and undertaken successfully, another important aspect to feasibility of this screening approach lies with its success at reaching young men and women to whom clinic-control efforts are not currently reaching. This study was successful in bringing young men into screening – 93% of whom reported in their survey responses that they had not been tested before. In contrast, more young women who provided a sample reported having previously screened for chlamydia (33%). Furthermore, men in this study reported higher-risk sexual behaviour than women; therefore, at-risk young men who had never been screened or tested before were reached via this approach. The CMO's Expert Advisory Group acknowledged the potential difficulties accessing young men to offer screening (Chief Medical Officer's Expert Advisory Group 1998b). It is a strength of this approach to screening that many young men who may not have previously been screened for chlamydia before were reached.

Aside from the clinical benefits of case identification, offering screening in non-medical settings can serve as a vehicle for health promotion, education and the fostering of collaboration between key community stakeholders, such as FE colleges, workplaces and GUM clinics. In particular, this approach offered young people the opportunity to become aware about chlamydia and the testing method in a familiar and convenient setting.

What young people know about chlamydia and their views and attitudes towards screening in community settings

This study was designed to elicit men and women's views towards non-medical chlamydia screening. Views towards the offer of screening may act as motivators or barriers to the effectiveness of any non-medical screening approach. In addition, given the paucity of evidence on young men's views about screening, the findings from this study are important because the views of young men were explored in comparison to those of young women.

Survey responses showed a high level of awareness of chlamydia in this study population, with 93% reporting they had heard of chlamydia. Nevertheless, whilst awareness was high, knowledge decreased as survey questions became increasingly focussed, so that 75% of men and 40% of women were not aware that there may be no symptoms associated with the infection and less than half of all respondents knew that chlamydia might cause an unusual discharge in women and men, a common symptom in both sexes. Further, male interviewees in this study, more often than females, discussed their surprise at learning of the asymptomatic nature of chlamydia infection. There was a common belief among many of the young men interviewed that symptoms would manifest in those with a STI. This has also been reported elsewhere in the literature (Garside et al. 2001; Mason 2005). The qualitative data validated the high awareness yet poor knowledge finding, with many interviewees claiming to have heard about chlamydia prior to participating in this study, although equally, many were unable to state with certainty much more about it.

It is possible that the high level of awareness of chlamydia among respondents was due to the information contained within the study literature (leaflets and posters). All respondents, when initially approached, were informed about chlamydia and given an information leaflet to read prior to giving consent to participate in the study. The study leaflet provided basic information about chlamydia, including that it is a sexually transmitted infection. Furthermore, prior to and throughout the study, there were information posters around the study venues, which also provided basic information about chlamydia. It is therefore possible that respondents may have affirmed their awareness of chlamydia prior to participation in the study based on the information they had obtained from this literature. As such, both the consent procedures and the advertising of the study on venue posters may have biased the response to this questionnaire item in favour of a high awareness of chlamydia

The high awareness of chlamydia in this study population is in contrast to the findings of previous studies. In one study 51% of men and 60% of women had heard of chlamydia (Devonshire et al. 1999); whilst in another 60% of women had heard of chlamydia (Kellock et al. 1999). The participants in these studies were GUM clinic attendees, therefore, findings might not be generalisable to the general population. This study involved users of public non-medical settings (except the workplace settings) and although the sample was a convenience one, which may have resulted in a bias towards those with

more awareness participating, nevertheless, the results may be a more useful reflection of young men and women who do not attend healthcare settings.

Low levels of knowledge about the largely asymptomatic nature of chlamydia have implications for clinic-control efforts, which rely on people self-referring to be tested for STIs. In the absence of symptoms, combined with a poor knowledge of the fact that chlamydia is often symptomless, young at-risk people might not seek health care in specialist settings, or might delay in seeking care. Whilst offering screening in non-medical settings could be one way of reaching at-risk asymptomatic populations, it could also raise awareness of the lack of symptoms associated with chlamydia infection and therefore encourage the uptake of testing. This has been found in some recent research with college students in the UK (Hay et al. 2004; Low et al. 2003; McClean et al. 2000). McClean et al found that uptake of testing sharply declined when 'information-giving' ceased in the college.

The commonest survey response to the item regarding men and women's source of knowledge about chlamydia was 'school/teacher'. Women tended to reported sources that men infrequently or do not use, such as doctor/nurse and magazines. This may be explained by females accessing primary care more than males (for example, for contraception and smear tests) and therefore being exposed to health topics and information. Indeed, 1 in 10 survey respondents, most of whom were men, reported that they first heard about chlamydia from their exposure to literature as part of this study, or else during conversations with the author. Thus, there would appear to be an information gap for young men, which is not currently being filled. The poorer knowledge of chlamydia among men suggests that ways in which to deliver information to young men are required. It is therefore encouraging that many young men in this study welcomed receiving information about chlamydia, with many willing to engage in lively conversations with the author to obtain sexual health information. This suggests that sexual health information can be delivered to young men. However, perhaps the results of this study also reflect a desire among men to receive information in culturally appropriate ways that 'fits' with the realities of their lives.

More research on how best to deliver information on STIs to young men could be of benefit to control strategies. If knowledge of chlamydia is increased, this may result in an increase in care-seeking behaviour. However, it is important to recognise that knowledge is only one prerequisite for effective disease prevention. Furthermore, how far information

affects behaviour change remains uncertain. Nevertheless, the implications of poor knowledge for disease control are significant unless there is an improvement in young people's understanding of this infection. Furthermore, poor knowledge works against notions of choice, which is so important in the New Labour modernising agenda for health care: persons have choice when they also retain knowledge. Condorcet, an eighteenth century French philosopher, trusted in people to have the ability to make correct decisions about their personal lives and society at large, if they are enabled to do so (Correa & Parker 2004). Knowledge, therefore, may be an important barrier to the utility of any screening approach - medical or non-medical - as it could limit young people's ability to make informed choices about their sexual health.

This study also found barriers to the uptake of screening in non-medical settings in the views of young people towards the appropriateness of this screening approach. Whilst knowledge is one important prerequisite for effective disease prevention, views towards chlamydia screening among the target population is also an important factor that warrants investigation because of the implications to the uptake of screening, as well as the delivery of services to take account of these attitudes. Whilst respondents from all three settings considered the education setting to be acceptable, both the health and fitness respondents and workplace respondents favoured their own setting more than others. This suggests that once screening is established, it has a positive effect on young people's views towards the acceptability of screening. Furthermore, this finding also suggests that it may be important to obtain the views of men and women who have experienced screening opportunities in non-medical settings, rather than their views towards a hypothetical situation, as some telephone surveys have done (Ford et al. 2002; Ford et al. 2004a). Boag and Kelly (1998) have argued that knowledge of chlamydia assumes greater importance once a screening programme is initiated; perhaps this may also be true for views towards the acceptability of screening in non-medical settings.

When asked about a broad range of screening opportunities, there was a high level of acceptability towards screening being offered in medical settings among both women and men. However, views towards screening being acceptable in non-medical settings were highest among males, with them considering non-medical settings, such as gyms, pubs and clubs, more acceptable than females. During interviews, three themes emerged relating to the setting and acceptability of chlamydia screening: first, a setting was seen to be appropriate if it was one where chlamydia screening could target those 'perceived' to be at risk of having chlamydia (i.e. those who 'should' be screened); second, and related, a

setting was appropriate if chlamydia screening would target those who are health conscious (i.e. those who 'would' do it); and third, if the setting is one where discussing health is appropriate to the setting (i.e. pharmacies and gyms). Views towards the acceptability of settings in which chlamydia screening could be offered therefore centered almost solely on considerations of the characteristics of the target screening population, rather than on notions of the practicalities of establishing screening in such settings.

There is clearly a need to address the myths that persist around STIs, for example, that only 'promiscuous' young people are at-risk of acquiring chlamydia. The majority of men and women who refused the offer of screening in this study believed they were not at-risk of having chlamydia. A significant majority of those persons reported being in a relationship as the reason why they did not consider themselves to be at risk. Many of these 'serial monogamists', who during interviews reported they ceased condom use after a short-time with each sexual partner, failed to understand their risk of acquiring chlamydia as a result of their non-use of barrier protection.

A number of barriers to accessing clinical settings for the purpose of STI screening has been identified in the literature, such as how confidentiality is dealt with (Burack 2000), being offered a choice of gender of staff (Armitage et al. 2004), stigma associated with GUM clinic attendance (Cunningham et al. 2002; Fortenberry et al. 2002; Scoular et al. 2001b) and poor knowledge of GUM clinic locations (Garside et al. 2001). Such barriers to accessing clinical settings could be significant enough to limit the effectiveness of clinic-control efforts. Barriers, and also supports, to access may be specific to the screening approach; the findings of this study suggest this may be the case.

More women identified the public nature of the non-medical screening as a barrier to both their views towards acceptability but also willingness to be screened. However, even for these women, as well as among many men, there was a view that the more widely available screening becomes the more young people would have access to services, increase their knowledge and change their behaviours. The view that screening should be made more available mirrors a view which underpinned the recent White Paper '*Our Health, Our Care, Our Say*', which emphasises the expansion of community health services (Department of Health 2006).

Although women spoke of the stigma of having a test for a STI in a public place, nonetheless, many spoke of the potential for screening in non-medical settings to

'normalise' screening, to make it increasingly visible so that it is not 'hidden' behind clinical walls. Young men's views reflected these. That men's views were more accepting of non-medical screening than women's suggests that there is the potential for men to be included, and even targeted, for screening in these public environments which may challenge notions that chlamydia is a 'woman's disease', as 1 in 10 respondents believed. If men are seen to be targeted for screening, and are willing to engage with the offer, then there is potential for the stigma that women spoke about to decline with time. Non-medical screening could therefore lead to a 'de-stigmatising' of screening, if it were made more widely available.

These men and women's views were based upon their experience of being approached in non-medical settings and offered screening, which is typically conducted in medical settings. Thus, new environments were created in canteens, foyers and 'chill-out zones'. How young men and women feel about being approached in non-medical settings, for the purpose of screening, has been little reported in the literature. As such, this study has painted an important portrait of the views towards being offered screening in these 'new environments'.

Willingness of young men and women to be screened for chlamydia in community settings

One third of all persons approached and whom participated in the study by completing a survey were subsequently willing to provide a sample of urine in non-medical settings. The success of non-clinical screening is achieved by identifying infections and reaching populations that would not otherwise receive screening opportunities. In this study three quarters of men and women reported having never been previously screened for chlamydia, which suggests that young people who use these non-medical settings consist a population to target screening towards. More men than women had never been screened before participating in this study. There was also a greater willingness among men than women to be screened in non-medical settings. This study was therefore successful in reaching people who had no experience of testing or screening and who might not otherwise have received the opportunity to be screened. Improving providers' practices could significantly increase chlamydia screening for women in clinical settings, under the SIGN recommendations for opportunistic screening. Meanwhile, screening in non-medical settings could fill the gap in providing these services in populations who do not access

care, and among those who do access care but may require more frequent screening because of higher risk.

Men were consistently more willing than women to provide a sample in each study setting, with the highest uptake in the health-related settings. The uptake in health-related settings of 60% is comparable with research conducted in a university sports arena, whereby 60% of male respondents participated in screening (Powell et al. 2005). Being male, aged 20-24 years and a user of health and fitness settings were factors (in the quantitative analysis) significantly associated with the decision to provide a sample. Older male respondents in this study reported more lifetime sexual partners and more partners in the past six months than their female peers. It was this group of men who were the most willing to provide a sample. Given the reported risk behaviour among these men, it is therefore encouraging that the majority who gave a sample also perceived themselves to be at risk of having chlamydia. These findings suggests that men did not necessarily hold avoidant attitudes towards their sexual health, as has previously been suggested (Darroch et al. 2003). Men were willing to engage with screening and perceived themselves to be at risk. It may however be that non-medical approaches to screening will be more successful in reaching male populations, since fewer women who had not been tested for chlamydia before then gave a sample.

Various barriers and supports to women's willingness to be screened for chlamydia were identified in this study. For many women, the public nature of the screening was associated with stigma. Women's beliefs negatively affected their willingness to provide a sample in non-medical settings. Women often reported a preference for screening to be offered in medical settings, predicated upon their belief that this setting offered a more confidential and private environment. Clearly, women were uncomfortable being invited into these 'new environments', which bridge health and social worlds. For women, medical settings are more acceptable in which to offer chlamydia screening as they offer anonymity and also confidentiality of seeking testing. There is the potential to reduce stigma for women by increasing screening in men, especially in public non-medical settings. If more men are seen to be offered and then engaging with screening then it is possible for screening to become 'normalised'. The effects of this could be to challenge notions that chlamydia is a 'women's disease', as one in ten respondents believed.

It is clear that offering screening for chlamydia in public, social settings does not necessarily reduce stigma-associated barriers to uptake for many women. A greater

availability of screening in non-medical settings could normalise screening and thereby reduce stigma for women. Non-medical settings are not traditionally associated with STI screening and this study has shown that there are setting-specific barriers to women's willingness to be screened in them. Thus, it is important to continue to consider the gendered impact of these new screening environments to assess whether they will have an effect on reducing stigma for women.

In contrast to women's views, few men discussed the public nature of screening and being embarrassed to accept screening in the study settings. Men's concerns regarding non-medical screening were less than those of attending GUM clinics for the purpose of screening. Many men perceived the screening in this study as being 'non-medical', in that the author was viewed as an 'ordinary person'; in other words, not a medical authority figure. This finding is in contrast to that of a chlamydia screening feasibility study for the second Natsal study, which found that many respondents preferred to be asked for a urine sample by a medical professional (Fenton et al. 2001a).

Key differences included the degree of awareness about chlamydia, which enabled or inhibited further discussion during the approach, and the interaction with peers suggests the social environment, with its associated gender norms, impacts on the feasibility of a non-medical approach. Indeed, as part of the continuing investigation and evaluation of non-medical approaches, an evaluation of the 'new environments' that will be created is necessary to be able to fully assess the unique barriers and supports to screening in such settings as well as the effects these 'new environments' have upon the target groups for screening. Establishing screening in social and public areas creates a new environment as it combines both health and social worlds. As Engebretson et al (2005) suggest:

'These new spaces may contribute to a paradoxical experience for the participants...Situating in this manner, the health screening participant in a public setting has one foot in the world of the health care arena and another in the social world of friends who accompany that person.'
(*Engebretson et al. 2005*).

The context, impact of gender and access to non-medical settings to establish screening requires further investigation to strengthen our understanding of how effective nonclinic-based screening is as part of control strategies to reduce the prevalence of chlamydia infection in the population.

Limitations

Different limitations to this study must be considered in the interpretation of the results. The one-person approach used in this study to offer screening meant that there were young men and women who used the setting but were not offered screening. In the health and fitness settings, for example, there was often a high volume of age-eligible young people accessing the setting at particular times (for exercise classes or to play football). The time taken to engage with young people and ensure informed consent meant that opportunities to invite other young men and women were missed. The degree of effectiveness of this approach to reach a variety of young people is therefore uncertain. Whilst the majority (63%) of young people who provided samples in this study considered themselves to be at risk of having chlamydia, it is possible that those who were willing to be approached and to provide a sample did so by virtue of the fact that they considered themselves to be at risk of having chlamydia. As such, it is possible that it is not only clinic-control efforts that might miss people. Essentially, there may be some people who do not wish to be screened regardless of how or where the offer of screening is made.

The one-person approach created 'missed opportunities' for engaging with men and women. The convenience sampling procedure might have introduced bias into the study. For example, it is possible that on some occasions, the author might have unintentionally approached 'friendly' and approachable young people who could have different characteristics to an unapproachable population. The author was aware not to introduce such bias into the study: there were many occasions when the author was present in settings with either no setting users or persons were over 25 years, therefore, attempts were made to approach all age-eligible setting users possible in the time available.

A further limitation stems from the use of the convenience sampling: the participants were not chosen randomly and it was impossible to verify their representativeness. Thus, a selection bias may have occurred. The reliability of answers to survey questions is also an important factor to consider. Recall and social desirability biases may have been involved in responses to questionnaire items; however, the latter may have been reduced since the questionnaire was self-administered and anonymous. Despite these methodological limitations, this study was able to obtain the views and attitudes of young men and women towards chlamydia screening in community settings. More research on men's views has been advocated by many commentators (Bellis et al. 2000; Fenton 2000; Hart et al. 2002). The results of this study will contribute to the evidence base, which is sparse in qualitative data from young men.

Implications of findings on policy and recommendations for future research

The current study was not commissioned research and therefore not intimately bound up with a policy process making recommendations for service provision for young people. It was, however, a response to policy urgency: how best to offer 'innovative' approaches to chlamydia screening that will reach at-risk young people (Department of Health 2001b). The study was too small in scale to base national policy on the findings, yet there are important questions to be asked about the way in which the project was established and run, and its findings. On the back of the findings of this study there are various recommendations for non-medical chlamydia screening, which can be grouped into two major themes: staff training and service design.

The role of the researcher

Offering screening in non-medical settings was the core of this study and as a result, the researcher spent a considerable amount of time in each of the settings, setting up her stall and being available for the young men and women to approach her, as well as approaching young people who passed through the study area. A time of ~ 230 hours was taken to recruit 363 young men and women into the study. The amount of time it took to attract the sample is not replicable in routine health service delivery, and thus the strictly research focus of the study needs to be acknowledged.

This study has highlighted the importance of the role of the individual implementing non-medical screening. The approach of the researcher in this study, as described in the previous chapters, affected both the uptake of screening and ultimately the feasibility of this approach to screening. The ways in which uptake was affected were related to the adaptability of the researcher, the way in which she personally encouraged people to take part in screening, as well as her style of dress and the manner with which young people were addressed. As the study progressed the researcher tried out different forms of approach and became highly successful at encouraging the young people to take part in the study. Evidence of the author's success is the high uptake of screening by men in this study – the highest in any non-medical (non-postal) approach. The limitation, however, is that the response to a particular approach may not be easily replicated if it is rolled out.

If this approach to screening is more widely introduced, there could be problems replicating the above findings: others may be less successful in engaging young men and women in the process of non-medical screening. The implications are therefore that uptake may not be as high in subsequent interventions. One way to combat this may be to place an emphasis within staff training on some of the key factors this study found to be associated with achieving a high willingness among young people to be screened for chlamydia in non-medical settings. Firstly, there has to be an awareness of gendered responses; the researcher found that men and women reacted well to different forms of encouragement to take part in the study. Young men responded particularly well to the use of humour or a more light-hearted initial approach. Many men appeared reluctant when a more fact-based approach was used, with the researcher describing the study in a matter of fact way and with a neutral manner. In contrast, women responded better to being approached in a more serious manner. The use of humour as a general approach to encouraging male participation is not a new finding: the Men's Health Forum conducted focus group research in Phase 1 of their research into the feasibility of introducing chlamydia postal testing kits in workplaces for testing men (Wilkins 2005); the outcome of their research was the use of the tag line 'Put yer tackle to the test' over a close up image of a man's crotch area in jeans. As a result, their postal testing approach reached more men than women (80% were men) as compared with Healthy Respect (where 17% of testers were men) (Wilkins 2005; Williamson et al. 2006). In addition, evidence from non-medical screening of the client group men who have sex with men also found the use of humour encouraged uptake in screening (Debattista et al. 2002a).

Secondly, adaptability is key to the success of getting young people involved in screening; the need to try out different approaches and see what worked. The researcher developed a sensitivity as to how young men and women responded in the different settings and what they would find appropriate. Some things did not appear to work (for example, asking young people if they were sexually active at the time of the initial approach was not well received, especially by young women) and were abandoned early on. Thus, with training and careful selection of those involved in offering screening (paying attention to age, manner and ability to be adaptable), the successful uptake of this approach perhaps could be replicated.

Service design

The positive views that young people in this study held towards non-medical screening included an appreciation of the convenience of the offer, the non-medical nature of the

approach (including the non-medical dress, the non-clinical language and manner of the person offering screening), and being offered information on chlamydia and opportunities to receive condoms. These factors encouraged participation in screening and are worth bearing in mind in the design of any future non-medical screening approach. At the same time more women than men reported disliking the public nature of the setting and the perceived stigma of being seen in public settings to want an STI test was too great for some women to agree to participate in screening and resulted in fewer women providing a sample for testing than men. Women already have other venues in which they attend and are more likely to be offered screening (for example, general practice and family planning settings), and indeed a greater proportion of the women in the sample had already been screened for chlamydia than the men. Thus although the involvement of women in this study suggests that some will find non-medical settings acceptable, it may be that men, who have fewer other options in the community in which to be screened, may benefit more from a non-medical approach to screening. The success of the approach used in this study is in keeping with the findings from Healthy Respect, which had greater success in reaching young men through the innovative postal testing kits than women (Williamson et al. 2006). Thus, there may be elements of this approach which can be generalisable to any future innovative screening initiatives or interventions.

It is important to bear in mind that improving service provision for young people is not just about improving individual services for individual users, important as that is, but should involve whole communities, as poor sexual health is not just a property of an individual but needs to be understood in a systematic manner. For instance, in addition to individual factors, social factors such as ethnicity, gender and social deprivation are known to play a major role in the risk of acquiring a sexually transmitted infection (Bonell et al. 2003; Cohen et al. 2000; Leishman 2004; MacDowall et al. 2002; McCulloch 2001; McLeod 2001; Scottish Executive 2003c). Whilst this study did not seek to obtain such information, there is an increasing evidence-based upon which findings from current work should acknowledge. The findings of this study, that men may be better reached through 'innovative' approaches to screening, that there is a gendered response and that the researcher can play a pivotal role in engaging young people in screening, suggests social factors are important in the delivery of STI screening services. Young people, especially men, are not necessarily as 'hard to reach' as some policy documents suggest (Chief Medical Officer's Expert Advisory Group 1998b; SIGN 2000), as 'innovative' approaches are reaching many men and women and including them in screening opportunities.

Opportunities that reflect the social and cultural backdrop may therefore prove effective in the longer-term.

Further research is required on how best to establish screening in non-med settings. Should such an approach involve a health adviser from GUM offer screening, should treatment be offered in the settings and how frequently should screening be offered from within non-medical settings are some of the questions that require further evidence before non-medical approaches can be championed as effective for disease control. Such research could also include further investigation of the feasibility of offering screening in other non-medical settings, such as schools. School settings have been used in American-based studies and have proved feasible as well as advantageous as they have detected high positivity rates (Cohen et al. 1999). Detecting infections early so that fertility problems are tackled early could be an important approach to controlling both infections and their associated complications, which are costly to the NHS. Feasibility work on the acceptability and uptake of screening in schools is therefore necessary.

The majority of the studies reported in the literature have used only one approach to offering chlamydia screening. There is also a need to consider more integration of services and approaches: screening being offered in non-medical settings alongside the availability of internet postal approaches, postal testing kits on site and health adviser sessions to offer a full sexual health check, counseling and treatment. If young people want their service to be as convenient as possible then perhaps offering a choice of screening in one setting would be a possible direction of future screening approaches. Offering young people a choice of receiving results via text message would also be part of offering a convenient and culturally appropriate service. As noted earlier, text messaging results has resulted in a reduction in staff hours, the interval between notification and treatment and 'missed' results.

Conclusion

Clinic-control strategies currently miss many infected, at-risk persons. Strategies for reaching these groups could include establishing screening in non-medical settings. Such an approach could be one way in which to involve young men in screening and women who might not otherwise be offered screening opportunistically in healthcare settings.

This study showed that it is feasible to offer screening from a variety of non-medical settings. This approach identified infections and was acceptable to many men and women.

The willingness of young people in this study, especially young men, to produce urine samples in less than completely private circumstances, is a good example of the potential for the development of mutual trust between screening personnel and the target community population. The variability in uptake in screening across the study settings suggests there exists a complexity of motivators to willingness to accept screening in non-medical settings. Self-care orientations, as well as accessibility and social influences were important motivators associated with willingness to be screened for chlamydia in this study. Thus, improving access to sexual health services may not be the only consideration of improving the uptake of screening among young people; an acknowledgement of, and further assessment of, the variety of individual and wider social factors associated with care-seeking behaviour is warranted.

Thus, it is important to continue to assess the best method of establishing chlamydia screening in non-medical settings. This is one way to involve young men in chlamydia screening, who represent a significant reservoir of infection for women. Young men were more willing to be screened in non-medical settings than women in this study. Thus, despite the complexities of motivation for care seeking, willingness exists among young men. Novel settings may be particularly important when targeting young men, for whom traditional health care settings themselves are barriers to accessing testing and treatment services. Reducing the prevalence of infection in men is a primary prevention strategy for women; as such, increasing screening for men may help reduce the current inequalities which exist in chlamydia screening as both sexes will be targeted, thereby reducing the burden of responsibility for sexual health on women.

In Scotland no chlamydia screening programme is planned. This could be an opportunity for the Scottish Health Department to continue to gather evidence before deciding on the approach to screening for chlamydia in Scotland. Lessons to be learnt from the English model, as well as the evidence from the Swedish experience, could be taken on board when planning the strategy for Scotland: men need to be included in screening and screening should not be restricted to clinic-based settings. In this way, any proposed Scottish strategy for controlling chlamydia will be truly evidence-based and effective. As such, the feasibility of screening in non-medical settings requires further investigation and evaluation. There is an opportunity in Scotland to develop the most rigorous, evidence-based strategy for chlamydia screening in Western Europe. Scotland is in a unique position to lead the way in chlamydia control and prevention.

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Appendixes

Appendix 1	Ethics consent and letters to organisations requesting access
Appendix 2	Study literature: posters, leaflets and consent forms
Appendix 3	Questionnaire and interview guide
Appendix 4	Study images: test 'kit' and main study desk
Appendix 5	Information sheet given to respondents who gave a sample

Appendix 1

Ethics consent and letters to organisations requesting access

[Facility Manager]

26 March 2004

Dear [Name]

I am a doctoral researcher based in the Department of Public Health at the University of Glasgow. My research concerns screening young people for *Chlamydia trachomatis*, a sexually transmitted infection which is most common among young people and which is often symptomless. Chlamydia is causally linked to infertility, which combined with increasing rates of infection, makes screening for chlamydia an important public health issue. However, given that only around 10% of infections are diagnosed, a significant pool of infections remains in the population. As such, the Scottish Executive has recognised the need for innovative chlamydia screening strategies, specifically targeting young men outside the traditional clinic setting. My research is concerned to find out appropriate settings in which to best offer such screening. I am writing to you, as the Manager of a non-medical community setting, to see if you would be willing for me to conduct my study from within your setting.

As I envisage it, the study would involve:

- Chatting to users aged 16 to 24 years, informing them about the research and what chlamydia is before asking them if they wish to participate in the study;
- Leaflets have been prepared for participants which detail what chlamydia is as well as the nature of their involvement within the study. Participants would sign two copies of a consent form (one of which they keep);
- Participants would be asked to complete a short (anonymous) questionnaire on knowledge of chlamydia, attitudes towards screening in non-medical locations and sexual lifestyles;
- Participants would have the opportunity of being tested for chlamydia by providing a urine sample (they may choose NOT to provide a sample and remain in the study);
- Samples will be sent to the West of Scotland Specialist Virology Centre, Gartnavel Hospital, for testing and participants will be informed confidentially of their result;
- Those testing positive for chlamydial infection will be referred to a Health Adviser for treatment, partner notification and further tests (if required).

Ethical approval for this study has been granted from the University Faculty of Medicine Ethics Committee. The proposed research has therefore been methodically considered in relation to key issues, including participant confidentiality and management of those testing positive for chlamydia.

The study has been rigorously piloted in a youth-oriented centre as well as successfully undertaken in a large Further Education college; it is feasible with little disruption to normal activities of the setting. Should you require any further information or clarification I am contactable by email and telephone, as detailed below. I shall telephone you shortly to discuss the possibility.

Yours sincerely,

Karen Lorimer (Ms)

E-Mail: k.lorimer@clinmed.gla.ac.uk

Telephone: 0141 330 3295 (Direct Line)

[Facility address]

18 May 2004

Dear Mr. [name],

I am a doctoral researcher based in the Department of Public Health at the University of Glasgow. My research concerns screening young people for *Chlamydia trachomatis*, a sexually transmitted infection which is most common among young people and which is mostly symptomless. Chlamydia is causally linked to infertility, which combined with increasing rates of infection, makes screening for chlamydia an important public health issue. However, given that only around 10% of infections are diagnosed, a significant pool of infections remains in the population. As such, the Scottish Executive has recognised the need for innovative chlamydia screening strategies, specifically targeting young men outside the traditional clinic setting. Funded by the Chief Scientist Office, my research is concerned to find out appropriate settings in which to best offer such screening. I am writing to you, as the Manager of a non-medical community setting, to see if you would be willing for me to conduct my study from within your setting. [Name], Operational Development Manager within Culture & Leisure Services at Glasgow City Council, has approved the study in principle (I am awaiting written confirmation of this).

As I envisage it, the study would involve:

- Chatting to users aged 16 to 24 years, informing them about the research and what chlamydia is before asking them if they wish to participate in the study;
- Leaflets have been prepared for participants which detail what chlamydia is as well as the nature of their involvement within the study. Participants would sign two copies of a consent form (one of which they keep);
- Participants would be asked to complete a short (anonymous) questionnaire on knowledge of chlamydia, attitudes towards screening in non-medical locations and sexual lifestyles;
- Participants would have the opportunity of being tested for chlamydia by providing a urine sample (they may choose NOT to provide a sample and remain in the study);
- Samples will be sent to the West of Scotland Specialist Virology Centre, Gartnavel Hospital, for testing and participants will be informed confidentially of their result;
- Those testing positive for chlamydial infection will be referred to a Health Adviser for treatment, partner notification and further tests (if required).

Ethical approval for this study has been granted from the University Faculty of Medicine Ethics Committee. The proposed research has therefore been methodically considered in relation to key issues, including participant confidentiality and management of those testing positive for chlamydia.

The study has been rigorously piloted in a youth-oriented centre and is feasible with little disruption to normal activities of the setting. Should you require any further information or clarification I am contactable by email and telephone, as detailed below. I shall telephone you shortly to discuss the possibility.

Yours sincerely,

Karen Lorimer (Ms)

E-Mail: 0009673L@student.gla.ac.uk

Telephone: 0141 330 3295 (Direct Line)

[Facility manager]

25 May 2004

Dear [Name],

I am a doctoral researcher based in the Department of Public Health at the University of Glasgow. My research concerns screening young people for *Chlamydia trachomatis*, a sexually transmitted infection which is most common among young people and which is mostly symptomless. Chlamydia is causally linked to infertility, which combined with increasing rates of infection, makes screening for chlamydia an important public health issue. However, given that only around 10% of infections are diagnosed, a significant pool of infections remains in the population. As such, the Scottish Executive has recognised the need for innovative chlamydia screening strategies, specifically targeting young men outside the traditional clinic setting. Funded by the Chief Scientist Office, my research is concerned to find out appropriate settings in which to best offer such screening. I am writing to you, as the Manager of a non-medical community setting, to see if you would be willing for me to conduct my study from within your setting. [Name], Operational Development Manager within Culture & Leisure Services at Glasgow City Council, has approved the study in principle (I am awaiting written confirmation of this).

As I envisage it, the study would involve:

- Chatting to users aged 16 to 24 years, informing them about the research and what chlamydia is before asking them if they wish to participate in the study;
- Leaflets have been prepared for participants which detail what chlamydia is as well as the nature of their involvement within the study. Participants would sign two copies of a consent form (one of which they keep);
- Participants would be asked to complete a short (anonymous) questionnaire on knowledge of chlamydia, attitudes towards screening in non-medical locations and sexual lifestyles;
- Participants would have the opportunity of being tested for chlamydia by providing a urine sample (they may choose NOT to provide a sample and remain in the study);
- Samples will be sent to the West of Scotland Specialist Virology Centre, Gartnavel Hospital, for testing and participants will be informed confidentially of their result;
- Those testing positive for chlamydial infection will be referred to a Health Adviser for treatment, partner notification and further tests (if required).

Ethical approval for this study has been granted from the University Faculty of Medicine Ethics Committee. The proposed research has therefore been methodically considered in relation to key issues, including participant confidentiality and management of those testing positive for chlamydia.

The study has been rigorously piloted in a youth-oriented centre and is feasible with little disruption to normal activities of the setting. Should you require any further information or clarification I am contactable by email and telephone, as detailed below. I shall telephone you shortly to discuss the possibility.

Yours sincerely,

Karen Lorimer (Ms)

E-Mail: 0009673L@student.gla.ac.uk

Telephone: 0141 330 3295 (Direct Line)

[Organisation Address]

14 June 2004

Dear ,

I am a doctoral researcher based in the Department of Public Health at the University of Glasgow. My research concerns screening young people for *Chlamydia trachomatis*, a sexually transmitted infection which is most common among young people and which is often symptomless. Chlamydia is causally linked to infertility, which combined with increasing rates of infection, makes screening for chlamydia an important public health issue. However, given that only around 10% of infections are diagnosed, a significant pool of infections remains in the population. As such, the Scottish Executive has recognised the need for innovative chlamydia screening strategies, specifically targeting young men outside the traditional clinic setting – indeed, the Chief Scientist Office (CSO) are funding this research. Essentially, I am concerned to find out appropriate settings in which to best offer chlamydia screening. I am therefore writing to you, as Manager of a non-medical setting, to see if you would be willing for me to conduct my study from within your setting.

As I envisage it, the study would involve:

- Chatting to students aged 16 to 24 years, informing them about the research and what chlamydia is before asking them if they wish to participate in the study;
- Leaflets have been prepared for participants which detail what chlamydia is as well as the nature of their involvement within the study. Participants would sign two copies of a consent form (one of which they keep);
- Participants would be asked to complete a short (anonymous) questionnaire on knowledge of chlamydia, attitudes towards screening in non-medical locations and sexual lifestyles;
- Participants would then have the opportunity of being tested for chlamydia by providing a urine sample (they may choose NOT to provide a sample and remain in the study);
- Samples will be sent to the West of Scotland Specialist Virology Centre, Gartnavel Hospital, for testing and participants will be informed confidentially of their result;
- Those testing positive for chlamydial infection will be referred to a Health Adviser at the Sandyford Initiative for treatment, partner notification and further tests (if required).

Ethical approval for this study has been granted from the University Faculty of Medicine Ethics Committee. The proposed research has therefore been methodically considered in relation to key issues, including participant confidentiality and management of those testing positive for chlamydia.

The study has been rigorously piloted in a youth-oriented centre as well as successfully undertaken in a large Further Education college; it is feasible with little disruption to normal activities of the setting. Should you require any further information or clarification I am contactable by email and telephone, as detailed below. I shall telephone you shortly to discuss the possibility.

Yours sincerely,

Karen Lorimer (Ms)

E-Mail: k.lorimer@clinmed.gla.ac.uk

Telephone: 0141 330 3295 (Direct Line)

Appendix 2

Study literature: posters, leaflets and consent forms

Chlamydia:

The most common, curable
Sexually Transmitted Infection.



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Could I be at risk?

Yes, if you had unprotected sexual intercourse. There may be approx. 1 in 10 young people under 25 with this infection.

Would I know if I had this infection?

Not always. Approx. 50% of young men and 80% of young women who have this infection do not have any symptoms.

If I don't have symptoms, why should I bother getting tested?

If left untreated, chlamydia can cause long-term problems for men and women: men can experience painful swelling of the testicles, and women can develop Pelvic inflammatory Disease (PID), which can result in fertility problems.

How can I get tested?

Chlamydia can be tested on a sample of urine. A study is being conducted in this gym, as part of PhD research at Glasgow University. The aim is to ask you *how you feel* about being tested and to offer you confidential testing. ***If you would like to have a test or just fill in a questionnaire come along and speak to Karen. Study starts XXXX***

What happens if I have chlamydia?

You will be referred to a Health Adviser who will arrange for you to be treated. A short course of antibiotics will get rid of this infection.

Your test and all information in this study are confidential. Only you will be told your result, no one at this health & fitness location will know your result.

Chlamydia:

The most common, curable Sexually Transmitted Infection

Could I be at risk?

Yes, if you've had unprotected sex.
Approx. 1 in 10 young people under 25
have this infection.

Would I know if I had this infection?

Not always. Approx 50% of young men
and 80% of young women will have no
symptoms. You can't tell by looking!

How can I get tested?

Chlamydia can be tested on a sample of
urine. A study is being conducted in this
college to see how willing people are to
be tested for chlamydia at this college.

*If you would like to have a test, ask
Karen.*

Study starts XXXX

Confidentiality



All information collected about you as part of this study will be strictly confidential. No names will be used in written work to identify people and samples will be labelled with numbers rather than names. All information will be stored under locked conditions and on password protected computers.

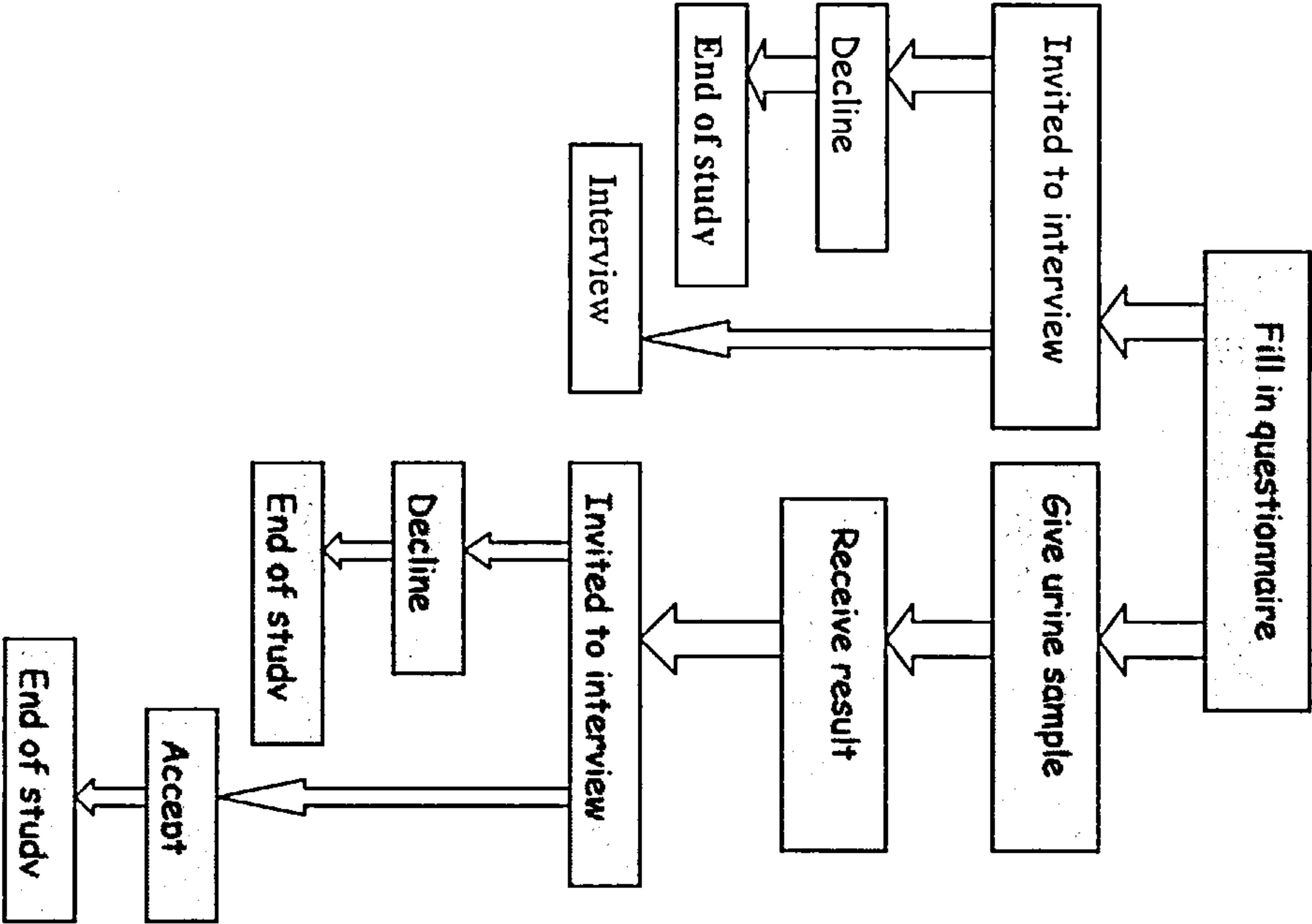
Ethical approval for this research has been obtained from the Faculty of Medicine Ethics Committee.

Contact Details:

Should you require any further information please contact me, Karen Lorimer, at:

University of Glasgow
Public Health & Health Policy, Division of
Community-Based Sciences, 1 Lilybank
Gardens, GLASGOW, G12 8RZ
Tel: 0141 330 3295 (Direct Line)
Email: k.lorimer@clinmed.gla.ac.uk

Flow chart:



Chlamydia Study:

What's involved?



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This leaflet explains why you are being invited to take part in a research study funded by the Chief Scientist Office (CSO), part of the Scottish Executive.

- It explains why the research is being done, and
- What it involves.

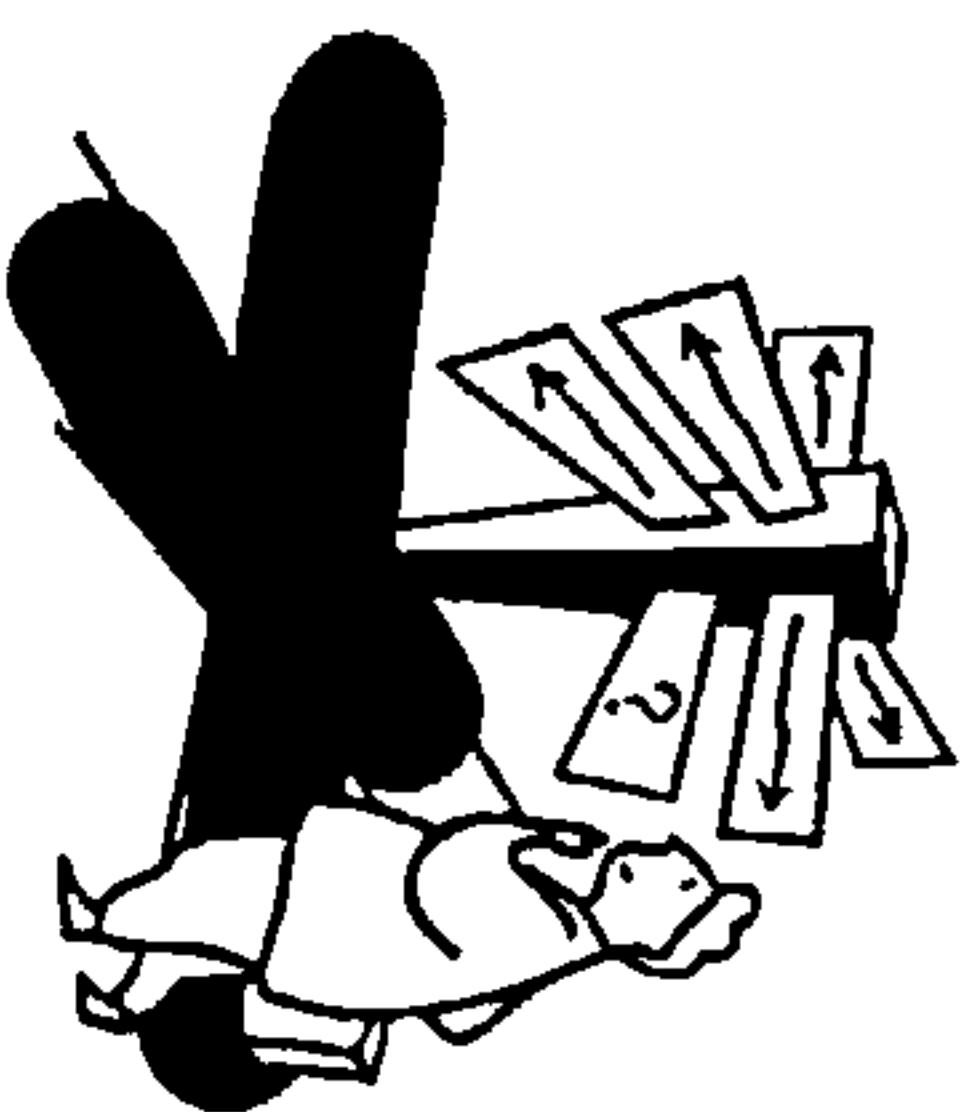


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SCOTTISH EXECUTIVE

What should I do if my partner or I have symptoms and may be infected?



You can be tested with this study and if positive you will be referred for correct treatment. However, if you are concerned about symptoms and wish to seek advice on your own you can attend your doctor or nearest genitourinary medicine (GUM) clinic.

How is Chlamydia tested for?

Both women and men can be tested for Chlamydia with a urine sample. Sometimes a swab might be taken, but this is increasingly being replaced with the urine sample.

Whilst it might be a bit embarrassing at least you do it in private on your own - no one else is there with you and it can easily be done in the toilet. It is quick and painless.

The samples are sent to a laboratory to be tested. In this study, they will not have your name on it.

What if I have Chlamydia?

You will be referred for treatment with antibiotics. It is important that if you receive a positive result for Chlamydia that you do seek treatment and also tell your current/previous partner(s) as they will also need to be tested. You will not have to contact them if you do not wish to; you can receive assistance from GUM staff.

If you have a partner you will have to abstain from sex until a week after you have been given your course of antibiotics.

You may become re-infected if you do not follow treatment.

Useful contacts:

Sandyford Initiative
2 – 6 Sandyford Place
(near Charing Cross)
Tel: 0141 211 8601
Drop-in service, with some appointments

My contact details:

Karen Lorimer
University of Glasgow
1 Lilybank Gardens, Glasgow, G12 8RZ
Tel: 0141 330 3295 (Direct Line)
Email: k.lorimer@clinmed.gla.ac.uk



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Chlamydia...

...the 1 in 10 bug.
What is it? Should I be tested?

Why is this research being done?

Chlamydia is a bacterial sexually transmitted infection (STI) that can easily be treated with antibiotics. It is found mostly among young people under 25 years old. The rate of infection has been increasing significantly over the past 10 years. The majority of men and women who have the infection *do not know* they have it as it often has *no symptoms*. Until recently, the majority of research has concentrated on screening for Chlamydia in clinical settings (e.g. family planning, doctors surgery, hospital...) but that means a large number of people will not be offered screening. The Chief Scientist Office (CSO) is funding this research (that is part of a postgraduate study at Glasgow University) to find out how *acceptable* screening for Chlamydia is in non-clinical settings, like the one you are in just now. The more information that is gathered the more the problem of increasing rates of infection can be tackled.

Why have I been chosen?

To find out how *acceptable* to young people screening for Chlamydia is in non-clinical settings we need information from young people themselves. The setting you are in just now is a place where young people can be found.

Everyone within this setting aged 16 to 24 will be asked to take part.

Do I have to take part?

It is your choice whether or not you wish to take part. If you decide to take part you will be asked to sign a consent form. You will be free to withdraw from the study at any time without giving a reason.

The more people who take part the better the information gathered will be and the results of the research can be used with confidence.

What's involved?



- If you agree to take part you will be asked to fill in a short questionnaire and then to provide a urine sample to be tested for Chlamydia. *You may just wish to fill in a questionnaire.* Some people may feel embarrassed or a little reluctant at first but research has shown that almost everyone is able to provide a urine sample with little or no embarrassment.
- If you provide a urine sample you will be asked for contact details (for example, a mobile phone number).
- You will be contacted with your result around 3 to 5 days later (e.g. by text message). Only you will be told your result.

- A small number (around 1 in 10) will be contacted to take part in an interview that will ask about your attitudes towards sexual health, screening for Chlamydia and your lifestyle. This will last around 1 hour and will take place either in the university or somewhere more convenient to you.
- People with Chlamydia will be referred to the nearest sexual health clinic (e.g. Sandyford, Glasgow). You must consent to your details being passed to a Health Adviser **BEFORE** having a test.

What are the benefits of taking part?

Having a test for Chlamydia will tell you whether or not you have the infection now. Remember, *most people do not know they have it.* Treatment is easy and will cure the Chlamydia infection. *Even if your test is negative, or you choose just to fill in a questionnaire, you will still be providing useful and important information.*

What are the disadvantages of taking part?

Chlamydia is a sexually transmitted infection and you may be upset to receive a positive result. You will be referred for treatment and will need to contact previous partners and/or your current partner. Sometimes there are consequences for current relationships but you will be given support. *You are advised to think carefully about how you would feel about a positive result before agreeing to take part.*

If I get tested as part of this study, what does it involve?

1. KAREN (the researcher) would give you a discrete 'test kit' for you to take to the toilet and provide your urine sample;
2. You would choose the method you would like to receive your result (i.e. by text, phone, letter or E-Mail);
3. Within a week you would be contacted - by your chosen method - by KAREN (if NEGATIVE) or by a Health Adviser (if POSITIVE).

What happens if my test result is positive?

A Health Adviser from the *Sandyford Initiative* (a sexual health organisation in Glasgow City Centre) would contact you to arrange for you to come in and be treated.

Treatment is simple, just 4 tablets taken with water there and then. No examination is needed.



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Chlamydia

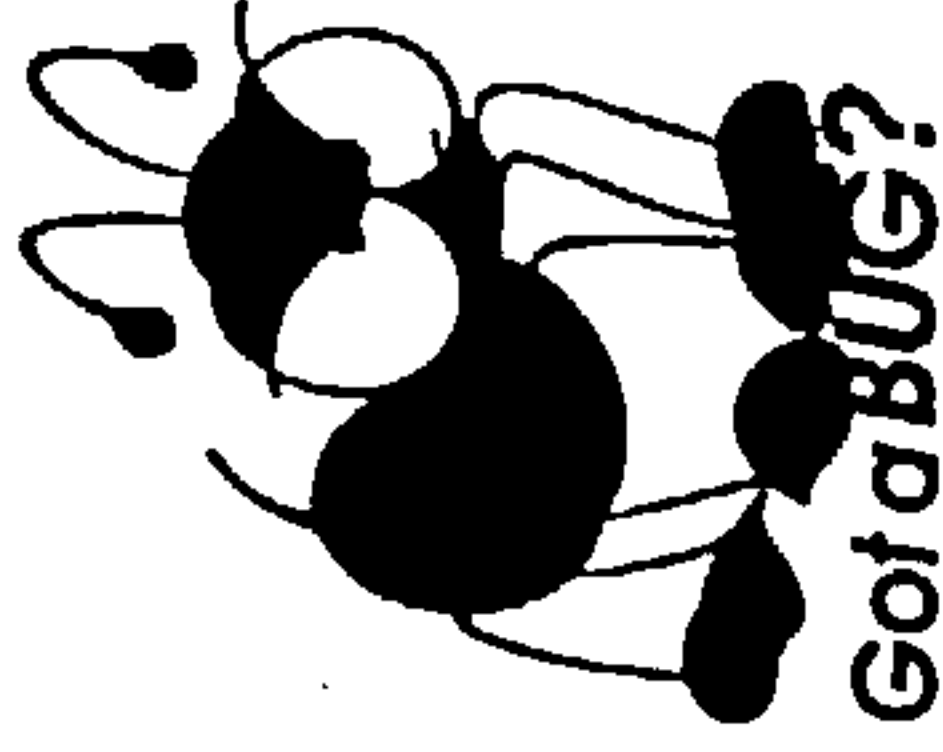
The 1 in 10 bug...

What is it? Should you get tested?

An information leaflet for men!

- *Exploring some myths.*

What is Chlamydia?



Chlamydia is a bacterial sexually transmitted infection (STI). It is the most common sexual infection in the UK.

How do you get it?

Chlamydia is mostly sexually transmitted. You can catch it by having unprotected sex with someone who has Chlamydia.

(on rare occasions, the infection can be passed on the fingers from the genitals to the eyes causing conjunctivitis and a woman with a genital infection can pass it to her baby during birth).

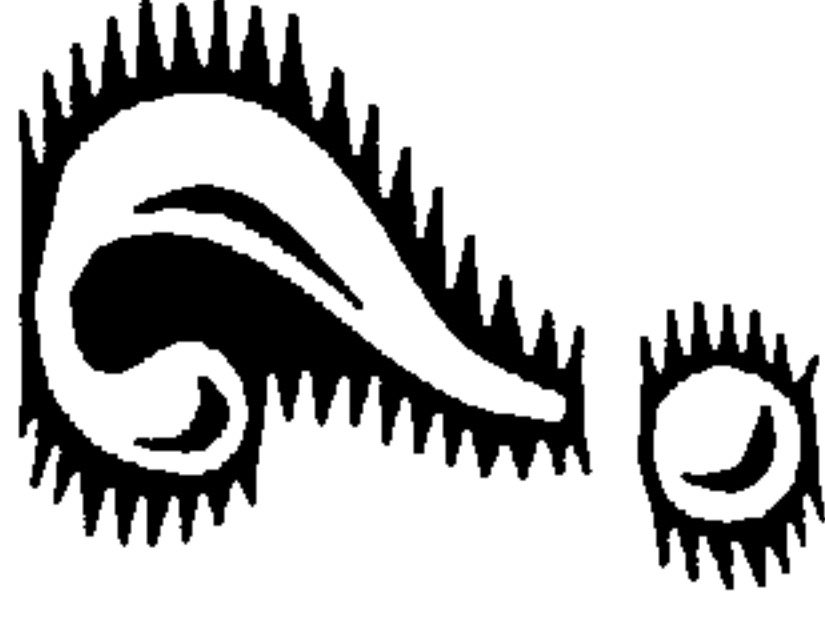
Can it be cured?

Yes, Chlamydia can be easily treated with a short course of antibiotics.

Can it be prevented?

Using condoms during sex can reduce the risk of catching Chlamydia, as well as other STIs.

But, if my sex partner has no obvious signs of an STI, won't I be OK?



Around 80% of women and 50% of men with Chlamydia will have no symptoms. So, they will have the infection and not know about it. They may then pass it on to you and you may not have symptoms either and not know you have an infection.

What is the risk of getting infected?

Chlamydia is extremely common, especially among those under 25. It's estimated that around 1 in 10 people are infected. In the UK there are over 60,000 reported cases of Chlamydia. It is estimated that only around 10% of infections are actually diagnosed, so there's a large pool of people in the population who do not know they have chlamydia.

If it can be treated then what's the problem?

It can be carried for a long time. It is thought that Chlamydia can go on to cause quite serious problems such as:

In women

Pelvic Inflammatory Disease (PID) that can be very painful and take months to treat;
Damage to the fallopian tubes (the tubes that connect a woman's ovaries with her womb) causing a fertilised egg to get stuck and resulting in an *ectopic pregnancy*.

In men

Inflammation of the testicles (epididymitis)
Fertility problems

For those with symptoms they might include:

IN WOMEN:

- An unusual vaginal discharge
- The need to pass urine more often
- Pain on passing urine or during sex
- Bleeding between periods or after sex.

IN MEN:

- A discharge from the penis
- Pain and/or burning when passing urine
- Irritation at the tip of the penis

What is Chlamydia?

Genital chlamydial infection is a sexually transmitted infection caused by the bacterium, *Chlamydia trachomatis*.

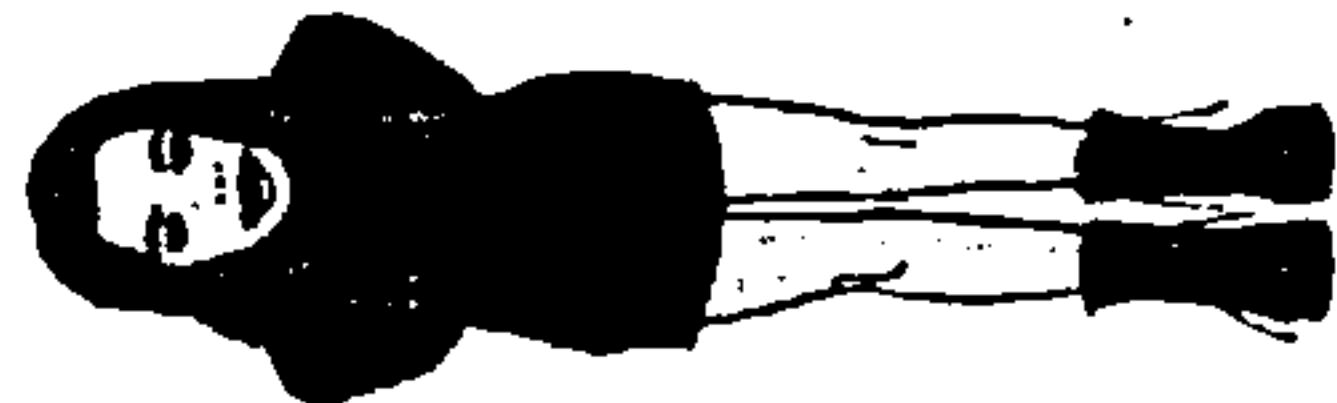
It is the most common bacterial sexually transmitted infection in the UK, with around 1 in 10 people under 25 infected with this infection.

Isn't it just a woman's disease?



NO. Chlamydia is sexually transmitted; anyone who has unprotected sex (no condom) can get Chlamydia.

But I don't sleep with 'dirty girls', so won't I be all right?



There is no 'type' of person who gets Chlamydia. If you have unprotected sex then you are at risk. A person *could* catch it from the first person they have sex with (if they don't use

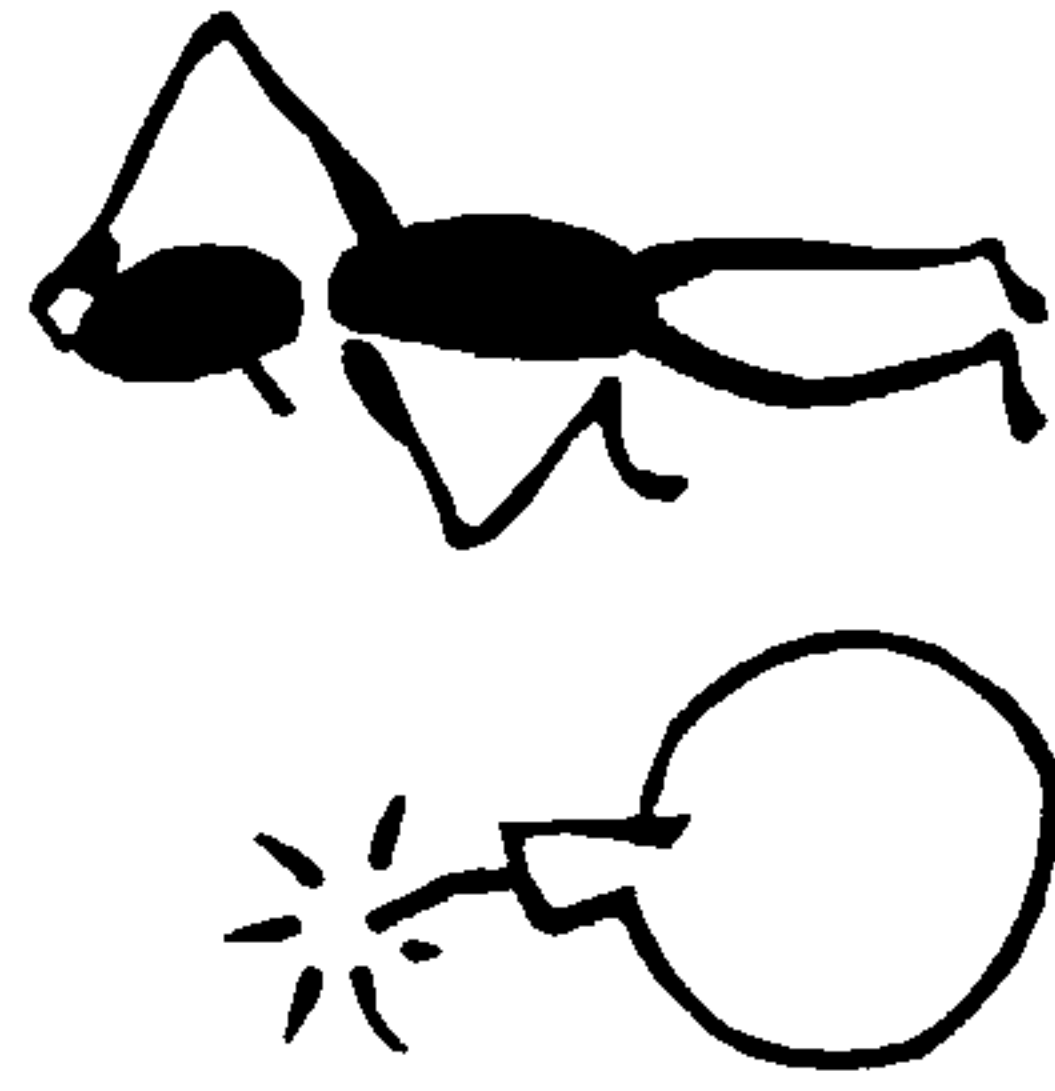
protection)! But people aged 16 - 24 are most likely to have this infection.

But my 'bits' look fine, won't I be OK?



Not all men develop symptoms, in fact most won't (around 70% will NOT have symptoms). You can't tell by looking! So, most people are unaware of their infection. If you've ever had unprotected sex you could have it and not even realise.

What if I might have it but don't want to get tested?



If you have Chlamydia and don't get it treated, you could pass it on to your sexual partner. Chlamydia can be especially nasty for women: it can lead to

something called pelvic inflammatory disease (PID). This occurs when the bacteria spread up from the vagina and cervix to damage the reproductive tubes leading to the ovaries.

Chlamydia in women can also cause an Ectopic Pregnancy (when the pregnancy develops outside the womb), which can be VERY serious for women (it accounts for 21% of deaths resulting from complications of pregnancy and childbirth).

So men getting tested and treated will prevent women from catching Chlamydia.

Chlamydia can also cause infertility in men.

What are the symptoms in men?

For those few men who do develop symptoms, they might appear 1 - 3 weeks after becoming infected.

Symptoms could include:

- Discharge from the penis;
- Pain and/or burning sensation when peeing;
- Irritation at the tip of the penis.

But I don't want someone examining my tackle!!!



A Chlamydia test can be done on a sample of urine.



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CONSENT FORM

A

PLEASE RETURN THIS FORM

Chlamydia study.

Please read each statement carefully and tick either 'yes' or 'no'.

	Please tick	
	YES	NO
1. I confirm that I have read and understood the information leaflet on chlamydia.	<input type="checkbox"/>	<input type="checkbox"/>
2. I understand that my participation is voluntary and that I am free to withdraw from the study at any time without giving a reason.	<input type="checkbox"/>	<input type="checkbox"/>
3. I agree to take part in the research.	<input type="checkbox"/>	<input type="checkbox"/>

You may be contacted at some point during the study. Please CHOOSE your preferred method of contact:

1. Telephone (landline or mobile): _____

2. Address: _____
Postcode _____

3. E-Mail: _____@_____

_____	_____	_____
Name of participant (PLEASE PRINT)	Date	Signature
KAREN LORIMER	_____	_____
Name of researcher (PRINT)	Date	Signature

CONSENT FORM

B

COPY FOR YOU TO KEEP

Chlamydia study.

Please read each statement carefully and tick either 'yes' or 'no'.

	Please tick	
	YES	NO
1. I confirm that I have read and understood the information leaflet on chlamydia.	<input type="checkbox"/>	<input type="checkbox"/>
2. I understand that my participation is voluntary and that I am free to withdraw from the study at any time without giving a reason.	<input type="checkbox"/>	<input type="checkbox"/>
3. I agree to take part in the research.	<input type="checkbox"/>	<input type="checkbox"/>

<hr/>	<hr/>	<hr/>
Name of participant <u>(PLEASE PRINT)</u>	Date	Signature
<hr/>	<hr/>	<hr/>
KAREN LORIMER		
Name of researcher (PRINT)	Date	Signature

Appendix 3

Questionnaire and interview guide



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Chlamydia Screening Study



What do young people aged
16 to 24 think about
testing for chlamydia in
non-medical settings.

For Office Use Only:

Study No.

Location:

Date:

Part A: About chlamydia...

IMPORTANT: If you haven't had sex, please attempt questions 1–16 and question 21. Thanks!

1 Had you heard of chlamydia before this study?

Yes	<input type="checkbox"/>
No	<input type="checkbox"/>

2 What is chlamydia?

(Tick one)

A blood disorder	<input type="checkbox"/>
A pregnancy complication	<input type="checkbox"/>
A vitamin	<input type="checkbox"/>
A sexual infection	<input type="checkbox"/>
A form of contraception	<input type="checkbox"/>

3 Where did you first hear about chlamydia?

(Tick one)

This study	<input type="checkbox"/>	Internet	<input type="checkbox"/>
Friend	<input type="checkbox"/>	Magazine	<input type="checkbox"/>
Family member	<input type="checkbox"/>	Television	<input type="checkbox"/>
Doctor/nurse	<input type="checkbox"/>	Health information leaflet	<input type="checkbox"/>
Teacher (school)	<input type="checkbox"/>	Other (please state)	<input type="text"/>

4 How do you rate your knowledge about the following:

	Excellent	Good	Fair	Poor
How you get chlamydia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Symptoms of chlamydia in women	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Symptoms of chlamydia in men	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medical problems that having chlamydia long-term can cause	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How to test someone for chlamydia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5a How can you get chlamydia?

(Tick one)

Sharing cups	<input type="checkbox"/>
Kissing	<input type="checkbox"/>
Toilet seats	<input type="checkbox"/>
Dirty needles	<input type="checkbox"/>
Unsafe sex (no condom)	<input type="checkbox"/>
Other (Please state)	<input type="text"/>

5b For those WOMEN who develop symptoms, what might they be?

(You can tick more than one)

Unusual discharge	<input type="checkbox"/>	Pain during sex	<input type="checkbox"/>
Pain or stinging when peeing	<input type="checkbox"/>	Pain in lower stomach	<input type="checkbox"/>
Dizziness	<input type="checkbox"/>	Itch and/or rash	<input type="checkbox"/>
Headache	<input type="checkbox"/>	Don't know	<input type="checkbox"/>

5c

For those MEN who develop symptoms, what might they be?

(You can tick more than one)

Unusual discharge from tip of penis ☐

Pain/swelling in testicles ☐

Pain and/or burning when peeing ☐

Itchiness around groin ☐

Dizziness ☐

Rash ☐

Headache ☐

Don't know ☐

5d

Chlamydia may cause problems in women who have it for a long time.

Do you know what problems? Please state: _____

Don't know ☐

5e

Chlamydia may cause problems in men who have it for a long time.

Do you know what problems? Please state: _____

Don't know ☐

5f

How would you be tested for chlamydia?

(Tick one)

Saliva sample ☐

Blood sample ☐

Urine sample ☐

True or False?

	True	False	Not sure
• You can catch chlamydia from toilet seats.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Men with chlamydia might not have symptoms.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Most women will not develop symptoms of chlamydia.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Only women get chlamydia.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Chlamydia can affect men's fertility.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Chlamydia can affect women's fertility.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Chlamydia can cause eye infections (conjunctivitis).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Once you get chlamydia you can't get rid of it.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• You can get chlamydia more than once.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Women's smear tests would detect chlamydia.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• 'The Pill' prevents sexual infections.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Part B: Testing

7a When you were approached and asked to take part in a chlamydia study, did you feel embarrassed?

Not at all embarrassed☐

A little embarrassed☐

Yes, very embarrassed☐

7b If you were embarrassed, WHY?

I get embarrassed quite easy☐

I was with people I don't know well☐

People were looking at me☐

I didn't know anything about Chlamydia☐

Other (Please state)

8 When you were approached and asked to take part in a chlamydia study, how willing were you to take part?

Very willing☐

Fairly willing☐

Not very willing☐

9 You were asked to take part in this research by a woman. Would you have *preferred* to be asked by a man?

(Tick one)

Yes☐

No☐

No preference☐

Not sure☐

10a Are other people taking part in this research with you?

Yes ☐

No, I'm by myself just now ☐ ————— Go to question 11

10b If YES to the last question:

Do you think you would only consider being tested for chlamydia if they would too?

Yes	No	Maybe	Not sure
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11 Thinking about being asked to provide a urine sample in work :

How far would the following influence you to give a sample

	Strongly Influence	Influence a little	Not Sure	Not really influence	Strongly <u>not</u> influence
Location of the toilet (in which to give a sample)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How many people are around you at the time you are asked	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Whether you could be bothered to give a sample at the time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How much you feel you know about chlamydia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How much time you have when you are asked to give a sample	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Is there anything else not mentioned that would influence you? _____

B IF YOU WERE TESTED FOR CHLAMYDIA, would you be worried that your sample would be tested for things other than chlamydia (eg, drugs...)?

Yes ☐

No ☐

Not sure ☐

C Would you be embarrassed to give a urine sample in work?

Yes, a lot ☐

Yes, a little ☐

Not at all ☐

Don't know ☐

12

Do you consider yourself at risk of having chlamydia?

Yes ☐

No ☐

Maybe ☐

Not sure ☐

13

Have you ever been tested for chlamydia infection?

Yes ☐

No ☐

Not sure ☐

If yes, when

MTH	YEAR
<input type="text"/>	<input type="text"/>

NB. Chlamydia is tested by providing a sample of urine. This can be done anywhere there is a toilet facility.

14 How acceptable to you personally would it be to test for chlamydia infection in the following settings?

	Very Acceptable	Acceptable	Not very Acceptable	Not Acceptable
Doctors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Family planning clinic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Termination of pregnancy clinic (abortion)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boots (chemist) or Superdrugs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local pharmacies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Health & Fitness (e.g. gyms)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet cafes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
College/University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pubs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clubs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Workplace	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prison	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Army barracks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bookstores (e.g. Borders...)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How far do you agree/disagree with the following statements?

(Please tick one answer for each statement)

PERSONAL:

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
• I'd know if I had chlamydia.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• I would worry about pregnancy more than sexual infections.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• I'd only think about chlamydia if I had symptoms.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• I'd feel embarrassed going to a clinic to be tested for a sexual infection.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• If I caught a sexual infection it wouldn't bother me.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

GENERAL:

• Men should be tested for chlamydia.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Sexual health is more of a woman's concern than a man's.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Only doctors (medically trained persons) should test people for sexual infections.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Part C: Sexual Lifestyle

The following questions ask about your sexual experience. They are important to young people's risk of chlamydia (e.g. condom use and sexual partners) *All your answers are IMPORTANT. Please try to be as honest as you* Thanks!

16

Have you ever had sexual intercourse?

Yes ☐

(n.b. Only include penetrative vaginal sex).

No ☐

Go to question 21

17a

Altogether, in your life so far, how many people have you had sex with (n.b. Penetrative vaginal sex—don't include anal or oral)

Write the number in your life (so far)

17b

Are you certain of that number?

Certain ☐

I've estimated it ☐

18a

How many people have you had sex with in the last 6 months?

Write the number

If none write 0

18b

Thinking about your three most recent sexual partners, please state your condom use with each:

	1. Most recent sexual partner	2. One before that	3. One before that
Yes, always	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Most of the time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Some of the time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rarely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19a How old were you when you first had sex?

Write age in years

19b Did you use a condom this first time?

Yes ☐

No ☐

19c The person you had sex with MOST RECENTLY, are you now or were you ever...

- Married to each other ☐
- Or, living together as a couple ☐
- Or, regular partners but never lived together ☐
- Or, not regular partners (so far) ☐

20a Next to each infection, tick the box if a doctor (or other medically trained) person has ever told you that **you had** that infection:

- Genital warts ☐
- Genital herpes ☐
- Gonorrhoea ☐
- Chlamydia ☐
- Hepatitis ☐
- HIV ☐
- Yes, can't remember which ☐
- NO, NONE ☐
- OTHER (please state) _____

Go to question 21

20b If YES to any:

Where were you tested for the infection? _____

How old are you?

Write age in years

NB. Recent statistics:

- Chlamydia infection has increase by 300% in the last 5 years in Scotland;
- Approx. 1 in 10 sexually active people under 25 have chlamydia;
- Around 80% of women and 50% of men who have chlamydia do not know they have it;
- It's easy treated with a short course of antibiotics.



As part of this study, you can be tested for chlamydia here *today*.

All you need to do is:

- Provide a urine sample
- Give contact details (e.g. mobile phone no.)
- Within a week you will be contacted with your result (e.g. by text message).

ONLY YOU will be told your result.

ALL results are CONFIDENTIAL

Are you willing to give a sample today to be tested for chlamydia?

Yes

☐

Please tell Karen (the researcher) you would like to be tested.

Not sure

☐

Ask Karen for more info. if not sure.

No

☐

If NO, it would be really useful to know why not?



END OF QUESTIONNAIRE
THANK YOU!!

Interview Schedule

General introduction

- Ask to say a bit about self
- Work – how long, how came to work in this job
- Socialising/hobbies – go out with work colleagues/friends

Going to ask more personal things now but remember you don't have to answer anything you don't want to. (Remind them of confidentiality.)

Relationship(s)

- Start with current relationship (or most recent) (or most recent sexual experience?)
- Background – how met – how long – how it is going?
- Sex?
 - When first had sex? – story
 - Contraceptive use in the relationship (or with this sexual experience if casual partner)
 - What method currently used?
 - Always this method? Previously used different methods?
 - Use of condoms –
 - if not used, why?
 - if NOT used, why not? Discussed with partner?

First sexual intercourse

- Story of first sexual intercourse
- Contraception used?
- Discussion of contraception with partner
- Discussed with anyone else – family, friends, school, FP adviser..
- Condoms – used first time?

Fill in gap – other sexual relationships in between first and most recent

- Casual – long-term..
- Condom use?

Smear – Have you ever had a smear test?

- Can you tell me how you felt about the experience (physically AND emotionally)
- Where did you have it done? How did you feel about having your smear done there?
- When most recent smear?
- Plan on going for next smear when it's due? Why?

Knowledge

Regarding contraception:

- **(Show list of persons)** Can you ever remember talking to any of these people about contraception
 - *Could you tell me all about that conversation* (how you came to talk to that person – did you initiate the conversation -, what you spoke about, how long did it last, did you enjoy the conversation, were you embarrassed, have you spoken to them again since about that topic, would you, did you learn anything during that conversation that you didn't know before talking to them, did they learn something from you..)

Still looking at the list

Sexual infections

- Can you ever remember talking to any of these people about sexual infections?
 - *Could you tell me all about that conversation* (same as above)

Sum up their answer to the above. Check it is correct.

- Ask about sex education if not mentioned already – what they remember.
- In general, have they ever learned anything about contraception or sexual infections from speaking to people about it?

(Show list of media)

Can you look at this list of various media and think whether you remember hearing or reading about chlamydia from any?

- Tell me what you remember

Ok, I'd like to ask you a bit more about chlamydia:

- When 1st aware about study
- Thoughts about it?
- Discuss study/chlamydia with anyone? [either before filling in questionnaire or after]
- Can you remember hearing anyone else talk about the study.
 - What did they say?
- How did you *feel* being asked to take part in a study about chlamydia?
- Some people think asking questions about health should only be done in medical locations. What's your view about that?
- Is there anything you think you *wouldn't* want to talk about in this setting?
- How did you feel about being offered a test for chlamydia here in your work?
 - Can you remember what other people said about it at the time?
- How would you feel about chlamydia tests being offered in other places which aren't *medical settings*, so if chlamydia testing was offered in other non-medical places?

(Show list of locations)

- If you look at this list which was in the questionnaire, what places, in your opinion, are suitable places in which to offer chlamydia testing?
 - Why so?

Sexual infections

- Ever worried about sexual infections? (is it something that has concerned them?)
- Why?
- Ever known anyone to have caught a sexual infection?
 - What did you think about it at the time?
- Ever been tested for anything?
 - IF YES: story of how came to be tested for a STI –
 - How felt when negative
 - how felt when positive, treatment, PN and interaction with medical staff (good/bad?)...

IF NO: why never been tested for any infections? [not asked, asked but said no..]

Appendix 5

Information leaflet given to respondents who gave a sample

Health Advisers & Chlamydia

You have just had a test for a treatable sexually transmitted infection called Chlamydia. If the result of this test returns as positive, a copy of the result will be forwarded to the Health Adviser team for Primary Care at the Sandyford Initiative, 2-6 Sandyford Place, Glasgow, G3 7NB.

When the health adviser team receive this result they will contact you by the method of contact you chose when you accepted to have a test taken within the study. They will ensure you get the appropriate care and treatment for this infection.

A health adviser will discuss with you what this infection is? How might you have got it? Your treatment and how you can avoid it in the future.

The health adviser can also help you explore ways of telling your partner(s) you have an infection. They will help you get your facts right beforehand and discuss any worries you have about doing this.

If you would like to speak to a health adviser at any time please telephone 0141 211 8634.



This leaflet should be given to all patients having a Chlamydia test.

Appendix 4

Study images: test 'kit' and main study desk



Study Test Kit

