TECHNICAL REPORT

Public health benefits of partner notification for sexually transmitted infections and HIV

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Abbreviations

CI	Confidence interval
ECDC	European Centre for Disease Prevention and Control
EEA	European Economic Area
EU	European Union
GNP+	Global Network of People Living with HIV/AIDS
GUM	Genitourinary medicine
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HIV	Human immunodeficiency virus
HSV	Genital herpes simplex
IDU	Injecting drug user
IUSTI	International Union against Sexually Transmitted Infections
MSM	Men who have sex with men
NICE	National Institute for Health and Clinical Excellence (UK)
NGU	Non-gonococcal urethritis
OECD	Organisation for Economic Cooperation and Development
OR	Odds ratio
PDPT	Patient-delivered partner therapy
PN	Partner notification
STI	Sexually transmitted infection
THT	Terrence Higgins Trust
UNAIDS	United Nations Joint Programme on HIV/AIDS
WHO EURO	World Health Organization Regional Office for Europe

Executive summary

Background

European countries have used partner notification as one of a range of measures to control sexually transmitted infections (STI) since the early 1900s. Besides clinical benefits, public health benefits are also recognised such as controlling the spread of STI, reducing STI-related morbidity and mortality, reaching people with asymptomatic STI and people who do not present for diagnosis, counselling and treatment.

Considerable variation in the ways of implementation exists across countries. Differences in laws, policies, regulations and clinical guidelines contribute to this. Health system characteristics, such as governance structures, public-private mix, models of service provision, resource allocation, financing - including payment for care and reimbursement of clinicians, and access to care, also influence practice. Differences in the microbiological and clinical characteristics of STI moreover contribute to variations in partner notification practice. Cultural, social and economic contexts also influence the way in which partner notification is perceived and practised in countries in Europe.

There are different approaches to partner notification, which can be broadly defined as patient referral, provider referral, and contract or conditional referral. Lack of consensus about the most effective methods of partner notification is another reason for the diversity of practice across countries and also represents a challenge to improving partner notification efforts.

Purpose and scope

The overall aim of this project was to provide a better understanding of current policies and practice in Europe and to evaluate the public health benefits of partner notification, particularly its role in STI and HIV prevention. The specific objectives were to:

- review the legal, regulatory and policy context for partner notification, including laws concerning the criminalisation of STI transmission
- review the availability and content of clinical guidelines for partner notification
- describe the organisation of health services for delivery of partner notification
- review current practices and evidence on the effectiveness of different approaches to partner notification for selected STI
- identify factors that facilitate or limit implementation of partner notification.

The project focused on the 27 EU Member States, Iceland, Liechtenstein and Norway. Sexually transmitted infections covered were HIV, chlamydia (*Chlamydia trachomatis*), gonorrhoea (*Neisseria gonorrhoeae*), syphilis (*Treponema pallidum*), trichomonas (*Trichomonas vaginalis*), Mycoplasma genitalium, herpes simplex, genital warts, hepatitis B and hepatitis C.

Methodology

Information was obtained through three online questionnaires designed to gather information about the:

- legal and policy framework for partner notification
- availability and content of clinical guidelines for partner notification
- organisation of healthcare services for delivering partner notification.

More in-depth information about issues influencing partner notification practice was collected through interviews with health professionals and policy-makers from Denmark, Estonia, France, Romania and Sweden. Information collected through the questionnaires and in-depth interviews, was triangulated through a review of documents relating to the legal, policy and regulatory context for partner notification in Europe.

Two literature reviews were performed; a systematic review of the literature on effectiveness of different methods of partner notification for syphilis, HIV, gonorrhoea, chlamydia, non-specific urethritis, trichomoniasis, hepatitis B and C; and, a literature review of qualitative studies on STI/HIV patients' views and attitudes about partner notification, their preferred methods, factors limiting partner notification; and on health professionals' attitudes and perceptions of barriers to partner notification.

Key findings

The legal context for partner notification varies within Europe. Some countries have wide-ranging legal obligations to enforce partner notification, others have laws that are not enforced, and some have no such laws. Eleven of the 24 countries that responded to the specific questionnaire reported the existence of laws or regulations that make partner notification compulsory for the healthcare provider, the patient or both. These laws most often apply to HIV, syphilis, gonorrhoea, chlamydia, hepatitis B and C.

There is no clear correlation between the existence of laws that make partner notification compulsory and routine partner notification. In 22 of the 24 countries, partner notification was described as routine for at least one STI. Infections for which partner notification is considered routine are often those for which notification is also mandatory.

Compulsory partner notification can have both positive and negative effects. International guidelines recommend voluntary partner notification as an intervention for STI control, with non-voluntary disclosure to partners only when all other avenues have been exhausted. Voluntary partner notification is still the rule in most countries in Europe.

The existence of laws, and attitudes towards compulsory partner notification, are influenced by a country's social, political and historical context. Laws that criminalise transmission exist, and have been used in nine countries. However, comparison of survey responses with other sources suggested that this may have been underreported, in particular for HIV.

Public sector services for the diagnosis and treatment of STI are provided in all 23 countries that responded to the questionnaire regarding availability and content of clinical guidelines for partner notification. Diagnosis and treatment services were provided in STI or genitourinary medicine (GUM) clinics in 22 countries, in dermato-venereology clinics in 16 countries and in other settings, including general practice, infectious disease units, gynaecology clinics and public health departments, in 13 countries. In most countries in Europe, specialist STI clinics also have the main responsibility for partner notification for syphilis, gonorrhoea, chlamydia and HIV.

Few countries have dedicated staff for partner notification or provide training in partner notification: five countries have dedicated staff for partner notification, four countries reported that they provide formal training for doctors specialising in STI, four provide training for other doctors and four provide training for nurses specialising in STI.

Patient referral is the preferred approach to partner notification in most countries in Europe. Questionnaire responses concerning partner notification in specialist STI clinics showed that patient referral is the preferred method for partner notification for all STI. Provider referral was used in some countries, most often for syphilis, gonorrhoea, chlamydia and HIV.

There is insufficient evidence about the most effective methods of partner notification for HIV or syphilis. A summary of systematic reviews concluded that there was insufficient evidence to draw conclusions about the best method of partner notification for syphilis and HIV; other systematic reviews have concluded that provider referral is more effective than patient referral in ensuring notification and treatment for HIV and other STI. For HIV, the one randomised trial identified found that index patients given a choice of method – patient or provider referral – had more partners tested for HIV than those who used patient referral alone. For syphilis, a randomised controlled trial found that there was little difference in the number of partners treated per index patient between contract referral and provider referral. The effectiveness of patient referral for syphilis has not been evaluated, although this is the preferred method in many European countries. Trials comparing different methods of partner notification for syphilis, particularly for men who have sex with men (MSM) amongst whom there have been outbreaks of syphilis in Europe and for pregnant women, would provide valuable and much needed evidence.

There is some evidence that enhanced patient referral and expedited partner therapy may be more effective in reducing re-infection for chlamydia, gonorrhoea, non-gonococcal urethritis (NGU) or trichomoniasis, but this is not conclusive. No trials on the effectiveness of partner notification for hepatitis B or C were identified. Few trials have been conducted in Europe.

Lack of resources, provider skills and time are barriers to partner notification. Limited funding, linked to the low political priority given to partner notification, was cited as a barrier by informants in four of the five countries where interviews were conducted. Changes in the organisation of healthcare have also led, in some cases, to increased involvement in STI care of practitioners without specialist training. The literature also suggests that lack of time for partner notification is a concern among general practitioners. Providers considered novel methods to be better than no partner notification at all; novel methods that require minimal time and training of primary care staff may be one way to enhance partner notification at the primary care level.

The majority of healthcare providers see the value of partner notification. There is little support for mandatory partner notification and concern about use of provider referral, in particular for HIV partner notification, because of patient confidentiality issues.

Partner notification is influenced by patients' knowledge, attitudes and the type of sexual relationship. The qualitative literature review showed that, in general, patients view partner notification as important for public health reasons, in particular with respect to HIV. However, patients perceived partner notification as a difficult task. Concerns about negative reactions from partners, the impact on relationships, stigma and social repercussions were cited as a barrier to partner notification. Lack of knowledge about STI is also a barrier in some contexts. Patient referral methods requiring less interaction, for example, providing pharmacy contact slips to partners, were preferred for notifying ex-partners or casual partners. Given the factors that influence partner notification, methods need to be flexible and tailored to the needs and situation of the index patient.

Conclusions and recommendations

This report shows the wide variety of partner notification practices in Europe, determined by diverse legal and policy frameworks and influenced by cultural and social factors. The following recommendations are formulated to build on growing interest on partner notification in Europe:

- Strengthen the evidence-base with respect to the positive and negative effects of laws that make aspects of partner notification compulsory and laws on criminalisation of transmission; harmonise European-wide recommendations with respect to the criminalisation of transmission of HIV and STI that conform to international human rights standards and monitor the use of laws to prosecute individuals.
- Address gaps in the evidence and determine the most effective approaches to partner notification in Europe, develop and disseminate evidence-based guidelines on partner notification including a range of approaches for implementation that can be adapted to different country contexts, population groups and healthcare settings, including primary care settings. Promote the use of clinical audits as a tool for monitoring partner notification practice against agreed standards and the development of interventions to improve outcomes.
- Improve awareness with respect to the importance of partner notification in STI prevention and control among policy-makers and the need for partner notification interventions to be adequately resourced.
- Facilitate comparison of practices and outcomes across countries in Europe by development of a set of common indicators for monitoring and evaluation of the outcomes of partner notification.

1. Introduction

This report presents the results of a project on the public health benefits of partner notification for STI and HIV which was implemented in 2009. As there has been no comprehensive review of the evidence in the interim, the project findings remain relevant and are of value. To build on growing interest in the issue of partner notification in Europe, the European Centre for Disease Prevention and Control (ECDC) plans to use the findings to develop scientific guidance for European Union (EU) Member States. The report is intended for public health policy-makers, programme managers, epidemiologists, researchers and others involved in sexually transmitted infection (STI) control and partner notification.

This chapter provides a brief background on partner notification and summarises project objectives and methods. Chapter 2 sets out key findings, and chapter 3 the conclusions and recommendations.

Background

Partner notification is the process whereby the sexual partner(s) of an index patient or case (a patient diagnosed with a sexually transmitted infection who presents for care) are identified and informed of their exposure and invited to attend for testing, counselling and, where necessary, treatment [1–4]. The World Health Organization (WHO) and the Joint United Nations Programme on HIV/AIDS (UNAIDS) recommend that partner notification is done on a voluntary basis [5] within enabling and supportive social and legal environments for disclosure [6]. UNAIDS provides clear guidelines on when it is permissible for a health professional to notify a partner without the consent of the index patient [7]. The International Union against Sexually Transmitted Infections (IUSTI) has included the importance of performing partner notification in current patient management guidelines for STI.

Partner notification has clinical benefits – it aims to prevent re-infection of the index patient and treat their sexual partners – as well as public health benefits – it aims to control the spread of STI and reduce STI-related morbidity and mortality [1] [8]. It is also a key strategy for reaching people with an STI who are asymptomatic and people who do not present for diagnosis, counselling and treatment. There are different approaches to partner notification, which can be broadly defined as patient referral, provider referral, and contract or conditional referral (see Box 1). A comprehensive glossary of these and other terms used in this report is provided in Annex 1.

Box 1: Partner notification methods

Patient referral – The index patient takes responsibility for informing their sexual partner(s) of their possible exposure to an STI and for referring them to services. Introduced in the 1970s in response to high levels of gonococcal infection [9] and limited resources, patient referral has since been widely used for a wide range of STI [10] [11].

Provider referral – The provider takes responsibility for informing the sexual partner(s) of the index patient of their possible exposure to an STI. This requires a health professional to obtain the names of sexual partners and other identifying information, from the index patient. A number of countries have specially trained health professionals whose primary role is contact tracing, for example, medical social workers in Sweden, health advisors in the UK, and disease intervention specialists in the USA. Provider referral is, however, resource intensive and tends to be used mostly for STI with the most serious health consequences such as HIV and syphilis.

Contract referral – The provider agrees with the index patient i.e. 'makes a contract' that the index patient will contact their sexual partners within a certain time period. Provider referral is carried out if the index patient fails to do this.

Countries in Europe have used partner notification as one of a range of measures to control sexually transmitted infections (STI) since the early 1900s [8, 12] [13]. Originally introduced for syphilis and then extended to include gonorrhoea, to tackle rapid increases in these infections in the 1930s and 1940s, partner notification is now considered useful for a wide range of STI. However, there is considerable variation between countries in the way in which partner notification is implemented. A range of factors contribute to this variation.

Differences in laws, policies, regulations and clinical guidelines are one factor. Most countries have laws and policies regulating the control of communicable diseases; partner notification is a component of communicable disease control. These laws and policies can be directed at the healthcare provider or the individual patient. In some countries the law requires health professionals to carry out partner notification. This can introduce ethical dilemmas about the balance between the 'duty to warn' partners and the patient's right to privacy [5]. In most countries, laws that make individual patients responsible for partner notification are voluntary but, in some, there may be a legal obligation for the patient to inform his or her partners.

Health system characteristics, such as governance structures, public-private mix, models of service provision, resource allocation, financing, including payment for care [14] and reimbursement of clinicians, and access to care [15], influence practice. Differences in the microbiological and clinical characteristics of STI also contribute to variations in partner notification practice. The common bacterial and viral sexually transmitted infections are almost exclusively sexually transmitted. In some countries they are managed largely in specialist STI clinics [16] [17]. In others, they are mainly diagnosed in general practice [18], or by other practitioners [19]. Syphilis and HIV might only be diagnosed and managed in women during pregnancy-related care.

Although several systematic reviews have been conducted [20] [21-24] and randomised trials continue to evaluate new methods, definitive evidence about the most effective methods of partner notification for specific STI and their impact on transmission at the population level is lacking [24]. Lack of consensus about the most effective methods of partner notification is one reason for the diversity of practice across countries and also represents a challenge to improving partner notification efforts [25]. Differences in cultural, social and economic contexts also influence the way in which partner notification is perceived and practised in countries in Europe.

Since 2009 when this project was implemented, new methods for partner notification, notably those that use new technologies such as the internet and social media have been increasingly used. The ECDC technical report 'novel approaches to testing for HIV, STI and hepatitis in Europe' highlights the development of such tools, which aim to improve both provider-led and patient-led partner notification [26] . For the provider these include information resources and letter templates, as well as software that can be integrated into clinic IT systems. For patients, a number of online tools have been developed, which enable them to notify partners anonymously[i] or by using their name.

Purpose and scope

Existing surveys provide valuable information about partner notification in Europe [17] [14] [15] [25] but much of this is general in nature. The overall aim of the project was, therefore, to provide a better understanding of current policies and practices in Europe and to evaluate the public health benefits of partner notification, particularly its role in STI and HIV prevention. The specific objectives were to:

- review the legal, regulatory and policy context for partner notification[ii], including laws concerning the criminalisation of STI transmission
- review the availability and content of clinical guidelines for partner notification
- describe the organisation of health services for delivery of partner notification
- review current practices and evidence on the effectiveness of different approaches to partner notification for selected STI
- identify factors that facilitate or limit implementation of partner notification.

The project focused on the 27 EU Member States, Iceland, Liechtenstein and Norway[iii]. Sexually transmitted infections covered were HIV, chlamydia (*Chlamydia trachomatis*), gonorrhoea (*Neisseria gonorrhoeae*), syphilis (*Treponema pallidum*), trichomonas (Trichomonas vaginalis), Mycoplasma genitalium, herpes simplex, genital warts, hepatitis B and hepatitis C[iv]. Hepatitis B and C were included as partner notification is used to identify and inform contacts who have shared needles or other drug injecting equipment. *M. genitalium* was included because of increasing interest in the clinical relevance of this relatively newly identified STI [27].

[i] See www.letthemknow.org.au, which is aimed at young people and allows them to notify partners via e-mail, SMS or letter, www.thedramadownunder.info, which offers a similar service for MSM, and www.inSPOT.org, a web-based tool in the USA for patient-initiated partner notification which allows users to send e-cards to up to six email addresses.

[ii] 'Notification', as used in partner notification, does not involve recording the names of individuals in national disease registers. The project did not investigate systems for disease notification.

[iii] In this report, the terms Europe and EU refer to these 30 countries.

[iv] In this report, hepatitis C is included when referring to all STI, even though the major route of transmission is parenteral.

Methodology

The report is based on information obtained through:

- a survey of countries using: online questionnaires
- interviews with health professionals and policy-makers
- a review of documents relating to partner notification laws and policies
- a systematic review of the evidence on the effectiveness of partner notification interventions
- a literature review of qualitative studies.

A brief summary of the objectives and methods for each of these is provided below. More detail about methods is provided in the annexes.

Country survey questionnaires

Three questionnaires were designed to gather information from countries about the legal and policy framework for partner notification; availability and content of clinical guidelines for partner notification; and organisation of healthcare services for delivering partner notification. The nominated contact points in the European networks for STI and HIV surveillance in EU/EEA countries were invited to participate in the survey, by completing the questionnaires and seeking additional information from other national experts. Data for 14 countries from a survey conducted by the European Surveillance of STI project in 2003 [17] were included in the questionnaires to reduce the workload for those 14 country contacts. Of the 30 countries, 22 (73%) responded to all three questionnaires and 24 (80%) responded to one or more questionnaires. No responses were received from the Czech Republic, Iceland, Liechtenstein, Luxembourg, Poland and Slovenia.

Responses were analysed using Stata. Key findings based on the questionnaire responses are summarised in sections 2.1, 2.2, 2.3 and 2.4. Potential limitations, which may have affected the accuracy of the results, included responses to questions that reflect judgements rather than statements of fact, inconsistencies resulting from completion of the questionnaires by more than one person, and differences of opinion between policy-makers and practitioners. To address this, comparisons were made with data from other sources and clarification and additional information were sought from country contacts.

Interviews with health professionals and policy-makers

To collect in-depth information about issues influencing partner notification practice, health professionals (clinical specialists, non-specialist doctors and nurses who see STI patients, and staff whose job only or mainly involves partner notification) and policy-makers (professionals at national, regional or local level involved in decisions about organisation and delivery of health services) were interviewed in Denmark, Estonia, France, Romania and Sweden. These five countries were selected as those that have experienced significant political and social change in the last 20 years to provide insights from different political and social contexts, health systems and ways of delivering partner notification services.

Telephone interviews were conducted with 15 informants using topic guides (see Annex 2). Topics explored included: priority given to partner notification; whether partner notification is compulsory or voluntary; funding; service delivery and methods for partner notification; cultural and ethical acceptability of partner notification; barriers and facilitating factors; and the impact of political and social change. Responses were analysed using ATLAS[i]. These responses, which illustrate some of the differences between countries in Europe, are summarised in Boxes 3 to 7 and in section 2.6.

[i] Muhr T. ATLAS.ti 6. Qualitative data analysis, management, model building (Software Manual) Scolari: Sage; 2006.

Legal and policy document review

To triangulate information collected through the questionnaire and in-depth interviews, the project also reviewed documents relating to the legal, policy and regulatory context for partner notification in Europe. This included a review of laws concerning criminalisation of STI exposure and transmission. Documents reviewed included those provided by respondents to the questionnaire and key informants, and those identified by an earlier project [19]. Additional sources of information reviewed included: the survey of the WHO Regional Office for Europe 1998–1999 [15]; European Surveillance for STI project survey 2002–2003 [25]; European Partner Notification Study Group survey 1995–1996 [28]; Domeika et al. survey of Central and Eastern European countries, 2002 [14]; Global Network of People Living with HIV/AIDS Europe (GNP+) and the Terrence Higgins Trust (THT) report on criminalisation of HIV transmission in Europe 2005 [29]; WHO and European AIDS Treatment Group consultation report on criminalisation of HIV and other STI 2006 [30]; Swiss Centre for International Health report on HIV for the Swiss Federal Office of Public Health 2009; and the World Bank [5]. Of the 30 countries, limited information was available for the Czech Republic, Liechtenstein, Luxembourg, Poland and Slovenia. Key information is included in section 2.1.

Evidence of effectiveness review

The systematic review searched for studies focused on partner notification for syphilis, HIV, gonorrhoea, chlamydia, non-specific urethritis, trichomoniasis, hepatitis B and C. The project drew mainly on the results of a systematic review of partner notification for selected STI and HIV conducted for the UK National Institute of Health and Clinical Excellence (NICE), which identified approximately 2500 references in the published and grey literature up to December 2005 [23]. Updated searches were conducted to identify papers published between January 2006 and August 2009 (see Annex 3 for more information about search strategy, study selection and analysis). New searches were conducted to identify papers on trichomoniasis and hepatitis B and C published between 1990 and the end of August 2009. The combined searches gave 3 450 hits, including 2 504 unique references. Of these, 242 papers were reviewed in full and 150 of these were excluded. The results of studies included in the effectiveness evidence review are described in section 2.5 (see Annexes 5 and 6 for summary information for controlled trials and non-comparative studies).

Literature review of qualitative studies

The literature review searched for qualitative studies on STI/HIV patients' views and attitudes about partner notification, their preferred methods of partner notification and their perceptions and experiences of factors that facilitate or limit notifying partner(s); and on health professionals' attitudes and perceptions of barriers to partner notification. The search identified 400 potentially relevant articles. Of these, 134 papers were reviewed in full. A total of 19 articles that met the inclusion criteria were included in the synthesis (see Annex 13 for more detailed information about search strategy, study selection and analysis). Key findings are summarised in section 2.6.

2. Key findings

2.1 Laws and policies concerning partner notification

This chapter is based on responses to the questionnaire about legal and policy aspects of partner notification, which were received from 24 countries (see Annex 14), and the review of documents related to laws, policies and regulations. The questionnaire asked about: laws and regulations that make it compulsory for health professionals to carry out partner notification, for index patients to comply with partner notification and for sexual partners of index patients to comply with testing or treatment; routine partner notification; and laws criminalising STI transmission.

Compulsory partner notification

Table 1 summarises country responses to the questionnaire about compulsory partner notification for specific infections by healthcare providers and index patients, and laws or regulations relating to testing or treatment for sexual partners.

Table 1. Laws and regulations relating to compulsory partner notification and routine partner notification by number of countries for each specific infection (response from 24 countries)

Infection	Compulsory for healthcare providers to do partner notification	Compulsory for patients to do partner notification	Compulsory testing/treatment for sexual partners	Partner notification routinely carried out
HIV	9	4	1	20
Syphilis	9	4	3	21
Gonorrhoea	8	4	1	21
Chlamydia	8	4	2	21
M. genitalium[i]	0	0	0	5
Trichomonas	0	0	0	11
Genital warts	1	0	0	9
Genital herpes	2	0	0	9
Hepatitis B	7	3	1	15
Hepatitis C	7	3	1	14

A detailed breakdown by country is presented in Annex 6. In almost half of countries that responded, 11 of 24, laws or regulations make partner notification compulsory for the healthcare provider, the patient or both:

- In seven countries, the legal duty rested with the healthcare provider only (Bulgaria, Estonia, Hungary, Italy, Latvia, Malta and Romania).
- In three countries, the legal duty rested with both the healthcare provider and the patient (Finland, Norway and Sweden).
- In Lithuania the legal duty rested with the index patient only.

Questionnaire responses indicated that laws about compulsory partner notification by providers or patients most often applied to HIV (11 of 11 countries), syphilis (ten countries), gonorrhoea and chlamydia (nine countries), and to hepatitis B and C (seven countries). Laws were applied to genital warts in Hungary and to genital herpes in Hungary and Latvia. See Annex 7 for a detailed breakdown by country and infection for the 11 countries with laws or regulations concerning partner notification. No country had laws relating to T. vaginalis or M. genitalium infections. In Lithuania, the law applies to HIV, syphilis, gonorrhoea and chlamydia. In three countries, laws or regulations can compel sexual partners to undergo testing or treatment. In Estonia this applies to syphilis and chlamydia, in Finland to syphilis and in Sweden to HIV, syphilis, gonorrhoea, chlamydia, hepatitis B and hepatitis C.

[i] *M. genitalium* is not yet completely established as an STI [26] so approaches to partner notification are not agreed upon.

In a previous survey on partner notification, only Norway and Sweden of 15 EU countries reported that partner notification was compulsory [17]. The increase from two to 11 countries reporting laws that make some aspect of partner notification compulsory reflects laws in new Member States since 2003 – Bulgaria, Estonia, Hungary, Lithuania Latvia, Malta and Romania – as well as updated information from Finland and Italy. For example, Finland reported that partner notification is compulsory for healthcare providers and patients, whereas in the response to the earlier survey, Finland reported that partner notification was voluntary.

Inconsistencies between responses to different surveys can also sometimes occur, reflecting differences in who completes the questionnaire or in interpretations of laws and regulations. Review of laws and policies concerning partner notification (see Annex 8) shows how such inconsistencies might arise. In some countries, the law about partner notification is explicit. For example, in Iceland the law makes clear the obligations of individuals and in Malta the legal obligation extends to recording the names of sexual partners (see Box 2). But in others, the law is more open to interpretation. In Finland, the law applied to STI is part of the Communicable Diseases Act. Partner notification for STI is not mentioned explicitly but the Act states that the physician in charge of communicable diseases shall 'ensure that anyone having or suspected of having a generally hazardous condition is examined' and 'as necessary, undertake treatment for persons having a generally hazardous communicable disease'. This could be interpreted as compulsory partner notification by physicians. In Romania, interviews with key informants also revealed different interpretations of the law and of the responsibilities of healthcare providers.

Box 2: Partner notification in laws

Iceland Section III. General measures against communicable disease. 1. Obligations of the *individual* Art. 7.

It is incumbent upon everyone to take all precautions against communicable disease, and to do one's best to avoid infecting oneself or others... Should medical tests reveal such an infection, the person must follow the instructions of the physician on treatment and measures to prevent infection. *If the physician regards it as important to trace the infection in order to prevent further spread of the disease, the patient must provide necessary information on possible sources of the infection, and on those that he/she may have infected*. If the physician is unable to do this, he/she shall refer the patient to an institution that is able to trace the mode of transmission… Those involved must obey the physician's instructions on necessary tests to prevent the spread of infection...

Malta Public Health Act 21st November, 2003, as amended by Act III 2004. Directions by the Superintendent. 29.

The Superintendent may order… a person suffering from a notifiable disease: … submits to further medical examination, medical testing, immunisation, medical treatment or counselling; *discloses to an authorised officer the name and address of any other person with whom contact by that person may result or may have resulted in the transmission of the disease;…* The Superintendent may apply to a magistrate for a warrant to apprehend and detain or quarantine any person who fails to comply with a direction under sub-article …

Routine partner notification

Table 1 also summarises questionnaire responses about whether routine partner notification is done for specific infections (see Annex 9 for a detailed breakdown by country). More countries reported that partner notification is routinely done than reported laws about partner notification.

Partner notification was described as routine for at least one STI in 22 of the 24 countries that responded (see Annex 6 for a detailed breakdown by country). The two exceptions were Austria and Bulgaria. In Austria, partner notification is not considered to be routine for any STI; disease notification is only required for cases of syphilis, gonorrhoea and chlamydia who do not adhere to treatment. In Bulgaria, partner notification is not routine for any infections, although disease notification is mandatory for some. However, a new ordinance from the Ministry of Health about HIV is expected, which includes a recommendation for the index patient to refer his or her partner(s) for testing.

As Table 1 shows, most countries reported that partner notification was routinely carried out for syphilis, gonorrhoea and chlamydia (21 countries) and HIV (20 countries). Partner notification was least likely for *M. genitalium* (5 countries). Infections for which partner notification is considered routine are often those for which notification is also mandatory (see Annex 9 and Annex 10 for a detailed breakdown by country and infection of routine partner notification and mandatory notification).

Box 3: Country example – Sweden

HIV, syphilis, chlamydia, gonorrhoea, hepatitis B and C are notifiable infections under the Swedish Contagious Diseases Act. For these infections, this law also makes it compulsory for healthcare providers to do partner notification, for index patients to accept partner notification and for partners to undergo testing and treatment. Diagnosis and treatment are free. Funding and provision of health services are decentralised and different counties organise partner notification in different ways. For example, in one county, partner notification is centralised, so all patients diagnosed with a notifiable STI other than HIV in any healthcare setting are referred to one of three centres with specialised contact tracing staff; partner notification for HIV is done by the Infectious Diseases Clinic at the University Hospital. In other counties, healthcare providers making a diagnosis also initiate partner notification. Dedicated contact tracers work in specialist STI clinics and youth clinics. Irrespective of differences between counties, index patients or partner(s) who do not attend can be referred to the county medical officer, who can contact the individual by letter, phone or, if necessary, a home visit, although this was reported to be very rare.

Patient referral is the most common approach used; STI patients usually choose to contact their partner(s) themselves. Provider referral is also used if the index patient does not feel comfortable getting in touch with partners themselves or is not taking responsibility for informing partners. Expedited partner therapy has been piloted, but is not widely used, mainly because existing methods work well.

Criminalisation of STI and HIV transmission

Criminalisation means that the criminal law is used to prosecute people who know that they have HIV or another STI, but do not tell their partner(s) and thus expose them to the risk of infection. Transmission is usually treated legally under the penal code or criminal law, although public health legislation can also be applied. In Bulgaria, prosecutions have taken place using the civil law. The use of these laws is relevant since, if the index patient fears prosecution, partner notification both by providers and by patients is likely to be more difficult. Laws that criminalise the transmission of at least one STI were reported by nine of the 24 countries that responded to the questionnaire (see Table 2). In Belgium, the law does not specify infections to which it can be applied. In Finland, the law applies to syphilis only but has also been used for HIV transmission.

Laws related to HIV were present in all nine countries that responded, although were only specific to HIV transmission in Denmark; in the other eight countries, criminal laws relating to bodily harm or the spread of diseases were used. Laws were reported that criminalise transmission of hepatitis B in Austria, Malta, Norway, Sweden and the United Kingdom; syphilis in Austria, Finland, Norway and Sweden; hepatitis C in Austria, Malta, Norway and Sweden; and gonorrhoea and chlamydia in Austria, Norway and Sweden. As Table 2 shows, of the nine countries with laws that criminalise STI transmission only four have laws that make partner notification compulsory.

Table 2. Laws relating to the criminalisation of STI transmission (response from 9 countries)

Country	Law on criminalisation of STI transmission						Infection for which law has ever been used	Law about partner notification for any STI
	HIV	Syphilis	Gonorrhoea	Chlamydia	Hep B	Hep C		
Austria	Yes	Yes	Yes	Yes	Yes	Yes	HIV	No
Belgium	Yes*	Yes*	Yes*	Yes*	Yes*	Yes*	Not reported	No
Denmark	Yes						HIV	No
Finland	Yes	Yes					HIV	Yes
Greece	Yes						Not reported	No
Malta	Yes				Yes	Yes	HIV	Yes
Norway	Yes	Yes	Yes	Yes	Yes	Yes	HIV	Yes
Sweden	Yes	Yes	Yes	Yes	Yes	Yes	HIV	Yes
UK	Yes				Yes		HIV, hepatitis B	No
Total	**9**	**4**	**3**	**3**	**5**	**4**		**4**

**STI transmission criminalised but infection not specified*

However, comparison with the findings of a survey conducted by GNP+ and THT in 2005 [29] suggests that the existence of laws used to criminalise STI transmission, in particular of HIV, may have been under-reported by respondents to the project questionnaire. The GNP+ and THT survey reported that HIV transmission is criminalised by all EU Member States[i], under specific or non-specific laws, apart from Bulgaria, Luxembourg and Slovenia. Similar differences were found with respect to use of the law to prosecute individuals. In project responses, seven countries reported that laws had been used (see Table 2). The GNP+ and THT survey reported prosecutions for HIV transmission in 18 of the 24 countries that participated in the survey (see Table 3 and Annex 8).

Table 3. Prosecution of HIV transmission in Europe

Number of prosecutions	Country (number convicted)
30 or more	Switzerland (>30), Austria (30), Sweden (30)
10-19	Netherlands (11), Finland (12), Denmark (12)
5-9	Norway (5)
1-4	Romania (<5), UK (4), Germany (3), Italy (3), France (2-4), Cyprus (1), Czech Republic (3), Estonia (2), Portugal (2), Slovakia (2), Hungary (3),
0	Belgium, Croatia, Iceland, Ireland, Latvia, Liechtenstein, Lithuania, Malta, Turkey
Criminalised but number not known	Poland
Not criminalised	Bulgaria, Luxembourg, Slovenia
Not Known	Greece, Spain

[i] No information was available from Greece, Poland or Spain.

2.2 Strategies and clinical guidelines for partner notification

Based on the ECDC report on chlamydia control [19], only eight countries (Denmark, Italy, Lithuania, the Netherlands, Norway, Romania, Sweden and the United Kingdom) had a national STI strategy at that time (see Annex 8). There is no consistent pattern between those countries with laws about partner notification and those that had strategies or plans.

Survey responses about clinical guidelines for partner notification were received from 23 countries. The questionnaire asked about the availability of guidelines for partner notification which have been endorsed by a ministry of health or professional society and the STI to which these guidelines refer.

Table 4 shows which countries report guidelines for partner notification for infections where partner notification is considered routine. Not all countries where partner notification is routinely carried out have guidelines for partner notification. Only nine countries reported the availability of clinical guidelines for partner notification for all infections for which partner notification is considered routine – Estonia, Greece, Ireland, Italy, Malta, Netherlands, Portugal, Sweden and the United Kingdom. Partner notification has been included in guidelines for some or all STI in France, Greece and Portugal since the ESSTI survey in 2003.

Table 4. Availability of clinical guidelines for partner notification (response from 23 countries)

Country	HIV	Syphilis	Gonorrhoea	Chlamydia	*M.genitalium*	Trichom.	Warts	HSV	HBV	HCV
Austria	PN not routine	PN not routine	PN not routine	PN not routine	PN not routine	PN not routine	PN not routine	PN not routine	PN not routine	PN not routine
Belgium	Yes	Yes	Yes	Yes	PN not routine	PN not routine	PN not routine	PN not routine	Yes	Yes
Bulgaria	PN not routine	PN not routine	PN not routine	PN not routine	PN not routine	PN not routine	PN not routine	PN not routine	PN not routine	PN not routine
Cyprus	No	PN not routine	PN not routine	PN not routine	PN not routine	PN not routine	PN not routine	PN not routine	No	No
Denmark	Yes	No	No	No	PN not routine	PN not routine	PN not routine	PN not routine	PN not routine	PN not routine
Estonia	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
France	No	Yes	Yes	Yes	PN not routine	PN not routine	PN not routine	PN not routine	No	PN not routine
Germany	No	No	No	No	No	No	No	No	No	No
Greece	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	PN not routine	PN not routine
Hungary	No	No	No	No	PN not routine	PN not routine	No	No	PN not routine	PN not routine
Ireland	Yes	Yes	Yes	Yes	PN not routine	Yes	Yes	Yes	Yes	Yes
Italy	PN not routine	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Latvia	Not stated	No	No	No	Not stated	Not stated	PN not routine	Not stated	Not stated	Not stated
Lithuania	Yes	Not stated	Not stated	Not stated	Not stated	Yes	Yes	Not stated	Yes	Not stated
Malta	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Netherlands	Yes	Yes	Yes	Yes	PN not routine	Yes	Yes	PN not routine	Yes	PN not routine
Norway	Yes	No	No	No	PN not routine	PN not routine	PN not routine	PN not routine	No	No
Portugal	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Romania	No	No	No	No	PN not routine	No	PN not routine	PN not routine	PN not routine	PN not routine
Slovakia	No	No	No	No	PN not routine	No	No	PN not routine	No	No
Spain	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Sweden	Yes	Yes	Yes	Yes	PN not routine	PN not routine	Yes	PN not routine	Yes	Yes
UK	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

With respect to specific infections, Table 4 shows that for:

- HIV – 12 of the 20 countries where partner notification is routine have clinical guidelines for partner notification.
- Syphilis – 12 of the 20 countries where partner notification is routine have clinical guidelines for partner notification.
- Gonorrhoea – 12 of the 20 countries where partner notification is routine have clinical guidelines for partner notification.
- Chlamydia – 12 of the 20 countries where partner notification is routine have clinical guidelines for partner notification.
- *Mycoplasma genitalium* – Seven of the nine countries where partner notification is routine have clinical guidelines for partner notification.
- Trichomoniasis – Ten of the 14 countries where partner notification is routine have clinical guidelines for partner notification.
- Hepatitis B – Ten of the 16 countries where partner notification is routine have clinical guidelines for partner notification.
- Hepatitis C – Nine of the 13 countries where partner notification is routine have clinical guidelines for partner notification.

Some countries, for example, Belgium, Greece, Ireland and Italy reported that they use international guidelines. Belgium and Ireland applied these guidelines to most STI. Greece used international guidelines for HIV only and national guidelines for syphilis, gonorrhoea, chlamydia and hepatitis C. Italy used international guidelines for syphilis, gonorrhoea, and hepatitis B but not for chlamydia for which national guidelines were available. Other countries use national guidelines. For example, Estonia, Netherlands, Spain, Sweden and the United Kingdom used the same national guidelines for partner notification in all settings for HIV, syphilis and gonorrhoea. Estonia, Netherlands, Spain and Sweden also used the same national guidelines for chlamydia in all settings; guidelines for partner notification for chlamydia in the United Kingdom varied according to the setting.

2.3 Organisation of partner notification services

This chapter is based mainly on responses to the questionnaire about the organisation of health services for delivering partner notification which were received from 23 countries. The questionnaire asked about the existence of STI services, including STI clinics; the main health services responsible for partner notification for each STI; staff responsible for partner notification; and training on partner notification for health professionals.

Box 4: Country example – Denmark

HIV, syphilis, chlamydia and gonorrhoea are notifiable infections in Denmark. However, since the repeal of the Venereology Law in the late 1980s, Denmark no longer has an STI law that obliges health providers to do partner notification. Denmark has eight infectious diseases departments where patients with HIV and other STI are treated. STI are also diagnosed and treated in dermato-venerology departments in larger hospitals. For chlamydia, primary care is the main site for diagnosis and treatment. Denmark has a decentralised health system, so the organisation of partner notification services can differ between regions and healthcare settings. Although there is no specific contact tracer role in the health service, partner notification for HIV infection was a major part of the job of one key informant. However, in most institutions partner notification is done by doctors or nurses who often have very limited time available for this activity.

Different methods of partner notification are used in Denmark. Key informants and questionnaire responses confirmed that patient referral is used most commonly. But the importance of appropriate provider referral was also acknowledged. The contact tracer can send a standardised letter – sometimes with a rapid test for HIV that allows them to have their result the day they come in for counselling – or telephone the identified partner – this is done more often for young people, who may not want parents or caretakers to see a letter. Patient-delivered therapy is not practised, because it does not allow STI testing to be done. Key informants commented that patient-delivered therapy "*does not fit with the way we see that doctors should behave and how patients and people should be treated in Denmark"* and that *"we hold on to the principle that we must see the person – also to be able to offer a more general check for STI".*

Public sector provision of STI services

All 23 countries responding provided public sector services for the diagnosis and treatment of STI. In some countries, services are provided in a range of settings. Table 5 shows that, in 22 countries, diagnosis and treatment services are provided in STI or genitourinary medicine (GUM) clinics, in 16 countries in dermato-venereology clinics and in 13 countries in other settings. Other settings included general practice in four countries, infectious disease units in three countries, gynaecology clinics in three countries, and public health departments in one country. Table 5 also shows that, in seven of the 23 countries, these services were only available in the capital city or other large cities. In eight countries, services are also provided in smaller towns and in the remaining eight countries they are provided in most parts of the country including rural areas.

Table 5. Dedicated STI services and staff for partner notification in the public sector (response from 23 countries)

Country	Dermato-venereology clinics	STI/GUM clinics	Other settings	Location of clinics	Dedicated staff for partner notification
Austria	No	No	Yes	Capital city only	No
Belgium	Yes	Yes	Yes	Cities and towns	No
Bulgaria	Yes	Yes	Yes	Cities and towns	No
Cyprus	No	Yes	No	Large cities	Yes
Denmark	Yes	Yes	Yes	Cities and towns	No[i]
Estonia	Yes	Yes	Yes	Cities and towns	No
Finland	Yes	Yes	No	Large cities	No
France	No	Yes	No	Cities and towns	No
Germany	Yes	Yes	Yes	Cities, towns, rural	No
Greece	Yes	Yes	No	Large cities	No
Hungary	Yes	Yes	No	Cities, towns, rural	Yes (Fostress, district nurse)
Ireland	No	Yes	Yes	Cities, towns, rural	Yes (Health adviser)
Italy	Yes	Yes	Yes	Cities, towns, rural	No
Latvia	Yes	Yes	Yes	Cities, towns, rural	No
Lithuania	Yes	Yes	No	Large cities	No
Malta	No	Yes	No	Capital city only	No
Netherlands	Yes	Yes	No	Cities, towns, rural	No
Portugal	Yes	Yes	No	Not stated	No
Romania	Yes	Yes	Yes	Cities, towns	No
Slovakia	Yes	Yes	Yes	Cities, towns	No
Spain	No	Yes	No	Large cities	No
Sweden	Yes	Yes	Yes	Cities, towns, rural	Yes (Kurator, social worker)
UK	No	Yes	Yes	Cities, towns, rural	Yes (Health adviser)

Box 5: Country example – France

In France, the control of STI was the responsibility of the regional Départements until 2004 when it was recentralised to the national level, although some responsibilities, especially for service provision, remained at local level. There are two different types of centres: Centres de Dépistage Anonyme et Gratuit are responsible for anonymous and free testing for HIV and hepatitis and the Centres d'Information, de Dépistage et de Diagnostic des Infections Sexuellement Transmissibles provide testing and treatment for STI other than HIV. STI testing is available in some family planning centres. STI are also diagnosed and treated by general practitioners or other specialists. Key informants reported that partner notification is recommended for some STI but is not done routinely. Although an STI patient should be advised about the importance of informing their sexual partners, there is no monitoring of whether partners come for testing or not. There are no dedicated contact tracers. Provider referral is not practised. Expedited partner therapy is not done often, although one informant commented that she sometimes gives the patient a prescription for their partner, but only for certain medications. The development of the national STI programme 2009-2012 was considering how different approaches to partner notification could be applied, including the development of communication material to help patients contact and inform their partners and the use of information technologies such as mobile phones. Expedited partner therapy was under consideration, but not provider referral.

[i] No specific role, but some nurses or social workers with extensive experience of partner notification.

STI diagnosis was reported to be available in a range of settings (see Table 6). HIV, syphilis, gonorrhoea and chlamydia diagnosis are provided by specialist STI clinics (dermato-venereology, GUM or STI clinics) in all 23 countries. Gynaecology or family planning clinics diagnose chlamydia in all countries and also provide diagnosis for most other STI in most countries. STI diagnosis is available in primary care or urology clinics in fewer countries.

Table 6. Healthcare settings for diagnosis of specific STI (response from 23 countries)

Infection	Specialist STI clinic	Primary care	Gynaecology/ family planning clinic	Urology clinic
HIV	23	19	21	18
Syphilis	23	18	22	18
Gonorrhoea	23	16	22	19
Chlamydia	23	18	23	22
M. genitalium	21	14	21	15
Trichomonas	21	15	20	16
Genital warts	21	15	22	17
Genital herpes	19	18	19	14
Hepatitis B	18	18	16	11
Hepatitis C	18	8	15	12

Healthcare settings for partner notification

Table 7 summarises country responses about healthcare settings with the main responsibility for partner notification for specific STI.

Table 7. Healthcare settings with main responsibility for partner notification (response from 23 countries)

Infection	STI clinic	Infectious disease*	Treating physician	Primary care	Public health	Partner notification not routine	No response
HIV	15	3	2	0	1	2	0
Syphilis	19	0	2	0	0	2	0
Gonorrhoea	19	0	2	0	0	2	0
Chlamydia	17	0	2	2	0	2	0
M. Genitalium	8	0	1	0	0	13	1
Trichomonas	12	0	2	0	0	8	1
Genital warts	9	0	2	0	0	11	1
Genital herpes	7	0	2	0	0	12	1
Hepatitis B	9	2	1	0	2	8	1
Hepatitis C	8	2	2	0	2	8	1

**Information available for Denmark, Estonia, France, Romania and Sweden from the qualitative interviews*

In most countries, specialist STI clinics have the main responsibility for partner notification for syphilis, gonorrhoea, chlamydia and HIV (see Annex 11 for a more detailed breakdown by infection and country of responsibilities of STI clinics and Annex 12 for a breakdown of healthcare settings for diagnosis of specific STI). In Latvia and Spain, physicians treating STI patients were reported to be responsible for initiating partner notification services for all

routine STI. From information provided in qualitative interviews, infectious disease units have the main responsibility for partner notification for HIV in Estonia and Sweden and for hepatitis B and C in Estonia, Finland and Sweden. Primary care settings have the main responsibility for partner notification for chlamydia in Denmark and Sweden.

Box 6: Country example – Estonia

Estonia became independent in 1991 following the end of the Soviet Union and has since undergone significant political, economic and social change. The STI law, introduced in 2003, makes it compulsory for health providers to do partner notification for HIV, syphilis, chlamydia and viral hepatitis, and for partners of syphilis and chlamydia patients to undergo testing and treatment. Prior to 1991, STI were only managed in dermato-venereology clinics, but provision has since diversified. Although these clinics remain the main setting for diagnosis and treatment of syphilis, an increasing proportion of chlamydia and trichomoniasis cases are diagnosed and treated in primary care and by private physicians. HIV is managed by Infectious Diseases Departments. There are also anonymous STI testing and youth centres in larger cities that provide STI counselling and testing and these are reported to be used by many young people. Patient referral is the method used for partner notification. Provider referral is no longer used as a partner notification method for any STI, in response to the approach taken prior to 1991 by the dermato-venereology clinics, which was perceived as violating the rights of patients and their partners. STI experts in Estonia have developed national guidelines for STI management. Whilst these recommend partner notification there is no specific guidance about how to do it and it is reported to be unclear how far the guidelines have been disseminated outside specialist clinics.

Box 7: Country example – Romania

Romania had a strictly regulated system for partner notification until 1989. After 1989, Romania introduced a law that makes it compulsory for health providers to conduct partner notification for HIV, syphilis, gonorrhoea and chlamydia. There are specialised STI clinics. Partner notification in these clinics is done through patient or provider referral. However, one key informant commented that, in the majority of cases, sexual partners are not found, especially if they are sex workers or sexual contact took place in another part of the country. Diagnosis of some STI also takes place in government family planning clinics, which are usually part of obstetrics and gynaecology clinics or a polyclinic. These clinics do partner notification for chlamydia and trichomoniasis and patient-delivered therapy is the norm; patients diagnosed with gonorrhoea and syphilis are referred to a dermato-venereology or gynaecology clinic for treatment and partner notification. General practitioners are also authorised to provide treatment and partner notification for gonorrhoea and syphilis. There is no follow up of outcomes, however, and no reimbursement for partner notification.

Partner notification staff and training

Only Cyprus, Hungary, Ireland, Sweden and the United Kingdom have health professionals whose main job is to carry out partner notification (see Table 5). With the exception of Hungary, these countries provide specific training for these staff. In Denmark, there is no specific role but some professionals, such as nurses and social workers, have extensive experience and partner notification is a significant element of their job. Few countries provide formal training in partner notification practice for other health professionals. Of the 23 countries that responded to the survey[i]:

- Finland, Ireland, Italy and the United Kingdom provide formal training for doctors specialising in STI.
- Bulgaria, Ireland, Italy and the United Kingdom provide training for other doctors. In Bulgaria, for example, training is provided for doctors who work in HIV voluntary counselling and testing centres.
- Finland, Ireland, Italy, the Netherlands and the United Kingdom provide training for nurses specialising in STI –. No countries reported that training is provided for other nurses.

[i] Spain reports that formal training is available, but professions were not specified.

2.4 Partner notification methods

The questionnaire asked about partner notification methods used in different healthcare settings. Table 8 summarises responses relating to specialist STI clinics, as these have the main responsibility for partner notification for most STI. This shows that:

- Patient referral is the preferred method for partner notification for all STI.
- Provider referral was most likely to be used for syphilis, gonorrhoea, chlamydia and HIV. Provider referral was preferred over patient referral for HIV, syphilis and gonorrhoea in Sweden, and used as much as patient referral for these infections in Hungary, Malta, Norway and Romania. Several countries reported that provider referral would never be used as a method for at least one STI. Estonia, France, Portugal and Spain do not use provider referral for any STI.
- Patient-delivered therapy was not as widely used. Five countries reported its use for gonorrhoea – Ireland, Netherlands, Norway, Portugal and Spain – and seven countries for chlamydia – Denmark, Finland, Ireland, Netherlands, Norway, Portugal and Spain.

Table 8. Approaches to partner notification in specialist STI clinics (response from 23 countries)*

Infection	Provider referral		Patient referral		Patient-delivered therapy**		PN not routine/not reported
	Yes***	Never	Yes	Never	Yes	Never	
HIV	9	4	19	0	NA	NA	4
Syphilis	10	6	20	0	NA	NA	2
Gonorrhoea	10	6	21	0	5	11	2
Chlamydia	10	5	19	0	7	11	2
M. genitalium	4	5	12	0	2	8	11
Trichomonas	5	7	13	0	4	10	8
Genital warts	5	4	13	0	NA	NA	12
Genital herpes	5	5	14	0	NA	NA	10
Hepatitis B	7	4	15	1	NA	NA	7
Hepatitis C	6	3	13	1	NA	NA	9

* *Number of responses does not add up to number of countries; countries could report both provider and patient referral.*

** *A form of expedited partner therapy, which usually involves physicians giving index patients prescriptions or medications, and sometimes information, to give directly to their partner(s) so that they do not have to wait for a medical consultation.*

*** *Yes includes responses 'sometimes' and 'usually' combined.*

Partner notification practices were also reported for other public sector healthcare settings in most countries; five countries reported that provider referral was not carried out in these settings for any STI. In the United Kingdom, provider referral in other settings was only done for gonorrhoea and chlamydia, in Finland for chlamydia and *M. genitalium* and in Sweden for trichomoniasis and *M. genitalium*. Other countries reported a mixture of provider and patient referral. In Finland, Norway and Portugal, patient-delivered therapy was sometimes used for gonorrhoea and in Denmark, Finland, Norway and Portugal for chlamydia. In Hungary, only health professionals working in dermato-venereology clinics are permitted to undertake partner notification. Estonia and the United Kingdom reported that provider referral never occurs in the private sector. Norway and Finland reported that patient-delivered therapy was sometimes used by private sector health services for gonorrhoea and chlamydia.

Box 8 includes provider perspectives on partner notification methods, drawing from the qualitative literature review (see also Table 11).

Box 8: Qualitative studies of provider perspectives on partner notification methods

In studies of HIV partner notification, providers encouraged patient referral, and had concerns about mandatory partner notification [31] [32]. Counsellors who were actively involved in partner notification among IDU noted that providers were opposed to mandatory HIV partner notification, especially with regards to needle-sharing partners, as this was considered to be unenforceable as well as difficult to implement because of limited resources [33]. Providers preferred approaches to improve the effectiveness of partner notification among IDU such as coaching of index patients by counsellors to notify their partners or calling clients' steady sex partners on the telephone to arrange a counselling appointment. Others noted that in the absence of a legal responsibility, physicians may need to be persuaded to undertake partner notification [34].

Two studies explored the views of healthcare providers in the United Kingdom about new approaches to partner notification to expedite partner treatment. One explored the acceptability of offering diagnosis and treatment for STI and partner notification in the primary care setting [35]. Both the telephone consultation and pharmacy models were considered an improvement on current practice or a useful addition to the available options for partner notification in primary care settings. These accelerated models were viewed as feasible within the time constraints faced by general practitioner staff. Most providers preferred the accelerated method of offering patients referral slips for treatment for partners via telephone hotline consultation; barriers to offering partner notification in pharmacy settings included lack of training of pharmacy staff and concerns about patient confidentiality.

The other study explored the acceptability among GUM physicians and health advisors of offering patient-delivered partner therapy (PDPT is not legal in the UK [36]) to patients for bacterial infections [37]. Some considered PDPT an unsafe option, because it does not involve clinical assessment of the index patient's sexual partner(s); 75% of study participants were concerned about partners' allergy history. Despite these concerns, approximately 50% of GUM physicians and 20% of health advisors had used PDPT in the past, and some felt that it was better than no treatment at all. In both studies, concerns about patient confidentiality, as well as the legal framework that governs medication and partner notification, influenced the acceptability of novel methods of partner notification among health providers.

2.5 Evidence of effectiveness of different partner notification methods

The review of the literature on the effectiveness of different methods of partner notification considered evidence from previous systematic reviews and updated the findings of an earlier review [23] to include the findings of trials published since 2006 and to cover a wider range of STI (see Annex 3 for more detailed information on the search strategy, Annex 13 for a summary of comparative studies identified and Annex 14 for a summary of non-comparative studies identified). The project search identified additional randomised controlled trials of partner notification for gonorrhoea, chlamydia, non-gonococcal urethritis and trichomonas, but no new evidence about partner notification for HIV or syphilis. No trials examining the effectiveness of partner notification for hepatitis B or C were identified. Key findings from systematic reviews and from studies identified for HIV, syphilis, chlamydia, gonorrhoea, non-gonococcal urethritis and trichomoniasis are summarised below[i].

Systematic reviews

A summary of systematic reviews of the literature up to the end of 2005 concluded that there is a lack of evidence that allows definitive conclusions to be drawn about the best method of partner notification for syphilis and HIV. In addition, most randomised or controlled clinical trials did not measure the primary outcomes of partner notification i.e. reduced re-infection in the index case or transmission to other partners [23]. More recent trials have measured re-infection in the index case and patient-reported outcomes about numbers of partners informed or treated [38-44], as it has become easier to follow up trial participants when infection status can be re-assessed using non-invasively collected specimens, for example, urine and vaginal swabs that can be reliably tested using nucleic acid amplification tests.

Recent research has focused on evaluating methods to improve the outcomes of patient referral. The most recent systematic review of this approach found that expedited partner therapy resulted in fewer repeat or persistent infections than simple patient referral when the index case had gonorrhoea, chlamydia or non-specific urethritis [24]. However, the number of studies was small and these studies did not compare outcomes of enhanced methods of patient referral with simple patient referral or of patient-delivered partner therapy with enhanced patient referral. Nor did they explore the effects of different forms of patient referral for specific infections, although one study suggested that patient-delivered partner therapy might be less effective for patients with chlamydia than for those with gonorrhoea [39].

HIV infection

No randomised or controlled clinical trials conducted in Europe or new studies since the end of 2005 were identified. There is still only one published trial comparing methods of partner notification for HIV infection, identified in the earlier systematic review [23]. This trial was conducted more than 20 years ago in the USA [45]. No non-randomised controlled studies were found.

The randomised controlled trial of partner notification identified was conducted in the USA between 1988 and 1990 [45]. Partner notification was carried out by public health counsellors. Women and men with HIV were enrolled if they reported knowing at least one partner by name. Of 162 eligible patients, 74 (23 women, 51 men) agreed to participate (87% were African-American, 35% were injecting drug users and 76% of the males were MSM). The trial compared giving index patients a choice of method for partner notification (intervention group) – either notifying partners themselves using contact slips or asking the counsellor to notify partners – with partner referral using contact slips to contact partners (control group), where after one month, a public health counsellor attempted to contact remaining partners. Index patients given a choice of method had more partners tested for HIV (36 partners, 0.92 per patient) and more partners testing positive (5 partners, 0.23 per patient) than those who used patient referral alone (9 partners tested, 0.14 per patient; one partner infected, 0.03 per patient). However, when additional partners notified by the counsellor in the control arm were taken into account, the difference between the intervention and control groups was less significant (0.71 partners tested per index patient and 0.14 partners infected per index patient).

[i] We included 61 other studies that reported on outcomes of partner notification but did not compare different partner notification methods. 21 were conducted in the UK, 5 in the Netherlands, 5 in Sweden, and one each in the Czech Republic, Denmark, Italy and Norway. The range of infections and outcomes measured meant it was not possible to perform pooled statistical analyses.

The interpretation of these findings is not straightforward. Only half of the patients eligible for inclusion agreed to be randomised and assessment of outcomes was not blinded. Conducting randomised trials of partner notification for HIV is difficult because of strong preferences for a particular type of referral method by either patients or providers [46]. Offering a choice of partner notification methods is often done in practice. The choice evaluated by this trial (contract referral or provider referral) was not one that is commonly used in Europe, where patient referral is the preferred method of partner notification for HIV infection in most countries. More evidence is needed about the effectiveness of different methods of partner notification for HIV, including studies comparing the effectiveness of patient referral as one of a choice of methods.

Syphilis

No randomised or controlled clinical trials conducted in Europe were identified. The search identified one randomised controlled trial [47] and two non-randomised studies that examined intermediate outcomes [48, 49].

The randomised controlled trial was a multi-centre study conducted in the USA between 1990 and 1993 [47], with partner notification carried out by specialists known as disease intervention specialists. The trial compared three interventions: contract referral where the disease intervention specialist conducted provider referral if the index patient did not notify partners within two days; immediate provider referral; and immediate provider referral with additional phlebotomy in the field, done by disease intervention specialists if partners seemed unlikely to come to the clinic. Of 1 966 participants (928 women, 1 038 men) who were enrolled (including 15% who were MSM), 8% were primary, 18% secondary and 72% early latent syphilis cases. The number of partners treated per index patient (0.61–0.67) was almost the same for all three interventions. The trial had a number of methodological weaknesses that limit interpretation of the results. In particular, two days is a very short time period for the patient to contact partners themselves and, in practice, might almost be the same as provider referral.

One non-randomised study compared provider referral with a social network approach between 2000 and 2003 in Canada [49]. The social network approach involved nurses and social workers conducting social mapping interviews in the field with index patients and partners during a syphilis outbreak; partner notification interviews with index patients were more intensive than before the outbreak. A total of 570 cases were included in the study, which compared the number of cases that could be linked with another case using the two approaches. The social network approach resulted in 32% (104/321) of cases being linked compared to 24% (60/249) of cases with the standard approach.

The other non-randomised study was conducted in the USA between 1990 and 1991 [48]. Provider referral was conducted by disease intervention specialists before and during a syphilis outbreak. During the outbreak, additional training in partner notification and additional supervision were provided for an increased number of public health workers. Outcomes were compared for a total of 229 index cases – 78 identified before the outbreak and 151 during the early phase of additional support for providers. In the former group, provider referral resulted in 0.37 partners per index case testing positive and 2.5 partners treated. In the latter group, 0.48 partners per index case tested positive and 3.9 received treatment.

No studies were found that explored reduction in syphilis prevalence, incidence or re-infection or evaluated partner notification in pregnant women. The effectiveness of patient referral for syphilis has not been evaluated, although this is the preferred method in many European countries. Trials comparing different methods of partner notification for syphilis, particularly for MSM amongst whom there have been outbreaks of syphilis in Europe and for pregnant women would be of value and provide much needed evidence.

Chlamydia, gonorrhoea, non-gonococcal urethritis and trichomoniasis

The search identified 17 randomised or controlled clinical trials [9, 11, 38-44, 50-56] [57] (see Table 9). Two of these were conducted in Denmark [50] [54], two in the UK [38, 52] and the rest in the USA.

Table 9. Summary of comparative trials of partner notification for chlamydia, gonorrhoea, non-gonococcal urethritis (NGU) and trichomoniasis

Partner notification method 1	Alternative partner notification method(s)*	Infections	Primary outcome	Intermediate outcomes	References
Patient referral†	Patient referral†	Chlamydia only	Yes	Yes	[38] [43] [38]
			No	Yes	[50, 52, 54]
		Gonorrhoea only	Yes	Yes	No trials identified
			No	Yes	[53, 55]
		Chlamydia/gonorrhoea/NGU	Yes	Yes	[39, 41, 44]
			No	Yes	[56, 57]
		Trichomoniasis	Yes	Yes	[42]
Contract referral	Patient referral†	Chlamydia only	Yes	Yes	No trials identified
			No	Yes	No trials identified
		Gonorrhoea only	Yes	Yes	[57]
			No	Yes	[9]
		Chlamydia/gonorrhoea/ NGU			No trials identified
		Trichomoniasis			No trials identified
Provider referral	Patient referral†	Chlamydia only	Yes	Yes	No trials identified
		Gonorrhoea only	Yes	Yes	No trials identified
		Chlamydia/gonorrhoea/ NGU	Yes	Yes	No trials identified
			No	Yes	[11]
		Trichomoniasis			No trials identified

**Can include more than one comparison group; † Includes any method of simple or enhanced patient referral*

Primary outcomes of different methods of patient referral

There were eight trials which included comparisons of one or more methods of patient referral and reported rates of infection at follow up. Five of these were published before the end of 2005 [39] [40] [43] [41] [57] and three between 2006 and 2009 [38, 42, 44] (see Table 9). One trial, which compared enhanced patient referral with expedited partner therapy in 330 women with chlamydia, was conducted in the UK [38] [47]; the rest were conducted in the USA. It is important to note that these trials had important methodological limitations, which could bias the results.

Table 10 shows the results of direct and indirect (network meta-analysis) comparisons between different types of patient referral methods of partner notification.

Table 10. Direct and network meta-analysis comparison of different patient referral methods

Intervention	Direct comparisons			Network comparisons				
	Studies	OR	(95% CI)	Studies	OR	(95% CI)	Probability OR<1.00	P value interaction
Expedited partner therapy *vs.* simple patient referral								
Overall	5	0.73	(0.53, 1.00)	8	0.72	(0.44, 1.12)	95%	
Chlamydia	4	0.76	(0.57, 1.02)	6	0.74	(0.41, 1.12)	95%	0.51
Gonorrhoea	4	0.31	(0.14, 0.71)	4	0.47	(0.13, 1.60)	91%	
Women	4	0.79	(0.59, 1.06)	6	0.80	(0.52, 1.27)	89%	0.51
Men	2	0.46	(0.16, 1.32)	4	0.51	(0.12, 2.02)	88%	
Enhanced patient referral *vs.* simple patient referral								
Overall	4	0.57	(0.19, 1.73)	8	0.54	(0.32, 0.93)	98%	
Chlamydia	2	0.32	(0.06, 1.58)	6	0.42	(0.17, 0.93)	98%	0.42
Gonorrhoea	5	0.64	(0.34, 1.20)	4	0.70	(0.25, 1.98)	81%	
Women	2	1.09	(0.24, 4.93)	6	0.82	(0.39, 1.65)	74%	0.22
Men	3	0.36	(0.08, 1.64)	4	0.36	(0.10, 1.12)	97%	
Expedited partner therapy *vs.* enhanced patient referral								
Overall	3	1.41	(0.64, 3.10)	8	1.32	(0.73, 2.34)	15%	
Chlamydia	2	1.67	(0.28, 9.90)	6	1.75	(0.75, 4.01)	8%	0.24
Gonorrhoea	0	..	..	4	0.66	(0.15, 2.68)	75%	
Women	2	1.15	(0.27, 4.89)	6	0.98	(0.49, 2.06)	53%	0.66
Men	0	..	..	4	1.41	(0.30, 7.42)	28%	

The number of studies available for the network meta-analysis is the total number of studies. CI – confidence interval; OR – odds ratio.

The estimated effects from the direct and indirect comparisons were consistent. The following summarises the results of the network meta-analysis, because it used all the information available so the precision of estimated effects is greater and it provides estimates for comparisons where no direct data were available.

- Five trials compared expedited partner therapy with simple patient referral [39-43]. Expedited partner therapy resulted in fewer episodes of repeat infection at follow up than simple patient referral when all STI in both men and women were considered together. In three trials – two examining women with chlamydia and one including women with trichomonas infection [40-43] – the statistical evidence favouring expedited partner therapy was not strong. The relative effect of expedited therapy appeared to be greater in individuals with gonorrhoea than with chlamydia, although the statistical test for interaction did not show strong evidence of a difference.
- Four trials compared enhanced patient referral with simple patient referral [41, 42, 44, 57]. Enhanced patient referral resulted in fewer episodes of repeat infection at follow up than simple patient referral. In two of these trials [41, 44], infection rates at follow up in patients with either chlamydia or gonorrhoea were lower in those receiving enhanced methods of patient referral compared with simple patient referral. However, there was no statistical evidence of a benefit of enhanced patient referral in the other two trials, in men or women with gonorrhoea only [57] and women with trichomonas [41]. In contrast with expedited partner therapy, enhanced patient referral appeared to be more effective than simple patient referral for patients with chlamydia than for those with gonorrhoea, although the statistical test for interaction did not show strong evidence of a difference. The relative effect of enhanced patient referral also appeared to be slightly stronger among men than women.
- Three trials compared enhanced patient referral with expedited partner therapy [38, 41, 42]. In these three trials, the rate of infection at follow up was higher in the expedited partner therapy arm – among men with chlamydia or gonorrhoea, 13.8% of those receiving expedited partner therapy and 10.7% receiving enhanced patient referral [41]; among women with chlamydia, 13% and 10% respectively [38]; and among women with trichomoniasis, 9.0% and 6.3% respectively [42] – but the confidence intervals around these estimates were wide. The results of the network meta-analysis also suggest that expedited partner therapy is unlikely to be more effective than enhanced patient referral in preventing repeat infection in index patients.

The analyses that considered all infections together included one study of women with trichomoniasis comparing expedited partner therapy, enhanced patient referral and simple patient referral [42]. The percentages of women with *Trichomonas vaginalis* infection at follow up were 9.4% for expedited partner therapy, 9.0% for enhanced patient referral and 6.3% for simple patient referral. Since trichomoniasis can be acquired non-sexually, the inclusion of this study might have underestimated the effectiveness of partner notification methods. In a sensitivity analysis excluding this study, however, the results were unchanged. For some comparisons of sub-groups there were no studies, for example comparisons of expedited partner therapy and enhanced patient referral in men or for gonorrhoea.

Intermediate outcomes of different methods of partner notification

Seventeen trials were included that reported on intermediate outcomes of partner notification (see Table 9). Nine reported on intermediate outcomes only [9, 11, 50-56] Of these, two were conducted in Denmark [50, 54] and one in the UK [52]. Eight trials that reported on primary outcomes also included information about intermediate outcomes [38, 39, 41, 42, 44, 57]. Intermediate outcomes differed between studies but included: number of partners elicited per index patient [9, 11, 38, 39, 41, 51, 52, 57]; number of partners tested per index patient [9, 38, 50, 53-55, 57]; number of partners infected per index patient [9, 11, 38, 50, 57]; number of partners treated per index patient [11, 41, 52]; proportion with all partners treated [39, 52]; proportion with at least one partner treated [42, 52]; proportion with at least one partner notified at one month [38]; number of traceable partners per index case [53]. Almost all trials had methodological weaknesses limiting interpretation of the results.

- One trial compared provider referral with two forms of patient referral [11]. The study included a total of 668 men with non-gonococcal urethritis in the USA. Provider referral included an extensive interview to elicit names and identify information about partners, who were then contacted by a disease intervention specialist. The simplest patient referral intervention was conducted by nurses who gave out referral letters but did not elicit partner names. The other patient referral intervention was conducted by disease intervention specialists who interviewed men and elicited partner names but no other identifying information. The number of partners elicited through interview was highest for the nurses conducting simple patient referral (1.16 partners per index case, compared with 0.75 for disease intervention specialist led patient referral and 0.80 for provider referral). The number of partners treated was highest, however, for the provider referral group (0.72 partners per index patient compared with 0.22 for nurse-led patient referral and 0.18 for disease intervention specialist-led patient referral).
- Three trials, all in the USA, compared contract referral with patient referral [9, 53, 57]. These trials showed conflicting results about effectiveness. In one trial among 65 college students with gonorrhoea or non-gonococcal urethritis, patients received simple patient referral for six months and were then randomised to simple patient referral plus a financial incentive (waiver of clinic fee) or contract referral (within five days) for the next six months [53]. The study reported that 62% of partners of patients receiving patient referral plus an incentive sought treatment compared with 90% of partners of patients in the contract referral arm. Similar results were shown by another trial, which compared contract referral with simple and enhanced patient referral among gonorrhoea patients at an STD clinic [57]. Of the 1 898 patients (1 786 male), 632 were randomised to contract referral (within 3 days), 632 to simple patient referral and 634 to enhanced patient referral groups. Contract referral resulted in more contacts being tested (392, 0.62 per case) and more infected contacts being identified (233, 0.37 per case) than simple patient referral (0.37 contacts tested per case, 0.24 contacts infected per case) or enhanced patient referral (0.37 contacts tested per case, 0.25 contacts infected per case). In contrast, a controlled clinical trial in an STD clinic, which compared contract referral (within 7–10 days), the standard method of partner notification at that time, with simple patient referral among 187 men with gonorrhoea, found that contract referral offered no benefit [9]. In the contract referral group, 94 men named 192 contacts, of whom 119 were examined and 67 were infected; in the simple patient referral group, 93 men named 198 contacts, of whom 107 were examined and 70 were infected.
- Five randomised trials compared simple patient referral with enhanced patient referral (enhanced either by provision of additional written information for index patients to give to partners and/or by additional health education given via counselling, written information or video) [41, 44, 55, 57]. Two of these found a benefit of enhanced patient referral on intermediate outcomes. One found that, compared with simple patient referral, booklet-enhanced patient referral resulted in more partners of men with gonorrhoea, chlamydia or non-gonococcal urethritis being treated [41]. Another found that a package of enhancements including additional counselling sessions resulted in a higher proportion of index cases with at least one partner notified [44]. The other three trials showed no difference in intermediate outcomes. Among women with trichomonas, booklet-enhanced patient referral did not increase the proportion of male partners treated [42]. In another study, showing a video that emphasised the need for partner referral and the importance of re-infection to men with gonorrhoea did not affect the number of partners notified, compared with simple patient referral [55]. The results of the third study are reported above [57].

- Five randomised trials that compared expedited partner therapy with simple or enhanced partner referral reported on intermediate as well as primary outcomes [38, 39, 41-43]. Three of these found that intermediate outcomes were improved by expedited partner therapy [38, 39, 41, 43]. Higher 'compliance' was found in women with chlamydia who received the expedited partner therapy intervention than those receiving patient referral [43]. Expedited partner therapy was also more effective among men with gonorrhoea, chlamydia or non-gonococcal urethritis than booklet-enhanced patient referral or simple patient referral [41]. And in the third of these trials, all partners were very likely to have been treated if the index patients (men and women with gonorrhoea or chlamydia) received expedited partner therapy than simple patient referral [39]. However, in two trials, there was no evidence that expedited partner therapy resulted in more partners being treated [38, 42]. Among women with chlamydia infection, there was no strong evidence that the proportion of male partners tested or treated was higher for those receiving expedited partner therapy (52/125 partners, 42%) than enhanced patient referral (46/134 partners, 34%) or postal testing kits (51/124 partners, 41%) [38]. In women with trichomonas, the proportion delivering the intervention to their partners was similar for patient-delivered medication (given to partners by 82.4% of women), tear-off cards in booklet enhanced patient referral (75.5%), and simple patient referral (87.7%).

Comparisons of different methods and settings for patient referral

Three randomised trials examined the effects of using postal sampling kits for index patients with chlamydia to give to their partners [38, 50, 54]. Two of these studies, in Denmark, tested whether giving index patients sampling kits for their partner(s) to send samples by post is more effective than giving index patients sampling kits for their partner(s) but requesting partners to visit a healthcare professional for testing using the sample kit provided. Both found that home sampling increased the number of partners who got tested [50, 54]. More recently, a study that compared giving postal sampling kits with expedited partner therapy and enhanced patient referral [38] did not show any benefit offered by postal sampling kits. There is weak evidence from two randomised trials that giving index patients diagnosed with chlamydia sampling kits for their partner(s) can increase the number of partners who get tested, compared to getting partner(s) to visit their doctor for testing.

One randomised trial [52] in the UK investigated whether patient referral for patients diagnosed with chlamydia is effective in general practice and compared it with referral of patients to GUM clinics. The trial showed that patient referral initiated in general practice was at least as effective as referring patients for partner notification to GUM clinics.

Overall, there is insufficient evidence to determine the effectiveness of provider (or contract) referral compared with patient referral. However, this might not be a priority in Europe, where patient referral is most commonly used for these infections. More of a priority is further investigation of methods that could optimise the effectiveness of patient referral. The network meta-analysis of available evidence suggests that enhanced forms of patient referral have the potential to reduce the incidence of infection at follow up compared with simple patient referral. It also suggests that expedited partner therapy might reduce the incidence of infection at follow up compared with simple patient referral, although it offers no advantage over enhanced forms of patient referral. Further trials to determine the optimal combination of components of enhanced patient referral could help to ensure that clinical guidelines provide evidence-based recommendations.

Gender, age and sexual orientation and partner notification

There was no strong evidence from controlled trials that the effectiveness of partner notification differed significantly by gender, age or sexual orientation. This reflects the limited statistical power in individual studies. In practice, therefore, it is not possible to make recommendations for tailored interventions that are effective among different population groups.

2.6 Provider and patient perspectives on partner notification

Partner notification is an intervention where individual and socio-cultural factors, and the relationship between individuals and health services can affect uptake and effectiveness. Qualitative research can provide useful insights and help to inform policy and practice [58]. This chapter is based on a review of qualitative studies of provider and patient perspectives (see qualitative study search strategy, study selection and analysis in Annex 13 and Table 11) and interviews with key informants in Denmark, Estonia, France, Romania and Sweden. It considers provider (and policy-maker) perspectives first, focusing on factors that facilitate partner notification and that present barriers to partner notification. It then considers patients' perspectives on partner notification.

Table 11. Characteristics of studies included in the qualitative literature review (19 studies)

First author, date, reference	Study aims	Setting, duration, infections	Study population
Chacko 2000 [59]	To qualitatively assess patient-referral from the perspective of the adolescent and young adult female who either did or did not notify their sexual partners	Urban hospital based family planning clinic, Houston, Texas, USA; 1995-1996; gonorrhoea or chlamydia	54 women, aged 14-20 years (median 18)
Coleman 2007[60]	To explore experiences of partner notification from lay perspectives	GUM clinic and gay venues, Greater Dublin, Ireland; December 2002 to February 2004; syphilis	40 gay/bisexual men (15 cases, 15 contacts, 10 non-patient); age range 20-60 years
Daker-White (Unpublished) [61]	To assess social and emotional effects of partner notification and compare acceptability of primary care and GUM clinics for partner notification for chlamydia	General practice UK; 2001 to 2002; chlamydia	25 participants in a randomised trial (8 men and 17 women) aged 18-28 years
Darroch 2003 [62]	To explore men's and women's accounts of chlamydia testing to understand sex differences in attitudes and in behaviours	GUM clinic, London, UK; Chlamydia	24 index cases (12 men, 12 women); mean age 27 years, mixed ethnicity
Duncan 2001 [63]	To explore the psychosocial impact of diagnosis of chlamydia on women	GUM or family planning clinic in Glasgow, UK; chlamydia	17 women (10 GUM and 7 family planning clinic), aged 18 -28 years
Dye 1999 [31]	To ask physicians who treat HIV about their experiences and opinions of HIV partner notification and methods used	New York, USA; HIV	11 public and private physicians, male and female
Fenton 1997 [32]	To understand views of senior clinic consultants on incorporation of HIV partner notification into clinical practice	GUM clinics in England, UK; HIV	59 GUM consultants in England
Gielen 2000 [64]	To understand concerns and experiences, particularly violence related to disclosure of HIV	Outpatient HIV primary care clinic and drug treatment clinic, Baltimore, USA; HIV	43 HIV-positive women, most African-American
Gorbach 2000 [65]	To describe self-reported patterns of partner notification among women diagnosed with gonorrhoea, chlamydia, non-gonococcal urethritis	GUM clinic and referrals from private practitioners, Seattle, USA; June 1996 to June 1998; chlamydia, gonorrhoea, non-gonococcal urethritis	79 patients (30 women, 30 heterosexual men, 19 MSM), mixed ethnicity, women, mean age 22 (range 15-46); men, mean age 28 (range 18-46)
Keogh 1998 [34]	To determine the current contact tracing practices of general practitioners and identify barriers to contact tracing faced by them	Victoria, Australia; any STI	25 GPs below age 65 years
Lichtenstein 2005 [66]	To assess African-American men's preferences in relation to 3 partner notification methods i.e. patient referral, provider referral and partner-delivered therapy	Southern city in USA; trichomonas	Group 1: 10 African-American heterosexual men aged 21-51, (mean: 32 years); Group 2: men aged 21-27, (mean: 22 years)
Rea A 2003 [67]	To understand the key influences hindering patients, participation in the contact tracing process for sexually transmissible infection exposure	GUM clinic, UK; chlamydia	One health advisor

First author, date, reference	Study aims	Setting, duration, infections	Study population
Rogers 1998 [33]	To explore prior experience of IDU with partner notification and their preference for partner notification	Street outreach centre, Central Harlem and hospital methadone treatment centre, Manhattan, USA; 1995; HIV	Active and former IDU; age 20-40 years, Latino and African-American
Rosenthal 1995 [68]	To examine adolescent girls' discussion of STD acquisition with partners	Urban hospital, USA; any STI	182 sexually active women with history of STI, mean age: 17 (range 12-21 years), most African-American
Shackleton 2009 {Shackleton, 2011 #138	To explore the views of participants on partner notification and opinions towards accelerated partner therapy (APT)	General practices, London, UK; any bacterial STI	17 participants (13 women, 4 men; 10 GPs, 7 practice nurses)
Shivasankar 2008 [37]	To investigate consultant genitourinary physicians' and health advisers' views on acceptability of patient-delivered partner therapy (PDPT)	Consultant GU physicians and senior health advisers; any bacterial STI	All consultant GU physicians and senior health advisers
Sutcliffe 2009 [69]	To explore acceptability and feasibility of two new strategies, known as accelerated partner therapy (APT)	GUM clinic, London, UK; any bacterial STI	37 participants with acute STI, aged 16->30, mixed ethnic groups
Tobin 2007 [70]	To assess the attitudes of HIV-positive current or former drug users towards HIV partner counselling and referral services (PCRS) i.e. provider referral, and determine if this varies by partner type	Baltimore, Maryland, USA; February 2001 to September 2003; HIV	209 HIV-positive drug users, mostly African- American
Tyden 2000 [71]	To evaluate patients' perceptions and views towards legal enforcement of partner notification	Hospitals, Stockholm, Sweden; 1997; chlamydia	240 consecutive patients diagnosed with Chlamydia

Healthcare provider and policy-maker perspectives

The eight qualitative studies included that were conducted among health providers, and interviews with policy-makers and health professionals, identified a range of factors that support and facilitate partner notification as well as constitute challenges and barriers. These included:

Partner notification as a public health priority

In all eight qualitative studies, providers considered partner notification to be an important public health intervention. This finding was confirmed by key informants interviewed in all five countries, with respect to healthcare providers. Only in Sweden, however, did informants consider partner notification to be a public health priority for policy-makers. In Denmark, for example, health professionals directly involved in providing partner notification saw it as an important measure for STI prevention and control, but it was ranked low on the list of public health priorities by a policy-maker. Similarly, in Estonia, informants interviewed agreed on the importance of partner notification, but believed that it was a low priority on the public health agenda. Despite the legal obligation, lack of infrastructure, resources and training had resulted in limited action.

In Romania, clinicians interviewed were committed to partner notification as part of STI control, but lack of coordination between different service providers who perform or are involved in the partner notification process is perceived as a difficulty, especially in terms of allocation of responsibilities, monitoring, and follow up of patients and partners. Another perceived barrier is the lack of authority of staff working in government family planning clinics to perform partner notification. Although these clinics could take on more responsibility for partner notification, there is no clear guidance from the Ministry of Health. In France, the health system has historically focused on treatment and care. Despite a recent shift towards prevention, it is still reported to be difficult to fund preventive measures through health insurance.

Legal context

In Sweden, the legal obligation to carry out partner notification is believed to facilitate its implementation. Informants saw the priority given to partner notification as reflecting the law which makes partner notification compulsory. In their view, the law facilitated partner tracing for both providers and patients as it is seen as an obligation rather than as an option, but not as punitive, resulting in collective acceptance of partner notification. In Denmark, some informants felt that although health providers feel a strong responsibility to carry out partner notification, the repeal of the legislation could have resulted in a reduction in partner notification, particularly by general practitioners, as they are not reimbursed for time spent on partner notification when partners are not their patients. Concerns were also raised that the law that criminalises the transmission of HIV has a negative impact on people's willingness to be tested.

Funding for partner notification

In Sweden, key informants reported that the law ensures that funds are allocated to STI prevention and partner notification. As a policy-maker said, 'We have these [funds] and I tell them [the politicians] that we have to do it and that it's in the law. It's good [that] it is in the law' A specialist also commented, 'where STI are legislated there is no problem to get money for testing and tracing – but for other STIs that are not legislated, it's much more difficult'. Lack of funding was seen as a major barrier to implementation of partner notification by informants in Denmark, Estonia and Romania. In Estonia, one commented, 'The economic situation is very difficult … and resources are decreasing. We … educate doctors … and we give the best recommendation to patients and counsel the patient on how important it is. But we must trust the patient … we do not have any mechanism to control this'. In addition, although STI counselling, testing and treatment are free in Estonia, in practice people often have to pay the full price for drugs because these are not always available in the public sector.

Provider awareness

Irrespective of the nature of infection, type of provider, and country of research, qualitative studies highlighted a lack of awareness of partner notification policies among providers. In some cases, physicians were unaware of HIV partner notification programmes [88]. In one study, they felt that they should approach partner notification for HIV in a similar way to partner notification for other STI, but were unclear about whether they should trace contacts on the basis of clinical diagnosis or to prescribe medication for partners without consultation [31]. In another study, GUM staff were unclear about the timing of HIV partner notification, who should do partner notification and to which patients it should be offered [32]. Lack of clarity results in subjective judgements being made about STI partner notification, as was the case with general practitioners in one study [34], and variations in partner notification practice. Interviews with key informants also highlighted lack of awareness of laws or policies as an issue. For example, in Denmark, one informant suggested that 'some providers thought that they no longer needed to do partner notification following the repeal of the Venereology Law'; another commented that general practitioners, who do a lot of partner notification, 'lack awareness about the public health role of contact tracing'.

Provider skills and time

In qualitative studies, general practitioners [34] and primary care staff [35] raised concerns about their ability to talk to patients about sexuality and STI. Counsellors in another study emphasised the need for training for partner notification [33]. Several studies highlighted provider concerns about lack of time for partner notification, especially in primary care settings [33, 34]. Counsellors reported that due to time pressures they were unable to implement HIV counselling protocols with clients, including partner notification, or to build a good relationship with patients [67].

Interviews with key informants emphasised the importance of provider skills, noting that the way in which partner notification is carried out is crucial to success. Informants in Sweden commented that asking a patient about sexual relations is a sensitive topic and emphasised the importance of empathy, giving information, providing assurances about confidentiality, and offering support rather than forcing people to obey the law. Particular emphasis is given to helping the patient to understand the importance of partner notification. One specialist noted that using contact tracers to do partner notification generally results in the patient identifying more partners. In Denmark, informants reported that many healthcare providers feel unsure about how to do partner notification, because it raises sensitive or difficult issues. One informant commented that providers try to avoid getting involved in other people's private life, while another said that because of fear and awkwardness 'it is just accepted if the patient says I don't know who I had sex with. You give up very quickly'. There was also recognition of the need for translation services to help with counselling patients whose first language is not Danish, and training for health providers on how to do partner notification among migrant populations.

Informants in Sweden reported that lack of time can be a barrier, as partner notification can be a time consuming process, especially when a patient has many sexual contacts. They also noted that dedicated staff were not always available. In Estonia, informants commented that lack of staff and of specialised training in STI management and partner notification limits the practice of partner notification. Similarly, in Romania, the difficulty of recruiting staff with relevant skills and of attracting staff to do partner notification was highlighted.

Provider-patient relationship and patient confidentiality

Qualitative studies highlighted the issue of provider-patient relationships. Physicians expressed concerns about the acceptability of partner notification among patients [32] and the impact of asking questions about sexual partners on their relationship with patients. Concerns were also raised by providers about patient confidentiality [32] and potential misuse of patient data [31]. Some providers were worried about the negative effects of HIV partner notification, particularly among disadvantaged groups like refugees and ethnic minorities, and were therefore reluctant to offer provider referral [32]. In one study, counsellors reported that partner notification was more challenging with female patients, who were reluctant to reveal information about current partners due to fear of violence [33]. Partner notification can also be a challenge in small communities when providers have a personal association with patients [67].

Key informants in France identified the duty to protect patient confidentiality as a major barrier to conducting partner notification. This duty is interpreted by providers as meaning that they could not take action to inform a person who could be infected with an STI. One said:

> I have the notion that we need to find the partners, but that we can't do anything without the patient. Basically, with medical confidentiality, we can't … call the partner ourselves to tell him or her anything', while another reported '… several times I have found myself in front of cases where I knew very well that one of them was positive, and where the other refused post-exposure treatment, arguing that the first one didn't have any risks. So here, I'm bothered by medical confidentiality. Because on one side it protects the positive patient but on the other side, it obliges me to put the negative patient in danger (…)

Several studies reported negative attitudes among providers, which have implications for partner notification. One noted that physicians did not have confidence in their patients' commitment to partner notification and considered partner notification among MSM to be pointless [34]. Another noted that male health providers found multiple sexual partners among women unacceptable and perceived women who had an STI as 'bad women' [66]. Interviews also raised this issue. For example, in Denmark, provider prejudices, especially towards ethnic minorities, were cited.

Patient attitudes towards partner notification

Interviews with key informants suggest that public trust in the health system plays a critical part in the extent to which partner notification is accepted. In Sweden, for example, a policy-maker commented that high acceptance of partner notification reflects the fact that 'people do trust authorities in general. And therefore I think they know that we will not misuse their confidence in us'.

Key informants in Sweden were all of the opinion that people with STI see the importance of partner notification and that most agree to contact their partner(s). They reported that it is a well-accepted practice among patients and is not perceived as an invasion of privacy. This is also attributed to the fact that people can speak openly about sexual issues in Sweden. Similarly, in Romania, although service providers are aware that asking patients about their sexual partners is a sensitive issue, most patients were reported to be willing to inform their sexual partners about a possible infection. However, low levels of public knowledge about STI, including modes of transmission and complications, were cited as a barrier to STI prevention and partner notification.

In France, in contrast, informants stated that partner notification is viewed as intrusive, and even as a threat. This reflects wider social attitudes about the importance of protecting privacy and individual liberty and, it was suggested, more individualistic notions of disease. As a result, any attempt to introduce provider referral would be likely to meet with strong resistance. Privacy and reluctance to disclose information to the authorities were also reported by informants in Estonia, but for different reasons. People's experience of social control during the Soviet era has influenced the acceptability of partner notification; reluctance to discuss or provide the names of sexual partners has persisted since independence, although attitudes are changing in the younger generations. As one policy-maker commented, 'Estonian people are very private and (…) they think that the data may leak (that health practitioners may pass the information to another authority).'"

In the qualitative studies, providers recognised that distrust of health services is a challenge for partner notification among some population groups. In one study, providers noted the lack of trust in government agencies among IDU [33]. In another, counsellors were aware of resistance among men to attending clinics for partner notification and their distrust of the healthcare system [66].

Patient perspectives

Thirteen patient-based qualitative studies were included. Five explored views about partner notification, seven explored experience of partner notification, and six preferred methods.

Views and attitudes towards partner notification

In most studies, participants perceived partner notification from an altruistic perspective. Partner notification for STI was considered to be 'the right thing to do' [61] and their 'responsibility' [60] [65], and not notifying partners was equated to 'not having a conscience' [60]. In some cases, participants also saw partner notification as important in terms of avoiding re-infection [65]. In one study, MSM associated partner notification with 'freedom of sexual pleasure' as well as with prevention of ill health, although MSM who were not 'out' as gay or bisexual were worried about being exposed as a result of partner notification [60]. Gay men also expressed fears about being perceived as a carrier of infection among their peers, whereas women were concerned with being labelled as 'loose' [65] [33]. The two studies of partner notification for HIV were conducted amongst IDU. In both studies, participants considered partner notification important to stop the spread of HIV and encourage testing and treatment seeking [33] [70]. There were differences in the acceptability of partner notification between active drug users and those in treatment; the former were more concerned about the effects of partner notification on their relationship with their partner [33]. There were also differences in views about notifying sexual partners and needle-sharing partners; drug users were more willing to contact sexual partners than to notify needle-sharing partners [33] [70].

There were some exceptions to views about the importance of partner notification. In one study, African-American men were concerned about loss of relationship status with their partner and the association of STI with homosexuality in their community [66]. Men who had both a stable relationship and casual partners considered it unlikely that their main partner was the source of their infection, and this affected the type of sexual partner they chose to notify.

Several studies reported on patients' responses to an STI or HIV diagnosis. Participants, particularly adolescent girls and women, experienced a range of emotions including contamination, delinquency, feeling dirty, shock, disgust, distress, guilt and discomfort [59, 61, 63, 64, 68] as well as anxiety about their reproductive health [62, 63]. Some studies suggest that negative reactions to STI diagnosis may be due the lack of perception of 'personal vulnerability' to STI [61-63]. These responses, especially negative reactions to diagnosis, may influence patients' feelings about partner notification.

In the one study that explored views about legal enforcement of partner notification, in this case for chlamydia, most participants had a 'positive reaction' towards naming their partners. Some reported that they avoided providing the names of their partners and preferred instead to inform their partners themselves. While some suggested using police assistance if a named partner refused to come for STI testing, most preferred less coercive methods or were opposed to coercion [71].

Experiences of notifying partners

The nature of the sexual partnership was the most important factor in partner notification. Most participants notified their main or current sexual partner about STI [59, 61-63, 65, 68, 69], although this was difficult in the context of long-term, monogamous relationships [60]. Women often opted to use non-incriminating explanations when notifying their partner, for example, saying that they got 'yeast infection from a toilet seat or a dance platform' [65], rather than acknowledging that they had had another sexual partner; no studies reported men using such explanations for their infections. In contrast, notifying ex-partners and casual partners was not viewed with the same sense of responsibility. With regard to ex-partners, the circumstances of the break-up were an important determining factor. If the break-up was difficult, participants were less likely to contact their ex-partner [61, 63, 68]. Women were particularly worried about gossip as a result of notifying casual or one-night stand partners and so often chose not to contact them [59, 61, 65]. These concerns led some participants to opt for provider-led notification [65]. Practical issues, such as difficulty in locating ex-partners or anonymity of partners, were also a barrier to partner notification [60, 65].

The type of STI, symptoms and sex also influenced partner notification. In one study, men saw trichomoniasis to be a 'women's disease' and were thus less likely to seek care [66]. In another, lack of symptoms was reported by adolescent girls as one of the reasons for not notifying some partners [65, 79]. Among some gay men, oral sex was not perceived to be a risk factor for STI transmission and oral sex partners were not notified [65, 79]. Two studies also reported that heterosexual men and MSM were unlikely to notify partners they saw as deliberate transmitters of infection [60, 65, 72, 79].

Several studies reported participants' experiences of partner notification. Concerns about the effect on the relationship with their partner, fear of being blamed or of negative reactions from partners was common [59, 65] [63, 66, 68]. Women and girls were particularly concerned about violence [59, 65] [33, 64, 72]. STI patients often perceived partner notification to be difficult [60] [61]. Patients experienced a range of emotions prior to notifying their partners including stress, anxiety, guilt, discomfort, lack of trust, anger, fear, apprehension [59, 60] [63, 68]. Two studies showed that women were more likely to feel guilt [62, 64]. Women diagnosed with HIV delayed partner notification because of their reaction to the diagnosis and concerns about personal safety [64]. Despite these concerns and feelings, most patients felt it was important to convey the 'bad news' to their partner themselves [59-62, 65]. In one study, the involvement of a healthcare provider was equated with 'confusion' and a 'sense of powerlessness' [60]. Another study reported that adolescent girls preferred to inform their partners face-to-face or by telephone [59]. In contrast, heterosexual men were likely to avoid disclosure to partners by not seeing them [66] or expected their partners to read between the lines [62]. Women who feared violence sometimes chose to use provider referral [65].

Although some studies reported that patients' experience of notifying their partners was not as bad as they had expected [60, 61, 63], others confirmed that fears are well-founded. Men, women and adolescent girls reported being blamed by their partner for chlamydia [59, 61-63, 68]. Other studies also reported that blame was a reaction [66, 73]. Some adolescent girls experienced 'negative emotional response' from their partner [59, 68]. In one study, HIV-positive women in violent relationships reported new or escalating verbal and physical abuse from their partner and social ostracism after notification [64]. For adolescent girls and women in long term relationships, partner notification acted as a catalyst for confrontation with their partner about his infidelity [59, 65] and partner notification resulted in the end of some long-term relationships in MSM [60].

Preferred methods of partner notification

The two studies among IDU reported that those who were in treatment considered patient referral to be an acceptable method for notifying sexual partners about HIV infection [33, 70]. Even when assistance was sought from a healthcare provider, in-treatment IDU expressed a preference to be present during the process of notifying their partners [33, 70]. Most preferred face-to-face notification. Active drug users preferred the assistance of a counsellor in notifying their partners to increase the chances of being taken 'seriously'. In both studies, participants felt that psychological support was needed during and after the process of partner notification for themselves and their partner(s). One of these studies explored preferred timing for partner notification. Some participants were willing to notify their partners immediately after their HIV diagnosis, whereas some active drug users expressed a preference to wait for at least six months or until close to their death before notifying their partner to avoid partner anger and gain sympathy [33, 70].

Preferred methods of partner notification and expedited partner therapy were explored in two studies [66, 69]. In one of these studies, among African-American men, preferred methods depended on the type of sexual relationship. Young men who had relationships with older women, and were aware that their partner had a concurrent relationship, expressed a preference for notification by a disease intervention specialist as they believed their partner would not inform them to avoid trouble with their main partner. Men in this study were suspicious of patient-delivered therapy, because of fear of allergies to medicines or lack of trust in their partner [66]. The second study reported that giving a contact slip to ex-partners for pharmacy-based-partner notification was preferred to telephone contact by a healthcare professional. However, younger participants preferred to be notified by telephone by their partner and to have a telephone consultation with a health advisor or attend the clinic in-person rather than to use pharmacy-based notification. Patients were willing to call their partner for telephone assessment by a health adviser and to take medicines for their partners if their partner was aware of their clinic visit. They expressed concerns, however, about referral to pharmacists because of perceived lack of privacy and expertise of the pharmacist [69].

Another study reported that participants would prefer the primary care setting to GUM clinics for STI partner notification [61], as many perceived GUM clinics as an "*unknown quantity.*" Participants in this study received their diagnosis and treatment in primary care; people diagnosed in GUM clinics might have had different opinions. In another study, men were worried about being seen to visit an STI clinic because of negative connotations and stigma [66]. Other studies reported similar ideas about GUM clinics, affecting their acceptability as a venue for partner notification [61, 63, 66].

3. Conclusions and recommendations

3.1 Discussion and conclusions

Legal context for partner notification

The legal context for partner notification varies within Europe. Some countries have wide-ranging legal obligations to enforce partner notification, others have laws that are not enforced, and some have none. Eleven of the 24 countries that responded to the questionnaire reported the existence of laws or regulations that make partner notification compulsory for the healthcare provider, the patient or both. These laws most often apply to HIV, syphilis, gonorrhoea, chlamydia, hepatitis B and C. Three countries, Estonia, Finland and Sweden, reported laws that can be used to compel sexual partners to undergo testing or treatment. The extent to which laws are enforced varies. In Estonia and Romania, for example, laws that make partner notification compulsory have been introduced but are not consistently implemented.

There is no clear correlation between the existence of laws that make partner notification compulsory and routine partner notification. In 22 of the 24 countries, partner notification was described as routine for at least one STI. In Belgium, Ireland, the Netherlands and the United Kingdom, for example, there is no legal obligation but partner notification is recommended in clinical guidelines and is widely practised. Most countries reported that partner notification was routine for syphilis, gonorrhoea, chlamydia and HIV. Infections for which partner notification is considered routine are often those for which notification is also mandatory.

Compulsory partner notification can have both positive and negative effects. International guidelines recommend voluntary partner notification as an intervention for STI control, with non-voluntary disclosure to partners only when all other avenues have been exhausted. Voluntary partner notification is still the rule in most countries in Europe, but the HIV epidemic has influenced the debate about the need for legal enforcement of partner notification [36]. In Sweden, where the law on partner notification covers providers, patients and partners, the law is seen as facilitating implementation of partner notification, as well as ensuring availability of funds for partner notification services. Denmark has experienced periods both with and without a law that makes partner notification compulsory. Whilst informants believed that it was appropriate that the law had been repealed, they also acknowledged that this may have resulted in partner notification receiving less attention and less funding. The debate about wider public health benefits versus individual liberty and the right to confidentiality is complex [74]. There is no evidence from this project, or from evaluations, that legislation improves the outcomes of partner notification or improves STI prevention and control.

The existence of laws, and attitudes towards compulsory partner notification, are influenced by a country's social, political and historical context. In Sweden, partner notification is viewed as a collective good and there is a high level of public trust in the state and in health services. In France, in contrast, respondents suggested that such laws would be viewed as a violation of individual freedom and that any attempt to make partner notification compulsory would be met with resistance.

Laws that criminalise transmission exist, and have been used in a number of countries. Nine countries reported laws that criminalise transmission. However, a review suggests that the number of European countries with laws that enable prosecution when transmission is deemed to have been intentional is significantly higher; at least 18 countries have prosecuted people for transmitting HIV to their sexual partners. There is no evidence that criminalisation of transmission is an effective public health measure and international recommendations are clear that legal redress should only be used in cases where there has been an intentional transmission of infection with the intent to cause harm; such cases are rare and in most countries existing criminal laws can be used to prosecute people [75]. Despite this, there is an ongoing debate about mandatory disclosure of infection and prosecution for failure to disclose, especially for HIV infection.

Clinical context for partner notification

Few countries have strategies or clinical guidelines that include partner notification. Interviews in the five countries suggested that, although partner notification is considered to be an important public health intervention by healthcare providers, this is not the case for policy-makers, except in Sweden. This low priority is perhaps reflected in the relatively few countries that have national STI strategies or that reported the availability of clinical guidelines for partner notification in their questionnaire responses. Only Denmark, Italy, Lithuania, the Netherlands, Norway, Romania, Sweden and the United Kingdom have a national STI strategy [19]. Not all countries where partner notification is routinely carried out have guidelines for partner notification. Only nine countries reported the availability of clinical guidelines for partner notification for those infections for which partner notification is routine – Estonia, Greece, Ireland, Italy, Malta, Netherlands, Portugal, Sweden and the United Kingdom. Lack of clear guidelines for partner notification can result in misinterpretation of laws and policies and inconsistent approaches to partner notification. The literature review suggests that, in some settings, providers are unclear about partner notification procedures. Clear recommendations in clinical guidelines could promote more consistent implementation of partner notification and wider adoption of good practice, with benefits both for providers and patients. It is worth noting that partner notification is recommended in IUSTI Europe guidelines for patient management although no detail is provided on how to do this.

In most countries, specialist STI clinics have the main responsibility for STI services and for partner notification. All 23 countries that responded to the questionnaire provided public sector services for the diagnosis and treatment of STI. Despite the increasing emphasis on STI diagnosis and treatment in primary care, specialised STI clinics are still the most likely setting for these services. Diagnosis and treatment services were provided in STI or GUM clinics in 22 countries, in dermato-venereology clinics in 16 countries and in other settings, including general practice, infectious disease units, gynaecology clinics and public health departments, in 13 countries. In seven countries these services were only available in the capital city or other cities, in eight countries services were also provided in smaller towns and in the final eight countries services were provided in most parts of the country. In most countries in Europe, specialist STI clinics also have the main responsibility for partner notification for syphilis, gonorrhoea, chlamydia and HIV. In some countries, other settings, such as infectious disease units and primary care, have the main responsibility for partner notification for specific infections including HIV, hepatitis B, hepatitis C and chlamydia.

Few countries have dedicated staff for partner notification or provide training in partner notification. Only five countries – Cyprus, Hungary, Ireland, Sweden and the United Kingdom – have health professionals whose main job is to carry out partner notification. With the exception of Hungary, these countries provide specific training for these staff. In Denmark, there is no dedicated role but some professionals, such as nurses and social workers, have extensive experience and partner notification is a significant element of their job. Few countries provide formal training in partner notification practice for other health professionals. Of the 23 countries that responded to the questionnaire, four reported that they provide formal training for doctors specialising in STI, four provide training for other doctors and four provide training for nurses specialising in STI.

Partner notification methods and effectiveness

Patient referral is the preferred approach to partner notification in most countries in Europe. Questionnaire responses concerning partner notification in specialist STI clinics showed that patient referral is the preferred method for partner notification for all STI. Only Latvia, never uses it for hepatitis B and C. Provider referral was used in some countries, most often for syphilis, gonorrhoea, chlamydia and HIV. Provider referral was preferred over patient referral for HIV, syphilis and gonorrhoea in Sweden, and used as often as patient referral for these infections in Hungary, Malta, Norway and Romania. Four countries do not use provider referral for any STI – Estonia, France, Portugal and Spain. Patient-delivered therapy is not widely used. Five countries reported its use for gonorrhoea – Ireland, Netherlands, Norway, Portugal and Spain – and seven countries for chlamydia – Denmark, Finland, Ireland, Netherlands, Norway, Portugal and Spain.

There is insufficient evidence about the most effective methods of partner notification for HIV or syphilis. A summary of systematic reviews concluded that there was insufficient evidence to draw conclusions about the best method of partner notification for syphilis and HIV; other systematic reviews have concluded that provider referral is more effective than patient referral in ensuring notification and treatment for HIV and other STI [20, 76, 77]. For HIV, the one randomised trial identified found that index patients given a choice of method – patient or provider referral – had more partners tested for HIV than those who used patient referral alone [45]. For syphilis, a randomised controlled trial [47] found that there was little difference in the number of partners treated per index patient between contract referral and provider referral, while two non-randomised studies showed that a social network approach was more effective than provider referral [49], and that the effectiveness of provider referral was increased by provision of additional training, staff and supervision [48]. The effectiveness of patient referral for syphilis has not been evaluated, although this is the preferred method in many European countries. Trials comparing different methods of partner notification for syphilis, particularly for MSM amongst whom there have been outbreaks of syphilis in Europe and for pregnant women, would provide valuable and much needed evidence.

There is some evidence that enhanced patient referral and expedited partner therapy may be more effective in reducing re-infection for chlamydia, gonorrhoea, non-gonococcal urethritis (NGU) or trichomoniasis, but this is not conclusive. Five trials found that expedited partner therapy resulted in fewer episodes of repeat infection at follow up than simple patient referral [39-43], although the evidence was not strong in three of these. Enhanced patient referral resulted in fewer episodes of repeat infection at follow up than simple patient referral in two trials, but appeared to offer no benefit in two others [41, 42, 44, 57]. In contrast with expedited partner therapy, enhanced patient referral appeared to be more effective than simple patient referral for patients with chlamydia than for those with gonorrhoea. In three trials the rate of infection at follow up was higher in the expedited partner therapy arm than in the enhanced patient referral arm [38, 41, 42], but meta-analysis suggests that expedited partner therapy is unlikely to be more effective than enhanced patient referral in preventing repeat infection in index patients.

Evidence about the effectiveness of different methods in achieving intermediate outcomes is mixed. Comparison of provider referral with two forms of patient referral [11] found that nurse-led simple patient referral elicited more partners than disease intervention specialist-led patient referral or provider referral, but the number of partners treated was highest for the provider referral group. Three trials that compared contract referral with patient referral [9, 53, 57] showed conflicting results about effectiveness. In two of these studies, contract referral resulted in more contacts being tested than simple or enhanced patient referral, whereas the third study found that contract referral offered no benefit over simple patient referral. Of five trials [41, 42, 44, 55, 57] that compared simple patient referral with enhanced patient referral, one concluded that enhanced patient referral increased partner notification and the other that it increased the number of partners being treated, but the other three studies showed no difference. Finally, three of five trials [38, 39, 41-43] that compared expedited partner therapy with simple or enhanced patient referral found that expedited partner therapy improved intermediate outcomes, but the other two studies found no difference.

Overall, evidence on the effectiveness of different methods of partner notification is limited. Although the evidence base is growing, there are still significant gaps. The review of the literature on the effectiveness identified randomised controlled trials of partner notification for gonorrhoea, chlamydia, non-gonococcal urethritis and trichomonas published since 2005, but no new evidence about partner notification for HIV or syphilis. No trials on the effectiveness of partner notification for hepatitis B or C were identified. The only studies of HIV-infected individuals were conducted with injecting drug users. No studies explored partner notification among sex workers. Few trials have been conducted in Europe.

Preferred methods, and provider and patient attitudes towards partner notification, are influenced as much by a country's social, political and historical context as by evidence of effectiveness. In both Estonia and France, for example, provider referral was not viewed as an acceptable method of partner notification, because it as seen as repressive or as a violation of privacy and individual liberty. In Sweden and Denmark, expedited partner therapy was not used, because it was seen to conflict with clinical principles or to offer no advantage over existing methods.

Barriers to partner notification

Lack of resources, provider skills and time are barriers to partner notification. Limited funding, linked to the low political priority given to partner notification, was cited as a barrier by informants in four of the five countries where interviews were conducted. In countries where funding is no longer available for specialised staff, such as Denmark and Romania, or for sufficient staff, such as Estonia and France, even physicians who are committed to partner notification find it difficult to find the time to do partner notification effectively. The literature also suggests that lack of time for partner notification is a concern among general practitioners. Providers considered novel methods to be better than no partner notification at all; novel methods that require minimal time and training of primary care staff may be one way to enhance partner notification at the primary care level [35]. Providers, including specialists in partner notification, also reported that asking patients about sexual relationships and eliciting information about sexual partners is sensitive and can be challenging. In countries without dedicated staff for partner notification and in healthcare settings where STI care is provided by general practitioners, lack of experience in taking sexual histories is a challenge. Changes in the organisation of healthcare have also led, in some cases, to increased involvement in STI care of practitioners without specialist training, for example, in Denmark and Estonia. In some countries, lack of coordination between healthcare providers, and tensions between specialists and general practitioners, is an issue, which can also result in inconsistent approaches to partner notification.

Provider attitudes towards partner notification are generally positive, although judgmental attitudes about some patients are a barrier. The majority of healthcare providers see the value of partner notification [78]. There is little support for mandatory partner notification and concern about use of provider referral, in particular for HIV partner notification, because of patient confidentiality issues. Available evidence suggests that some providers have limited confidence that patients, for example, MSM, will contact partners, while others have judgmental attitudes towards drug users, women who have multiple sexual partners, ethnic minorities and migrants. Training to develop non-judgemental attitudes and provide psychological support is important for the success of partner notification [33, 60, 65, 70].

Partner notification is influenced by patients' knowledge, attitudes and the type of sexual relationship. The qualitative literature review showed that, in general, patients view partner notification as important for public health reasons, in particular with respect to HIV. For most patients, notifying a main partner is important, but notifying ex-partners or, in the case of injecting drug users, needle-sharing partners, is less important. MSM appear to be more likely to notify ex-partners, and to recognise the significance of partner notification, except in the case of men who are not openly gay or bisexual, because of concerns that notifying partners will disclose their sexuality. However, patients perceived partner notification as a difficult task. Concerns about negative reactions from partners, the impact on relationships, stigma and social repercussions were cited as a barrier to partner notification. Fear of partner violence is more likely among women, especially in relation to partner notification for HIV. Lack of knowledge about STI is also a barrier in some contexts. These factors influence patients' preferred methods for partner notification. Although patient referral is the preferred method, in certain situations, for example if negative reactions from partners were anticipated or for HIV partner notification for needle-sharing partners, patients expressed a preference for, or chose to use, provider referral. Patient referral methods requiring less interaction, for example, providing pharmacy contact slips to partners, were preferred for notifying ex-partners or casual partners. Given the factors that influence partner notification, methods need to be flexible and tailored to the needs and situation of the index patient [33, 65, 70].

3.2 Recommendations

Laws and policies

- Monitor the existence and content of laws and regulations about partner notification and encourage countries to report on these indicators.
- Harmonise European-wide recommendations with respect to the criminalisation of transmission of HIV and STI that conform to international human rights standards and monitor the use of laws to prosecute individuals.
- Strengthen the evidence-base with respect to the positive and negative effects of laws that make aspects of partner notification compulsory and laws on criminalisation of transmission.
- Improve awareness with respect to the importance of partner notification in STI prevention and control among policy-makers and the need for partner notification interventions to be adequately resourced.

Guidelines and training

- Develop and disseminate evidence-based guidelines on partner notification including a range of approaches for implementation that can be adapted to different country contexts, population groups and healthcare settings, including primary care settings.
- Countries can be encouraged to provide training in partner notification for providers who are directly involved in diagnosis and treatment of HIV and other STI, including addressing judgmental attitudes.
- Health professionals with experience in partner notification could be involved to support the development of guidance and training.

Effectiveness of partner notification methods

- Further research is needed to address gaps in the evidence and determine the most effective approaches to partner notification in Europe. Specific studies are needed to determine the best methods of partner notification for:
  - HIV and syphilis, including the relative effectiveness of contract or provider referral compared with patient referral
  - gonorrhoea, chlamydia, non-gonococcal urethritis, and trichomoniasis, including the role of contract referral, the benefits of enhanced patient referral compared with simple patient referral and expedited partner therapy, and the most effective package of enhanced patient referral
  - hepatitis B and hepatitis C
  - specific sub-populations who may be at increased risk or less likely to use health services.
- Mathematical modelling studies may be considered to determine the most appropriate contact tracing periods for specific STI and the optimal number of partners and types of partners on which partner notification efforts should focus.

Monitoring and evaluation

- Develop of a set of common indicators for monitoring and evaluation of the outcomes of partner notification; this will facilitate comparison of practices and outcomes across countries in Europe.
- Promote the use of clinical audits as a tool for monitoring partner notification practice against agreed standards and the development of interventions to improve outcomes.

References

1. WHO, UNAIDS. Sexually transmitted diseases: policies and principles for prevention and care: [Geneve]; 1999. Available from: http://www.unaids.org/en/media/unaids/contentassets/dataimport/publications/irc-pub04/una97-6_en.pdf.
2. Toomey KE, Cates W. Partner notification for the prevention of HIV infection. AIDS. 1989 /;3 Suppl 1:57-62.
3. Rothenberg RB, Potterat JJ. Partner notification for sexually transmitted diseases and HIV infection. In: Holmes KK, Sparling PF, Lemon SM, Mardh PA, Stamm WE, editors. Sexually transmitted diseases. New York: McGraw-Hill; 1999. p. 745-52.
4. Centers for Disease Control and Prevention. Recommendations for partner services programs for HIV infection, syphilis, gonorrhea, and chlamydial infection. MMWR Recommendations and reports : Morbidity and mortality weekly report Recommendations and reports / Centers for Disease Control. 2008 Nov 7;57(RR-9):1-83;
5. Gable L, Gostin L, Hodge J, Gamharter K, Van Puymbroeck R. Legal aspects of HIV/AIDS: a guide for policy and law reform. Washington: The World Bank; 2007.
6. HIV/AIDS JUNPo. Opening up the HIV/AIDS epidemic: guidance on encouraging beneficial disclosure, ethical partner counselling & appropriate use of HIV case-reporting. Geneva: UNAIDS; 2010. Available from: http://www.who.int/hiv/pub/vct/en/Opening-E%5b1%5d.pdf.
7. Office of the United Nations High Commissioner for Human Rights and the Joint United Nations Programme on HIV/AIDS. International guidelines on HIV/AIDS and human rights: 2006 consolidated version. Geneve: UNAIDS; 2006. Available from: http://data.unaids.org/Publications/IRC-pub07/jc1252-internguidelines_en.pdf.
8. Golden MR, Faxelid E, Low N. Partner notification for sexually transmitted infections including HIV infection: an evidence-based assessment. In: Holmes KK, Sparling PF, Stamm WE, Piot P, N. WJ, Corey L, et al., editors. Sexually transmitted diseases. New York: McGraw-Hill; 2008. p. 965-84.
9. Potterat JJ, Rothenberg R. The case-finding effectiveness of self-referral system for gonorrhea: a preliminary report. Am J Public Health. 1977 02/;67(2):174-6.
10. Thelin I, Wennstrom AM, Mardh PA. Contact-tracing in patients with genital chlamydial infection. Br J Vener Dis. 1980 08/;56(4):259-62.
11. Katz BP, Danos CS, Quinn TS, Caine V, Jones RB. Efficiency and cost-effectiveness of field follow-up for patients with Chlamydia trachomatis infection in a sexually transmitted diseases clinic. Sex Transm Dis. 1988 /;15(1):11-6.
12. Harrison LW. Anti-Venereal Measures in Denmark and Sweden. Br J Vener Dis. 1939 Jan;15(1):1-17.
13. Brandt AM. No magic bullet: a social history of venereal disease in the Inited States since 1880. New York: Oxford University Press; 1985.
14. Domeika M, Hallen A, Karabanov L, Chudomirova K, Gruber F, Unzeitig V, et al. Chlamydia trachomatis infections in eastern Europe: legal aspects, epidemiology, diagnosis, and treatment. Sex Transm Infect. 2002 04/;78(2):115-9.
15. Dehne KL, Riedner G, Neckermann C, Mykyev O, Ndowa FJ, Laukamm-Josten U. A survey of STI policies and programmes in Europe: preliminary results. Sex Transm Infect. 2002 10/;78(5):380-4.
16. Cassell JA, Mercer CH, Sutcliffe L, Petersen I, Islam A, Brook MG, et al. Trends in sexually transmitted infections in general practice 1990-2000: population based study using data from the UK general practice research database. BMJ. 2006 02/11;332(7537):332-4.
17. Arthur G, Lowndes CM, Blackham J, Fenton KA. Divergent approaches to partner notification for sexually transmitted infections across the European union. Sex Transm Dis. 2005 12/;32(12):734-41.
18. Andersen B, Ostergaard L, Nygard B, Olesen F. Urogenital Chlamydia trachomatis infections in general practice: diagnosis, treatment, follow-up and contact tracing. Fam Pract. 1998 06/;15(3):223-8.
19. Low N, Cassell JA, Spencer B, Bender N, Hilber AM, van Bergen J, et al. Chlamydia control activities in Europe: cross-sectional survey. European journal of public health. 2012 Aug;22(4):556-61.
20. Oxman AD, Scott EA, Sellors JW, Clarke JH, Millson ME, Rasooly I, et al. Partner notification for sexually transmitted diseases: an overview of the evidence. Can J Public Health. 1994 /;85 Suppl 1:41-7.
21. Cowan FM, French R, Johnson AM. The role and effectiveness of partner notification in STD control: a review. Genitourin Med. 1996 08/;72(4):247-52.
22. Mathews C, Coetzee N, Zwarenstein M, Lombard C, Guttmacher S, Oxman A, et al. Strategies for partner notification for sexually transmitted diseases. Cochrane Database Syst Rev. 2001 /(4).

23. Trelle S, Shang A, Nartey L, Cassell J, Low N. Revised rapid review of evidence for the effectiveness of partner notification for sexually transmitted infections including HIV 2006. Available from: http://eglobalmed.com/opt/NICE_Guidelines/www.nice.org.uk/page3a97.html?o=371771.
24. Trelle S, Shang A, Nartey L, Cassell JA, Low N. Improved effectiveness of partner notification for patients with sexually transmitted infections: systematic review. BMJ. 2007 02/17;334(7589):354-.
25. Lowndes CM, Fenton KA. Surveillance systems for STIs in the European Union: facing a changing epidemiology. Sex Transm Infect. 2004 08/;80(4):264-71.
26. European Centre for Disease Prevention and Control E. Novel approaches to testing for sexually transmitted infections, including HIV and hepatitis B and C in Europe. Stockholm: ECDC2012.
27. Anagrius C, Lore B, Jensen JS. Mycoplasma genitalium: prevalence, clinical significance, and transmission. Sex Transm Infect. 2005 12/;81(6):458-62.
28. European Partner Notification Study Group. Recently diagnosed sexually HIV-infected patients: seroconversion interval, partner notification period and a high yield of HIV diagnoses among partners. QJM : monthly journal of the Association of Physicians. 2001 Jul;94(7):379-90.
29. (THT) GNoPLwHAEGEaTHT. Criminalisation of HIV transmission in Europe A rapid scan of the laws and rates of prosecution for HIV transmission within signatory States of the European Convention of Human Rights. 2005.
30. World Health Organisation. Report of the WHO European Region Technical Consultation, in collaboration with the European AIDS Treatment Group (EATG) and AIDS Action Europe (AAE), on the criminalization of HIV and other sexually transmitted infections. Copenhagen: WHO; 2006.
31. Dye TD, Knox KL, Novick LF. Tracking sexual contacts of HIV patients: a study of physician practices. J Public Health Manag Pract. 1999 09/;5(5):19-22.
32. Fenton KA, Copas A, Johnson AM, French R, Petruckevitch A, Adler MW. HIV partner notification policy and practice within GUM clinics in England: where are we now? Genitourin Med. 1997 02/;73(1):49-53.
33. Rogers SJ, Tross S, Doino-Ingersol J, Weisfuse I. Partner notification with HIV-infected drug users: results of formative research. AIDS Care. 1998 08/;10(4):415-29.
34. Hammond J, Mulvey G, Temple-Smith M, Keogh L. Contact tracing for sexually transmissible diseases in general practice in Victoria, Australia. Venereology. 1998;11(1):32.
35. Shackleton T, Sutcliffe L, Estcourt C. Is Accelerated Partner Therapy partner notification for sexually transmissible infections acceptable and feasible in general practice? Sexual health. 2011 Mar;8(1):17-22.
36. Estcourt C, Sutcliffe L. Moving partner notification into the mainstream of routine sexual healthcare. Sex Transm Infect. 2007 04/;83(2):169-72.
37. Shivasankar S, Challenor R. Patient-delivered partner therapy in the UK: what do the professionals think? Int J STD AIDS. 2008 07/;19(7):437-40.
38. Cameron ST, Glasier A, Scott G, Young H, Melvin L, Johnstone A, et al. Novel interventions to reduce re-infection in women with chlamydia: a randomized controlled trial. Hum Reprod. 2009 04/;24(4):888-95.
39. Golden MR, Whittington WLH, Handsfield HH, Hughes JP, Stamm WE, Hogben M, et al. Effect of expedited treatment of sex partners on recurrent or persistent gonorrhea or chlamydial infection. N Engl J Med. 2005 02/17;352(7):676-85.
40. Kissinger P, Brown R, Reed K, Salifou J, Drake A, Farley TA, et al. Effectiveness of patient delivered partner medication for preventing recurrent Chlamydia trachomatis. Sex Transm Infect. 1998 10/;74(5):331-3.
41. Kissinger P, Mohammed H, Richardson-Alston G, Leichliter JS, Taylor SN, Martin DH, et al. Patient-delivered partner treatment for male urethritis: a randomized, controlled trial. Clin Infect Dis. 2005 09/01;41(5):623-9.
42. Kissinger P, Schmidt N, Mohammed H, Leichliter JS, Gift TL, Meadors B, et al. Patient-delivered partner treatment for Trichomonas vaginalis infection: a randomized controlled trial. Sex Transm Dis. 2006 07/;33(7):445-50.
43. Schillinger JA, Kissinger P, Calvet H, Whittington WLH, Ransom RL, Sternberg MR, et al. Patient-delivered partner treatment with azithromycin to prevent repeated Chlamydia trachomatis infection among women: a randomized, controlled trial. Sex Transm Dis. 2003 01/;30(1):49-56.
44. Wilson TE, Hogben M, Malka ES, Liddon N, McCormack WM, Rubin SR, et al. A randomized controlled trial for reducing risks for sexually transmitted infections through enhanced patient-based partner notification. Am J Public Health. 2009 04/;99 Suppl 1:104-10.
45. Landis SE, Schoenbach VJ, Weber DJ, Mittal M, Krishan B, Lewis K, et al. Results of a randomized trial of partner notification in cases of HIV infection in North Carolina. N Engl J Med. 1992 01/09;326(2):101-6.

46. Toomey KE, Peterman TA, Dicker LW, Zaidi AA, Wroten JE, Carolina J. Human immunodeficiency virus partner notification. Cost and effectiveness data from an attempted randomized controlled trial. Sex Transm Dis. 1998 07/;25(6):310-6.
47. Peterman TA, Toomey KE, Dicker LW, Zaidi AA, Wroten JE, Carolina J. Partner notification for syphilis: a randomized, controlled trial of three approaches. Sex Transm Dis. 1997 10/;24(9):511-8.
48. Engelgau MM, Woernle CH, Rolfs RT, Greenspan JR, O'Cain M, Gorsky RD. Control of epidemic early syphilis: the results of an intervention campaign using social networks. Sex Transm Dis. 1995 /;22(4):203-9.
49. Ogilvie G, Knowles L, Wong E, Taylor D, Tigchelaar J, Brunt C, et al. Incorporating a social networking approach to enhance contact tracing in a heterosexual outbreak of syphilis. Sex Transm Infect. 2005 04/;81(2):124-7.
50. Andersen B, Ostergaard L, Moller JK, Olesen F. Home sampling versus conventional contact tracing for detecting Chlamydia trachomatis infection in male partners of infected women: randomised study. BMJ. 1998 01/31;316(7128):350-1.
51. Brewer DD, Potterat JJ, Muth SQ, Malone PZ, Montoya P, Green DL, et al. Randomized trial of supplementary interviewing techniques to enhance recall of sexual partners in contact interviews. Sex Transm Dis. 2005 03/;32(3):189-93.
52. Low N, McCarthy A, Roberts TE, Huengsberg M, Sanford E, Sterne JAC, et al. Partner notification of chlamydia infection in primary care: randomised controlled trial and analysis of resource use. BMJ. 2006 01/07;332(7532):14-9.
53. Montesinos L, Frisch LE, Greene BF, Hamilton M. An analysis of and intervention in the sexual transmission of disease. J Appl Behav Anal. 1990 /;23(3):275-84.
54. Ostergaard L, Andersen B, Moller JK, Olesen F, Worm AM. Managing partners of people diagnosed with Chlamydia trachomatis: a comparison of two partner testing methods. Sex Transm Infect. 2003 10/;79(5):358-61.
55. Solomon MZ, DeJong W. The impact of a clinic-based educational videotape on knowledge and treatment behavior of men with gonorrhea. Sex Transm Dis. 1988 /;15(3):127-32.
56. Tomnay JE, Pitts MK, Kuo TC, Fairley CK. Does the Internet assist clients to carry out contact tracing? A randomized controlled trial using web-based information. Int J STD AIDS. 2006 06/;17(6):391-4.
57. Cleveland J. A cost-effective study of alternative methods for gonorrhea contact referral and rescreening. Dade County, FL: Dade County Department of Public Health; 2001.
58. Campbell R, Pound P, Pope C, Britten N, Pill R, Morgan M, et al. Evaluating meta-ethnography: a synthesis of qualitative research on lay experiences of diabetes and diabetes care. Soc Sci Med. 2003 02/;56(4):671-84.
59. Chacko MR, Smith PB, Kozinetz CA. Understanding partner notification (Patient self-referral method) by young women. J Pediatr Adolesc Gynecol. 2000 02/;13(1):27-32.
60. Coleman C, Lohan M. Sexually acquired infections: do lay experiences of partner notification challenge practice? J Adv Nurs. 2007 04/;58(1):35-43.
61. Daker-White G MN, Campbell R, and the ClaSS co-operative publications group (2000). Patient views of sexual partner notification and the relative acceptability of primary care and GUM as venues for contact tracing in genital Chlamydia trachomatis infections: a qualitative study nested within a randomised controlled trial. Unpublished .
62. Darroch J, Myers L, Cassell J. Sex differences in the experience of testing positive for genital chlamydia infection: a qualitative study with implications for public health and for a national screening programme. Sex Transm Infect. 2003 10/;79(5):372-3.
63. Duncan B, Hart G, Scoular A, Bigrigg A. Qualitative analysis of psychosocial impact of diagnosis of Chlamydia trachomatis: implications for screening. BMJ. 2001 01/27;322(7280):195-9.
64. Gielen AC, McDonnell KA, Burke JG, O'Campo P. Women's lives after an HIV-positive diagnosis: disclosure and violence. Matern Child Health J. 2000 06/;4(2):111-20.
65. Gorbach PM, Aral SO, Celum C, Stoner BP, Whittington WL, Galea J, et al. To notify or not to notify: STD patients' perspectives of partner notification in Seattle. Sex Transm Dis. 2000 04/;27(4):193-200.
66. Lichtenstein B, Schwebke JR. Partner notification methods for African American men being treated for trichomoniasis: a consideration of main men, Second Hitters, and Third Players. Med Anthropol Q. 2005 12/;19(4):383-401.
67. Rea AJ. Doing the analysis differently. Using narrative to inform understanding of patient participation in contact tracing for sexually transmissible infections. J Health Organ Manag. 2003 /;17(4):280-326.

68. Rosenthal SL, Baker JG, Biro FM, Stanberry LR. Secondary prevention of STD transmission during adolescence: Partner notification. Adolescent and Pediartic Gynecology. 1995;8(4):183-7.
69. Sutcliffe L, Brook MG, Chapman JL, Cassell JM, Estcourt CS. Is accelerated partner therapy a feasible and acceptable strategy for rapid partner notification in the UK?: a qualitative study of genitourinary medicine clinic attenders. Int J STD AIDS. 2009 09/;20(9):603-6.
70. Tobin KE, Muessig KE, Latkin CA. HIV seropositive drug users' attitudes towards partner notification (PCRS): results from the SHIELD study in Baltimore, Maryland. Patient Educ Couns. 2007 07/;67(1-2):137-42.
71. Tyden T, Ramstedt K. A survey of patients with Chlamydia trachomatis infection: sexual behaviour and perceptions about contact tracing. Int J STD AIDS. 2000 02/;11(2):92-5.
72. Rothenberg R, Kimbrough L, Lewis-Hardy R, Heath B, Williams OC, Tambe P, et al. Social network methods for endemic foci of syphilis: a pilot project. Sex Transm Dis. 2000 01/;27(1):12-8.
73. Nack A. Damaged goods: women managing the stigma of STDs. Deviant Behavior. 2000 2000/03/01;21(2):95-121.
74. Bayer R. Entering the second decade: the politics of prevention, the politics of neglect. In: Fee E, Fox DM, editors. AIDS: the making of a chronic disease. Berkeley: University of California Press; 1992. p. 207-26.
75. Joint United Nations Programme on HIV/AIDS, United Nations Development Programme. Summary of main issues and conclusions International Consultation on the Criminalization of HIV Transmission. Geneva: UNAIDS; 2008. Available from: http://www.unaids.org/en/media/unaids/contentassets/documents/priorities/20080919_hivcriminalization_meetingreport_en.pdf.
76. Macke BA, Maher JE. Partner notification in the United States: an evidence-based review. Am J Prev Med. 1999 10/;17(3):230-42.
77. Mathews C, Coetzee N, Zwarenstein M, Lombard C, Guttmacher S, Oxman A, et al. A systematic review of strategies for partner notification for sexually transmitted diseases, including HIV/AIDS. Int J STD AIDS. 2002 05/;13(5):285-300.
78. Passin WF, Kim AS, Hutchinson AB, Crepaz N, Herbst JH, Lyles CM. A systematic review of HIV partner counseling and referral services: client and provider attitudes, preferences, practices, and experiences. Sex Transm Dis. 2006 05/;33(5):320-8.
79. Centers for Disease Control and Prevention. Expedited partner therapy in the management of sexually transmitted diseases. Atlanta: US Department of Health and Human Services; 2006. Available from: http://www.cdc.gov/std/treatment/eptfinalreport2006.pdf.
80. Alary M, Joly JR, Poulin C. Gonorrhea and chlamydial infection: comparison of contact tracing performed by physicians or by a specialized service. Can J Public Health. 1991 /;82(2):132-4.
81. David LM, Wade AA, Natin D, Radcliffe KW. Gonorrhoea in Coventry 1991-1994: epidemiology, coinfection and evaluation of partner notification in the STD clinic. Int J STD AIDS. 1997 05/;8(5):311-6.
82. Golden MR, Hughes JP, Brewer DD, Holmes KK, Whittington WLH, Hogben M, et al. Evaluation of a population-based program of expedited partner therapy for gonorrhea and chlamydial infection. Sex Transm Dis. 2007 08/;34(8):598-603.
83. Haddon L, Heason J, Fay T, McPherson M, Carlin EM, Jushuf IH. Managing STIs identified after testing outside genitourinary medicine departments: one model of care. Sex Transm Infect. 1998 08/;74(4):256-7.
84. Menza TW, De Lore JS, Fleming M, Golden MR. Partner notification for gonococcal and chlamydial infections in men who have sex with men: success is underestimated by traditional disposition codes. Sex Transm Dis. 2008 01/;35(1):84-90.
85. Ross JD, Sukthankar A, Radcliffe KW, Andre J. Do the factors associated with successful contact tracing of patients with gonorrhoea and Chlamydia differ? Sex Transm Infect. 1999 04/;75(2):112-5.
86. van Duynhoven YT, Schop WA, van der Meijden WI, van de Laar MJ. Patient referral outcome in gonorrhoea and chlamydial infections. Sex Transm Infect. 1998 10/;74(5):323-30.
87. van de Laar MJ, Termorshuizen F, van den Hoek A. Partner referral by patients with gonorrhea and chlamydial infection. Case-finding observations. Sex Transm Dis. 1997 07/;24(6):334-42.
88. Apoola A, Mantella I, Wotton M, Radcliffe K. Treatment and partner notification outcomes for gonorrhoea: effect of ethnicity and gender. Int J STD AIDS. 2005 04/;16(4):287-9.
89. FitzGerald M, Bell G. Measuring the effectiveness of contact tracing. Int J STD AIDS. 1998 11/;9(11):645-6.
90. Lewis DA, Bond M, Butt KD, Smith CP, Shafi MS, Murphy SM. A one-year survey of gonococcal infection seen in the genitourinary medicine department of a London district general hospital. Int J STD AIDS. 1999 09/;10(9):588-94.
91. Rogstad KE, Clementson C, Ahmed-Jushuf IH. Success of partner notification in heterosexuals with gonorrhoea: effects of sex and ethnicity. Sex Transm Infect. 1998 10/;74(5):379-.

92. Rogstad KE, Clementson C, Ahmed-Jushuf IH. Contact tracing for gonorrhoea in homosexual and heterosexual men. Int J STD AIDS. 1999 08/;10(8):536-8.
93. Apoola A, Boothby M, Radcliffe K. Is telephone follow-up as good as traditional clinic follow-up in achieving the proposed national outcome standards for chlamydia management? Int J STD AIDS. 2004 Jun;15(6):376-9.
94. Bakken IJ, Skjeldestad FE, Halvorsen TF. Norwegian men diagnosed with genital Chlamydia trachomatis infection notified two-thirds of their sexual partners. Scand J Infect Dis. 2008 /;40(4):275-8.
95. Carre H, Boman J, Osterlund A, Garden B, Nylander E. Improved contact tracing for Chlamydia trachomatis with experienced tracers, tracing for one year back in time and interviewing by phone in remote areas. Sex Transm Infect. 2008 06/;84(3):239-42.
96. Eitrem R, Erenius M, Meeuwisse A. Contact tracing for genital Chlamydia trachomatis in a Swedish county. Sex Transm Dis. 1998 09/;25(8):433-6.
97. Evans J, Baraitser P, Cross J, Bacon L, Piper J. Managing genital infection in community family planning clinics: an alternative approach to holistic sexual health service provision. Sex Transm Infect. 2004 04/;80(2):142-4.
98. James NJ, Hughes S, Ahmed-Jushuf I, Slack RC. A collaborative approach to management of chlamydial infection among teenagers seeking contraceptive care in a community setting. Sex Transm Infect. 1999 06/;75(3):156-61.
99. Jones K, Webb A, Mallinson H, Birley H. Outreach health adviser in a community clinic screening programme improves management of genital chlamydia infection. Sex Transm Infect. 2002 04/;78(2):101-5.
100. Lim SW, Coupey SM. Are adolescent girls with Chlamydia infection notifying their partners? J Pediatr Adolesc Gynecol. 2005 02/;18(1):33-8.
101. Manavi K, McMillan A, Young H. Genital infection in male partners of women with chlamydial infection. Int J STD AIDS. 2006 Jan;17(1):34-6.
102. McMillan A, Young H. Rectal chlamydial infection among men who have sex with men: partner notification as a means of nucleic acid amplification test validation. Int J STD AIDS. 2007 Mar;18(3):157-9.
103. van Valkengoed IGM, Morre SA, van den Brule AJC, Meijer CJLM, Bouter LM, van Eijk JTM, et al. Partner notification among asymptomatic Chlamydia trachomatis cases, by means of mailed specimens. Br J Gen Pract. 2002 08/;52(481):652-4.
104. Woodland H, Rogstad KE. Trichomonas vaginalis in a Sheffield genitourinary medicine department. Int J STD AIDS. 2005 07/;16(7):491-3.
105. Kissinger PJ, Niccolai LM, Magnus M, Farley TA, Maher JE, Richardson-Alston G, et al. Partner notification for HIV and syphilis: effects on sexual behaviors and relationship stability. Sex Transm Dis. 2003 01/;30(1):75-82.
106. Vest JR, Valadez AM, Hanner A, Lee JH, Harris PB. Using e-mail to notify pseudonymous e-mail sexual partners. Sex Transm Dis. 2007 11/;34(11):840-5.
107. Hogben M, Paffel J, Broussard D, Wolf W, Kenney K, Rubin S, et al. Syphilis partner notification with men who have sex with men: a review and commentary. Sex Transm Dis. 2005 10/;32(10 Suppl):43-7.
108. Jayaraman GC, Read RR, Singh A. Characteristics of individuals with male-to-male and heterosexually acquired infectious syphilis during an outbreak in Calgary, Alberta, Canada. Sex Transm Dis. 2003 04/;30(4):315-9.
109. Kingston MA, Higgins SP. Audit of the management of early syphilis at North Manchester General Hospital. Int J STD AIDS. 2004 05/;15(5):352-4.
110. Kohl KS, Farley TA, Ewell J, Scioneaux J. Usefulness of partner notification for syphilis control. Sex Transm Dis. 1999 04/;26(4):201-7.
111. Samoff E, Koumans EH, Katkowsky S, Shouse RL, Markowitz LE. Contact-tracing outcomes among male syphilis patients in Fulton County, Georgia, 2003. Sex Transm Dis. 2007 07/;34(7):456-60.
112. Singh S, Bell G, Talbot M. The characterisation of a recent syphilis outbreak in Sheffield, UK, and an evaluation of contact tracing as a method of control. Sex Transm Infect. 2007 06/;83(3):193-9.
113. Ahrens K, Kent CK, Kohn RP, Nieri G, Reynolds A, Philip S, et al. HIV partner notification outcomes for HIV-infected patients by duration of infection, San Francisco, 2004 to 2006. J Acquir Immune Defic Syndr. 2007 12/01;46(4):479-84.
114. Centers for Disease Control and Prevention. Partner counseling and referral services to identify persons with undiagnosed HIV--North Carolina, 2001. MMWR Morbidity and mortality weekly report. 2003 Dec 5;52(48):1181-4.

115. Forbes KM, Lomax N, Cunningham L, Hardie J, Noble H, Sarner L, et al. Partner notification in pregnant women with HIV: findings from three inner-city clinics. HIV medicine. 2008 Jul;9(6):433-5.
116. Giesecke J, Ramstedt K, Granath F, Ripa T, Rado G, Westrell M. Efficacy of partner notification for HIV infection. Lancet. 1991 11/02;338(8775):1096-100.
117. Golden MR, Hopkins SG, Morris M, Holmes KK, Handsfield HH. Support among persons infected with HIV for routine health department contact for HIV partner notification. J Acquir Immune Defic Syndr. 2003 02/01;32(2):196-202.
118. Harry TC, Sillis M. Outcome of partner notification of HIV infection in a provincial clinic in East Anglia, UK. Int J STD AIDS. 2008 01/;19(1):53-4.
119. Pattman RS, Gould EM. Partner notification for HIV infection in the United Kingdom: a look back on seven years experience in Newcastle upon Tyne. Genitourin Med. 1993 04/;69(2):94-7.
120. Pavia AT, Benyo M, Niler L, Risk I. Partner notification for control of HIV: results after 2 years of a statewide program in Utah. Am J Public Health. 1993 10/;83(10):1418-24.
121. Rodkjaer LO, Ostergaard LJ, Frydenberg M. [HIV and partner notification in Denmark]. Ugeskr Laeger. 2008 09/08;170(37):2877-80.
122. Schnell DJ, Higgins DL, Wilson RM, Goldbaum G, Cohn DL, Wolitski RJ. Men's disclosure of HIV test results to male primary sex partners. Am J Public Health. 1992 12/;82(12):1675-6.
123. de Souza L, Munday PE. Audit of HIV partner notification in a district general hospital. Int J STD AIDS. 2003 12/;14(12):854-5.
124. Spencer NE, Hoffman RE, Raevsky CA, Wolf FC, Vernon TM. Partner notification for human immunodeficiency virus infection in Colorado: results across index case groups and costs. Int J STD AIDS. 1993 /;4(1):26-32.
125. Tomnay JE, Hatch BA, Pitts MK, Carter TR, Fairley CK. HIV partner notification: a 2002 Victorian audit. Int J STD AIDS. 2004 09/;15(9):629-31.
126. Wells KD, Hoff GL. Human immunodeficiency virus partner notification in a low incidence urban community. Sex Transm Dis. 1995 /;22(6):377-9.
127. Brewer DD, Hagan H, Hough ES. Improved injection network ascertainment with supplementary elicitation techniques. Int J STD AIDS. 2008 03/;19(3):188-91.
128. Brewer DD, Hagan H, Sullivan DG, Muth SQ, Hough ES, Feuerborn NA, et al. Social structural and behavioral underpinnings of hyperendemic hepatitis C virus transmission in drug injectors. J Infect Dis. 2006 09/15;194(6):764-72.
129. Cialdea L, Mele A, Stroffolini T, Novaco F, Galanti C, Catapano R, et al. Acute hepatitis B in households of chronic carriers. Vaccine. 1994 09/;12(12):1150-.
130. Golden MR, Hogben M, Handsfield HH, St Lawrence JS, Potterat JJ, Holmes KK. Partner notification for HIV and STD in the United States: low coverage for gonorrhea, chlamydial infection, and HIV. Sex Transm Dis. 2003 06/;30(6):490-6.
131. Golden MR, Gift TL, Brewer DD, Fleming M, Hogben M, St Lawrence JS, et al. Peer referral for HIV case-finding among men who have sex with men. AIDS. 2006 10/03;20(15):1961-8.
132. Gunn RA, Weinberg MS, Borntrager D, Murray PJ. Partner notification for persons with chronic hepatitis B virus infection: use of a syphilis model service. Sex Transm Dis. 2006 07/;33(7):437-40.
133. Pazdiora P, Bohmova Z, Kubatova A, Menclova I, Moravkova I, Pruchova J, et al. [Long-term experience with testing family and sexual contacts of HBsAg positive persons]. Epidemiologie, mikrobiologie, imunologie : casopis Spolecnosti pro epidemiologii a mikrobiologii Ceske lekarske spolecnosti JE Purkyne. 2006 Apr;55(2):53-8.
134. van Steenbergen JE, Baayen D, Peerbooms PGH, Coutinho RA, Van Den Hoek A. Much gained by integrating contact tracing and vaccination in the hepatitis B antenatal screening program in Amsterdam, 1992-1999. J Hepatol. 2004 06/;40(6):979-85.
135. Struve J. Hepatitis B virus infection among Swedish adults: aspects on seroepidemiology, transmission, and vaccine response. Scandinavian journal of infectious diseases Supplementum. 1992;82:1-57.
136. Beddard D, Chandiok S, James P, Russell A. A 6-month pilot of a collaborative clinic between genitourinary medicine services and a young persons' sexual health clinic. J Fam Plann Reprod Healthcare. 2003 04/;29(2):40-2.
137. Fortenberry JD, Brizendine EJ, Katz BP, Orr DP. The role of self-efficacy and relationship quality in partner notification by adolescents with sexually transmitted infections. Arch Pediatr Adolesc Med. 2002 11/;156(11):1133-7.
138. Thurman AR, Holden AEC, Shain R, Perdue S, Piper J. Partner notification of sexually transmitted infections among pregnant women. Int J STD AIDS. 2008 05/;19(5):309-15.

139. Thurman AR, Shain RN, Holden AEC, Champion JD, Perdue ST, Piper JM. Partner notification of sexually transmitted infections: a large cohort of Mexican American and African American women. Sex Transm Dis. 2008 02/;35(2):136-40.
140. Niccolai LM, Winston DM. Physicians' opinions on partner management for nonviral sexually transmitted infections. Am J Prev Med. 2005 02/;28(2):229-33.
141. Hogben M, McNally T, McPheeters M, Hutchinson AB. The effectiveness of HIV partner counseling and referral services in increasing identification of HIV-positive individuals a systematic review. Am J Prev Med. 2007 08/;33(2 Suppl):89-8100.
142. National Institute for Health and Clinical Excellence. CPHE Public health guidance: methods manual. London: National Institute for Health and Clinical Excellence; 2005. Available from: www.nice.org.uk
143. Noblit GW, Hare RD. Meta-ethnography: Synthesizing qualitative studies. California: Sage Publications; 1988.
144. Pound P, Britten N, Morgan M, Yardley L, Pope C, Daker-White G, et al. Resisting medicines: a synthesis of qualitative studies of medicine taking. Soc Sci Med. 2005 Jul;61(1):133-55.

Annex 1. Glossary

Audit	Quality assessment for the effectiveness of partner notification, mandatory in some countries. Usually done by chart review and analysed to see if a standard level of success for partner notification is reached
Accelerated partner therapy	Term used in the UK to include partner notification practices that expedite treatment of sexual partner(s) following a medical assessment of the partner. The assessment could be performed by telephone, by a pharmacist, or by another health professional [69]. See also expedited partner therapy and patient-delivered partner therapy
Available case analysis	An analysis in which data are analysed for every participant for whom the outcome was obtained. See also Intention-to-treat analysis
Brought to treatment-index	Number of infected contacts who have been treated per number of index patients
Chart review	Study done by reviewing already existing files, e.g. surveillance data. Audits are normally chart reviews, but not every chart review is an audit
Clinical guideline	Recommendations about practical steps in the case management of people with sexually transmitted infections
Compulsory or mandatory partner notification	A legal or policy provision that obliges the provider or index patient to carry out partner notification
Contact cards or contact slips	Printed material that index patients give to their sex partner(s) advising them to seek medical care, and giving details of where they can be treated. Sometimes contact slips also provide additional written information about the infection. See Referral letter
Contact period	Period of time before diagnosis for which information on potentially exposed or infected partners is gathered to be used in partner notification. This can vary according to the disease concerned
Contact tracer	Person who undertakes contact tracing
Contact tracing	Also referred to as case-finding. Often used synonymously with partner notification. Sometimes used to refer only to provider referral, particularly in the USA
Contract referral or conditional referral	A form of partner notification. The provider and the index patient agree that the index patient will notify their partner(s) within a specified time period. It is further agreed that the provider will complete the notification process for partners, but only notify those partners not reached within the agreed time period
Control group or control arm	Participants in an intervention or epidemiological study with whom comparison to another group is made. In an intervention study the comparison is with a group that receives the intervention or trial group. In a case-control study the comparison is with a group of cases that has the outcome of interest
Criminalisation	The process by which an action, such as deliberate exposure of an uninfected person to HIV, is turned into a crime
Elicited partners	The total number of partners which the index patient is reporting as a result of the partner notification interview. This also includes untraceable/anonymous/uncontactable partners
Enhanced patient referral	Intended to enhance the yield of patient referral, it involves simple patient referral aided by one or more of the following: provision of written information that index patients can give to their partner(s); counselling from health professionals about how to notify partners; videos with information and guidance for index patients; provision of sampling kits for index patients to give to partners. Use of contact cards or slips alone does not constitute enhanced patient referral
Epidemiologic index	Number of contacts treated per number of index patients
Expedited partner therapy	Term used in the USA to include any partner notification practices that that aim to get sexual partners of index patients treated more quickly [79]. Expedited partner therapy usually involves physicians providing index patients packages containing drugs and sometimes information about the STI or medication, condoms, helpline phone numbers, which they give directly to their sex partner(s) so that the partner does not have to wait for a medical consultation; also called patient-delivered partner therapy. Expedited partner therapy can be viewed as a form of minimal patient referral enhanced by giving drugs or prescriptions. See also accelerated partner therapy and patient-delivered partner therapy. In practice, these methods are commonly used in many countries. Their effectiveness has, however, been compared with simple patient referral only relatively recently [79].
Home sampling kits	Specimen collection devices, e.g. urine collection pots and vulvo-vaginal swabs, which can be given to sexual partners of index patients to enhance notification
Index patient or index case	Patient diagnosed with a sexually transmitted infection and presenting for care
Intention-to-treat analysis	Method of analysing randomised controlled trials in which 1) all randomised participants are included in the analysis regardless of whether their outcomes were actually collected and 2) participants are analysed in the group to which they were randomised regardless of which (or how much) treatment they actually received, and regardless of other protocol irregularities, such as ineligibility. See also available-case analysis
Law	A rule established by a governing authority to institute and maintain orderly coexistence, usually as a written document
Minimal patient referral	Patient referral when index patients are advised of the need for partner treatment. No additional material like contact slips or information cards is provided
Named partners	All contacts for which the index patient provides locating information
Partner services	Term used in the USA for partner notification and contact tracing, which includes patient, contract and provider referral

Partner index	Number of named partners per interviewed index patient
Partner notification	The process of informing the sex partners of people with sexually transmitted infections of their potential exposure to infection, ensuring their evaluation and/or treatment and providing advice about preventing future infection. Often used synonymously with contact tracing. Partner notification is a newer term, which places more emphasis on the involvement of the patient, rather than a healthcare provider, in informing their sexual partners. Contact tracing is sometimes used to refer only to provider referral, when a healthcare worker notifies sex partners on behalf of the infected person. This term was, historically, used to refer to finding the sex partners of patients with gonorrhoea and syphilis and was originally done by medical social workers whereas partner notification refers to both provider referral and patient referral. Sometimes used as a term that encompasses both patient referral and provider referral, particularly in the USA. Also in the USA, the term partner services is now used for HIV, syphilis, gonorrhoea and chlamydia, and includes partner notification and other prevention counselling and testing. The terms contact tracing and partner notification are also used for hepatitis, tuberculosis and other infections for which the identification and notification of close contacts is necessary; the terminology is not related to the contagiousness of the infection. Contact tracing and partner notification are also used with injecting drug users who have shared needles or other equipment that can transmit blood-borne viral infections. Partner counselling is another synonym for partner notification
Partner notification index	Term found in some publications which refers to the percentage of index patients for whom information on previous partner(s) is available
Patient	In this context, synonymous with index patient
Patient-delivered partner therapy	A form of expedited partner therapy. Index patients are given medication or prescriptions for their sexual partner(s). See also accelerated partner therapy
Patient referral	A method of partner notification. The index patient accepts full responsibility for informing partner(s) of the possibility of exposure to a sexually transmitted infection and for referring them to the appropriate services. Patient referral includes enhanced patient referral, minimal patient referral, and simple patient referral. First introduced in the 1970s, an early intervention comprised a 3-5 minute interview to explain the nature of gonorrhoea and the importance of sex partners referring themselves for treatment and contact slips for the partners to bring to the clinic; the names of sex partners were not elicited and no offer of follow up to notify contacts was made. The contact slips did not help the process of self-referral; only 12 of 183 contact slips issued were returned to the clinic. This kind of patient referral for people with chlamydia was described in Sweden in 1980 and was first evaluated in a randomised controlled trial in 1988. Patient referral has since become widely used for bacterial, parasitic and viral STI
Peer referral	Members (including uninfected ones) of a group with specific behavioural risk factors refer their peers (sexual and social contacts within their group) who they think could be at risk for the infection
Policy	A rule or regulation promulgated, adopted or ratified by a governmental entity's legislative body. It is made public through a policy statement or decision that is officially made by the law-making or policy-making official. Policy can also be a custom that is a permanent, widespread, well-settled practice that constitutes a standard operating procedure of the city/county, or an act or omission ratified by the city/county law-making or policy-making official
Provider referral	A method of partner notification where the health professional takes responsibility for confidentially notifying partners of their possible exposure to an STI
Pseudonymous sex partners	Partners who cannot be located by traditional contact information e.g. postal address or phone number. They are not completely anonymous because they can be located by an e-mail address or similar
Referral letters	In this context usually used synonymously with contact slips
Routine partner notification	It is agreed by a ministry or health or professional body that partner notification should be undertaken for a named STI, irrespective of any legal obligation to do so
Sexually transmitted infection or disease	Infection caused by infectious agents whose main route of transmission is from person to person by sexual contact
Simple patient referral	Patient referral when index patients are advised of the need for partner treatment. The nature of the infection and importance of referring partners are emphasised in a short consultation. Contact slips or information about specialist clinics may or may not be given
Strategy	The means by which objectives are consciously pursued and obtained over time. A health strategy usually outlines how a law or policy is to be carried out or implemented
Third party partner notification	See provider referral
Traceable partners	See named partners
Trial arm or group	Group of participants in a randomised or non-randomised trial that receives the intervention that is being evaluated
Verification	Follow-up of partner management. This can be verified via the index patient or health professionals who treat partner(s). The latter is more reliable but more difficult to achieve
Voluntary partner notification	Index patient or provider or both are encouraged to carry out partner notification but the decision to do so is the choice of the individual, and he or she is assured that the process will be confidential

Annex 2. Topic guides for interviews

Topic guide for policy-makers

The numbered questions are the main themes. Below these are questions that can be used to prompt or probe for additional information.

1. **Cultural and ethical acceptability:** What are the predominant views of you and your colleagues about partner notification/contact tracing for STI in your country?
   a. Cultural acceptability of the principle of attempting to inform and treat, or test, sexual partners of a person with a STI
   b. Appropriateness of asking individuals with STI to inform their sexual partners themselves (patient referral)
   c. Appropriateness of public health service staff obtaining names of sexual partners contacts and of contacting them on behalf of a patient (provider referral)
   d. Threat to personal liberty of being asked to undergo partner notification
   e. Personal responsibility for protecting oneself from potential exposure
   f. Ethics of identifying a sexual partner for the purposes of disease control
2. **Importance/priority given to partner notification:** What are the predominant views of you and your colleagues about the importance of partner notification for STI in your country?
   g. Benefits perceived
   h. Contribution to control of STI
   i. Priority given in comparison with partner notification for TB
   j. Priority given in comparison with other public health interventions (e.g. providing ART for individuals including for PMTCT, tobacco control, cardiovascular disease prevention)
3. **Methods available for partner notification:** What are the predominant views of you and your colleagues about the methods of PN recommended in your country?
   k. What methods do you know about? (*Prompt for recognition of terms such as patient referral, provider referral, contract referral*)
   l. What other methods could be tried, e.g. expedited partner therapy?
   m. What methods would not work in their country, and why, e.g. expedited partner therapy?
   n. Relationship to surveillance
4. **Organisation of partner notification services:** How is partner notification organised within the health system in your country?
   o. Who should actually carry out PN tasks in your country?
   p. How do services and requirements for partner notification differ for different STI, e.g. syphilis, chlamydia, HIV, hepatitis B?
   q. How is PN monitored in your country, if at all?
5. **Funding for PN:** How does funding for partner notification and the testing and treatment for sexual partners work in your country?
   r. What kind of charges are there from the health system for someone attending because they have been notified as a sexual partner?
   s. Does the patient with the STI have to pay anything for testing or treatment of the partner?
   t. How does the funding of the healthcare system make PN feasible/difficult?

6. **Compulsory vs. voluntary PN:** What are the predominant views of you and your colleagues about compulsory partner notification for:
   u. HIV infection
   v. Other STI
7. **Specific groups of people with STI:** What are the predominant views of you and your colleagues about PN methods for special vulnerable groups in your country, e.g.:
   w. MSM, especially for HIV
   x. IDU, especially for hepatitis, and contacting needle sharing contacts
   y. HIV
   z. Sex workers
   aa. Migrants
   bb. Pregnant women, especially for syphilis, HIV
8. **Social/political change and effect on PN:** What sort of changes over the past 15-20 years in your country or neighbouring country have affected how PN is carried out?
9. **Barriers and facilitators:** What are the predominant views of you and your colleagues about whether the PN being done in the country is as it should be?
   cc. Barriers for providers, e.g. funding, time, lack of obligation to manage partners
   dd. Barriers for patients, e.g. fear or reprisal from a partner, fear of legal action if HIV transmission is criminalised
   ee. Barriers for policy makers
   ff. Problems that make it difficult to implement
   gg. Factors that would help in implementation
   hh. Plans to overcome identified barriers
   ii. How do you think PN could be improved?

Topic guide for health professionals

The numbered questions are the main themes. Below these are questions that can be used to prompt or probe for additional information.

1. **Cultural and ethical acceptability:** What are the predominant views of you and your colleagues about partner notification/contact tracing for STI in your country?
   a. Cultural acceptability of the principle of attempting to inform and treat, or test, sexual partners of a person with a STI
   b. Appropriateness of asking individuals with STI to inform their sexual partners themselves (patient referral)
   c. Appropriateness of public health service staff obtaining names of sexual partners contacts and of contacting them on behalf of a patient (provider referral)
   d. Threat to personal liberty of being asked to undergo partner notification
   e. Personal responsibility for protecting oneself from potential exposure
   f. Ethics of identifying a sexual partner for the purposes of disease control

2. **Importance/priority given to partner notification:** What are the predominant views of you and your colleagues about the importance of partner notification for STI in your country?

   g. Benefits perceived

   h. Contribution to control of STI

   i. Priority given in comparison with partner notification for TB

   j. Priority given in comparison with other public health interventions (e.g. providing ART for individuals including for PMTCT, tobacco control, cardiovascular disease prevention)

3. **Methods available for partner notification:** What are the predominant views of you and your colleagues about the methods of PN recommended in your country?

   k. What methods do you know about? (*Prompt for recognition of terms such as patient referral, provider referral, contract referral*)

   l. What other methods could be tried, e.g. expedited partner therapy?

   m. What methods would not work in their country, and why, e.g. expedited partner therapy?

4. **Carrying out partner notification:** Can you tell us about your own experience of working with STI and PN?

   n. How much of your time is spent dealing with STI and PN?

   o. What sort of activities does PN involve when you or your staff do it? (*Prompt for detailed description of intensity of PN processes and follow up, e.g. telling people that partners need treatment only, obtaining sexual history details of partners that need treating, follow up*)

   p. How do you approach PN for different STI, e.g. HIV, syphilis, chlamydia?

   q. What would you consider to be bad practice or inappropriate practice in PN?

5. **Organisation of partner notification services:** How is partner notification organised within the health system in your country?

   r. Who should actually carry out PN tasks in your country?

   s. How do services and requirements for partner notification differ for different STI, e.g. syphilis, chlamydia, HIV, hepatitis B?

   t. How is PN monitored in your country, if at all?

6. **Funding for PN:** How does funding for partner notification and the testing and treatment for sexual partners work in your country?

   u. What kind of charges are there from the health system for someone attending because they have been notified as a sexual partner?

   v. Does the patient with the STI have to pay anything for testing or treatment of the partner?

   w. How does the funding of the healthcare system make PN feasible/difficult?

7. **Compulsory vs. voluntary PN:** What are the predominant views of you and your colleagues about compulsory partner notification for:

   x. HIV infection

   y. Other STI

8. **Specific groups of people with STI:** What are the predominant views of you and your colleagues about PN methods for special vulnerable groups in your country, e.g.:

   z. MSM, especially for HIV

   aa. IDU, especially for hepatitis, and contacting needle sharing contacts

   bb. HIV

   cc. Sex workers

   dd. Migrants

   ee. Pregnant women, especially for syphilis, HIV

9. **Social/political change and effect on PN:** What sort of changes over the past 15-20 years in your country or neighbouring country have affected how PN is carried out?

10. **Barriers and facilitators:** What are the predominant views of you and your colleagues about whether the PN being done in the country is as it should be?

ff. Barriers, e.g. funding, time, lack of obligation to manage partners

gg. Barriers for patients, e.g. fear or reprisal from a partner, fear of legal action if HIV transmission is criminalised

hh. Problems that make it difficult to implement

ii. Factors that would help in implementation

jj. Plans to overcome identified barriers

kk. How do you think PN could be improved?

Annex 3. Evidence of effectiveness review search strategy, study selection and analysis

Search strategy

The systematic reviews searched for studies related to partner notification for syphilis, HIV, gonorrhoea, chlamydia, non-specific urethritis, trichomoniasis, hepatitis B and hepatitis C. The project drew mainly on the results of a systematic review of partner notification for selected STI and HIV conducted for the UK National Institute of Health and Clinical Excellence (NICE), which identified approximately 2,500 references in the published and grey literature up to December 2005 [23]. Updated searches were conducted to identify papers published between January 2006 and the end of August 2009. New searches were conducted to identify papers about trichomoniasis and hepatitis B and C published between 1990 and the end of August 2009.

The search strategy for Medline for studies about partner notification used the following keywords:

- exp Sexually Transmitted Diseases/
- exp HIV Infections/
- exp Chlamydia Infections/
- exp Condylomata Acuminata/
- exp Gonorrhea/
- exp Herpes Genitalis/
- exp Syphilis/
- sexually transmitted infection$.mp.
- sexually transmitted disease$.mp.
- venereal disease$.mp.
- (STI or STIs or STD or STDs).mp.
- (Acquired Immunodeficiency Syndrome or HIV or AIDS).mp.
- chlamydia.mp.
- genital wart$.mp.
- (gonorrhea or gonorrhoea).mp.
- genital herpes.mp.
- or/1-16
- exp Contact Tracing/
- partner notification.mp.
- contact tracing.mp.
- (contract referral or conditional referral).mp.
- provider referral.mp.
- patient referral.mp.
- (patient$ adj deliver$ adj (treat$ or therap$)).mp.
- (patient$ adj partner$ adj (treat$ or therap$)).mp.
- expedited partner.mp.
- or/18-26
- 17 and 27
- limit 28 to (humans and yr="1990 - 2006")

Study selection

Study selection was done in duplicate by two reviewers. The full text of selected titles was read by two independent reviewers using pre-specified criteria. Discrepancies at any stage were resolved by discussion. Methodological and reporting quality of included studies was assessed using published criteria [23].

Inclusion criteria

Interventions – We considered any intervention described as partner notification, contact tracing, or any activities describing a process of locating and notifying partners that they have been exposed to an infection.

Setting – We considered studies conducted in specialist healthcare settings (e.g. genitourinary medicine clinics), other healthcare settings (e.g. general practices), and non-healthcare settings (e.g. needle exchanges, homeless shelters).

Study population – We applied no restrictions regarding the study population recruited in comparative studies.

Outcome measures – We considered three main groups of outcome. Within these we recorded outcomes reported in individual studies:

- Primary outcomes – Reduction of incidence or prevalence of STI in the population; or reduction of incidence or prevalence of STI in index patients.
- Intermediate outcomes – Partners treated; partners tested or tested positive; partners contacted, located, or elicited; other outcomes reported by investigators.
- Other outcomes – Adverse effects, acceptability of and barriers to partner notification.

Study design – We included the following study designs:

- Systematic reviews; randomised controlled trials; non-randomised comparisons (controlled clinical trials); before-and-after studies and time-trend analyses reporting outcomes for selected groups.
- Non-controlled studies; cross-sectional studies; audits and chart reviews reporting outcomes for groups of special interest only.
- Qualitative studies reporting the opinions of patients or providers about the acceptability or feasibility of partner notification, barriers to implementing partner notification, or adverse effects of partner notification.

Exclusion criteria

The following exclusion criteria were applied:

- Studies conducted in developing countries (as defined by OECD).
- Studies of index patients diagnosed with STI syndromes and no specific diagnosis.
- Studies of patients with HIV infection in which the main objective was to promote disclosure of infection status by the index patient to partners; whilst related to partner notification, the outcomes measured were not comparable.
- Epidemiological studies of patients with hepatitis B or C in which the purpose was not partner notification to control transmission or identify previously undiagnosed carriers (this excluded studies in which contacts were systematically sought to determine the proportions of contacts infected).
- Non-controlled studies not reporting the number of eligible participants or enrolling less than 50% of eligible participants (this criterion was not applied to studies reporting adverse effects).
- Audits or chart reviews if they did not state that charts were selected consecutively.
- Letters, commentaries and editorials after checking the reference lists, unless they included primary data about partner notification.
- Surveys of health professionals reporting partner notification practices, unless they also reported opinions about the feasibility and acceptability of partner notification.

Results

The combined searches gave 3 450 hits, including 2 504 unique references. Of these, 242 papers were reviewed in full and 150 of these were excluded. The main reasons for exclusion at this stage were that the study group was not part of our inclusion criteria (n=42), no data on relevant outcomes could be extracted (n=38) or the study was conducted in a developing country (n=25). Studies that were excluded based on the quality of reporting were mostly non-comparative descriptive studies with low enrolment rates (n=23). Figure A4 shows results of the search strategies for all partner notification methods and all STI.

Data extraction

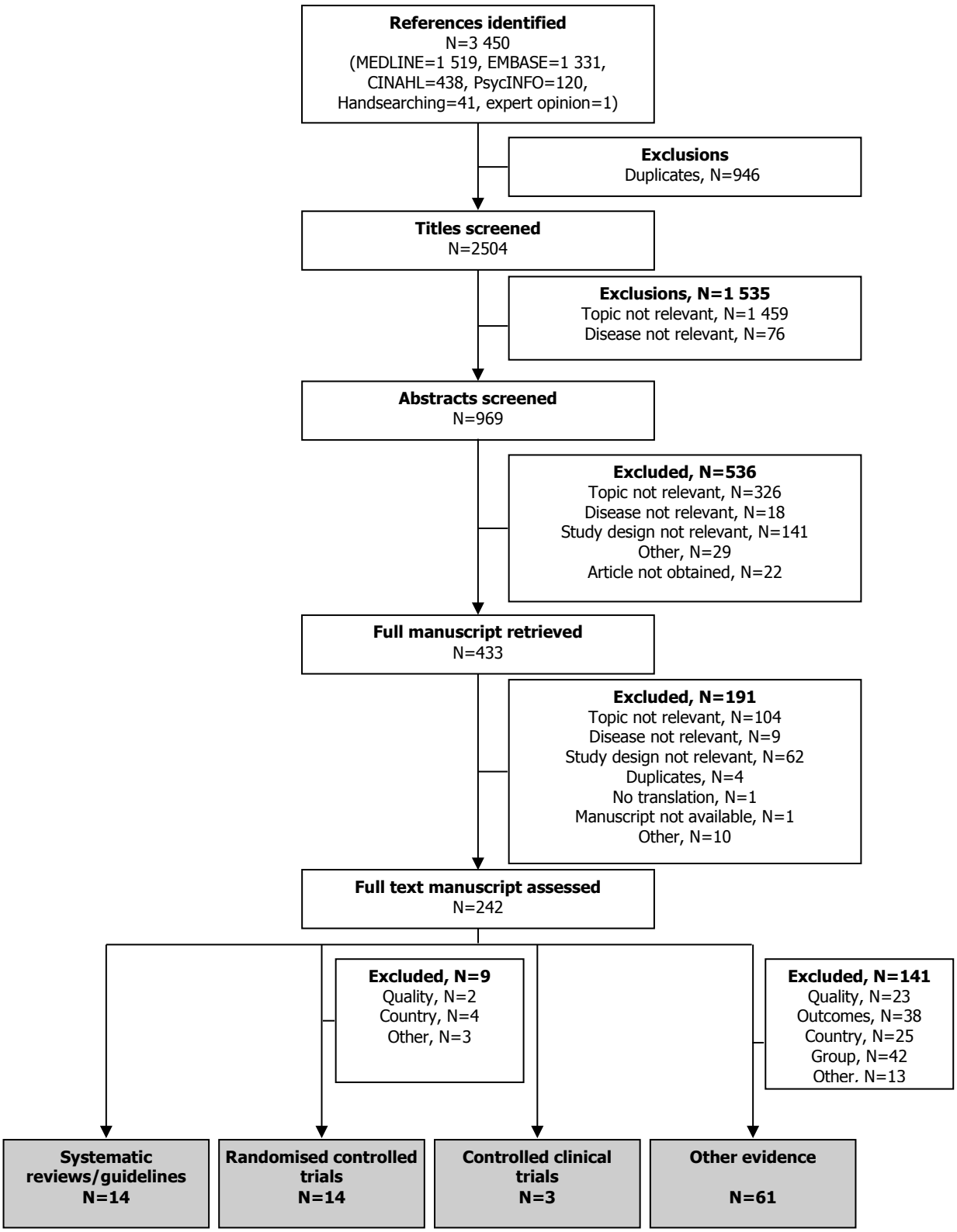
Data extraction was done by two reviewers from the project team into pre-piloted structured forms. Data extracted included details of study design, setting, infection, population, comparison groups (where appropriate) and outcomes. For three trials that included patients with either chlamydia or gonorrhoea (or both) and reported on primary outcomes we contacted authors to request results stratified according to infection and according to sex [39, 41, 44].

Statistical analysis

We made our own calculations of descriptive statistics where necessary. For example, if outcomes were presented as percentages and the total number of participants was provided, we estimated the numbers of participants with each outcome. Where numbers of participants and the number of partners with a specific outcome were presented we converted these to express the outcome as the mean number of partners per index case. We could not, however, estimate standard deviations for these aggregated data so confidence intervals around pooled estimates could not be calculated.

We used meta-analysis to pool the results of individual studies statistically if appropriate. For comparative studies we estimated pooled odds ratios (with 95% confidence intervals, CI). For non-controlled studies we pooled data for specific outcomes and presented pooled means or proportions.

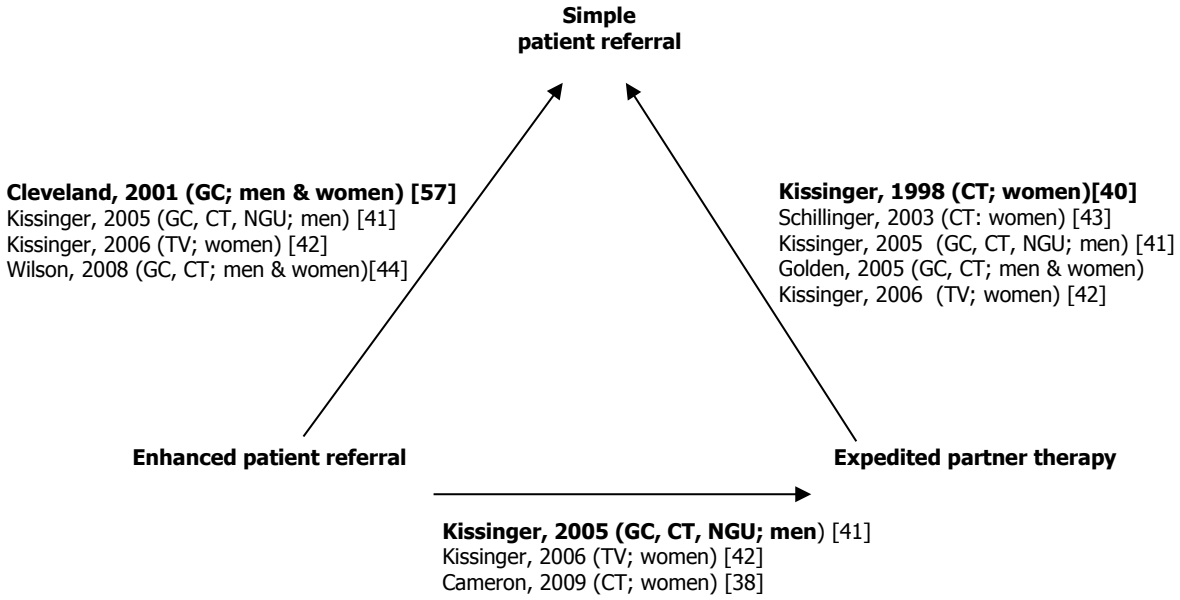
Figure A4.1. Flow diagram of studies included from searches from 1990 to September 2009



We made direct comparisons of the relative effectiveness of different partner notification methods where possible. Eight trials were identified that included comparisons of one or more methods of patient referral and reported rates of infection at follow up for chlamydia, gonorrhoea, non-gonococcal urethritis and/or Trichomoniasis.

The figure below summarises the trials in which there are direct comparisons between interventions.

Figure A4.1. Diagram of eight trials included in network meta-analysis



Each trial is shown according to the direct comparisons made. A single trial with more than two trial groups can appear in more than one comparison.

- Five trials with a total of 5 758 enrolled patients (522 outcome events of infection at follow up) included a comparison of expedited partner therapy with simple patient referral [39-43]. All the expedited therapy interventions included antibiotics to be given to partners, information about the medication and healthcare worker contact details. The treatment packages also included information about specific infections or STI in general [39, 43] and condoms [39, 43]. Effects of delivering antibiotics to partners cannot therefore be disentangled from other parts of the expedited partner therapy package.
- Four trials with a total of 2 801 enrolled patients (158 outcome events) included a comparison of enhanced patient referral with simple patient referral [41, 42, 44, 57]. The additional elements included booklets of tear-out cards with written infection-specific information for partners and treatment guidelines for healthcare workers [41, 42], educational pamphlet for partners [57], or two health education sessions, written support materials, a contract signed with the health educator and telephone follow up [44].
- Three trials with 1 215 enrolled patients (78 outcome events) reported on a comparison of enhanced patient referral with expedited partner therapy [38, 41, 42, 44]. Enhanced patient referral included booklets of tear-out cards with written infection-specific information for partners and treatment guidelines for healthcare workers [41, 42, 44], or written infection-specific information for partners and addresses of local specialist clinics and telephone follow up [38].

For some comparisons of sub-groups there were no studies, for example comparisons of expedited partner therapy and enhanced patient referral in men or for gonorrhoea. The absolute differences in proportions of index patients with persistent or re-infections following these interventions are modest, generally between 3 and 6%.

To obtain as much information as possible about different methods for enhancing the effectiveness of patient referral we also used network meta-analysis methods. This method increases the precision of the estimate that is based solely on the data available from the studies that have direct comparison data, whilst preserving the original randomisation in the individual studies. We used standard meta-analysis methods to pool data from studies that directly compare simple patient referral (A) with expedited partner therapy (B), and studies that directly compared simple patient referral (A) with enhanced patient referral that provided information to partners (C). We also used the limited available data to estimate the direct comparison between expedited partner therapy (B) and enhanced patient referral that provided information to partners (C). We then used network meta-analysis to estimate the indirect effect of interventions B and C.

We also examined the effects of the interventions in the following sub-groups: individuals with chlamydia infection only at baseline and individuals with gonorrhoea only at baseline (we excluded those with both infections at baseline or follow up so that the observations were independent); women and men. There were too few data to examine results stratified by both infection and sex. The validity of the indirect comparison was assessed by examining the similarity in the magnitude of the effect estimates from the direct and indirect comparison. Statistical analyses were conducted in WinBUGS and Stata.

Annex 4. Qualitative literature review search strategy, study selection and analysis

Previous systematic reviews on partner notification have focused on quantifying the clinical effectiveness of different partner notification approaches for STI and HIV [20, 22, 24, 76]. The systematic review conducted for the UK National Institute of Health and Clinical Excellence (NICE) [20, 22, 23, 76] also included studies on the adverse effects of partner notification experienced by index patients and perceived barriers but did not go into great detail. Passin et al. [78] examined literature relevant to HIV infection from 1998–2004 on the attitudes and practices of healthcare professionals who conduct partner notification or refer clients to partner counselling and referral services, barriers and effects of partner notification, and preferences of patients. However, this review only covered studies conducted in the USA related to HIV. Hogben et al. [141] reviewed the literature from 1985-2004 on the negative effects of partner notification on HIV-positive index patients in high-income countries. None of these reviews investigated studies exploring views about and barriers to partner notification and experiences of healthcare providers and patients. These experiential and attitudinal data are crucial to modifying partner notification practices in order to improve their acceptability among patients and healthcare providers and their effectiveness. The project team conducted a systematic review of qualitative literature about partner notification from the point of view of health service users and healthcare providers.

Search strategy

The search strategy used to identify research studies was as described for the effectiveness evidence review in Annex 3. In addition, we searched the JSTOR database (http://www.jstor.org) to identify additional qualitative studies. We also contacted researchers who work in the field of partner notification for unpublished papers or reports. Two independent reviewers screened titles and abstracts of all the potentially relevant articles. Discrepancies were resolved by discussion or adjudication by a third reviewer. Figure A7 summarises the search and study selection process.

Study selection

Study design – We included studies that used any qualitative data collection method such as focus group discussions, individual in-depth interviews, and semi-structured interviews, or that used mainly quantitative methods but reported findings from open-ended questions.

Infections, settings and population – We included studies about chlamydia, gonorrhoea, non-gonococcal urethritis, syphilis, trichomonas, hepatitis B or C, or HIV. Studies could be conducted in any industrialised country, defined as members of the OECD. We included studies conducted in healthcare settings (specialist or non-specialist), and non-healthcare settings (e.g. needle exchanges, homeless shelters). Eligible study populations were sexually active women and men.

Types of intervention – We included any intervention described as partner notification, contact tracing or any activities describing location and notification of sexual or needle-sharing partners of people with the above-mentioned STI.

Methodological and reporting appraisal – We used established guidelines for the appraisal of qualitative studies [142]. We included all studies in the synthesis, irrespective of the methodological appraisal because of the small number of relevant studies.

Data extraction and synthesis

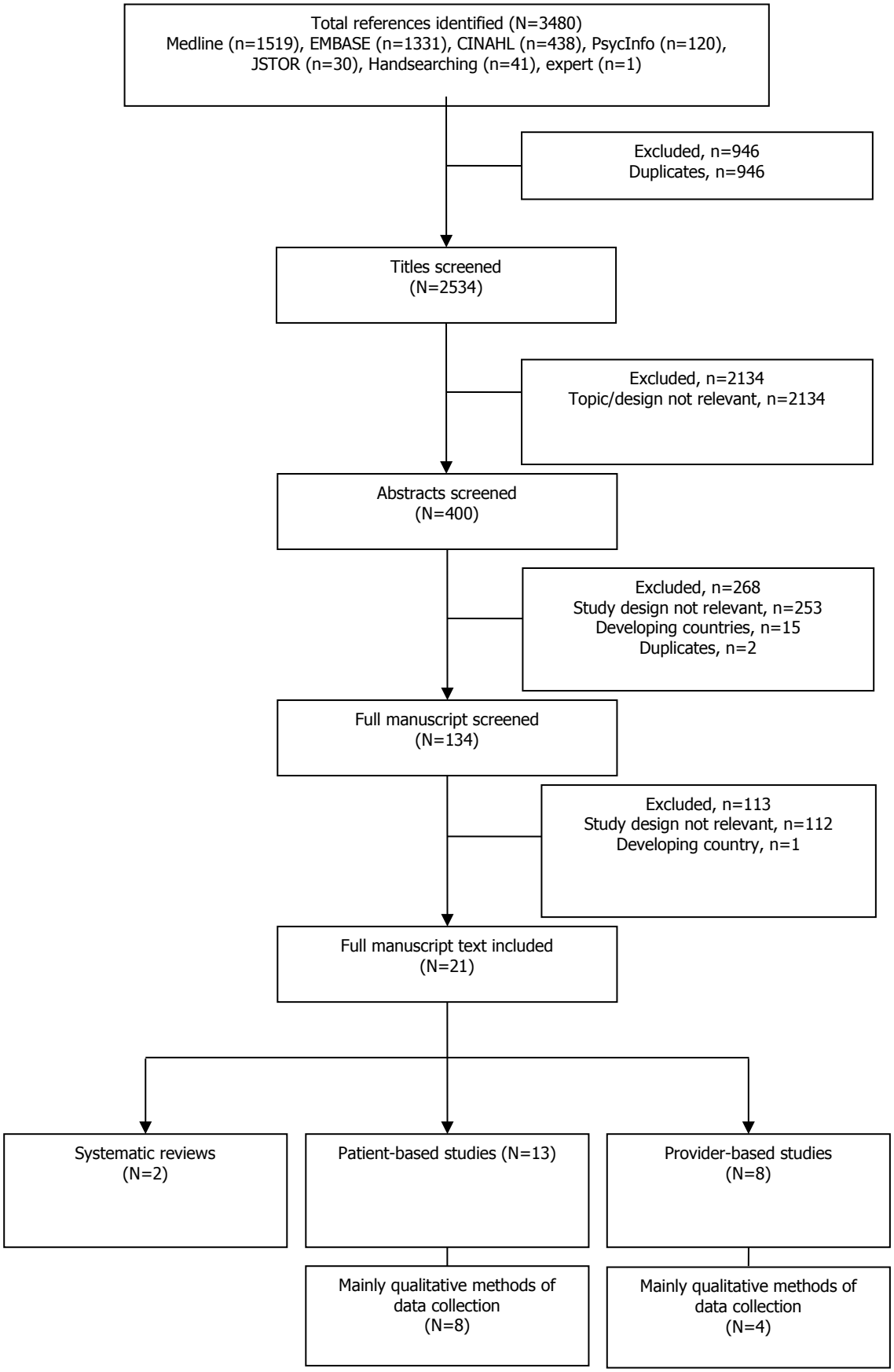
We used the qualitative data synthesis approach developed by Noblit and Hare known as meta-ethnography [143]. Meta-ethnography is "the synthesis of interpretive research" with the aim of maintaining the uniqueness and holism of the individual accounts by translating the meanings of these accounts into each other [143].

We organised studies into following groups: 1) studies on views and attitudes of patients towards partner notification, 2) studies on the perceived and experienced barriers to notifying partner(s), 3) studies on preferred methods for notifying partner(s) or being notified, 4) studies on views and experiences of healthcare providers. These studies were then organised in to two sub-groups: studies relating to STI and those relating to HIV. Within these two sub-groups, studies were further organised according to population studied i.e. studies conducted among adolescents, women, MSM etc. We followed the phases of meta-ethnography (see Box A7).

One reviewer extracted pre-defined data items into standardised tables and identified key themes and metaphors to reflect the essence of each study (Stages 3 and 4). A second reviewer checked these for completeness and accuracy. This process ensured that the patient studies were concerned with similar topics, except one study by Tyden and Ramstedt [71], which was the only study that explored participants' views towards legal enforcement of partner notification. This led us to the stage of synthesis suggested by Noblit and Hare termed as "reciprocal translations as synthesis" (Stage 5). This stage involved the comparison of the themes and metaphors identified in each study with those identified in other studies to enable 'translating the studies in to one another' [143]. We used the process adopted by Pound et al. and Campbell et al. [58, 144] to translate the studies.

We then reviewed key themes and metaphors of a study, and compared it with another study for similarities in these two studies. We identified any 'new' themes from the second study that were not mentioned in the first paper and documented if there were any contradictions in these papers. The themes and metaphors from these two studies were then compared in a similar fashion to another study and so on. This process of translating the key metaphors and themes from individual studies (i.e. the interpretations of the study) into one another to express their relationships is termed by Noblit and Hare as *"interpretations of interpretations of interpretation"* (Stage 6). We did this by, firstly, comparing the metaphors of the studies related to STI with each other and those related with HIV with each other. We then compared the themes and metaphors across these two sub-groups. We then brought together the reciprocal translations of the studies and compared them using the themese and metaphors and interpretations of these metaphors, simultaneously refining these metaphors, to better explain the phenomenon of partner notification. This process is termed as line-of-argument synthesis (Stage 7).

Figure A7. Flow diagram of studies selected for review of qualitative literature about partner notification



Box A7. Phases of meta-ethnography

- Identifying the area of interest or research question (Determined as per ECDC project goals)
- Deciding what is relevant to initial interest (We defined the aims of synthesis and decided the nature of the studies to be included in the synthesis)
- Reading the studies (We read and reread the studies to understand their meaning and identify the key themes and metaphors that convey the key sense/meaning of the study)
- Determining how the studies are related (We prepared lists of the key metaphors of different studies and did a preliminary review to identify if these metaphors, themes were similar or contradictory in their understanding of the phenomenon)
- Translating the studies into one another (We compared the metaphors and themes of studies to identify similarities and differences)
- Synthesising these translations to provide a further interpretation of the translations (We compared the translations of studies and brought together these translations to further interpret them)
- Expressing the synthesis in the form considered most appropriate by the synthesiser and serves the purpose for which synthesis was undertaken (We prepared a written report based on the synthesis)

Source: Noblit and Hare[143]

Results

We identified 400 potentially relevant articles and reviewed 134 full-text manuscripts. We also received two unpublished articles from researchers related to the focus of the review, which we included. Finally, we included 19 articles that met the inclusion criteria in the synthesis[31-35, 37, 59-71]. Some studies presented data on both providers and patients; therefore, the total number of full manuscripts included in the synthesis presented in **Error! Reference source not found.**7 differs from the number of studies in the sub-groups.

There were five studies that explored the views and attitudes of participants towards partner notification [33, 60, 61, 65, 70]. Three of these included patients diagnosed with a bacterial STI before study participation [60, 61, 65]. These studies were conducted among adult heterosexual men and women and two studies included MSM. Two studies were conducted among pre-dominantly African-American heterosexual male and female injecting drug users (IDU), either current users or ex-users and explored their views and preferences regarding HIV partner notification [33, 70].

Seven studies explored the participants' experiences of partner notification; either retrospective or current [33, 59-61, 64, 65, 68]. The majority of studies dealt with the experiences of notifying partners for chlamydia (n=4). Others were about HIV (n=1), syphilis (n=1), gonorrhoea (n=2) or non-gonococcal urethritis (n=1). Of these studies, one was conducted among IDU [33], two included MSM[60, 65], two included heterosexual men [61, 65] and five included heterosexual women [59, 61, 64, 65, 68].

Six studies reported on patients' preferred methods for partner notification. Of these, four explored preferred methods for notifying their sexual and/or needle-sharing partners [33, 69-71]. While Rogers et al. [33] and Tobin et al. [70] explored preferred methods for HIV partner notification among IDU, the other two explored preferences for STI partner notification.

Only one study explored views towards legal enforcement of partner notification for chlamydia [71]. Daker-White et al. explored the acceptability of primary care and GUM clinics as settings for notifying partners and seeking care [61].

Most of the included studies used qualitative data collection methods like focus group discussions and semi-structured interviews. Some studies used open-ended questions in the survey to collect qualitative data that were analysed quantitatively [60, 68, 70, 71]. Despite the variation in the research questions and aims of the studies included in the analysis, as the synthesis proceeded it was evident that all these studies were concerned with understanding challenges to and preferences for partner notification from the users' perspective. The synthesis considered: a) lay perspectives of partner notification, b) experiences of partner notification and c) preferred methods for partner notification.

We found eight studies that were conducted among healthcare providers. Most of these studies explored the views and attitudes of the providers towards partner notification [31-35, 37, 66, 67]. Providers' experiences of partner notification were explored in five studies [31, 33, 34, 66, 67]: three of these studies explored providers' experiences or views towards partner notification for HIV [31-33], one for trichomoniasis [66] and one for chlamydia [67]. Two studies explored providers' views towards novel methods of partner notification: one among primary care staff and the other among GUM clinic staff [35, 37]. Shackleton et al.'s study explored the acceptability of offering telephone consultation contact slips to index patients to enable their partner's telephone clinical assessment with a specialist healthcare professional and faxing the antibiotic prescriptions to a local pharmacy or the sex partners attend the community pharmacy for clinical assessment by a trained pharmacist who then provides them with a treatment [35]and Shivasankar et al.'s study explored views about PDPT [37].

Overall, this review of the qualitative literature about partner notification for STI found few studies conducted since 1990. Although several studies reported findings from open-ended questions, the quantitative approach to analysis made it difficult to interpret the key findings. We were able to synthesise the qualitative data using meta-ethnographic tools proposed by Noblit and Hare [143]. The reciprocal translation of the studies (Stage 5) related to patients appears promising, despite variation in the context in which they were conducted. The synthesis of the healthcare providers data should be interpreted with caution because these studies predominantly used open-ended survey data and analysed it quantitatively, which weakened the process of translating studies into each other.

Annex 5. Countries that responded to the three questionnaires

Country	Legal and policy aspects	Organisation of health services	Guidelines and practices
Austria	Yes	Yes	Yes
Belgium	Yes	Yes	Yes
Bulgaria	Yes	Yes	Yes
Cyprus	Yes	Yes	Yes
Czech Republic	NA	NA	NA
Denmark	Yes	Yes	Yes
Estonia	Yes	Yes	Yes
Finland	Yes	Yes	No
France	Yes	Yes	Yes
Germany	Yes	Yes	Yes
Greece	Yes	Yes	Yes
Hungary	Yes	Yes	Yes
Iceland	NA	NA	NA
Ireland	Yes	Yes	Yes
Italy	Yes	Yes	Yes
Latvia	Yes	Yes	Yes
Liechtenstein	NA	NA	NA
Lithuania	Yes	Yes	Yes
Luxembourg	NA	NA	NA
Malta	Yes	Yes	Yes
Netherlands	Yes	Yes	Yes
Norway	Yes	No	Yes
Poland	NA	NA	NA
Portugal	Yes	Yes	Yes
Romania	Yes	Yes	Yes
Slovakia	Yes	Yes	Yes
Slovenia	NA	NA	NA
Spain	Yes	Yes	Yes
Sweden	Yes	Yes	Yes
United Kingdom	Yes	Yes	Yes
Total	**24**	**23**	**23**

Annex 6. Compulsory and routine partner notification by country

Country	Partner notification compulsory	Compulsory for healthcare providers to do partner notification	Compulsory for STI patients to do partner notification	Compulsory testing/treatment for sexual partners	Partner notification routinely carried out for at least one STI
Austria	No	No	No	No	No
Belgium	No	No	No	No	Yes
Bulgaria	Yes	Yes	No	No	No
Cyprus	No	No	No	No	Yes
Denmark	No	No	No	No	Yes
Estonia	Yes	Yes	No	Yes	Yes
Finland	Yes	Yes	Yes	Yes	Yes
France	No	No	No	No	Yes
Germany	No	No	No	No	Yes
Greece	No	No	No	No	Yes
Hungary	Yes	Yes	No	No	Yes
Ireland	No	No	No	No	Yes
Italy	Yes	Yes	No	No	Yes
Latvia	Yes	Yes	No	No	Yes
Lithuania	Yes	No	Yes	No	Yes
Malta	Yes	Yes	No	No	Yes
Netherlands	No	No	No	No	Yes
Norway	Yes	Yes	Yes	No	Yes
Portugal	No	No	No	No	Yes
Romania	Yes	Yes	No	No	Yes
Slovakia	No	No	No	No	Yes
Spain	No	No	No	No	Yes
Sweden	Yes	Yes	Yes	Yes	Yes
UK	No	No	No	No	Yes
Total positive replies	**11**	**10**	**4**	**3**	**22**

Annex 7. Compulsory partner notification by healthcare providers and patients, and compulsory testing or treatment for sexual partners, by infection (11 countries)

	HIV			Syphilis			Gonorrhoea			Chlamydia			Genital warts			Genital herpes			Hepatitis B			Hepatitis C		
	H	P	T	H	P	T	H	P	T	H	P	T	H	P	T	H	P	T	H	P	T	H	P	T
Bulgaria	●																							
Estonia	●			●		●				●		●							●			●		
Finland	●	●		●	●	●	●	●		●	●								●	●		●	●	
Hungary	●			●			●			●			●			●								
Italy	●			●			●												●			●		
Latvia	●			●			●			●						●			●			●		
Lithuania		●			●			●			●													
Malta	●			●			●			●									●			●		
Norway	●	●		●	●		●	●		●	●								●	●		●	●	
Romania	●			●			●			●														
Sweden	●	●	●	●	●	●	●	●	●	●	●	●							●	●	●	●	●	●

● = Yes

H – Healthcare provider must do partner notification

P – Index patient must accept partner notification

T – Sexual partner(s) must undergo testing or treatment

Annex 8. Sources of information summarising legal aspects of partner notification in Europe (30 countries)

Country	Any law about partner notification , EuroPN	Routine partner notification any STI , EuroPN	Voluntary/ compulsory partner notification	Law trans-mission any STI, EuroPN	Law HIV trans-mission, GNP+/THT 2005	HIV prosecution convictions, GNP+/THT 2005	National STI programme, WHO 1998	STI plan/ strategy Project SCREen 2007[i]	Guidelines, WHO 1998
Austria	No	No	Voluntary	Yes	Non-specific law	Yes	No	No	No
Belgium	No	Yes	Voluntary	Yes	Non-specific law	Yes	No	No	No
Bulgaria	Yes	No	Voluntary	No	HIV transmission not criminalised	No	Yes	NA	Yes
Cyprus	No	Yes	Voluntary	No	Non-specific law	Yes	NA	NA	NA
Czech Republic	NA	NA	NA	NA	Non-specific law	Yes	Yes	No	Yes
Denmark	No	Yes	Voluntary	Yes	Specific law criminalising HIV transmission	Yes	Yes	Yes	Yes
Estonia	Yes	Yes	Compulsory	No	Non-specific law	Yes	No	No	Yes
Finland	Yes	Yes	Voluntary	Yes	Non-specific law	Yes	No	No	No
France	No	Yes	Voluntary	No	Non-specific law	Yes	No	No	Yes
Germany	No	Yes	Voluntary	No	Non-specific law	Yes	No	No	No
Greece	No	Yes	Voluntary	Yes	NA	NA	No	No	Yes
Hungary	Yes	Yes	Voluntary	No	Non-specific law	Yes	NA	No	Yes
Iceland	Yes[ii]	NA	Compulsory	No	Non-specific law	Yes	No	No	No
Ireland	No	Yes	Voluntary	No	Non-specific law	Yes	No	No	No
Italy	Yes	Yes	Voluntary	No	Non-specific law	Yes	No	Yes	No
Latvia	Yes	Yes	Voluntary	No	Specific law criminalising HIV transmission	Yes	No	No	Yes

i Review of chlamydia control activities in EU countries 2008. European Centre for Disease Prevention and Control. http://ecdc.europa.eu/en/publications/publications/0805_ter_review_of_chlamydia_control_activities.pdf

ii Additional information from original documents

Country	Any law about partner notification , EuroPN	Routine partner notification any STI , EuroPN	Voluntary/ compulsory partner notification	Law trans-mission any STI, EuroPN	Law HIV trans-mission, GNP+/THT 2005	HIV prosecution convictions, GNP+/THT 2005	National STI programme, WHO 1998	STI plan/ strategy Project SCREen 2007[i]	Guidelines, WHO 1998
Liechtenstein	NA	NA	NA	NA	Non-specific law	Yes	NA	No	NA
Lithuania	Yes	Yes	Voluntary	No	Non-specific law	Yes	Yes	Yes	Yes
Luxembourg	NA	NA	NA	NA	HIV transmission not criminalised	No	No	No	No
Malta	Yes	Yes	Voluntary	Yes	Specific law criminalising HIV transmission	Yes	NA	No	No
Netherlands	No	Yes	Voluntary	No	Non-specific law	Yes	No	Yes	Yes
Norway	Yes	Yes	Compulsory	Yes	Non-specific law	Yes	No	Yes	No
Poland	NA	NA	NA	NA	Specific law criminalising HIV transmission	Yes	Yes	NA	Yes
Portugal	No	Yes	Voluntary	No	Non-specific law	Yes	No	No	No
Romania	Yes	Yes	Voluntary	No	Specific law criminalising HIV transmission	Yes	No	Yes	No
Slovakia	No	Yes	Voluntary	No	Specific law criminalising HIV transmission	Yes	Yes	NA	Yes
Slovenia	NA	NA	Voluntary	NA	HIV transmission not criminalised	No	Yes	NA	Yes
Spain	No	Yes	None	No	NA	NA	No	No	No
Sweden	Yes	Yes	Compulsory	Yes	Non-specific law	Yes	Yes	Yes	Yes
United Kingdom	No	Yes	Voluntary	Yes	Unclear	Yes	No	Yes	Yes

NA: information not available

Annex 9. STI for which partner notification is considered to be routine (and which are mandatorily notifiable), by infection

	HIV	*Tp*	*Ng*	*Ct*	*Mg*	*Tv*	Warts	HSV	HBV	HCV
Austria	No	No	No	No	No	No	No	No	No*	No*
Belgium	Yes	Yes*	Yes*	Yes	No	No	No	No	Yes*	Yes*
Bulgaria	No*	No*	No*	No*	No	No	No	No	No*	No*
Cyprus	Yes*	No*	No*	No*	No	No	No	No	Yes*	Yes*
Denmark	Yes*	Yes*	Yes*	Yes*	No	No	No	No	No*	No*
Estonia	Yes*	Yes*	Yes*	Yes*	Yes	Yes	Yes	Yes*	Yes*	Yes*
Finland	Yes*	Yes*	Yes*	Yes*	No	Yes	No	No	Yes*	Yes*
France	Yes*	Yes	Yes	Yes	No	Yes	No	No	Yes*	No
Germany	Yes*	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	Yes*
Greece	No	Yes*	Yes*	Yes	No	No	Yes	Yes	No	No
Hungary	Yes*	Yes*	Yes*	Yes*	No	No	Yes	Yes	No*	No*
Ireland	Yes	Yes*	Yes*	Yes*	No	No*	No*	Yes*	No*	No*
Italy	No	Yes*	Yes*	Yes	No	No	No	No	Yes*	Yes*
Latvia	Yes*	Yes*	Yes*	Yes*	Yes	Yes	No	Yes*	Yes*	Yes*
Lithuania	Yes*	Yes*	Yes*	Yes*	No	No	No	No	No	No
Malta	Yes*	Yes*	Yes*	Yes*	Yes	Yes	Yes	No	Yes*	Yes*
Netherlands	Yes	Yes	Yes	Yes	No	No	No	No	Yes*	Yes*
Norway	Yes*	Yes*	Yes*	Yes*	No	No	No	No	Yes	Yes*
Portugal	Yes*	Yes*	Yes*	Yes	No	Yes	Yes	Yes	No*	No*
Romania	Yes*	Yes*	Yes*	Yes*	No	Yes	No	No	No	No
Slovakia	Yes*	Yes*	Yes*	Yes*	No	Yes*	Yes*	No*	Yes*	Yes*
Spain	Yes*	Yes*	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	Yes
Sweden	Yes*	Yes*	Yes*	Yes*	No	No	No	No	Yes*	Yes*
United Kingdom	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes*	Yes*
Total positive replies	20	21	21	21	5	11	9	9	15	14

** Mandatorily notifiable*

Tp – syphilis; Ct – chlamydia; HBV – hepatitis B; HCV – hepatitis C; HSV – genital herpes simplex; Mg – Mycoplasma genitalium; Ng – gonorrhoea; Tv – trichomonas

Annex 10. Legal requirements for disease notification and partner notification, by infection and country

HIV	Statutorily notifiable to health authorities	Compulsory reporting for provider	Compulsory reporting for patient	Compulsory testing/treatment for partner	Partner notification routinely done
Austria	No				
Belgium	No				Yes
Bulgaria	Yes				
Cyprus	Yes				Yes
Denmark	Yes				Yes
Estonia	Yes	Yes			Yes
Finland	Yes	Yes	Yes	No	Yes
France	Yes				
Germany	Yes				Yes
Greece	No				
Hungary	Yes	Yes			Yes
Ireland	No				Yes
Italy	Yes	Yes			
Latvia	Yes	Yes			Yes
Lithuania	Yes	No	Yes		Yes
Malta	Yes	Yes	No	No	Yes
Netherlands	No				Yes
Norway	Yes	Yes	Yes		Yes
Portugal	Yes				Yes
Romania	Yes	Yes	No	No	Yes
Slovakia	Yes				Yes
Spain	Yes				Yes
Sweden	Yes	Yes	Yes	Yes	Yes
UK	No				Yes

Syphilis	Statutorily notifiable to health authorities	Compulsory reporting for provider	Compulsory reporting for patient	Compulsory testing/treatment for partner	PN routinely done
Austria	No				Yes
Belgium	Yes				Yes
Bulgaria	Yes				
Cyprus	Yes				No
Denmark	Yes				Yes
Estonia	Yes	Yes		Yes	Yes
Finland	Yes	Yes	Yes	Yes	Yes
France	No				No
Germany	Yes				Yes
Greece	Yes				Yes
Hungary	Yes	Yes			Yes
Ireland	Yes				Yes
Italy	Yes	Yes			Yes
Latvia	Yes	Yes			Yes
Lithuania	Yes	No	Yes		Yes
Malta	Yes	Yes	No	No	Yes
Netherlands	No				Yes
Norway	Yes	Yes	Yes		Yes
Portugal	Yes				Yes
Romania	Yes	Yes	No	No	Yes
Slovakia	Yes				Yes
Spain	Yes				Yes
Sweden	Yes	Yes	Yes	Yes	Yes
UK	No				Yes

Gonorrhoea	Statutorily notificable to health authorities	Compulsory reporting for provider	Compulsory reporting for patient	Compulsory testing/treatment for partner	Partner notification routinely done
Austria	No				Yes
Belgium	Yes				Yes
Bulgaria	Yes				
Cyprus	Yes				No
Denmark	Yes				Yes
Estonia	Yes	No			Yes
Finland	Yes	Yes	Yes	No	Yes
France	No				No
Germany	No				Yes
Greece	Yes				Yes
Hungary	Yes	Yes			Yes
Ireland	Yes				Yes
Italy	Yes	Yes			Yes
Latvia	Yes	Yes			Yes
Lithuania	Yes	No	Yes		Yes
Malta	Yes	Yes	No	No	Yes
Netherlands	No				Yes
Norway	Yes	Yes	Yes		Yes
Portugal	Yes				Yes
Romania	Yes	Yes	No	No	Yes
Slovakia	Yes				Yes
Spain	Yes				Yes
Sweden	Yes	Yes	Yes	Yes	Yes
UK	No				Yes

Chlamydia	Statutorily notifiable to health authorities	Compulsory reporting for provider	Compulsory reporting for patient	Compulsory testing/treatment for partner	Partner notification done routinely
Austria	No				Yes
Belgium	No				Yes
Bulgaria	Yes				
Cyprus	Yes				No
Denmark	Yes				Yes
Estonia	Yes	Yes		Yes	Yes
Finland	Yes	Yes	Yes	No	Yes
France	No				No
Germany	No				Yes
Greece	No				Yes
Hungary	Yes	Yes			Yes
Ireland	Yes				Yes
Italy	No				Yes
Latvia	Yes	Yes			Yes
Lithuania	Yes	No	Yes		Yes
Malta	Yes	Yes	No	No	Yes
Netherlands	No				Yes
Norway	Yes	Yes	Yes		Yes
Portugal	No				Yes
Romania	Yes	Yes	No	No	Yes
Slovakia	Yes				Yes
Spain	No				Yes
Sweden	Yes	Yes	Yes	Yes	Yes
UK	No				Yes

Trichomonas	Statutorily notifiable to health authorities	Compulsory reporting for provider	Compulsory reporting for patient	Compulsory testing/treatment for partner	Partner notification routinely done
Austria	No				
Belgium	No				
Bulgaria	No				
Cyprus	No				
Denmark	No				No
Estonia	No	No			Yes
Finland	No	No	No	No	Yes
France	No				No
Germany	No				Yes
Greece	No				
Hungary	No	No			No
Ireland	Yes				
Italy	No				
Latvia	No	No			Yes
Lithuania	No				
Malta	No	No	No	No	Yes
Netherlands	No				No
Norway	No	No	No		Yes
Portugal	No				Yes
Romania	No	No	No	No	Yes
Slovakia	Yes				Yes
Spain	No				Yes
Sweden	No		No	No	No
UK	No				Yes

Genital warts	Statutorily notifiable to health authorities	Compulsory reporting for provider	Compulsory reporting for patient	Compulsory testing/treatment for partner	Partner notification routinely done
Austria	No				No
Belgium	No				No
Bulgaria	No				
Cyprus	No				No
Denmark	No				No
Estonia	No	No			Yes
Finland	No	No	No	No	No
France	No				Yes
Germany	No				Yes
Greece	No				Yes
Hungary	No	Yes			Yes
Ireland	Yes				
Italy	No				No
Latvia	No	No			No
Lithuania	No				
Malta	No	No	No	No	Yes
Netherlands	No				No
Norway	No	No	No		No
Portugal	No				Yes
Romania	No	No	No	No	No
Slovakia	Yes				Yes
Spain	No				Yes
Sweden	No	No	No	No	No
UK	No				Yes

Genital herpes	Statutorily notifiable to health authorities	Compulsory reporting for provider	Compulsory reporting for patient	Compulsory testing/treatment for partner	Partner notification routinely done
Austria	No				No
Belgium	No				No
Bulgaria	No				
Cyprus	No				No
Denmark	No				No
Estonia	Yes	No			Yes
Finland	No	No	No	No	No
France	No				Yes
Germany	No				Yes
Greece	No				Yes
Hungary	No	Yes			Yes
Ireland	Yes				Yes
Italy	No				No
Latvia	Yes	Yes			Yes
Lithuania	No				
Malta	No	No	No	No	No
Netherlands	No				No
Norway	No	No	No		No
Portugal	No				Yes
Romania	No	No	No	No	No
Slovakia	Yes				No
Spain	No				Yes
Sweden	No	No	No	No	No
UK	No				Yes

Hepatitis B	Statutorily notifiable to health authorities	Compulsory reporting for provider	Compulsory reporting for patient	Compulsory testing/treatment for partner	Partner notification routinely done
Austria	Yes				
Belgium	Yes				Yes
Bulgaria	Yes				
Cyprus	Yes				Yes
Denmark	Yes				No
Estonia	Yes	Yes			Yes
Finland	Yes	Yes	Yes	No	Yes
France	Yes				No
Germany	Yes				Yes
Greece	No				
Hungary	Yes	No			No
Ireland	Yes				
Italy	Yes	Yes			Yes
Latvia	Yes	Yes			Yes
Lithuania	No				
Malta	Yes	Yes	No	No	Yes
Netherlands	Yes				Yes
Norway	Yes	Yes	Yes		Yes
Portugal	Yes				
Romania	No	No	No	No	No
Slovakia	Yes				Yes
Spain	Yes				Yes
Sweden	Yes	Yes	Yes	Yes	Yes
UK	Yes				Yes

Hepatitis C	Statutorily notifiable to health authorities	Compulsory reporting for provider	Compulsory reporting for patient	Compulsory testing/treatment for partner	Partner notification routinely done
Austria	Yes				
Belgium	Yes				Yes
Bulgaria	Yes				
Cyprus	Yes				Yes
Denmark	Yes				No
Estonia	Yes	Yes			Yes
Finland	Yes	Yes	Yes	No	Yes
France	No				Yes
Germany	Yes				Yes
Greece	No				
Hungary	Yes	No			No
Ireland	Yes				
Italy	Yes	Yes			Yes
Latvia	Yes	Yes			Yes
Lithuania	No				
Malta	Yes	Yes	No	No	Yes
Netherlands	Yes				Yes
Norway	Yes	Yes	Yes		Yes
Portugal	Yes				
Romania	No	No	No	No	No
Slovakia	Yes				Yes
Spain	No				Yes
Sweden	Yes	Yes	Yes	Yes	Yes
UK	Yes				Yes

Mycoplasma genitalium	Statutorily notifiable to health authorities	Compulsory reporting for provider	Compulsory reporting for patient	Compulsory testing/treatment for partner	Partner notification routinely done
Austria	No				
Belgium	No				
Bulgaria	No				
Cyprus	No				
Denmark	No				No
Estonia	No	No			Yes
Finland	No	No	No	No	No
France	No				Yes
Germany	No				Yes
Greece	No				
Hungary	No	No			No
Ireland	No				
Italy	No				
Latvia	No	No			Yes
Lithuania	No				
Malta	No	No	No	No	Yes
Netherlands	No				No
Norway	No	No	No		No
Portugal	No				
Romania	No	No	No	No	No
Slovakia	No				No
Spain	No				Yes
Sweden	No	No	No	No	No
UK	No				No

Annex 11. Partner notification responsibilities of STI clinics

	HIV	Syphilis	Gonorrhoea	Chlamydia	Genital Herpes	T. vaginalis	Genital warts	Hep B	Hep C	M. genitalium
Austria	•	•	•	•	•	•	•	•	•	•
Belgium	Yes	Yes	Yes	Yes	•	•	•	Yes	Yes	•
Bulgaria	•	•	•	•	•	•	•	•	•	•
Cyprus	Yes	Yes	Yes	Yes	Yes	Yes	•	Yes	Yes	•
Denmark	Yes	Yes	Yes	No	•	•	•	•	No	•
Estonia	•	Yes	Yes	Yes	•	•	•	•	Yes	Yes
Finland	Yes	Yes	Yes	Yes	Yes	Yes	•	No	Yes	No
France	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
Germany	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hungary	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Ireland	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	•
Italy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Latvia	No	No	No	No	No	No	•	No	No	No
Lithuania	Yes	Yes	Yes	Yes	•	•	•	•	Yes	•
Malta	No	Yes	Yes	Yes	Yes	Yes	Yes	?	Yes	Yes
Netherlands	Yes	Yes	Yes	Yes	•	•	•	Yes	Yes	•
Portugal	Yes	Yes	Yes	Yes	•	?	•	•	Yes	•
Romania	Yes	Yes	Yes	Yes	•	Yes	Yes	•	Yes	Yes
Slovakia	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Spain	No	No	No	No	No	No	No	No	No	No
Sweden	No	Yes	Yes	Yes	•	•	•	No	Yes	•
UK	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	•

• *Partner notification not routine*

Annex 12. Healthcare settings for diagnosis of specific STI

HIV	Specialist STI clinic/practice	Primary care	Gynaecology/ family planning clinic	Urology clinic/ practice
Austria	Yes	No	Yes	Yes
Belgium	Yes	Yes	Yes	Yes
Bulgaria	Yes	Yes	Yes	Yes
Cyprus	Yes	Yes	Yes	Yes
Denmark	Yes	Yes		
Estonia	Yes	Yes	Yes	Yes
Finland	Yes	Yes	No	No
France	Yes	Yes	Yes	Yes
Germany	Yes	Yes	Yes	Yes
Hungary	Yes	No	Yes	No
Ireland	Yes	Yes	Yes	Yes
Italy	Yes	Yes	Yes	Yes
Latvia	Yes	Yes	Yes	Yes
Lithuania	Yes	Yes	Yes	Yes
Malta	Yes	No	Yes	No
Netherlands	Yes	Yes	Yes	Yes
Portugal	Yes	Yes	Yes	Yes
Romania	Yes	Yes	Yes	Yes
Slovakia	Yes	Yes	Yes	Yes
Spain	Yes	Yes	Yes	Yes
Sweden	Yes	Yes	Yes	Yes
UK	Yes	Yes	Yes	Yes

Syphilis	Specialist STI clinic/practice	Primary care	Gynaecology/ family planning clinic	Urology clinic/ practice
Austria	Yes	No	Yes	Yes
Belgium	Yes	Yes	Yes	Yes
Bulgaria	Yes	Yes	Yes	Yes
Cyprus	Yes	Yes	Yes	Yes
Denmark				
Estonia	Yes	Yes	Yes	Yes
Finland	Yes	Yes	Yes	No
France	Yes	Yes	Yes	Yes
Germany	Yes	Yes	Yes	Yes
Hungary	Yes	No	Yes	No
Ireland	Yes	Yes	Yes	Yes
Italy	Yes	Yes	Yes	Yes
Latvia	Yes	No	No	No
Lithuania	Yes	Yes	Yes	Yes
Malta	Yes	No	Yes	No
Netherlands	Yes	Yes	Yes	Yes
Portugal	Yes	Yes	Yes	Yes
Romania	Yes	Yes	Yes	Yes
Slovakia	Yes	No	Yes	Yes
Spain	Yes	Yes	Yes	Yes
Sweden	Yes	Yes	Yes	Yes
UK	**Yes**	**Yes**	**Yes**	**No**

Gonorrhoea	Specialist STI clinic/practice	Primary care	Gynaecology clinic/family planning clinic	Urology clinic/ practice
Austria	Yes	No	Yes	Yes
Belgium	Yes	Yes	Yes	Yes
Bulgaria	Yes	Yes	Yes	Yes
Cyprus	Yes	No	Yes	Yes
Denmark				
Estonia	Yes	No	Yes	Yes
Finland	Yes	Yes	No	No
France	Yes	Yes	Yes	Yes
Germany	Yes	Yes	Yes	Yes
Hungary	Yes	No	Yes	No
Ireland	Yes	Yes	Yes	Yes
Italy	Yes	Yes	Yes	Yes
Latvia	Yes	No	Yes	Yes
Lithuania	Yes	Yes	Yes	Yes
Malta	Yes	No	Yes	No
Netherlands	Yes	Yes	Yes	Yes
Portugal	Yes	Yes	Yes	Yes
Romania	Yes	Yes	Yes	Yes
Slovakia	Yes	No	Yes	Yes
Spain	Yes	Yes	Yes	Yes
Sweden	Yes	Yes	Yes	Yes
UK	Yes	Yes	Yes	No

Chlamydia	Specialist STI clinic /practice	Primary care	Gynaecology /family planning clinic	Urology clinic/ practice
Austria	Yes	No	Yes	Yes
Belgium	Yes	Yes	Yes	Yes
Bulgaria	Yes	Yes	Yes	Yes
Cyprus	Yes	No	Yes	Yes
Denmark				
Estonia	Yes	Yes	Yes	Yes
Finland	Yes	Yes	Yes	Yes
France	Yes	Yes	Yes	Yes
Germany	Yes	Yes	Yes	Yes
Hungary	Yes	No	Yes	No
Ireland	Yes	Yes	Yes	Yes
Italy	Yes	Yes	Yes	Yes
Latvia	Yes	No	Yes	Yes
Lithuania	Yes	Yes	Yes	Yes
Malta	Yes	Yes	Yes	Yes
Netherlands	Yes	Yes	Yes	Yes
Portugal	Yes	Yes	Yes	Yes
Romania	Yes	Yes	Yes	Yes
Slovakia	Yes	No	Yes	Yes
Spain	Yes	Yes	Yes	Yes
Sweden	Yes	Yes	Yes	Yes
UK	Yes	Yes	Yes	Yes

Trichomonas vaginalis	Specialist STI clinic /practice	Primary care	Gynaecology /family planning clinic	Urology clinic/ practice
Austria	Yes	No	Yes	Yes
Belgium	Yes	Yes	Yes	Yes
Bulgaria	Yes	Yes	Yes	Yes
Cyprus	No	No	No	No
Denmark				
Estonia	Yes	No	Yes	Yes
Finland	Yes	Yes	Yes	No
France	Yes	Yes	Yes	Yes
Germany	Yes	Yes	Yes	Yes
Hungary	Yes	No	Yes	No
Ireland	Yes	Yes	Yes	Yes
Italy	Yes	Yes	Yes	Yes
Latvia	Yes	No	Yes	No
Lithuania	Yes	No	Yes	Yes
Malta	Yes	No	Yes	No
Netherlands	Yes	Yes	Yes	Yes
Portugal	Yes	Yes	Yes	Yes
Romania	Yes	Yes	Yes	Yes
Slovakia	Yes	No	Yes	Yes
Spain	Yes	Yes	Yes	Yes
Sweden	Yes	Yes	Yes	No
UK	Yes	Yes	Yes	No

Genital warts	Specialist STI clinic /practice	Primary care	Gynaecology /family planning clinic	Urology clinic/ practice
Austria	Yes	No	Yes	Yes
Belgium	Yes	Yes	Yes	Yes
Bulgaria	Yes	Yes	Yes	Yes
Cyprus	Yes	No	Yes	Yes
Denmark				
Estonia	Yes	Yes	Yes	Yes
Finland	Yes	Yes	Yes	Yes
France	Yes	Yes	Yes	Yes
Germany	Yes	Yes	Yes	Yes
Hungary	Yes	No	Yes	No
Ireland	Yes	Yes	Yes	Yes
Italy	Yes	Yes	Yes	Yes
Latvia	No	No	Yes	No
Lithuania	Yes	No	No	No
Malta	Yes	No	Yes	No
Netherlands	Yes	Yes	Yes	Yes
Portugal	Yes	Yes	Yes	Yes
Romania	Yes	Yes	Yes	Yes
Slovakia	Yes	No	No	No
Spain	Yes	Yes	Yes	Yes
Sweden	Yes	Yes	Yes	Yes
UK	Yes	Yes	Yes	No

Genital herpes	Specialist STI clinic /practice	Primary care	Gynaecology /family planning clinic	Urology clinic/ practice
Austria	Yes	No	Yes	Yes
Belgium	Yes	Yes	Yes	Yes
Bulgaria	Yes	Yes	Yes	Yes
Cyprus	Yes	No	Yes	Yes
Denmark				
Estonia	Yes	Yes	Yes	Yes
Finland	Yes	Yes	Yes	No
France	Yes	Yes	Yes	Yes
Germany	Yes	Yes	Yes	Yes
Hungary	Yes	No	Yes	No
Ireland	Yes	Yes	Yes	Yes
Italy	Yes	Yes	Yes	Yes
Latvia	Yes	No	Yes	No
Lithuania	Yes	No	Yes	Yes
Malta	Yes	No	Yes	No
Netherlands	Yes	Yes	Yes	Yes
Portugal	Yes	Yes	Yes	Yes
Romania	Yes	Yes	Yes	Yes
Slovakia	Yes	No	Yes	Yes
Spain	Yes	Yes	Yes	Yes
Sweden	Yes	Yes	Yes	Yes
UK	Yes	Yes	Yes	No

Hepatitis B	Specialist STI clinic /practice	Primary care	Gynaecology /family planning clinic	Urology clinic/ practice
Austria	No	Yes	Yes	Yes
Belgium	Yes	Yes	Yes	Yes
Bulgaria	Yes	Yes	Yes	Yes
Cyprus	Yes	Yes	Yes	No
Denmark				
Estonia	Yes	Yes	Yes	No
Finland	Yes	Yes	No	No
France	Yes	Yes	Yes	Yes
Germany	Yes	Yes	Yes	Yes
Hungary	No	No	No	No
Ireland	Yes	Yes	Yes	Yes
Italy	Yes	Yes	Yes	Yes
Latvia	No	Yes	Yes	No
Lithuania	Yes	No	No	No
Malta	Yes	Yes	Yes	Yes
Netherlands	Yes	Yes	Yes	Yes
Portugal	Yes	Yes	Yes	Yes
Romania	No	No	No	Yes
Slovakia	Yes	Yes	Yes	Yes
Spain	Yes	Yes	Yes	Yes
Sweden	Yes	Yes	Yes	No
UK	Yes	Yes	Yes	Yes

Hepatitis C	Specialist STI clinic /practice	Primary care	Gynaecology /family planning clinic	Urology clinic/ practice
Austria	No	Yes	Yes	Yes
Belgium	Yes	Yes	Yes	Yes
Bulgaria	Yes	Yes	Yes	Yes
Cyprus	Yes	Yes	Yes	No
Denmark				
Estonia	Yes	Yes	Yes	No
Finland	Yes	Yes	No	No
France	Yes	Yes	Yes	No
Germany	Yes	Yes	Yes	Yes
Hungary	No	No	No	No
Ireland	Yes	Yes	No	Yes
Italy	Yes	Yes	Yes	Yes
Latvia	No	Yes	Yes	No
Lithuania	Yes	No	No	No
Malta	Yes	No	Yes	No
Netherlands	Yes	Yes	Yes	Yes
Portugal	Yes	Yes	Yes	Yes
Romania	No	No	No	No
Slovakia	Yes	Yes	Yes	Yes
Spain	Yes	Yes	Yes	Yes
Sweden	Yes	Yes	Yes	No
UK	Yes	Yes	No	No

Mycoplasma genitalium	Specialist STI clinic /practice	Primary care	Gynaecology /family planning clinic	Urology clinic/ practice
Austria	Yes	No	Yes	Yes
Belgium	Yes	Yes	Yes	Yes
Bulgaria	No	No	No	No
Cyprus	No	No	No	No
Denmark				
Estonia	No	No	Yes	Yes
Finland	No	No	No	No
France	No	No	Yes	Yes
Germany	Yes	Yes	Yes	Yes
Hungary	Yes	No	Yes	No
Ireland	No	No	No	No
Italy	Yes	Yes	Yes	Yes
Latvia	Yes	No	Yes	Yes
Lithuania	Yes	No	No	No
Malta	Yes	No	Yes	No
Netherlands	Yes	Yes	Yes	Yes
Portugal	Yes	Yes	Yes	Yes
Romania	Yes	Yes	Yes	Yes
Slovakia	Yes	No	No	No
Spain	Yes	Yes	Yes	Yes
Sweden	Yes	No	Yes	No
UK	Yes	No	No	No

Annex 13. Evidence tables for controlled trials of partner notification

Table A5.1. Characteristics of controlled trials of partner notification for HIV

First author Date	Study type, disease(s) covered	Country, Setting, Participants, Duration	Study question	Interventions (I)	Control group (C)	Randomised Enrolled	Outcomes	Analysed	Partners or means	Outcome estimate	Comments and interpretation
Landis, 1992 [45]	RCT, HIV	USA. Large health departments in North Carolina. Women and men knowing at least one name of partner Age mean: 30 y. Nov 1988 – Jun 1990	To test if provider referral is effective	*Choice between contract or provider referral* Participants could choose to notify partners. Public health counsellor attempted to notify in person remaining partners and partners not attending health department within two weeks after enrolment. Index patients received contact cards to give to partners.	*Patient referral* Index partners advised to locate partners, hand out contact cards, and request (including counselling about different ways) that partners come in for counselling and testing within one month. After one month counsellor attempted to contact remaining partners (these additional numbers reported as + x.x in last column).	Overall: 74 (F: 23; M: 51) I: 39 C: 35	1. Partners tested per ip Partners infected per ip 2. Partners contacted per ip Partners elicited per ip	1. I: 39 C: 35 2. I: 39 C: 35 3. I: 39 C: 35 4. I: 39 C: 35	1. I: 0.92 C: 0.14 + 0.57 contacted by counsellor 2. I: 0.23 C: 0.03 + 0.11 contacted by counsellor 3. I: 2 C: 0.29 + 1.2 contacted by counsellor 4. I: 4.03 C: 4.40	1. Mean difference favouring I: 0.78 2. Mean difference favouring I: 0.20 3. I better than C ($p<0.001$; based on proportion of partners contacted / partners elicited = 50% vs. 7%)	1) Only a fraction of screened and eligible patients recruited in the study limiting its external validity; 2) Intervention I some kind of contract referral; 3) Inclusion criteria limit generalisability. **Interpretation:** In selected populations, choice between patient and provider referral (with contract) increases the number of partners tested compared to patient referral.

Abbreviations: C – control group; I – intervention group; ip – index patient; RCT – randomised controlled trial

Table A5.2. Characteristics of controlled trials and other comparative evidence of partner notification for syphilis, by first author

First author Date	Study type, disease(s) covered	Country, Setting, Participants, Duration	Study question	Interventions (I)	Control group (C)	Randomised Enrolled	Outcomes	Analysed	Partners or means	Outcome estimate	Comments and interpretation
Engelgau, 1995 [48]	Before-after study, Syphilis	USA STD clinics, Montgomery County. Women and men Age n/r 1990–1991	To describe the yield of new cases from index case interviews Before versus after campaign	*Provider referral* Provider referral by DIS during campaign which consisted of an increase in number of DIS and opening hours of STD clinics	*Provider referral* Provider referral by DIS before campaign	78 (Before-campaign) 151 (During campaign)	1. Partners treated per ip 2. Partners infected per ip	I: 78 C: 151	1. 2.5 (Before-campaign) vs. 3.9 (campaign) 1. 0.37 (Before-campaign) vs. 0.48 (campaign)	1. p<0.01 1. p=0.66	1) Campaign unclear.
Ogilvie, 2005 [49]	Before-after study, Syphilis	Canada Street nurses in Vancouver. Sex n/r (probably both sexes) Age n/r Oct 2000–Mar 2002 versus Apr 2002–Sep 2003	Description how street nurses incorporated a sexual network approach to improve contract tracing in heterosexual outbreak of syphilis	*Provider referral* Complex intervention to enhance identification of partners and index patients (especially 'on the street').	*Provider referral* Provider referral by street nurses.	All cases from British Columbia Centre for Disease Control in time period I: 321 C: 249	1. Cases linked to another case identified	1. I: 321 C: 249	2. I: 32% (104/321) C: 24% (60/249)	2. Absolute difference 8% (p=0.03)	1) Complex intervention; 2) Definition of outcomes unclear. **Interpretation:** Social networking can be used to increase the number of contacts in a heterosexual outbreak of syphilis.

First author Date	Study type, disease(s) covered	Country, Setting, Participants, Duration	Study question	Interventions (I)	Control group (C)	Randomised Enrolled	Outcomes	Analysed	Partners or means	Outcome estimate	Comments and interpretation
Peterman, 1997 [47]	RCT Syphilis	USA Not reported, Boward County, Fl; Tampa, Fl; Paterson, NJ. Women and men 79% black Age < 25 y.: 25% Dec 1990 – Mar 1993	To test effectiveness of different forms of partner referral	*Contract referral (I1)* Contracting index cases to notify partners within 2 days otherwise disease intervention specialist notifies partners on third day. *Provider referral +field notification (I2)* Disease intervention specialist notifies sex partners. *Provider referral +field blood testing(I3)* Disease intervention specialist notifies sex partners and had possibility to draw blood for testing in the field if partner seemed unlikely to come to clinic.	No control group	Overall: 1966 (F: 928; M: 1038) I1: 586 I2: 742 I3: 638	1. Partners treated per ip 2. Partners infected per ip 3. Partners tested per ip 4. Partners contacted per ip 5. Partners elicited per ip	1. I1: 586 I2: 742 I3: 638 2. I1: 586 I2: 742 I3: 638 3. I1: 586 I2: 742 I3: 638 4. I1: 586 I2: 742 I3: 638 5. I1: 586 I2: 742 I3: 638	1. I1: 0.67 I2: 0.61 I3: 0.62 2. I1: 0.20 I2: 0.18 I3: 0.18 3. I1: 0.92 I2: 0.87 I3: 0.86 4. I1: 1.2 I2: 1.1 I3: 1.1 5. I1: 6.4 I2: 4.2 I3: 6.9	1. Mean difference favouring I1 (vs. I2): 0.06; Mean difference favouring I1 (vs. I3): 0.05; Mean difference favouring I3 (vs. I2): 0.01	1) Group assignment was not concealed and the number of participants in groups is very different; 2) Contract referral arm was not very different to provider referral given that index cases had only 2 days to notify partners; 3) 9% of patients in I1 and I2 had blood drawn in the field although this was not allowed resulting in potential reduction of group differences. **Interpretation:** Provider referral identifies some infected partners but drawing blood in the field does not result in a relevant benefit. No conclusions about contract referral can be drawn from this study.
Brewer, 2005 [51]	RCT, Gonorrhoea, Chlamydia, syphilis	Reported in Table A5.3									

Abbreviations: C – control group; I – intervention group; ip – index patient; n/r – item not reported in manuscript; RCT – randomised controlled trial

Table A5.3. Characteristics of controlled trials of partner notification for gonorrhoea, chlamydia, non-gonococcal urethritis and trichomoniasis, by first author and year of publication

First author date	Study type, disease(s) covered	Country, setting, participants, duration	Study question	Interventions (I)	Control group (C)	Randomised/enrolled	Outcomes	Analysed	Partners or means	Outcome estimate	Comments and interpretation
Andersen, 1998 [50]	CCT Chlamydia	Denmark. General practices in Aarhus County. Women only Age n/r Dates not reported	To test if home sampling of urine is effective in increasing the test rate of partners	*Home sampling postal testing kit* Index patients take an envelope to male partner containing sterile container, information on collecting urine, and a prepaid return-envelope. Partner should send prepaid envelope to laboratory.	*Postal testing kit with practice sampling* Index patients take an envelope to male partner containing a request for the partner to visit his doctor, a contact slip, and a prepaid envelope to be given to the doctor for returning urethral swab.	Overall: 96 (F: 96; M: n/a) I: 45 C: 51	1. Partners tested per ip 2. Partners infected per ip 3. Partners contacted per ip 4. Time until testing partner	1. I: 45 C: 51 I: 45 C: 51 2. I: 45 C: 51 3. I: 45 C: 51	1. I: 0.98 C: 0.37 I: 0.27 C: 0.14 I: 1.44 C: 1.33 2. I: 12.6 days C: 17.7 days	1. I better than C ($p<0.01$; based on proportion of tested partners / contacted partners = 68% vs. 28%) 2. Mean difference favouring I: 0.13 (95%-CI: -0.03 to 0.29) 3. Mean difference favouring I: 0.11 4. Mean difference favouring I: 5.1 days (95%-CI: -1.6 to 11.8 days)	1) Short report limiting assessment of methodology; 2) Allocation by date of birth. **Interpretation:** Urine samples kits delivered by index patients and subsequent sampling at home is a simple and inexpensive method to increase the number of partners who get tested compared to sampling in offices.

First author date	Study type, disease(s) covered	Country, setting, participants, duration	Study question	Interventions (I)	Control group (C)	Randomised/enrolled	Outcomes	Analysed	Partners or means	Outcome estimate	Comments and interpretation
Brewer, 2005[51]	RCT, Gonorrhoea, chlamydia, or syphilis	USA. STD clinic, community hospital and other health providers in Colorado Springs. Women and men Age mean 21.2y Aug 2000 - Jun 2001	To compare the effectiveness of recall cues developed in prior research with first-name and individual characteristic cues	*Partner notification unclear (simple patient referral?)* Routine partner notification contact interviews plus location /alphabetic/ network/role cues (I1) or first-name cues (I2)	*Partner notification unclear (simple patient referral?)* Routine partner notification contact interviews plus individual characteristics cues (C)	Overall: 123 participants, F:70; M:53) I1: 35 I2: 41 C: 47	1. Partners located per ip 2. Partners elicited per ip	1. I1: 35 I2: 41 C: 47 2. I1: 35 I2: 41 C: 47	1. I1: 1.51 I2: 1.12 C: 1.02 (total) I1: 0.11 I2: 0.10 C: 0.00 (elicited by cues and located) 2. I1: 2.8 I2: 2.14 C: 2.73 (total) I1: 0.57 I2: 0.29 C: 0.28 (elicited by cues)	1. I1, I2 favoured Mean number elicited by cues who were then located 2. I1 favoured: Mean number of partners elicited by cues	1) Only 38% of eligible cases participated 2) 83% had chlamydia only, 9% gonorrhoea only, 7% both, 1% had syphilis

First author date	Study type, disease(s) covered	Country, setting, participants, duration	Study question	Interventions (I)	Control group (C)	Randomised/enrolled	Outcomes	Analysed	Partners or means	Outcome estimate	Comments and interpretation
Cameron, 2009 [38]	RCT, Chlamydia	UK. FPC, GUM and TOP clinics, Edinburgh. Women only Age mean 22.1 y May 2004-Dec 2006	To determine whether postal testing kits or patient delivered partner therapy reduce re-infection rates compared to patient referral	*Patient-delivered partner therapy (I1)* Package containing antibiotic given for each sexual partner, as well as information leaflet contact details of study nurse and GUM clinics *Postal testing kit (I2)* Postal testing kit and information leaflet with contact details for study nurse and GUM clinics given for each sexual partner	*Enhanced patient referral* Index patient given contact slips, information leaflet about chlamydia and addresses of clinics, phoned 4 weeks after study entry to see if contact successful	Overall: 505 asked, 330 randomized (F:330; M: n/a) Randomized I1: 110 I2: 110 C: 110 Analyzed I1: 62 I2: 57 C: 64 .	1.Proportion of index patients with persistent or recurrent infection (over 12 months) 2. Partners infected 3. Partners tested 4. Proportion of partners tested and/or treated 5. Partners contacted per ip (mean, reported by index patient) 6. Partners elicited	1. I1: 62 I2: 57 C: 64 2. I1: 110 I2: 110 C: 110 3. I1: 110 I2: 110 C: 110 4. I1: 125 I2: 124 C: 134 5. I1: 51 I2: 49 C: 46 6. I1: 110 I2: 110 C: 110	1. I1: 10 I2: 15 C: 7 2. I1: n/a I2: 31 C: 20 3. I1: n/a I2: 49 C: 40 4. I1: 52 I2: 51 C: 46 5. I1: 1.3 I2: 1.1 C: 1.1 6. I1: 125 I2: 124 C: 134	1. Odds ratio I1 v C 1.47 (0.54-4.02), I2 v C 2.32 (0.91-5.94), I1 v I2: 0.63 (0.27-1.48) 4. Odds ratio I1 v C 1.36 (0.80-2.33) I2 v C 1.34 (0.78-2.29)	Primary outcome for positive retesting anytime over 12 months (n=215) Index patient reported partner contact rates, poorer partner testing treating rates in women who attended TOP clinic

First author date	Study type, disease(s) covered	Country, setting, participants, duration	Study question	Interventions (I)	Control group (C)	Randomised/enrolled	Outcomes	Analysed	Partners or means	Outcome estimate	Comments and interpretation
Cleveland, 2001, [57]	RCT Gonorrhoea	USA. Public STD clinic. Sex n/r Age n/r Dates of study n/r	To test different forms of referring partners.	*Enhanced patient referral+ education (I1)* Patient referral with contact cards and standard interview plus educational pamphlet and health education. *Contract referral (I2)* Patient referral with contact cards and standard interview. If partners did not present within 3 days, then provider referral.	*Simple patient referral* Patient referral with contact cards and standard interview.	Overall: 1898 (F: 114; M: 1784) I1: 634 I2: 632 C: 632	1. Proportion of index patients with persistent or recurrent infection 2. Partners infected per ip 3. Partners tested per ip 4. Partners elicited per ip	1. I1: 333 I2: 337 C: 302 2. I1: 634 I2: 632 C: 632 3. I1: 634 I2: 632 C: 632 4. I1: 634 I2: 632 C: 632	1. I1: 6.3% I2: 7.7% C: 7.6% 2. I1: 0.25 I2: 0.37 C: 0.24 3. I1: 0.37 I2: 0.62 C: 0.37 4. I1: 3.30 I2: 2.90 C: 3.30	1. I1 vs. C: difference -1.3% (-5.5, 2.7%); I2 vs. C: difference 0.1% (-4.2, 4.3%); I1 vs. I2: difference -1.4% (-5.4, 2.5%) 2. Mean difference favouring I1 (vs. C): 0.01 (-0.04, 0.06); Mean difference favouring I2 (vs. C): 0.13 (0.07, 0.19); I1 vs. I2: 0.12 (0.06 to 0.18) 3. Mean difference of I1 vs. C: 0.0 (-0.07, 0.07); Mean difference favouring I2 (vs. C): 0.25 (0.17, 0.33); I1 vs. I2: 0.25 (0.17, 0.33) 4. Mean difference of I1 vs. C: 0.0 (-0.20, 0.20); Mean difference favouring C (vs. I2): -0.40 (-0.59, -0.21); I1 vs. I2: -0.40 (-0.59, -0.21)	1) This is an unpublished trial. Data were extracted from Mathews 2001 and an internal report. **Interpretation:** Contract referral might increase the number of partners who get tested compared to standard and counselling-enhanced patient referral.

First author date	Study type, disease(s) covered	Country, setting, participants, duration	Study question	Interventions (I)	Control group (C)	Randomised/enrolled	Outcomes	Analysed	Partners or means	Outcome estimate	Comments and interpretation
Golden, 2005 [39]	RCT, Gonorrhoea or chlamydia	USA. 2 STD clinics in King County, WA. Women and heterosexual men with at least one partner with contact information Age mean: 23 y. Sep 1998 – Mar 2003	To test if expedited partner treatment is effective in reducing persistent or recurrent infections	*Patient-delivered partner therapy* Packets to be delivered to partners by index patient (content: antibiotics; drug information; condoms; study personal contact info; brochure about STDs; info that care for STDs is free)	*Simple patient referral* Advise index patients to tell partners to seek care and that care is free.	Overall: 2751 (F: 2105; M: 646) I: 1375 C: 1376	1. Proportion of index patients with persistent or recurrent infection 2. Proportion with all partners treated 3 .Partners elicited per ip 4. Adverse effects	1. ACC I: 929 C: 931 ITT I: 1375 C: 1376 2. I: 850 C: 888 3. unclear 4. n/r	1. ACC I: 10% C: 13% ITT I: 7% C: 9% 2. I: 61% C: 49% 3. I: 1.5 (SD 1.1) C: 1.6 (SD 1.3) 4. n/r	1. I better than C, ACC: Δ 3% (95%-CI: 0 to 6%, p=0.04) ITT: Δ 2% (95%-CI: 0 to 4%; p=0.046) 2. Risk ratio favouring I: 1.2 (95%-CI: 1.1 to 1.4) 3. Mean difference favouring control: -0.1 4. Adverse effects mentioned as endpoint but not reported	1) Minimal partner notification in control group; 2) Partners in intervention group received additional information/ material; 3) Inclusion criteria limit generalisability; 4) Analysis by authors based on available cases. **Interpretation:** Patient-delivered partner therapy plus condoms and additional information slightly reduces persistent infection rates compared to minimal partner notification.

First author date	Study type, disease(s) covered	Country, setting, participants, duration	Study question	Interventions (I)	Control group (C)	Randomised/enrolled	Outcomes	Analysed	Partners or means	Outcome estimate	Comments and interpretation
Katz, 1988 [11]	RCT, Chlamydia	USA. STD clinic. Heterosexual men only Age n/r Dates of the study n/r (6 months in mid 1980s)	To compare different methods of partner referral.	*Simple patient referral (I1)* Patient referral by DIS; names elicited but no other identifying information, advice about importance of partner referral *Provider referral by DIS (I2)* Sexual history to elicit names and identifying information. DIS attempted to refer partners by phone, letters, or personal visits plus field follow-up.	*Simple patient referral with contact cards (C)* Patient referral by nurse; advice about importance of partner referral and referral letters. No names elicited.	Overall: 678 (F: n/a; M: 678) I1: 240 I2: 221 C: 217	1. Partners treated per ip 2. Partners infected per ip 3. Partners elicited per ip	1. I1: 240 I2: 221 C: 217 2. I1: 240 I2: 221 C: 217 3. I1: 240 I2: 221 C: 217	1. I1: 0.18 I2: 0.72 C: 0.22 2. I1: 0.03 I2: 0.09 C: 0.03 3. I1: 0.75 I2: 0.80 C: 1.16	1. Mean diff. favouring C (vs. I1) -0.04 (95%CI -0.12, 0.04); Mean diff. favouring I2 (vs. C) 0.50 (95% CI 0.37, 0.63) 2. Mean diff. I1 vs. C: 0.00 (95%CI -0.03, 0.03); Mean diff. favouring I2 (vs. C): 0.06 (95% CI 0.01, 0.11) 3. Mean diff. favouring C (vs. I1) -0.41 (95%CI -0.59, -0.23); Mean diff. favouring C (vs. I2) -0.36 (95% CI -0.55, -0.17)	Data also extracted from Mathews [19]; 2) Definition of outcomes unclear. **Interpretation:** Provider referral by disease intervention specialist is more effective in terms of treated partners compared to referral of partners by patients even if these are educated about STDs. However, the method employed in this trial was time-consuming

First author date	Study type, disease(s) covered	Country, setting, participants, duration	Study question	Interventions (I)	Control group (C)	Randomised/enrolled	Outcomes	Analysed	Partners or means	Outcome estimate	Comments and interpretation
Kissinger, 1998 [40]	CCT Chlamydia	USA. Family planning clinic, New Orleans. Women only 97.7% black Age mean 21 y. Oct 1993 – Dec 1994	To test if patient-delivered partner therapy is effective in reducing recurrent infection.	*Patient-delivered partner therapy* Antibiotics offered to index patient to deliver to partner.	*Simple patient referral* Referral card given to patient to deliver to partner. Card contained contact information of (STD) clinics.	Overall: 256 eligible (178 included in analysis) (F: 178; M: n/a) I: 43 C: 135	1. Rate of infection per person year	1. ACA: I: 43 C: 135	1. I: 11.5% C: 22.1%	1. I vs. C 11 per person year (95%-CI: 4 to 18; p<0.05); adjusted Odds ratio in logistic regression (Age) favouring I: 0.37 (95%-CI: 0.15 to 0.97)	1) Intervention group seen by one doctor with fewer working hours resulting in possible selection bias for patients enrolled; 2) Analysis based on available-case principle; 3) 70% of index patients were retested for chlamydia. **Interpretation:** Patient-delivered partner therapy might reduce the number of recurrent infections compared to partner referral.

First author date	Study type, disease(s) covered	Country, setting, participants, duration	Study question	Interventions (I)	Control group (C)	Randomised/enrolled	Outcomes	Analysed	Partners or means	Outcome estimate	Comments and interpretation
Kissinger, 2005 [41]	RCT, Gonorrhoea, chlamydia or NGU	USA Public STD clinics in New Orleans, LA. Men with at least one female partner Age <24 y.: 48% 95% black Dec 2001 – Mar 2004	To test if patient-delivered partner therapy or booklet-enhanced patient referral are effective.	*Patient-delivered partner therapy (I1)* Packages for up to four partners with antibiotics), written instructions about medication, adverse effects, and pager number of nurse. *Enhanced patient referral (patient referral + booklet) (I2)* Booklets of tear-out cards with information for partner and treatment guidelines for healthcare professional.	*Simple patient referral* Instruction to tell their partners that they needed to go to a healthcare facility for STD evaluation and treatment.	Overall: 977 (F: n/a; M: 977) I1: 344 I2: 348 C: 285	1.Proportion of index patients with persistent or recurrent infection 2. Partners treated per ip 3. Partners elicited per ip	unclear	1. Analysis-type unclear I1: 6% I2: 5% C: 12% Based on all pats who provided sample (n=289) I1: 23.0% I2: 14.3% C: 42.7% 2. I1: 1.14 I2: 0.93 C: 0.71 3: I1: 2.05 I2: 2.03 C: 2.03	1. I1 and I2 better than C (p<0.01) I1 vs. C: 6% I2 vs. C: 8% I1 vs. I2: -1% I1 vs. C: 20% I2 vs. C: 28% I1 vs. I2: -9% 2. Based on proportion of treated partners/all partners I1 vs. I2 11% 95%CI 6, 16%; p=0.007) I1 vs. C 21% (95%CI 15 to 16%; p=0.001) I2 vs. C 9% (95%CI 5, 15%; p=0.001)	1) Number of participants in the control group (PR arm) lower than in intervention arms; 2) Patients allocated according to month of attendance and months were randomised; 3) Method of outcome assessment in referral arms unclear; 4) Only 30% of index patients retested for chlamydia. **Interpretation:** Patient-delivered partner therapy or patient referral enhanced by information for partners might be more effective in reducing persistent infections in index patients compared to simple patient referral.

First author date	Study type, disease(s) covered	Country, setting, participants, duration	Study question	Interventions (I)	Control group (C)	Randomised/enrolled	Outcomes	Analysed	Partners or means	Outcome estimate	Comments and interpretation
Kissinger, 2006 [42]	RCT, Trichomonas	USA. STD clinic in New Orleans. Women only 99.1% black Age mean 25.8y Dec 2001-Aug 2004	To test if patient-delivered partner therapy or booklet-enhanced patient referral are effective.	*Patient-delivered partner therapy (I1)* Packages for up to four partners with antibiotics, written instructions about medication, adverse effects, and pager number of nurse. *Enhanced patient referral+booklet (I2)* Booklets containing tear-out cards with information for partner and treatment guidelines for healthcare professional.	*Simple patient referral* Instruction to tell their partners that they needed to go to a healthcare facility for STD evaluation and treatment.	Overall: 458 (F: 458; M: n/a) Randomized I1: 155 I2: 154 C: 154 Analyzed I1: 156 I2: 147 C: 155	1. Proportion of index patients with persistent or recurrent infection 2. Proportion of index patients with at least 1 partner treated 3. Proportion of index patients who contacted partners	1. I1: 156 I2: 147 C: 155 2. I1: 156 I2: 147 C: 155 3. I1: 156 I2: 147 C: 155	1. I1: 9.4% I2: 9.0% C: 6.3% 2. I1: 76.5% I2: 57.6% C: 70.4% 3. I1: 90.3% I2: 83.7% C: 87.7%		1) Women needed to interact with the partner in all 3 arms 2) Unclear if all or only 1 partner treated/contacted per ip (86.8% reported only 1 partner)
Low, 2006 [52]	RCT Chlamydia	UK. GPs and GUM clinics. Women and men diagnosed at GP Age <25 y.: 89% Mar 2001 – Oct 2002	To test if partner notification by trained practice nurses and health advisers is effective.	*Enhanced patient referral at GP* Counselling by trained practice nurse (sexual history, advice regarding abstinence until partner completed therapy) plus patient referral using contact slips.	*Mixed forms of partner notification at GUM clinic* Referral to health adviser at GUM. If no contact of GUM within 1 week: 2 contact-attempts. Health adviser carried out partner notification either as patient referral, provider referral, or conditional referral plus contact slips.	Overall: 140 (F: 92; M: 48) I: 72 C: 68	1. Partners treated per ip 2.Proportion of ip with all partners treated 3. Proportion of ip with at least one partner treated 4. Partners elicited per ip	1. I: 72 C: 68 2. I: 72 C: 68 3. I: 72 C: 68 4. I: 72 C: 68	1. I: 0.74 (SD 0.6) C: 0.57 (SD 0.6) 2. I: 51% C: 31% 3. I: 65% C: 53% 4. I: 1.7 (SD 1.2) C: 1.4 (SD 1.0)	1. Mean difference favouring I: 0.16 (95%-CI: -0.02 to 0.34) 2. Risk difference favouring I: 20.5% (95%-CI: 4.1% to 36.9%) 3. Risk ratio favouring I: 1.2 (95%-CI: 0.9 to 1.6) 4. Mean difference favouring I: 0.3 (95%-CI: -0.01 to 0.6)	1) PercentAge of patients not receiving intervention in control group is high (ca. 31%); 2) Relatively small study. **Interpretation:** Practice based partner notification with referral of partners by index patients is at least as effective as referring patients to GUM clinic (various referral method).

First author date	Study type, disease(s) covered	Country, setting, participants, duration	Study question	Interventions (I)	Control group (C)	Randomised/enrolled	Outcomes	Analysed	Partners or means	Outcome estimate	Comments and interpretation
Montesinos, 1990 [53]	RCT, Gonorrhoea or NGU	USA. Health service of large midwestern university. Female and male students with partners at same university Age range: 18-23 y. Jul 1984 – Jun 1985	To test if incentive increases effectiveness of patient referral	*Enhanced patient referral +incentive* Counselling by nurse or physician plus contact cards (different styles) containing information about the relevant STD plus request to seek healthcare to be given to partners. If partner referral successful 3$ charge for healthcare at health service was waived for index patient and partners.	*Enhanced patient referral (C1)* Counselling by nurse or physician plus contact cards (different styles) containing information about the relevant STD plus request to seek healthcare to be given to partners. Telephone follow-up after 5 days if no partner referred. *Simple patient referral (C2)* Counselling only	Overall: 65 (F: n/r; M: n/r) I: 19 C1: 19 C2: 27	1. Partners tested per ip 2. Traceable partners per ip	1. I: 19 C1: 19 C2: 27 2. I: 19 C1: 19	1. I: 0.84 C1: 1.0 C2: 0.67 2. I: 1.3 C1: 1.1 C2: 1.2	1. Mean difference favouring C1: 0.16 (95%-CI: -0.44 to 0.76)	1) Very small study; 2) Selected population of university students only having partners at same university. 3) Randomised part with 38 pats compared to simple patient referral with 27 index pats from previous 6 months
Ostergaard, 2003 [54]	RCT Chlamydia	Denmark. Setting not reported, Women and men 100% white Age mean: 24 y. Feb 1999 – Mar 2000	To test if home sampling of urine is effective in increasing the test rate of partners	*Home sampling postal testing kit* Index patients advised give an envelope to partner containing sterile container, information on collecting urine/specimens, and a prepaid return-envelope. Partner should send prepaid envelope to laboratory.	*Postal testing kit* Index patient advised to give or mail a specimen-collecting packAge to partners. Partners were advised to bring the sampling kit to a healthcare provider accompanied by a letter explaining the study.	Overall: 1826 (562 recruited) (F: 1300 (414); M: 526 (148)) FI: 663 FC: 637 MI: 269 MC: 257 F+MI: 932 F+MC: 894	1. Partners of women tested 2.Partners of men tested 3. Proportion of index patients with ≥ 1 infected partner	1. I: 663 C: 637 2. I: 269 C: 257 3. I: 894 C: 932 ACA: I: 304 C: 258	1. I: 0.31 C: 0.14 2. I: 0.16 C: 0.04 3. I: 10% C: 5% I: 67% C: 34%	1. I better than C (p<0.0001) 2. I better than C (p<0.0001) 3. I better than C (p=0.0007) ACA: I better than C (p<0.001)	1) Patients consented after randomisation. External validity reduced; 2) Kits in both arms looked identical. Authors state that index patients were therefore blinded. However, blinding seems unlikely (communication between index patient and partners; index patients may have opened the kits). **Interpretation:** Urine samples kits delivered by index patients and sampling at home is a simple method to increase the number of partners who get tested compared to sampling in offices.

First author date	Study type, disease(s) covered	Country, setting, participants, duration	Study question	Interventions (I)	Control group (C)	Randomised/enrolled	Outcomes	Analysed	Partners or means	Outcome estimate	Comments and interpretation
Potterat, 1977[9]	CCT Gonorrhoea	USA. Public health department, El Paso City. Heterosexual men only Age n/r Feb 1975 – Sep 1975	To assess the effectiveness of contract referral compared to patient referral.	*Simple patient referral* Short interview without eliciting names of partners plus contact cards. (Index patients re-interviewed later to elicit partner names for study purposes only).	*Contract referral* Longer interview to elicit names and addresses partners. If partner did not attend the health service within 7-10 days they were notified by provider.	Overall: 187 (F: n/a; M: 187) I: 93 C: 94	1. Infected partners treated 2. Partners tested per ip 3. Partners infected per ip 4. Partners contacted per ip 5. Partners elicited per ip	1. I: 93 C: 94 2. I: 93 C: 94 3. I: 93 C: 94 4. I: 93 C: 94 5. I: 93 C: 94	1. I: 0.75 C: 0.71 2. I: 1.15 C: 1.27 3. I: 0.85 C: 0.71 4. I: 1.97 C: 1.70 5. I: 2.13 C: 2.04	1. Mean difference favouring I 0.04 (-0.21, 0.29) 2. Mean difference favouring C -0.12 (-0.44, 0.2) 3. Mean difference favouring I 0.14 4. Mean difference favouring I 0.27 5. Mean difference favouring I 0.09 (95%CI -0.32, 0.5)	1) Data were also extracted from Mathews 2001; 2) Trial conducted in 1975; 3) 9 of the infected partners in intervention group were identified by field efforts. **Interpretation:** Contract referral did not appear to increase the number of partners tested or treated.

First author date	Study type, disease(s) covered	Country, setting, participants, duration	Study question	Interventions (I)	Control group (C)	Randomised/enrolled	Outcomes	Analysed	Partners or means	Outcome estimate	Comments and interpretation
Schillinger, 2003 [43]	RCT Chlamydia	USA. Family planning, adolescent, primary care, or STD clinics; emergency and other hospital departments. Women only Age <25y: 83% Sep 1996 – Jun 2000	To test if patient-delivered partner therapy is effective.	*Patient-delivered partner therapy* Index patients instructed to tell partner(s) about exposure, encourage to seek treatment, and to offer packets (maximum 4) containing antibiotics, drug information, chlamydia fact sheet, advice to abstain 7 days from intercourse, healthcare provider contact information.	*Simple patient referral* Index patient were advised to tell partner(s) about exposure to chlamydia, seek treatment, and information sheet for each partner stating that he had been exposed to a STD and contact information of clinics.	Overall: 1889 (F: 1889; M: n/a) I: 946 C: 943	1. Proportion of index patients with persistent or recurrent infections	1. I: 946 C: 943 2. ACC: I: 728 C: 726	1. ACC I: 12% C: 15% ITT I: 9% C: 11%	1. ACC If drop-outs are excluded (as in article): I vs. C 3% (95%-CI: -1 to 6%; p=0.11) ITT If drop counted as free of infection: I vs. C. 2% (95%-CI: 0 to 5%; p=0.11)	1) Patients in the intervention group received more information about chlamydia and STDs to deliver to their patients. **Interpretation:** Patient-delivered partner therapy might slightly reduce the number of persistent or recurrent infections compared to patient referral even if additional information about STD is provided to partners.
Solomon, 1988, [55]	RCT Gonorrhoea	USA. Public STD clinic. Men only Age n/r 05/1984-01/1985	To compare different methods of partner referral.	*Enhanced patient referral + education* Patient referral with contact cards and educational videotape	*Simple patient referral* Patient referral with contact cards	Overall: 902 I: 456 C: 446	1. Partners tested	1. n/r	1. n/r	1. "No significant differences"	1) No details on results reported **Interpretation:** Not possible

First author date	Study type, disease(s) covered	Country, setting, participants, duration	Study question	Interventions (I)	Control group (C)	Randomised/enrolled	Outcomes	Analysed	Partners or means	Outcome estimate	Comments and interpretation
Tomnay, 2006 [56]	RCT, Chlamydia or NGU	Australia. Sexual health clinic in Melbourne.	To determine the acceptability of the Internet, specifically a website for use in standard partner notification	*Enhanced patient referral* Patients given 5 letters with website address, user ID and password to access information on CT and NGU	*Simple patient referral* Patients given 5 standard partner notification letters	Overall: 105 Randomized I: 73 C: 32 Analyzed I: 68 C: 29	1. Number of traceable partners per ip 2. Partners contacted per ip 3. Patients traced all contactable partners 4. Patients traced any contactable partners 5. Acceptablility of the Internet	1. I: 68 C: 29 2. I: 68 C: 29 3. I: 68 C: 29 4. I: 68 C: 29	1. I: 161 C: 69 2. I: 1.5 C: 1.7 3. I: 55% C: 65% 4. I: 84% C: 86% 5.100% partners	1. n/r 2. No sig difference between groups p=0.18 3. I v C OR 0.63 (95% CI 0.23-1.69) 4. I v C OR 0.97 (95% CI 0.81-1.16) 5. No partners had objection to website 0% (95% CI 0 - 5) or complained.	1) Block randomization 2:1 2) Only 21 women in trial 3) User ID valid 2 visits then inactivated 4) Patients reported if traceable partners contacted 1 week after attending clinic 5) Only 8 partners hit the website, and only 2 completed questionnaire 6) Primary outcome was acceptability to partners 7) Only 30% ip with 3 or more partners contacted all of them vs. 73% of those with 2 or fewer (p=0.01)
Wilson, 2008 [44]	RCT, Gonorrhoea or chlamydia	USA. 2 STD clinics in Brooklyn, NYC. Women and men Age mean 25.1y (I) 24.9 (C) 92% black Jan 2002 - Dec 2004	To assess the effectiveness of approaches targeting improved STI sexual partner notification through patient referral	*Enhanced patient referral* Patient gets 2 sessions with health educator, counselling, plan, support materials, referral slips, contract signing, follow-up phone call to review progress	*Simple patient referral* Patient has brief discussion with health educator, referral slips	Overall: 600 randomized, (F:246; M:354) I: 304 C: 296	1. Proportion of index patients with persistent or recurrent infection up to 6 months 2. Proportion with at least 1 partner notified at 1 month 3. Adverse events	1. I :253 C :263 2. I: 287 C: 285	1. I: 6% C: 11% 2. I: 92% C: 86% 3.33% report argument, 4% physical violence as a result of PN, but no significant difference between groups.	1. I better than C Adjusted OR C vs. I 2.15 (95%CI 1.12, 4.14)	1) Men in intervention group less likely to have recurrent/persistent infection (I: 3% v C: 12% p= 0.01) Women NS (I: 10% v C: 11% p=0.82)

Abbreviations: ACC – according to protocol; C – control group; CCT – controlled clinical trial (not randomised); DIS – disease intervention specialist; I – intervention group; ip – index patient; ITT – intention to treat; n/a – item not applicable; n/r – item not reported in manuscript; RCT – randomised controlled trial

Annex 14. Evidence tables for non-comparative studies of partner notification, according to infection

First author date	Study type, disease(s) covered	Special group(s)	Country, Setting, Participants, study duration	Study question	Interventions (I) or study method	Sampling method	Eligible Included Analysed	Outcomes	Quantitative results	Effect size or qualitative results	Comments
Gonorrhoea, Chlamydia or NGU											
Alary, 1991 [80]	Observational study, Gonorrhoea or chlamydia	Different providers	Canada Community health department Quebec Women and men Mar – Sep 1986	To compare results of contact tracing by specialised nurse and physicians	*Contract referral* Contract referral by physician (GP or specialist) or nurse (patient choice)	All diagnosed included	104 (60 nurse; 44 physician)	1. Proportion of partners tested positive per partners elicited 2. Partners elicited	1. 50% (54/108; nurse) vs. 20% (7/35; physician) 2. 2.55 (nurse) vs. 1.59 (physician)	1. p=0.002; RR=2.5 (95%-CI: 1.26 to 4.98) 2. p=0.0042 (Sex distribution was different in both groups: stratified analysed by sex: 2.38 vs. 1.21; p<0.0001)	1) Statistical analysis unclear; 2) Assignment to comparison groups according to patient's preferences.
David, 1997 [81]	Audit/chart review, Gonorrhoea (including coinfection with chlamydia)	MSM	UK STD clinic Coventry Men only 1991 – 1994	To evaluate the implementation and outcome of partner notification MSM versus non-MSM	*Choice of patient or provider referral* Patients choose between patient referral (plus contact slip) or provider referral both guided by health adviser	All diagnosed included	237 (36 MSM ; 201 heterosexual)	1. Partners elicited	1. 1.56 (MSM) vs. 1.63 (non-MSM)	n/r	1) Low number of MSM; 2) Only partners elicited reported.

First author date	Study type, disease(s) covered	Special group(s)	Country, Setting, Participants, study duration	Study question	Interventions (I) or study method	Sampling method	Eligible Included Analysed	Outcomes	Quantitative results	Effect size or qualitative results	Comments
Golden, 2007 [82]	Before/after implementation of program (mixed cross-sectional and cohort study) Gonorrhoea or chlamydia	Age <25 67%	USA STD clinic, FPC public health clinics, private sector in Seattle and King County Women and men Age : n/r Apr 2004 - Aug 2005	To evaluate a PN program for GC and CT that involves communitywide access to free patient delivered partner therapy and use of case-report forms to triage patients to get PN assistance	*Patient-delivered partner therapy* Routine PDPT therapy by clinicians, triage using new case report forms. Compare before and after program	Random sample of all heterosexuals diagnosed with GC or CT	8076 eligible 1757 included 2396 or 1757 interviewed in total (77% F)	1. Partners treated per ip 2. Proportion of all partners that get treated 3. Proportion of ip with all partners treated 4. Risk factors in having untreated partner	1. 2461/2396 2. 66% 3. 36% v. 77% (with partner notification efforts)	1. 16% after program vs 5.6% before got PDPT from provider OR 3.2 (95% CI 2.5-4.1) 3. OR for having any untreated partners 0.63 (95% CI 0.52-0.74) for after vs before program	1) Risk factor in having untreated partners are >1 sex partner in 60d before diagnosis, sex partner ip does not intend having sex with anymore 2) Partner notification assistance improves PN outcomes 3) Reporting unclear, numbers don't add up logically. Not clear if inclusion and exclusion criteria defined prior to study
Haddon, 1998 [83]	Cross-sectional study Gonorrhoea or chlamydia	Gender	UK Obstetrics and gynaecology clinics, PN done in GUM clinic, Nottingham Women only Age: mean 22.1y (14-45y) Dates n/r	To develop a local strategy for managing cases of CT and GC	*Unclear* Standard clinic protocol followed	All diagnosed got fast track appointments, those who attended were included	294 eligible 231 included 231 analysed	1. Partners treated per ip 2. Proportion of ip with ≥ 1 partner treated	1. 194/231 2. 74%		1) Partner notification method not described

First author date	Study type, disease(s) covered	Special group(s)	Country, Setting, Participants, study duration	Study question	Interventions (I) or study method	Sampling method	Eligible Included Analysed	Outcomes	Quantitative results	Effect size or qualitative results	Comments
Menza, 2008[84]	Chart review Gonorrhoea or chlamydia	MSM	USA STD clinics and private providers in Seattle and King County. PN done by public health dept. Men only 71% white Age: median 33 Jan - Dec 2004	To evaluate PN practices among MSM with GC or CT infections, assess utility of offering PN assistance and compare patient self-reported PN outcomes to those recorded using DIS disposition codes	*Provider and patient referral* Standard PN interview during visit to STD clinic or at 3 attempts to contact. Only 18 asked for provider referral, others did patient referral. Contact time last 60d.	All diagnosed	409 eligible 313 included 313 analysed	1. Partners elicited per ip 2. Traceable partners per ip 3. Partners contacted per ip 4. Partners treated per ip 5. Proportion of ip with ≥ 1 partner treated 6. Proportion of ip with all partners treated 7. Proportion of elicited partners notified	1. 1037/313 mean 3.3 (SD 4.9) 2. 634/313 3. 318/313 4. 198/313 5. 165/313 53% 6. 93/313 30% 7. 318/1037 31%	Multivariate analysis: Factors associated with successful PN: Future sex partner: OR 4.32 (95% CI 2.44-7.65) Phone v clinic interview OR 2.51 (95% CI 1.09-5.78) Factors associated with worse PN: >1 sex partner OR 0.34 (95% CI 0.16-0.75) >1 anonymous partner OR 0.85 (95% CI 0.39-1.77) Met partner in internet OR 0.32 (95% CI 0.12-0.84) Partner from outside Seattle OR 0.15 (95% CI 0.04-0.55)	1) High number of anonymous partners 2) Many ip who did not give information about any partner were not included 3) 50% partners of MSM are anonymous, 70% never notified

First author date	Study type, disease(s) covered	Special group(s)	Country, Setting, Participants, study duration	Study question	Interventions (I) or study method	Sampling method	Eligible Included Analysed	Outcomes	Quantitative results	Effect size or qualitative results	Comments
Ross, 1999 [85]	Observational study (multivariable analysis) Gonorrhoea or chlamydia	Age <25 MSM MEG black Caribbean Barriers	UK GUM clinic Birmingham. Women and men Age: n/r Homosexual: 29 Jarman score ≤ 8: 315 Jan 1997 – Oct 1997	To assess and compare factors associated with successful contact tracing	*Patient referral* Patient referral guided by health adviser with help of contact slips	All diagnosed included with ≥ 1 partner named	196 (gonorrhoea) 417 (chlamydia)	1. Proportion of index patients with all partners tested	1. 32% (62/196; gonorrhoea); 33% (139/417; chlamydia)	Factors associated with all partners treated: Gonorrhoea: > 1 partners elicited (OR 1.44; 95%-CI: 1.04 to 2.01) Chlamydia: History of gonorrhoea (OR 1.46; 95%-CI: 1.12 to 1.9) Factors not associated (selection): race; Age < 25 y.; socioeconomic status; sexual orientation	1) Description of statistical method unclear.
van Duynhoven, 1998 [86]	Observational study (multivariable analysis) Gonorrhoea or chlamydia	MSM LEA Barriers	Netherlands STD clinic Rotterdam. Women and men Age n/r Jan 1994 – Dec 1994	To study characteristics of index patients and partnerships related to outcome of partner notification	*Patient referral* Patient referral guided by public health nurse plus contact slip (plus offering assistance in notifying)	Consecutive patients	454 250 250 (55 gonorrhoea; 182 chlamydia; 13 both)	1. Proportion with ≥ 1 partner referred by index patient	1. 61%	Factors associated with ≥ 1 self referred partners: Surinam (OR 0.3; 95%-CI: 0.05 to 0.7); other foreign (OR 0.2; 95%-CI: 0.1 to 1.1); "one night stand" (OR 0.1; 95%-CI: 0.04 to 0.4); Age of sexual partner > 25 y. (OR 6.4; 95%-CI: 2.2 to 18.6); Time since last contact: 8-30 days (OR 0.6; 95%-CI: 0.1 to 3.1); 31-90 days (OR 0.3; 95%-CI: 0.1 to 1.1); >90 days (0.1; 95%-CI: 0.01 to 0.4)	1) Short report limiting assessability.

First author date	Study type, disease(s) covered	Special group(s)	Country, Setting, Participants, study duration	Study question	Interventions (I) or study method	Sampling method	Eligible Included Analysed	Outcomes	Quantitative results	Effect size or qualitative results	Comments
van de Laar, 1997 [87]	Observational study (multivariable analysis) Gonorrhoea or chlamydia	Barriers	Netherlands STD clinic Amsterdam, Women and men Age n/r Sep 1986 – Dec 1988	To identify characteristics associated with outcome of partner notification	*Patient referral* Patient referral guided by public health nurse with contact slips	All patients diagnosed who gave written consent and were referred to nurse	396 355 355	1. Proportion of tested partners per elicited partners	1. 41% (236/580)	Factors associated with success of PN: Non-Dutch (OR 0.19; 95%-CI: 0.08 to 0.44); Commercial contact (OR 0.05; 95%-CI: 0.02 to 0.17); Casual contact (OR 0.14; 95%-CI: 0.07 to 0.29); Age of sexual contact: < 20 y. (OR 0.29; 95%-CI: 0.11 to 0.76); 26-30 (OR 0.44; 95%-CI: 0.21 to 0.91); >31 (OR 0.35; 95%-CI: 0.15 to 0.80); timing of contact: < 1 week (OR 0.35; 95%-CI: 0.15 to 0.83); > 1 month (OR 0.78; 95%-CI: 0.38 to 1.64)	1) No MSM included.
Chacko, 2000 [59]	Qualitative study of patients Gonorrhoea or chlamydia	Barriers	USA Urban family planning clinic, Houston, Texas Women Age median: 18 y. 57% had notified ≥ 1 partner 1995 – 1996	To understand communication process in patient referral in adolescent females	*Patient referral* Patient referral without specific counselling how to notify partners *Structured face-to-face interview*	Convenience	54 females 31 (who notified ≥ 1 partner) 31	1. Barriers: None (90%); Uncomfortable with discussion (7%); Fear (3%) 2. Method of notification: Face-to-face (52%); Phone (45%) 3. Content: Disease name (94%); Source of infection (39%); Need for treatment (58%); Where to get treated (29%) Style: Direct (48%); Direct and sensitive (32%); Accusatory and angry (20%)			1) Small study on adolescents with little information on barriers.

First author date	Study type, disease(s) covered	Special group(s)	Country, Setting, Participants, study duration	Study question	Interventions (I) or study method	Sampling method	Eligible Included Analysed	Outcomes	Quantitative results	Effect size or qualitative results	Comments
Gorbach, 2000 [65]	Qualitative study of patients Gonorrhoea, Chlamydia or NGU	Barriers	USA STD clinic Seattle. MSM: 24% Black: 46% Age mean: F: 22 y.; M: 28 y.; MSM 32 y. Jun 1996 – Jun 1998	To describe patterns of partner notification reported by patients with STI.	*Partner notification* *Ethnographic and structured interview*	n/r (convenience?)	79 (F: 30; M: 30; MSM: 19)	1. Tell all partners (mostly index patients with only 1 partner): Why? responsible about stopping transmission; concern for partner's health 2. Tell only main partner: Why?: other partners are ex-partners and don't wanting further contact; don't care about partners; can't locate 3. Tell all but main partner (no hetero (F or M): Why?: 1 MSM – believed main partner not exposed 4. Tell some partners (: Why? can't locate; partners not perceived as exposed; oral sex only (in MSM) 5. Tell no partners: Why? can't locate; partnerships over; fear of violence or gossip; don't care (blaming partners for infection); assume partner already knows; 6. Fear of gossip and stigma especially in young hetero F or M emerged as strong barrier to PN; fear of violence expressed by some F; fear of rejection expressed by MSM with gonorrhoea			Qualitative study of patients

First author date	Study type, disease(s) covered	Special group(s)	Country, Setting, Participants, study duration	Study question	Interventions (I) or study method	Sampling method	Eligible Included Analysed	Outcomes	Quantitative results	Effect size or qualitative results	Comments
Gonorrhoea											
Apoola, 2005 [88]	Chart review Gonorrhoea	Gender MEG	UK STD clinic, Birmingham. Women and men Black 60.5% Age median: black 24, white 25 y Jan - Jul 2002	To assess if gender and ethnicity were associated with differences in the number of patients satisfactorily treated and number of partners successfully treated	*Unclear* Patients see health adviser at diagnosis for partner notification interview (probably patient referral)	Case notes of 400 patients reviewed	400 analysed (F: 134; M: 266; MSM: 29)	1. Number of partners elicited per ip 2. Proportion of ip with ≥ 1 partners treated 3. Partners treated per ip within 4 weeks	1. 634/400 Black: mean 1.64 median 1.5 (1-6) White: mean 1.52 median 1.0 (1-4) 2. Overall 138/400: 34.5% 34% black v. 31% white 45% F v. 28% M, 38% black F v. 32% black M 41% white F v. 24% white M 3. mean 0.39	Multivariate analysis: Older pats more likely to test -ve at 4w OR 1.04 (95% CI 1.012-1.06) p= 0.003 Men v women less likely ≥ 1 partners treated within 4w OR 0.5 (95% CI 0.3-0.7) p=0.001	1) Unclear if the first 400 patients analysed or if these are all patients in this time period
Fitzgerald et al.1998 [89]	Chart review / audit Gonorrhoea	MSM MEG Gender	UK All GUM clinics. Women and men MSM: 16% White: 50% Age: mean women 22.8-27.7y, men 28.9 - 31.8y Jan - Mar 1995	To quantify the outcome of PN in all UK GUM clinics	*Unclear* PN practice determined by individual clinic policy, some used contact slips	Retrospective postal survey of big and small clinics, London and provincial clinics	1308 included 1260 analysed (F: 417, heterosexual M: 622; MSM: 201)	1. Number of partners elicited per ip 2. Number of infected partners per ip 3. Number of contacts attending clinic per ip	1. 1887/1260 mean 1.50 1.20 F v. 1.60 M 2. 410/1260 (75% of contacts attending clinic) 3. 621/1260 mean 0.50 F v. 0.50 hetero M v. 0.30 MSM, Clinics: 0.30 big London v. 0.40 small London v. 0.50 big provincial v. 0.60 small provincial	Multivariate analysis: Contacts of homosexuals less likely to attend than of heterosexuals OR 0.42 (95% CI 0.29-0.59) Any contact less likely to be seen in London clinic vs. provincial clinic OR 0.41 (95% CI 0.32-0.53) or in clinic with inadequate HA time OR 1.90 (95% CI 1.38-2.60)	1) Clinics reported up to a maximum of 30 cases in 3 months 2) Contacts attending per ip not influenced by gender or ethnicity but by male sexual orientation p<0.001 3) PN outcome less good in metropolitan than provincial clinics

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Lewis, 1999 [90]	Cross-sectional study Gonorrhoea	MSM Gender	UK GUM clinic London. Women and men MSM 1% Age: women 14-38, men 16-47y Jan - Dec 1996	To describe clinic's experience of GC infection in 1996 and discuss findings in relation to the National Audit	*Patient referral* Health education given and contact tracing initiated during interview with health adviser	All attending clinic diagnosed with GC	210 eligible 210 included 183 interview with HA (78 F , 129 hetero M, 3 MSM)	1. Number of partners elicited per ip 2. Number of partners treated per ip 3. Proportion of contacts treated	1. 102/78 F v. 334/129 hetero M v. 28/3 MSM 2. 61/78 F v. 71/129 hetero M v. 2/3 MSM 3. 60% F v. 21% hetero M v. 7% MSM		1) Only 55% new GC episodes re-attend for test of cure 2) 29% reported contacts attend clinic for testing and treatment. 3) 31% F , 19% hetero M 0% MSM co-infected with chlamydia
Rogstad, 1998 [91]	Observational study Gonorrhoea	MEG Afro-Caribbean	UK GUM clinic Nottingham. Women and heterosexual men Age n/r Oct 1992 – Sep 1993	*Partner referral* To determine if success of partner notification is related to sex or ethnicity Black versus white	*Patient referral* Patient referral guided by health adviser with help of contact slips	All primary attendees diagnosed with gonorrhoea	477 452 452 (152 black; 292 white)	1. Proportion of partners tested per elicited partners 2. Partners elicited	1. 50% (black M) vs. 60% (white M) 43% (black F) vs. 63% (white F) 2. 1.49 (black M); 1.29 (white M); 1.11 (black F); 1.24 (white F)	1. M: p=0.045; relative risk=1.21 (95%-CI: 1.0 to 1.47) F: p=0.016; relative risk=1.47 (95%-CI: 1.02 to 2.12)	1) Short report limiting assessability.
Rogstad, 1999 [92]	Audit/chart review Gonorrhoea	MSM	UK GUM clinic Nottingham. Men Oct 1992 – Sep 1993	To examine whether success of PN is affected by sexual orientation MSM versus heterosexual men	*Patient referral* Patient referral with contact slips (health adviser)	All diagnosed included	278 males 278 278 (253 hetero; 25 MSM)	1. Proportion of partners tested per partners elicited 2. Partners tested 3. Partners elicited	1. 38% (MSM) vs. 55% (hetero) 2. 0.52 (MSM) vs. 076 (hetero) 3. 1.36 (MSM) vs. 1.38 (hetero)	1. p=0.054; relative risk=1.45 (95-CI%: 0.94 to 2.25) 2. n/r 3. n/r	1) Number of MSM much smaller compared to heterosexual men; 2) Results identical if only white men included in analysis (n=133)

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Chlamydia											
Apoola, 2004 [93]	Before-after study but analysed combined Chlamydia	Age<25 MEG (black)	UK GUM clinic, Birmingham. Age median: 23 y. Feb – Jun 2001; Feb – Jun 2002	To assess effects of new follow-up protocol for index patients. Age < 25 y. versus Age ≥ 25 y.	*Patient referral* 2001: Health adviser for contact tracing and 2-week personal follow-up in clinic. 2002: Health adviser for contact tracing and 2-week telephone follow-up.	First 400 cases in each period	800 (F: 390; M: 410) 800 800 (≤ 25y. 42%; > 25y: 497; black: 340; white 350)	1. Proportion with ≥ 0.6 partners treated	1. ≤ 25 y.: 42% (128/303) > 25 y.: 40% (197/497) Black: 34% (144/340) White: 47% (165/350)	1. p=0.5 p<0.0001	1) Outcome defined; 2) Overall no. partners treated (0.52) comparable to RCTs.
Bakken, 2008 [94]	Cross-sectional study Chlamydia	Age<25 Multiple partners Adverse events	Norway Student health centres, Oslo & Trondjheim. Men only 90% students Age: mean 23.2y SD 2.0 Apr-Dec 2005	To investigate treatment compliance, PN and attendeance for test of cure in men with Ct.	*Unclear* Patient delivered drug therapy for some patients, not known for the rest face to face interview with health centre staff	All diagnosed patients	81 eligible 81 asked 71 included 35 analysed	1. Partners elicited per ip 2. Proportion of ip with ≥1 partner treated 3. Proportion of ip with all partners treated 4. Proportion of partners notified 5. Number of ip with persistant infection	1. 165/65 2. 11/12 for 1 partner vs. 6/7 for 2 partners vs. 16/16 for >2 partners 3. 11/12 for 1 partner vs. 5/7 for 2 partners vs. 4/16 for>2 partners 4. 68% 63/95 5. 10% 4/40	Adverse events: 4/16 index cases reported that the Ct test had a negative impact on the relationship	1) 65/71 ip interviewed at treatment visit(for PN intentions), 35/40 ip at test of cure visit (for PN actions) 2) Only 56% (40/71) attended for a test-of-cure visit

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Carré, 2008 **[95]** **Part one**	Interview with contact tracer about all consecutive patients in time period Chlamydia	Different providers (councellors, midwives, doctors)	Sweden Setting not clearly reported, probably GUM-clinic Västerbotten area. Women and men Age mean 23.8y Jan 2002 – Dec 2002	To evaluate the Swedish model for contact tracing and especially the "Västerbotten Model" with centralised, extended contact interview periods, sometimes by telephone.	*n/r* "no directions regarding PN were given to the healthcare providers", but in introduction following information given: sexual history taken for the last 12 month, notified parters are obliged to seek medical advice or the CMO can force testing.	All diagnosed patients reported to the County medical officer	550 eligible 534 participating 533 analyzed (78% of IP counselled by counsellors, 20% by midwives and 2% by doctors)	1. number of partners elicited per index patient 2. number of traceable partners per index patient 3. number of partners tested per index patient 4. number of infected partners per index patient	1. 1076/ 414 for counsellors, 265/106 for midwives, 18/13 for doctors 2. 874/414 for counsellors, 237/106 for midwives, 17/13 for doctors 3. 779/414 for counsellors, 100/106 for midwives, 14/13 for doctors 4. 411/414 for counsellors, 78/106 for midwives, 8/13 for doctors	Most infected partners found when time since last intercourse 0-2 (340/429 elicited) months, but also high percentage of infected contacts found for time since last intercourse >12 (11/16 elicited)	2.) This papers reports independent results from two different time periods, therefore extracted in two parts. 1.) Numbers in Text and Table for part one not matching, in text total of 534 index patients/ 1360 elicited partners, in table 533 index patients/ 1359 elicited partners

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Carré, 2008 **[95]** **Part two**	Cross-sectional study Chlamydia	Interview done by phone call/ personal appointment	Sweden Setting not clearly reported, probably GUM-clinic Västerbotten area. Women and men Age mean 24.0y Nov 2005 – Dec 2006	See above	*Provider referral* Partners asked by contact tracers to seek medical advies and confirm that they had, sexual history 12 month back, if interview done by phone call or appointment was chosen by index patients	All index patients who received PN services by one ot the 6 tracers who did most of the interviews in the examined time period.	567 eligible and analyzed	1. number of partners elicited per index patient 2. number of traceable partners per index patient	1. 689/310 for telephone interview, 780/257 for appointment 2. 609/310 for telephone interview, 655/257 for appointment	n/r	
Eitrem, 1998 **[96]**	Observational study Chlamydia	Different providers	Sweden Various health settings. Women and men Age mean 22.4 y. Jan 1995 – Oct 1995	To assess partner notification in an everyday setting Specialised social worker (STD clinic) versus health professional (physician, nurse, midwife; specialty n/r but not in STD clinic)	n/r	All diagnosed patients	159 149 80 (37 social worker; 43 health professional)	1. Partners elicited	1. 2.6 (social worker) versus 1.5 (health professional)	1. p<0.01	1) Small study; 2) Assignment to comparison groups according to patient's preferences; 3) Social worker were situated in STD clinic but comparison group were situated in non-specialised settings.
Evans, 2004 **[97]**	Chart review Chlamydia, or chlamydia/non-specific urethritis	Non-specialist health-care setting	UK FPC in Outer London. Sex n/r Age n/r Dec 2000 – Feb 2001; Dec 2001 – Feb 2002	*Referral of partners* To test the feasibility of managing STIs in community FPCs.	*Patient referral [IIIb]* Patient referral with contact slips	All diagnosed patients included	44 (F: n/r; M: n/r) 44 (37 received PN) 44	1. Partners tested	1. 0.43 (19/44)	n/a	1) Small study; 2) Follow-up of index patients unclear; 3) Result comparable to other studies in GUM settings.

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James, 1999 **[98]**	Observational study Chlamydia	Non-specialist setting AGE	UK Teenage clinic and local GUM clinic both in Nottingham. Females Age < 20 y.: 100% Jun 1995 – Jun 1997	*Partner referral* To develop a coordinated model of care for effective manAgement of chlamydia patients in a teenAge health clinic. TeenAge clinic versus GUM clinic	*Choice of three partner notification methods* Choice of patient, contract, or provider referral guided by health adviser	All diagnosed included	94 females 94 86 TeenAge clinic: 73 GUM: 13	1. Proportion of partners treated per elicited partners 2. Partners treated 3. Partners elicited	1. 82% (41/50; teen) vs. 86% (6/7; GUM) 2. 0.56 (teen) vs. 0.46 (GUM) 3. 0.68 (teen) vs. 0.54 (GUM)	1. p=0.64; relative risk=0.96 (95%-CI: 0.69 to 1.32) 2. n/r 3. n/r	1) Very few index patients in GUM clinic.
Jones, 2002 **[99]**	Observational study, Chlamydia	Non-specialist healthcare setting AGE	UK Community young people's clinic and GUM clinic at Royal Liverpool University both in Liverpool. Age < 26 y: 100% Aug 1999 – Mar 2000	*Health adviser in young people's clinic* To assess effectiveness of an outreach health adviser in a community young people's clinic Young people's clinic versus GUM clinic	*Patient referral [IIIb]* Interview and advise about the need for testing of partners provided by health adviser plus contact slip *Health adviser in GUM clinic* n/r	All diagnosed included (community clinic) All diagnosed in 10/1999 (GUM)	63 63 63 GUM: 25	1. Partners treated 2. Partners infected 3. Partners tested 4. Partners elicited	1. 0.62 2. 0.35 vs. 0.28 3. 0.62 (39/63) vs. 0.68 (17/25) 4. 1.19 (75/63) vs. 1 (25/25)	1. n/r 2. n/r 3. Proportions of partners tested per elicited partners: 52% (39/75) vs. 68% (17/25); p=0.25	1) Small study.

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Lim, 2005 **[100]**	Cross-sectional and qualitative study Chlamydia	Age<25 Barriers Adverse events	USA Adolescent medicine, and teen pregnancy clinics, paediatric 1° care and ER, NY Women only Age:mean 18.3y (range 13-21y) Black 36% Hispanic 46% Mar 2000 - May 2002	To determine the proportion of inner-city adolescent girls who notify their partners, to examine their attitudes and perceptions about PN, and if they know partners being treated	*Simple patient referral* Clinicians trained to advise each patient to notify partners	Adolescent girls diagnosed with CT with +ve Gen Probe tests	165 eligible 55 included	1. Number of ip who report ≥ 1 sex partner treated 2. Number of ip who notified ≥ 1 sex partner 3. Qualitative results	1. 54% (22/41 who notified) 2. 75% 41/55	Barriers: 2% did not tell for fear of physical violence, 4% feared upsetting partner, 2% feared relationship break-up Adverse events: For 18% sex partner got upset, 13% accusative, 9%partners did not believe, 0% violence or relationship break-up	1) Many of those not included were diagnosed in paediatric ER
Manavi, 2006 **[101]**	Audit/chart review Chlamydia	Gender Multiple partners	UK GUM clinic, Edinburgh. Women only Age: Jun 2002-Dec 2003	To examine the prevalence of infection among male contacts of women with endocervical chlamydia	*Patient referral* Counselling by health adviser, male contacts up to 6 months ago elicited, reminder letter to ip if contact had not attended within 1 month	Consecutive women diagnosed with Ct	488 eligible 404 included	1. Partners elicited per ip 2. Partners tested per ip 3. Partners infected per ip 4. Partners contacted per ip	1. Overall 632/404 2. mean 0.32 (155/404) 3. Overall 64/404 (46/254 for 1 partner vs. 14/112 for 2 partners vs. 4/28 for 3 partners vs. 0/10 for ≥4 partners 4. 105/254 for 1 partner vs. 41/112 for 2 partners vs. 9/28 for 3 partners vs. 0/10 for ≥4 partners		1) Aim of this study is not to evaluate PN 2) Male partners seen and treated elsewhere were excluded.

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McMillan, 2007 **[102]**	Audit/chart review Chlamydia	MSM Number of partners	UK GUM clinic, Edinburgh. Men only MSM 100% Age: median 31y (IQR 13y) Feb 2003- Oct 2005	To assess urethral Chlamydia infection among male sexual partners of MSM with rectal chlamydia	*Unclear* "PN undertaken as is routine clinic policy"	Consecutive patients with rectal Chlamydia identified using COBAS Amplicor assay	243 episodes included (15 M had 2 episodes, 4 M had 3, 1 M had 4 , the rest 1 only) 217 men total (calculated)	1. Partners elicited per ip 2. Partners tested per ip 3. Infected partners per ip 4. Proportion of ip with ≥ 1 partner tested	1. Median 2.0 (range 1-50) 2. 90/243 (30/84 for 1 partner only, 27/61 for 2 partners, 30/98 for ≥3 partners) 3. 34/243 (16/84 for 1 partner only, 11/61 for 2 partners, 7/98 for ≥3 partners) 4. 87/243	3. Urethral chlamydia more likely to be found in men with only 1 sexual partner (53% of 30 men) than those with 2 or more partners in previous 3months (32% of 57 men) p=0.05	1) Only includes partners seen in a specific clinic 2) Only includes rectal Chlamydia, 17% had concurrent urethral Chlamydia 3) Arbitrary cut-off period of 3 months from contact or until last previous sexual partner was used for PN
van Valkengoed2002 **[103]**	Observational study Chlamydia	Barriers	Netherlands GPs Women and men Date n/r	To determine participation of partners of patients with asymptomatic C. trachomatis.	*Patient referral* Voluntary patient referral with help of information leaflet, urine sample kit, prestamped envelope, questionnaire	All consenting	97 93 93 60 index patients notified ≥ 1 partner	Being in a steady relationship independently associated with success of partner notification (OR=6.1; 95%-CI: 2.2 to 16.9)			1) Small study; 2) Statistical analysis not described.
Trichomonas											
Woodland, 2005 **[104]**	Audit/chart review Trichomonas	Gender	UK GUM clinic, Sheffield. Women only Age: <16 to >46y Oct 2002- Sep 2003	To investigate the management of trichomonas in Sheffield and to compare findings with UK national guidelines	*Unclear* Not described	Patients with first diagnosis of TV during trial period	78, all F	1. Proportion of ip with ≥ 1 partner treated 2. Proportion of ip with no partners treated	1. 27% (21/78) confirmed plus 20% (15/78) reported but not confirmed 2. 54% (42/78)	n/r	1) Health advisers only saw 50% of the study patients, most probably due to other concurrent STIs, so PN efforts may have been for these not for TV 2) Nearly 50% also had at least 1 other STD, 18% also had CT, 17% GC, 2.5% HIV

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Syphilis and HIV											
Kissinger, 2003 [105]	Observational study Syphilis and HIV	Adverse effects	USA STD clinic in New Orleans. Black: > 90% Heterosexual: > 80% Age ≥ 30 y: 50% LEA: ca. 47% Apr 1998 – Jul 2000	*Adverse events of partner notification* To compare PN for HIV and syphilis in terms of dissolution of partnerships, acquisition of new sex partners, and negative outcomes. HIV versus syphilis	*Contract referral [IV]* Elicitation of sex partners by DIS (HIV: 12 mo, syphilis: 3 mo); choice between patient and provider referral; provider contacts all partners not presenting within 1 month	All meeting inclusion criteria and consenting (≥ 18 y., in New Orleans, no partner, refusing PN)	429 (HIV: 208; syphilis: 221) 255 157 (HIV: 76; syphilis: 81)	1. Physical violence 2. Emotional abuse 3. Dissolution of partnerships 4. Partners contacted (verified by DIS) 5. Partners elicited	1. 9% (HIV: 9%, syphilis: 8%) 2. 24% (HIV: 24%, syphilis: 21%) 3. 47% (103/220; HIV: 46%, syphilis: 48%) complete PN vs. incomplete: 24% vs. 76% 4. 0.46 (HIV: 0.39; syphilis: 0.52) 5. 1.40 (HIV: 1.24 (94/76); syphilis: 1.56 126/81)	1. HIV vs. syphilis: p>0.72 complete vs. incomplete: p=0.012 complete: DIS documented contacting and notifying partners	1) Low number of participants; 2) Transparent definition of outcomes.

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Vest , 2007 **[106]**	Non-matched case-control study (chart review) HIV and/or syphilis	MSM	USA Setting n/r Residents of Austin, Texas Women and men Age: 37% cases and 27% controls <30y Jan 2004- Jun 2006	To compare notification efforts for sexual partners with traditional contact information and pseudonymous (e-mail) partners	*Provider referral* Contacted partners of cases by email, partners of controls using traditional contact details	Cases: Diagnosed with HIV and/or early syphilis with at least 1 pseudonymous sex partner Controls: No pseudonymous sex partners	654 eligible 318 included (45 F, 273 M) 53 cases (2 F, 51 M) 265 controls (43 F, 222 M)	1. Partners elicited per ip 2. Partners contacted per ip 3. Partners tested per ip 4. Partners infected per ip	1. 177/53 case 534/265 control 2. 88/53 cases 372/265 control 3. 71/53 cases 355/265 control 4. 19/53 cases 106/265 control	Bivariate analysis: 1) Cases with pseudonymous partners more likely to be M OR 4.94 (95% CI 1.16-21-06), white non-Hispanic OR 4.05 (95% CI 2.10-7.82) 2) More likely to have pseudonymous partners: MSM OR 12.01 (95% CI 1.61-89.40) Prior STI OR 2.33 (95% CI 1.28-4.25) Multiple partners OR 5.20 (95% CI 1.57-17.24) Partners have multiple partners OR 2.92 (95% CI 1.37-6.23)	1) For numerical outcomes partners evaluated = partners tested 2) 98% male cases and 80.6 controls had male-to-male sex
Syphilis											
Hogben, 2005 **[107]**	Observational study Syphilis	MSM	USA MSM only 2003	To report current effectiveness of partner notification for MSM	*Provider referral* Provider referral by DIS	All diagnosed included	1517	1. Partners treated 2. Partners tested 3. Partners contacted	1. 0.50 (283 index patients missing) 2. 0.72 (254 index patients missing) 3. 1.04	n/a	1) Large cohort study covering approx. 20% of all syphilis cases in USA.

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Jayaraman 2003 **[108]**	Audit/chart review Syphilis	MSM	Canada STD clinic, Calgary. Women and men Age: MSM median 37y (range 26-57) heterosexuals 24y (19-36) Jan 2000 - Apr 2002	To determine the characteristics of individuals with infectious syphilis due to male-to-male and heterosexual contact	*Provider referral* Provider referral by public health staff members at the clinic	All diagnosed patients included	32 eligible 31 included (14 MSM, 17 hetero, 9 F) (1 congenital)	1. Partners elicited per ip. 2. Traceable partners per ip 3. Infected partners per ip 4. Proportion of traceable partners notified	1. mean (±SD) 2.0 (1.0) MSM 3.0 (2.0) hetero 2. 7/14 MSM 14/17 hetero 3. 5/14 MSM 8/17 hetero 4. 19% MSM 22% hetero	n/r	1) Small study 2) 78.5% MSM and 88.2% heterosexuals were white
Kingston, 2004 **[109]**	Audit/chart review Syphilis	MSM (90%)	UK GUM clinic, Manchester. Age n/r Jan 1999 – Dec 2001	To examine manAgement of early syphilis.	n/r	All diagnosed patients included	72 (F: 4; M: 68) 72 72	1. Partners tested positive 2. Partners tested 3. Partners elicited (time frame previous 6 months)	1. 0.24 2. 1.0 3. 26	Number of partners tested of all elicited partners is 72/1848 (4%).	1) Unclear how testing was verified; 2) Although the mean number of partners tested is comparable to other studies the result is problematic given the large number of partners.

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Kohl, 1999 **[110]**	Observational study Syphilis	Age	USA Louisiana. Women and men Age median: 28 y. 1993 – 1996	To describe outcome measures of partner notification during and after a syphilis epidemic Age ≤ 19 y. versus Age > 19 y.	*Provider referral* Provider referral by disease intervention specialist	All diagnosed patients interviewed by DIS	12927 (96% of all reported syphilis cases)	1. Proportion of tested partners per elicited partners 2. Partners infected 3. Partners tested 4. Partners elicited	1. 27% (Age ≤ 19y) vs. 28% (Age > 19 y.) 2. 0.68 (Age ≤ 19y) vs. 0.74 (Age > 19 y.) 3. 1.92 (Age ≤ 19y) vs. 1.77 (Age > 19 y.) 4. 2.46 (Age ≤ 19y) vs. 2.21 (Age > 19 y.)	1. p=0.17	1) Large cohort study.
Rothenberg 2000 **[72]**	Non-comparative prospective study Syphilis	MEG	USA Street based setting, supervised by STD clinic, Atlanta. Women and men Black 97% Age: 70% 25-44y Mar - Oct 1998	To augment traditional syphilis-control activities with social network methods	*Unclear* Interview at diagnosis, elicit contacts offer medical evaluation to contacts but not further specified	Persons diagnosed in Zipcode A with highest syphilis prevalence	48 included	1. Traceable partners per ip 2. Infected partners per ip	1. Mean 3.0 (130/48) 2. 30/48		1) Data from non-infected people interviewed for network approach or non-sexual partners was not included 2) Pilot project

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Samoff, 2007 **[111]**	Audit/chart review Syphilis	MSM	USA Providers n/s, County Dept. of Health and Wellness, Georgia. Men only Age: mean 37y Jan - Dec 2003	To compare contact tracing outcomes among male syphilis patients	*Provider referral* FDHW staff asked index patients name, location and number of partners, then tried to locate and interview all contacts	Male, with syphilis living in Fulton County, Georgia	597 eligible 401 included 401 analysed (243 MSM, 158 MSWO men who have sex with women only)	1. Partners elicited per ip 2. Partners traceable/ named per ip 3.Partners contacted per ip 4. Partners infected per ip 5. Partners with infectious syphilis per ip	1. 764/243 MSM vs. 387/158 MSWO 2. mean 0.80 207/243 MSM vs. 0.72 116/158 MSWO 3. mean 0.65 159/243 MSM vs. 0.57 90/158 MSWO 4. mean 0.24 58/243 MSM vs. 0.22 35/158 MSWO 5. mean 0.12 30/243 MSM vs.0.08 13/158 MSWO	2. Proportion of named partners notified 77% for both MSM and MSWO 4. Newly diagnosed cases through contact tracing activities per ip mean 0.10 MSM vs. 0.14 MSWO	1) Not a normal distribution, only 25% partners named. 2) Contacts include non-sexual contacts
Singh, 2007 **[112]**	Audit/chart review Syphilis	MSM	UK GUM clinic, Sheffield. Women and men Age: women mean 24y, male heterosexual 30y, MSM 34y Jan 2004- Oct 2005	To explore factors around and success of contact tracing in recent major outbreak of syphilis in Sheffield	*Choice of three partner notification methods* Choice of patient, contract, or provider referral guided by health adviser	All diagnosed from Oct 2004-2005 (heterosexuals) and Jan-Dec 2004 (MSM)	21 included (10 MSM)	1. Partners elicited per ip 2. Partners contacted per ip 3. Partners tested per ip 4. Partners infected per ip 5. Contacts verified/tested within 90d per ip	1. 28/10 MSM vs. 26/11 heterosexuals 2. 12/10 MSM vs. 20/11 heterosexuals 3. 11/10 MSM vs. 20/11 heterosexuals 4. 4/10 MSM vs. 14/11 heterosexuals 5. mean 1.0 MSM vs. 1.81 heterosexuals	n/r	1) Explicitly say that cases can count as contacts and vice versa 2) Contact tracing most effective in spread network in heterosexuals, less in starburst network of MSM

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HIV											
Ahrens, 2007 [113]	Audit/chart review HIV	MSM Duration of HIV infection	USA STD clinic and county hospital, San Francisco. Women and men MSM 89% white 54% Age: Jan 2004-Dec 2006	To examine association between duration of HIV infection and PN	*Unclear* Patient referral, assisted patient referral and provider referral were all used. Third party PN was available for all contacts	All diagnosed at municipal STD clinic (from Jan 2004) and county hospital (from Jul 2005)	763 eligible (22 F, 733 M, 30 acute HIV, 398 non-acute HIV, 335 longstanding HIV) 607 included in analysis	1. Partners elicited per ip 2. Traceable partners per ip 3. Partners contacted per ip 4. Partners tested per ip 5. Newly infected partners per ip	1. Overall 8263/607 (432/25 for acute HIV vs. 4947/308 for non-acute HIV vs. 2884/274 for longstanding HIV 2. mean 1.49 (907/607) (15/25 for acute HIV vs. 339/308 for non-acute HIV vs. 553/274 for longstanding HIV 3. 12/25 for acute HIV vs. 240/308 for non-acute HIV vs. 377/274 for longstanding HIV 4. 4/25 for acute HIV vs.119/308 for non-acute HIV vs. 95/274 for longstanding HIV 5. 1/25 for acute HIV vs. 15/308 for non-acute HIV vs. 9/274 for longstanding HIV		1) Cost of PN per new diagnosis of HIV 7081$ for acute/nonacute cases vs. 2603$ for longstanding cases 2) Women only had non-acute HIV, 100% of those with acute HIV and 97.6% with longstanding HIV were MSM 3) 12% index patients could not be located for interview, 8% refused to speak to health officials
CDC 2003 [114] (Foust)	Observational study HIV	MEG (African American)	USA Specialist service, North Carolina Age n/r 2001	To evaluate a new introduced service for partner notification	*Provider referral* Provider referral by disease intervention specialist	All diagnosed patients included	1379 (black: 1117; white: 291) 982 (received PN) 982	1. Partners tested positive 2. Partners tested 3. Partners elicited	1. 0.10 (black) vs. 0.07 (white) 2. 0.47 (black) vs. 0.38 (white) 3. 1.2 (black) vs. 1.0 (white)	n/a	

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Forbes, 2008 [115]	Audit/chart review HIV	Pregnant women Adverse events Barriers	UK 3 hospitals with specialist HIV antenatal care, London. Women only Age: <21 to >35 Mar 2004-Jun 2006	To describe local practice of PN and patterns of disclosure in HIV +ve pregnant women	*Unclear* Patient encouraged to disclose HIV infection, should have a discussion with sexual health adviser, provider referral offerred	Pregnant women who accessed specialist HIV antenatal care	145 included	1. Partners tested per ip 2. Partners infected per ip 3. Number of new HIV diagnoses per partners tested	1. 62/145 2. 29/145 3. 8/62 13%	Adverse events: 14 women report intimate partner violence Barriers: Fear of relationship breakdown (33 women reported breakdown, 11 because of their HIV status)	1) Unclear which partners got tested as 24% were HIV +ve at start of study 2) For 19% women non-disclosure to male partner was recorded
Giesecke, 1991 [116]	Observational study HIV	MSM IDU Provider	Different settings not further specified, Sweden Median Age 31 y. Jan 1989 – Jun 1990	To evaluate outcome of partner notification in Sweden MSM vs. heterosexual vs. IDU Counsellor vs. physician	*Choice between patient and provider referral* Partner notification was initiated by trained counsellors or physicians	All diagnosed included	403 365 365 (MSM: 140; IDU: 43; heterosexual: 165)	1. Partners tested 2. Partners contacted 3. Partners elicited	1. 1.14 (MSM) vs. 0.81 (hetero) vs. 1.14 (IDU) 2. 1.28 (MSM) vs. 0.91 (hetero) vs. 1.21 (IDU) 2.6 (counsellor) vs. 1.1 (physician) 3. 1.76 (MSM) vs. 1.36 (hetero) vs. 1.91 (IDU)	1. n/r 2. p<0.01 (but no difference between counsellor and physicians for number of newly diagnosed partners)	

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Golden, 2003 **[117]**	Survey of patients HIV	Barriers	USA HIV clinic and health department Seattle. MSM: > 80% Age > 35 y.: 62% White: 65% Jan 2001 – Nov 2001	What patients with HIV (especially MSM) think about partner notification	*Partner notification* *Questionnaire* 6-page questionnaire	All patients diagnosed included if contact information available	198 (potentially eligible) 95 (responded)	1. Help wanted to notify at least one partner: 20% 2. Sexual orientation of health adviser/DIS – 45% preferred MSM, 44% no preference 3. Patients should be contacted about partner notification as soon as possible after diagnosis: 64%; 1-2 weeks after diagnosis: 13%; 3-4 weeks: 9% 4. Interviews by health adviser/DIS face-to-face: 54%; telephone: 32%; computer-assisted: 14%; no information would be given anyway: 13% 5. Kind of professional patients willing to give information on partners – doctors: 64%; social/case worker: 62%; someone from health department: 48%; someone from gay men's community: 45% 6. Factors that might influence decision to provide names of partners – HIV test anonymous: 50%; if information on partners could be provided anonymously: 42%; if paid $20: 24%[130]			1) Survey with a low rate of recruited patients; representativness remains unclear.
Harry, 2008 **[118]**	Audit/chart review HIV	MEG MSM	UK HIV/AIDS clinic, Norwich. Women and men MSM Age: median F 31y (18-44) M 43y (3-61) Jan 1997-Dec 2004	To evaluate partner notification and contact tracing in newly diagnosed HIV patients from 1997 - 2004	*Unclear* Health advises initiate post-test counselling, partner notification or provider referral where appropriate	All newly diagnosed patients	61 included (17 F, 43 M, 41 white, 2 asian, 16 african, 17 MSM)	1. Partner notification index	1. Overall 51.7% (95% CI 38.4-64.8) 76% African or Asian vs. 39% white 38% MSM vs. 25% bisexuals vs. 57% heterosexuals	1. Africans and Asians more likely to bring in partner than Caucasians (p=0.01) 61% Caucasians did not bring in partner, these more likely to be oil workers who got infected abroad (p=0.02)	1) Partner notification index seems to be the % index patients for whom information on previous partners is available

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Pattman, 1993 **[119]**	Audit/chart review HIV	MSM (82%)	UK GUM clinic in Newcastle upon Tyne. Age n/r 1985 – 1992	To examine outcome of partner notification of HIV	*Choice of patient and provider referral?* Patient choose between provider referral by health adviser and patient referral (unclear)	All diagnosed included	114	1. Proportion of newly diagnosed HIV patients as a result of partner notification (per all newly diagnosed HIV cases)	1. 22% (25/114)		1) Outcome not comparable to other studies 2) Unclear if patient referral was done or only provider rerferral.
Pavia, 1993 **[120]**	Observational study HIV	MSM MEG (African American) IDU Barriers	USA County Health Department Salt Lake City Women and men Age median: 32 y. Oct 1988 – Sep 1990	To evaluate utility of partner notification and to identify subgroups in which it may be most effective MSM vs. Heterosexual; Black vs. white; IDU	*Choice of patient or provider referral* Index patients choose between patient or provider referral but guided by DIS	All diagnosed included	308 (F: 34; M: 274 (MSM 190))	1. Partners contacted 2. Partners elicited	1. 1.6 (MSM) vs. 1.5 (hetero); 2.7 (black) vs. 1.9 (white); 3.3 (IDU) 2. 2.4 (MSM) vs. 2.3 (hetero); 4.2 (black) vs. 2.8 (white); 5.7 (IDU)	1. No significant associations between succesful contacting and race, risk group, Age 2. Black vs. white: p=0.02 (includes hispanic as additional race); MSM vs. hetero vs. IDU: p<0.0001 (includes additional risk groups not extracted)	

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Rodkjaer, 2008 **[121]**	Observational study HIV	Barriers Different health settings	Denmark 9 different hospitals Women and men Age: n/r May 2005-Jun 2006	To describe the present organisation and conditions re PN in Denmark	*Various forms including patient and provider referral:* PN performed according to usual care in each of 9 hospitals. Index patients interviewed by healthcare professionals	All newly diagnosed Consecutive sampling	254 eligible 123 asked 107 included 107 analysed	1. Partners elicited per ip 2. Partners contacted per ip 3. Partners tested per ip 4. Partners infected per ip 5. Partners treated per ip 6. Proportion of partners notified	1. 252/107 mean 2.4 2.155/107 mean 1.4 3. 126/107 4. 30/107 mean 0.28 5. 12/107 6. Overall 155/252 (92% for patient referral vs. 78% for provider referral	4. Proportion of partners infected: 33% if ip married or living with them vs. 21% cohabiting previously vs. 48% ongoing relationship. 6. Proportion of partners notified: 96% if ip married or living with them vs. 77% cohabiting previously vs. 85% ongoing relationships	1) Barriers for healthcare professionals to initiate PN are language and cultural barriers (public decency in ethnic minorities), difficulties if index patient had secret life (e.g.bisexual), ethical dilemma if ip did not want to tell partner, lack of time, resources and PN specific education 2). Partner lives in another country or anonymous partner
Schnell, 1992 **[122]**	Observational study HIV	Adverse effects	USA MSM 1987 – 1990	To examine the impact of disclosing HIV antibody status on partnership	*Patient referral* Patient referral by DIS	All tested positive	Unclear 44	1. Status of relationship	1. Strong as ever: 82% (32/44) Weaker: 5% (2/44) Now single 13% (5/44)	n/a	1) Small study.

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de Souza, 2003 [123]	Audit/chart review HIV	MSM Gender Barriers	UK District general hospital, Watford Women and men Age: n/r Apr 2000- Feb 2002	To evaluate PN for HIV in a district general hospital over a 2 year period	*Patient referral* PN guided by the general policy for health advisers in the STD handbook and undertaken by index patient	All HIV positive patients seen for HIV related care	59 (F: 30; M: 29 (MSM 15))	1. Traceable partners per ip 2. Partners tested per ip 3. Infected partners per ip 4. Proportion of tested partners who test +ve 5. Proportion of traceable partners notified	1.Total 117/59 (F: 65/30; hetero M: 35/14 MSM 17/15) 2.Total 25/59 (current partners only) (F: 11/30; hetero M: 11/14 MSM 3/ 15) 3. Total 15/59 (F: 7/30; hetero M: 6/14 MSM 2/15) 4. 15/25 60% 5. 70% current partners 25/36 25/117 total partners	Barriers: Previous partner from outside the UK	1) Data presented for current and previous partners but non of the previous partners were notified or tested 2) Homosexual/bisexual men report many anonymous partners (no numbers)
Spencer, 1993 [124]	Observational study HIV	MSM MEG (African American) IDU	USA Department of Health Colorado Women and men Age n/r 1988	To examine the outcome of patient referral. MSM vs. non-MSM; Black vs. White; IDU vs. non-IDU	*Contract referral* Choice between patient and provider referral. If partner did not attend DIS conducted provider referral	All diagnosed meeting criteria for high likelihood of transmitting virus (priority criteria)	231 (met priority criteria) 226 190 (unsafe behaviour) (MSM: 140; non-MSM: 19; black: 29; white: 130; IDU: 53; non-IDU: 137)	1. Partners tested	1. 0.362 (MSM) vs. 0.89 (non-MSM); 0.72 (black) vs. 0.35 (white); 0.38 (IDU) vs. 0.44 (non-IDU)	n/r	1) Priority criteria probably result in non-comparability to other populations; 2) In addition, only results for patients with unsafe behaviour reported.

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Tobin, 2007 **[70]**	Qualitative HIV	MEG (African American) IDU	USA Baltimore City Women and men 97% African American 63% male 95% had history of IDU, 40% in last 6 months	To assess the attitudes of HIV seropositive current or former IDUs towards HIV partner counselling and referral services, by partner type	*Unclear* Partner notification defined according to CDC	Aged >18, HIV positive taking part in 4th cross-sectional survey as part of SHIELD study	209 (male 63%)	1. 87% agreed that partner notification would stop the spread of AIDS, did not vary by gender, length of time infected with HIV, if being treated for HIV or drug use 2. Of these 41% and 38% had a negative reaction to their drug and sex partners being informed			
Tomnay, 2004 **[125]**	Audit/chart review HIV	MSM	Australia (setting n/r) Victoria 74% MSM Age median: 35 y. Jan – Dec 2002	To evaluate role of PN in HIV. MSM versus non-MSM	*Choice of three partner notification methods* Patient, provider, contract referral by DHS apparently based on patients choice.	All diagnosed patients included	215 (F: 22; M: 191; trans.: 2) 105 (no partner = 66; partner known HIV = 44) 83 (MSM: 51; non-MSM: 32)	1. Partners tested 2. Partners newly tested positive 3. Contactable partners traced 4. Partners contactable	1. Overall: 0.76 2. MSM: 8% non-MSM 3. MSM: 95% (61/64) non-MSM: 92% (36/39) 4. MSM: 64 non-MSM: 39	1. n/a 2. p=0.01 3. p=0.52 MSM preferred patient referral (41% vs. 9%) and used less commonly provider referral than non-MSM (12% vs. 53%)	1) Various denominators were used but not reported. Numbers are therefore not comparable to other studies; 2) Outcomes not defined.

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Toomey, 1998 **[2]**	Observational study (planned as RCT but analysed as observational study) HIV	AGE MSM MEG (African American)	USA STD clinics in Florida and New Jersey Women and men Age n/r Dec 1990 – Feb 1993	To determine the effectiveness of partner notification for HIV (RCT analysed as cohort study) Age ≤ 25 y. vs. > 25 y.; MSM vs. non-MSM; Black vs. white	*Three methods of partner notification* Contract referral (after 3 days), provider referral with field notification, or provider referral with blood taken in field	n/a	1399 1070 1070 (MSM: 255; non-MSM: 419; ≤ 25y.: 203; > 25y.: 867; black: 789; white: 274)	1. Partners tested 2. Partners contacted	1. 0.7 (Age ≤ 25) y. vs. 0.5 (25-34) 0.6 (>34); 0.4 (MSM) vs. 0.5 (non-MSM); 0.6 (Black) vs. 0.4 (White) 2. 1.2 (Age ≤ 25) y. vs. 1.0 (25-34) 0.8 (>34); 0.8 (MSM) vs. 0.9 (non-MSM); 1.1 (Black) vs. 0.8 (White)	n/r	1) Initially RCT but large amount of cross-over. Therefore, analysis combined for three study groups.
Wells, 1995 **[126]**	Audit/chart review HIV	MSM IDU	USA Health Department Kansas City Women and Men Jan 1990 – Dec 1993	MSM vs. IDU vs. heterosexuals	*Choice of contract or provider referral* Details n/r	All diagnosed included	362 (MSM: 242; IDU: 40; no risk factor: 36)	1. Proportion of index patients who elicited ≥ 1 partner	1. 81% (MSM) vs. 85% (IDU) vs. 90% (heterosexuals with partners at risk) vs. 72% (no risk factor)	n/r	1) Only partners elicited reported

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Hepatitis											
Brewer, 2008 [127]	Observational study Hepatitis C	IDU Before and after special interview technique	USA (setting n/r) Seattle Male and female IDU Age mean 26y Dec 2000 – Jan 2002	To evaluate supplementary techniques to elicit injection partners.	*Patient referral* Special interview technique and vouchers used. Incentive for index patient to participate in interview and for every partner successfully referred, partners also received incentive when they redeemed voucher.	Cases and controls from a case-control study on HCV seroconversion, HepC infected and non-infected individuals included	61 participating (17 cases, 42 controls, 1 indeterminate), but only 46 including (for whom compete information about different stages of interview reported)	1. Mean number of partners elicited per index patient	1. 12.7/SD 12.4 (before special interview techniques) vs 19.8/ SD 17.6 (after special techniques)	n/r	1.) Also IDU without HCV included, this study is more about interview technique than HCV-infection 2.) Substudy of Brewer 2006, ID 20169
Brewer, 2006 [128]	Observational study (based on a case control study) Hepatitis C	IDU	USA (setting n/r) Seattle Male and female IDU Age mean 26y Dec 2000 – Jan 2002	Case control study of IDUs, focusing on transmission within networks.	*Enhanced patient referral* Special interview technique and vouchers used. Incentive for index patient to participate in interview and for every partner successfully referred, partners also received incentive when they redeemed voucher.	Cases are subjects from a large prospective IDU cohort, who have incident HCV infection	17 (only HCV infected cases)	1. Mean number of partners elicited per index patient 2. Mean number of partners interviewed per index patient 3. Mean number of infected partners per index patient	1. 22.0/ SD 21.0 2. 3.0/ SD 1.7 3. 1.5/ SD 0.9	n/r Additional network analysis of network structure of injection and sexual network.	1.) ad Outcomes 2. and 3. – only a maximum of 5 partners attempted to refer and test, not all of them Comparison between cases and controls reported – shall we put this on evidence table ? (not really relevant for PN…)

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Cialdea, 1994 [129]	Audit/Chart review Hepatitis B	none	Italy (setting n/r) Women and men "Peak in the age group 15-44" Jan 1990 – Dec 1992	Surveillance of acute viral hepatitis B.	*n/r*	Acute HBV cases reporting risk factor of "having a household contact of pos HBs Ag carrier"	272	1. Proportion of included cases filling out a "cohabitants card" (intention to trace back infection) [130]	1. 91/272	Of the 91 infected subjects filling out the cohabitant card: 39 (42%) were acquainted with the carrier condition of the cohabitant, 30 were conscious of the potential infectiousness, 25 had received information about prophylaxis measures to be adopted, 10 knew of the availability of a specific vaccine offered free to household of HBsAg carriers, 2 only had started vaccination.	1.) very few information available
Golden, 2006 [131]	Part of it observational, part of it Audit/Chart review Hepatitis B	MSM	USA STD clinic and community based King County, Washington MSM Age median for recruiters 35y (18-63), for peers 37y (16-63) Sep 2002 – Jan 2005	Case-finding effectiveness and cost-effectiveness of a public health peer referra program for HIV and STDs among MSM.	*Peer referral* Recruiters refer social contacts not only sex partners, financial incentives and numbered cards used.	Peer recruiters enrolled from MSM community via snowball-enrollment advertising in local newspapers and community-based organisations	283 recruiters participating and analysed	1. number of tested peers per recruiter 2. number of infected peers (surfaced antigen positive) per recruiter	1. 314/283 2. 8/283	n/r	1.) Here only outcomes for Hep B reported, for other diseases especially HIV see ID 10649 below

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Gunn, 2006 [132]	Observational study Hepatitis B	High risk patients (MSM, IDU, sex workers, high number of sex parters or history of >= 2 STD in last 5 years)	USA (setting n/r) High risk area for STD in San Diego Women and men Age: 78% >= 30 years Mar 1999 – Jun 2000	Initiation and Evaluation of PN program for persons with chronic Hepatitis B virus infection..	*Provider referral* Interviews by CDI (communicable disease intervention specialist), standard protocol, Contact time 1month.	All cases with chronic HBV infection.	190 eligible 129 participating 85 analyzed (26 low risk, 59 high risk)	1. number of partners elicited per index patient 2. number of tracable partners per index patient 3. number of partners contacted per index patient	1. 26/26 (low risk) vs 110/59 (high risk) 2. 19/26 (low risk) vs 28/59 (high risk) 3. 19/26 (low risk) vs 22/59 (high risk)	"PN acceptance rate" = proportion of index patients who accepted PN services per all index patients46/85 Acceptability: 39 cases declined PN services: 14 would inform partners by themselves, 7 had anonymous partners, 5 had already vaccinated partners, 13 refused	1.) indexes who wanted to inform partners themselves were excluded 2.) additional outcomes about vaccination (eligible for vaccination, started vaccination, completed vaccination)
Pazdiora, 2006 [133]	Unclear (chart review or observational study) Hepatitis B	none	Czech Republic Regional Sanitary Clinic, Health department or responsible general practitioner Pilsen region, Women (417) and men Age mean 42.2 years Jan 1997 – Dec 2004	To identify HBSAG positive persons and to offer free vaccination against the infection to their family and sexual contacts found negative in screening for viral hepatitis B postinfection markers.	*n/r*	All cases with positive HBsAg, except the ones in mental hospital, social care homes and prison.	939 eligible 794 asked to partidipate	1. number of partners elicited per index patient 2. number of partners tested per index patient 3. number of infected partners per index patients	1. 930/794 2. 829/794 3. 151/794	n/r	1.) additional outcomes about vaccination (completely vaccinated contacts per index patient and per to vaccination susceptible contacts

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van Steenbergen, 2004 [134]	Audit/ Chart review Hepatitis B	Pregnant women Sex partners/ children/ other household members	Netherlands Antenatal Hepatitis Screening Program Amsterdam Pregnant women 20 women <= 18y, no other information about age given Jan 1992 – Dec 1999	To report on program of centralised enhanced contact tracing for HBS AG-positive pregnant women.	*Provider referral (presumably)* Women are assisted in listing their contacts: sex partners, children and other household members. Contact are then invited to come to the MHS for screening of anti HBc.	All screened women tested positive for HBsAg	738 eligible and analyzed	1. number of partners elicited per index patient 2. number of partners tested per index patient 3. number of partners with markers of previous infection per index patient	1. 644/738 (sex partners), 551/738 (children), 24/738 (other household contacts 2. 595/738 (sex partners), 483/738 (children), 22/738 (other household contacts) 3. 476/738 (all contacts)	Multivariate analysis for predictors of partner participation, infection rate, completing vaccination series. Country of origin predictor of partner participation, low for Ghana (aOR 0.08 CI 0.03-0.18), Surinam (aOR 0.14 CI 0.06-0.32) and The Netherlands (aOR 0.16, CI 0.05-0.55), all compared to Turkey.	1.) additional outcomes about vaccination available (number of partners susceptible for vaccination, completing first vaccination series, fully compliant)
Struve, 1992 [135]	Audit/Chart review Hepatitis B	none	Sweden Department of Infectious Diseases Stockholm Women and men Age n/r Jan 1985 – Dec 1990	To describe transmission of acute HBV infection among adults in Stockholm.	*n/r* It seems that some PN was done, but not clear if systematically and how it was done	All cases of acute Hep B during 1985 and 1988-1990	144 eligible 122 analyzed	1. number of partners tested per index patient 2. number of infected partners per index patient 3. number of previously unknown HBs carriers found	1. 47/122 2. 29/122 3. 3/122	n/r	1.) very bad data quality, few information about methods, some number not matching 2.) reason for difference between number of indexes eligible and number analysed not mentioned

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Several STIs											
Beddard, 2003 **[136]**	Observational study Various STIs (Chlamydia 34%)	Non-specialist health-care setting	UK GUM clinic in teenage pregnancy unit and GUM clinic in Withington Hospital both in Manchester Age:≤ 19 y: 48% Oct 2000 – Mar 2001	To investigate whether situating a GUM clinic within a teenage pregnancy unit is successful compared to traditional setting Teenage pregnancy unit versus GUM clinic	*Provider referral by health adviser* Provider referral by health adviser in GUM clinic in teenage pregnancy clinic *Provider referral by health adviser* Provider referral by health adviser in specialist setting	All patients seen by health adviser included	Teen: 93 (attended clinic) (F: 76; M: 17) 60 (seen by health adviser) 26 (PN by health adviser) Specialist setting: 2081	1. Partners tested 2. Partners elicited	1. Teen: 0.69 (18/26); 82% (18/22) of elicited partners vs. 69% in specialist setting 2. 0.85 (22/26)	1. 82% versus 69%; p=0.50	1) Very low number of patients.
Fortenberry 2002 **[137]**	Cohort study Gonorrhoea, Chlamydia, trichomonas or NGU	Age <25 MEG Gender	USA STI clinic or community adolescent health clinics in Indianapolis Women and men 83% black Age mean 17.2y (range 14-20y) Mar 1996- Jan 1999	To evaluate the role of self-efficacy, anticipated -ve consequences and relationship quality in patient-initiated PN	*Simple patient referral* Patients treated, given condoms and counselled to advise sex partners of the need for testing and treatment	All patients diagnosed	241 included (199 F, 42 M) 200 analysed (161 F, 39 M)	1. Partners elicited per ip 2. Partners contacted per ip	1. 279/200 211/161 F, 68/39 M) 2. 164/200 (129/161 F, 435/39 M)	Multivariate analysis of PN: Self efficacy OR 1.16 (95% CI 1.03-1.30) Relationship quality OR 1.17 (95% CI 1.08-1.27) Age, sex, ethnicity, no prior STI not significant Univariate analysis only: Single event coital activity OR 1.80 (95% CI 1.12-2.89) Anticipated _ve consequences OR 0.88 (95% CI 0.81-0.96)	1) Self-reported partner notification only 2) Partners notified before enrolment excluded

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Golden, 2003 **[130]**	Survey of providers Gonorrhoea, chlamydia, syphilis or HIV	Barriers	USA Health departments in 78 cities (with highest prevalence of STI/HIV) 2000	To define current practice of partner notification in USA	*Partner notification* *Questionnaire* Questionnaire on practice of partner notification plus open ended questions on barriers	50 cities with highest rate of gonorrhoea, chlamydia, syphilis, or HIV	78 (sent out) 61 (returned) 60 (complete)	Barriers: Suggestions to improve partner notification 1. 40% (24/60): insufficient funding/personnel 10% (6/60): inability to retain personnel ≥ 5%: noncooperation by private providers and community based organisations; political opposition of MSM organisations; absence of mandatory HIV infection reporting 1. 40% (23/60): improve ongoing training opportunities for PN staff			
Golden, 2006 **[131]**	Non-comparative prospective study and chart review during study vs. after Gonorrhoea, Chlamydia, syphilis, HIV, hepatitis A, B or C.	MSM	USA STD and HIV clinics, media advertisements and CBOs, King County, Washington Men only 100% MSM Age: Recruiters: median 35y SD 9.2 range 18-63 Peers: median 37y SD 9.9 range 16-63 Study Sep 2002- Feb 2004 Program used Mar 2004 - Jan 2005	To evaluate effectiveness and cost-effectiveness of a public health peer referral program for HIV and STDs	*Peer referral* Peer recruiters encouraged to refer social contacts, with incentive of $20 per peer.	MSM with non-viral STI receiving PN services from PHSKC STD program; and STD or HIV clinic patients	283 included 100% MSM	1. Recruited peers per recruiter 2. Tested peers per recruiter 3. Infected peers per recruiter 4. Proportion of recruiters (index) referring ≥1 peers for testing 5. Recruited peers per recruiter for those who recruited ≥1 peer(s)	1. Overall 498/283 2. 438/283 HIV 307/283 GC 285/283 CT 445/283 syphilis 3. 22/283 HIV 23/283 GC 6/283 CT 1/283 syphilis 4. 142/283 5. 498/142	3. % number infected peers / number tested peers, by disease: 5% HIV 8% gonorrhoea 2% chlamydia 0.2% syphilis 31% hepatitis C	1) Peer recruiters not explicitly told to refer their sex partners 2) Recruited peers also got incentives $10 fro testing and $10 for receiving their results 3) HIV-associated costs of peer referral less than bathhouse or CBO testing program. With all program elements included not cheaper.

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Thurman, 2008a [138]	Cross-sectional study Gonorrhoea, Chlamydia, syphilis, or trichomonas	Gender MEG Multiple partners Barriers	USA Obstetrics and Gynaecology clinic, San Antonio Women only 100% Mexican-American or African-American, low income Age: n/r (most aged 15-25) Dates n/r	To identify women most likely to notify their partners about an STI exposure	*Simple patient referral* Face-to-face interview with counselling by trained research staff. For sex partners in last 3 months asked question "Are you going to tell him you have STI so he can get checked"	Women enrolled in an RCT with non-viral STI, speaking English	775 included (1 partner 505, 2 partners 186, ≥3 partners 84)	1. Partners elicited per ip 2. Partners contacted per ip 3. Proportion of ip who answered YES to PN for all partners 4. Proportion of ip who answered YES to PN for any partners	1. Overall 1122/775 2. Overall 535/775 3. Overall 542/775, (87.9% 1 partner vs. 41.4% 2 partners vs. 25.0% ≥3 sex partners) 4. Overall 671/772, (86.1% Mexican - American vs. 89.5% African-American, 552/638 aged <25, vs. 88.8% 119/134 aged>25)	Multivariate analysis: Predictors for YES PN: 1 vs. ≥2 sex partners OR 1.96 (95% CI 1.61-2.38) Steady relationship OR 2.43 (95% CI 1.74-3.41) ≤30 d since last sex OR 1.37 (95% CI 1.21-1.54) Desire for pregnancy with this partner OR 1.64 (95% CI 1.08-2.51) Anticipate future sex with this partner OR 1.88 (95% CI 1.34-2.63) Barriers: Reasons for non-disclosure in 248/1122 partners are: 48% she might not see him again, 18% did not want to be accused of infidelity, 12% was angry at him, 18% feared his anger or 4% his violence	1) Numbers in abstract, table and text do not match up 2) No difference in saying YES to PN for any partners by age, disease, education, clinic, or pregnancy state

First author date	Study type, disease(s) covered	Special group(s)	Country, Setting, Participants, study duration	Study question	Interventions (I) or study method	Sampling method	Eligible Included Analysed	Outcomes	Quantitative results	Effect size or qualitative results	Comments
Thurman, 2008b [139]	Cross-sectional study NB substudy of above Gonorrhoea, Chlamydia, syphilis, or trichomonas	Pregnant women MEG Multiple partners Barriers	USA Obstetrics and Gynaecology clinic, San Antonio Pregnant women only 100% Mexican-American or African-American, low income Age: n/r (most aged 15-25) Dates n/r	To determine the factors associated with PN of STI exposure among pregnant, low income Mexican-American and African-American women and their male sexual partners	*Simple patient referral* Face-to-face interview with counselling by trained research staff. For sex partners in last 3 months asked question "Are you going to tell him you have STI so he can get checked"	Pregnant women enrolled in an RCT with non-viral STI, speaking English	166 included	1. Partners elicited per ip 2. Partners contacted per ip 3. Proportion of partners where ip answered YES to PN	1. Overall 202/166, (136/136 1 partner vs. 66/30 ≥2 sex partners) 2. 90/136 1 partner vs. 21/30 ≥2 sex partners 3. Overall 156/202, (88.2% 1 partner vs. 54.5% ≥2 sex partners)	Multivariate analysis: Predictors for YES PN: 1 vs. ≥2 sex partners OR 2.44 (95% CI 1.37-4.35) Steady relationship OR 3.36 (95% CI 1.39-8.13) ≤30 d since last sex OR 5.22 (95% CI 1.95-13.98) Barriers: Reasons for non-disclosure in 46/202 partners are: 59% she might not see him again, 22% did not want to be accused of infidelity, 12% was angry at him, 7% feared his anger	1) YES to PN counted if the woman responds "Yes", "He told me", "I told him already/ he already knows" to PN question. NO if answer "Maybe" or "No" 2) No woman did not disclose for fear of partner violence or threatening behaviour 3) Driver variable was having only 1 sex partner
STI not specified											
Niccolai, 2005 [140]	Survey of physicians STI not specified	Barriers	USA Physicians Women and men	Opinions towards potential benefits and barriers related to PDPT	*Patient-delivered partner therapy* *Questionnaire*	Random sample	n/r 500 (send out) 265 responded 154/265 no STI managed or undeliverable 111 (35%)	Barriers: 1. Inability to determine if medication was delivered 2. Adverse reactions to medication 3. Dispensing multiple doses 4. Missing opportunities for other clinical services 5. Inability to counsel partner 6. Liability			1) Response rate (although non-respondents did not differ from respondents)

First author date	Study type, disease(s) covered	Special group(s)	Country, Setting, Participants, study duration	Study question	Interventions (I) or study method	Sampling method	Eligible Included Analysed	Outcomes	Quantitative results	Effect size or qualitative results	Comments
Rogers, 1998 **[33]**	Qualitative study STI not specified	Barriers IDU	USA Methadone maintenance programme and STD clinic all in New York IDU, heterosexual, Age 20-40 y. health professionals 1995	To gather qualitative information from drug users and STI counsellors on partner notification	*Partner notification* *Focus group and personal interviews*	Convenience sample	25 IDU 23 health professionals	1. 50% IDU would refuse to participate in partner notification for sex partners if provider referral compared to patient referral (preferable face-to-face) 2. IDUs less likely to participate in PN for needle-sharing partners (not practical, gossip) 3. Health professional prefer provider referral because it was felt to be more successful 4. Perceived barriers by health professionals: Distrust of clients; emotional state of index patients (anger); female sex; negative political climate; non-comprehensive service			1) Drug users not diagnosed with STI.
Rosenthal, 1995 **[68]**	Observational study STD not specified	Adverse effects	USA Black 85% Females Age mean 17 y.	Experience how adolescent girls experience partner notification	*Patient referral*	Unclear	Unclear 182 102	1. Negative emotional reaction: 44% 2. Positive emotional reaction: 24% 3. Blame who infected who: 26%			1) Unclear how adverse effects were collected.

Abbreviations: ACC – according to protocol; C – control group; CBO – community based organisation; CCT – controlled clinical trial (not randomised); CT – Chlamydia trachomatis infection; GC – Neisseria gnorrhoeae (gonococcal) infection; HCV – hepatitis C infection; I – intervention group; IDU – injection drug user; ip – index patient; ITT – intention to treat; MEG – minority ethnic group; MSM – men who have sex with men; n/a – item not applicable; n/r – item not reported in manuscript; PHSKC – Public health services King County; PN – partner notification; RCT – randomised controlled trial; STD – sexually transmitted diseases; STI – sexually transmitted infection