Review 3
Revised rapid review of evidence for the effectiveness of partner notification for sexually transmitted infections including HIV

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Abbreviations

ACA ..................................... Available-case analysis
AGE...................................... Age group under 25 years of age
AIDS..................................... Acquired immunodeficiency syndrome
ARR...................................... Absolute risk reduction
CCT ...................................... Controlled clinical trial
CI.......................................... Confidence interval
CSW ..................................... Commercial sex worker
DHS...................................... Disease health specialist
DIS ....................................... Disease intervention specialist
FPC....................................... Family planning clinic
GP ........................................ General practice
GUM..................................... Genitourinary medicine
HIV ........................................ Human immunodeficiency virus
IDU ....................................... Intravenous drug users
ITT ....................................... Intention-to-treat analysis
MEG ...................................... Minority ethnic group
MSM ...................................... Men who have sex with men
MSSVD ................................ Medical Society for the Study of Venereal Diseases
n/r ......................................... Not reported
NGU ..................................... Non-gonococcal urethritis
NICE ..................................... National Institute for Health and Clinical Excellence
OR ....................................... Odds ratio
PDPT .................................... Patient-delivered partner therapy
PN ......................................... Partner notification
RCT ...................................... Randomised controlled trial
RR ....................................... Relative risk or risk ratio
STD ....................................... Sexually transmitted disease
STI ....................................... Sexually transmitted infection
Glossary

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. 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.

Conditional referral .................. See Contract referral.

Contact cards ......................... See Contract slips.

Contract 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.

Contract tracing ........................ See Partner notification.

Contract referral ........................ A form of partner notification. The provider and the index patient agree that the index patient will notify the 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.

Expedited partner therapy .......... Term used in the USA to include any partner notification practices that expedite treatment of sexual partner(s), without the need for a medical assessment of the partner by a health care provider. Expedited partner therapy usually involves physicians providing index patients with drugs or prescriptions intended to be delivered to their partner(s) (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.

Index case ............................. See Index patient.

Index patient ........................... 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.
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.

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.

Patient .................................. In this context 'patient' is synonymous with *index patient*.

Patient referral ...................... A form 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 can be assisted by counselling from a health professional, other additional information, using *contact slips*, or by *accelerated partner therapy*.

Patient-delivered partner therapy ... A form of *Expedited partner therapy* usually done in the USA. See also *Accelerated partner therapy*.

Provider referral ..................... A form of *partner notification* where the health professional takes responsibility for confidentially notifying partners of the possibilities of their exposure to a *sexually transmitted infection*.

Referral letters ....................... In this context 'referral letters' are usually used synonymously with *contact slips*.

Sexually transmitted disease ........ Clinical disease caused by *sexually transmitted infection*.

Sexually transmitted infection....... Infection caused by infectious agents whose main route of transmission is from person to person by sexual contact. In contrast to the term *sexually transmitted disease* 'sexually transmitted infections' also include asymptomatic infections.

Trial arm................................ Synonymous with trial group.

Verification ............................ Follow-up of partner management. Partner management can either be verified via the index patient or via health care professionals who treat/care for the partner(s). The latter is a more reliable form of verification but also more difficult to achieve.
1. Executive summary

This review examines evidence for the effectiveness of partner notification in women and men diagnosed with gonorrhoea, chlamydia, non-gonococcal urethritis, syphilis, or HIV. The review addresses five key questions:

– What is the effectiveness of partner notification in patients diagnosed with gonorrhoea, chlamydia trachomatis, or non-gonococcal urethritis?
– What is the effectiveness of partner notification in patients diagnosed with syphilis?
– What is the effectiveness of partner notification in patients diagnosed with HIV or AIDS?
– What are the adverse effects of partner notification from the point of view of patients?
– What are the opinions about acceptability of and barriers to partner notification as perceived by patients or providers?

We conducted a systematic review of the literature in any language, identified by searching electronic databases from January 1990 to December 2005, and checking the reference lists of included studies and reviews. We included studies that reported on: primary outcomes (reduction of incidence or prevalence of sexually transmitted infections in index patients.); intermediate outcomes (Partners treated, tested, tested positive, contacted, located, or elicited); and other outcomes (adverse effects of partner notification, acceptability of or barriers to screening).

Our search strategy identified 2492 unique references and we included 59 studies in our report (eight systematic reviews or guidelines, twelve randomised controlled trials, two non-randomised controlled trials, and 37 prospective, quantitative or qualitative descriptive studies).

**Systematic review and guidelines**

We included three systematic reviews: (Mathews et al. 2001) (+++) (Macke et al. 1999) (–) (Oxman et al. 1994) (–). All reviews included randomised controlled trials but the older ones (Macke et al. 1999; Oxman et al. 1994) also considered other comparative studies. All types of sexually transmitted infections relevant for this rapid review were covered by the retrieved systematic reviews. There was great overlap of studies in all of the reviews and all studies are also included in this rapid review. Of note, most of the results of the reviews are not specific for specific sexually transmitted infections. All reviews found that partner notification is a means of newly detecting infections in partner(s) of index patients. Both of the more recent reviews (Mathews et al. 2001) (+++) (Macke et al. 1999) (–) concluded that provider referral alone, or the choice between patient and provider referral, when compared with patient referral increases the rate of partners presenting for medical evaluation. The most recent review (Mathews et al. 2001) (+++) further concluded that contract referral, when compared with patient referral among patients with gonorrhoea, results in more partners presenting for medical evaluation and that verbal,
nurse-given health education together with patient-centred counselling by lay workers, when compared with standard care results in small increases in the rate of partners treated.

We included four guidelines relevant for gonorrhoea, chlamydia, or non-gonococcal urethritis. Three of which were published by organisations from the UK (Anon. 1999a; Anon. 1999b; FitzGerald et al. 1996) (two from the Medical Society for the Study of Venereal Diseases, the Association for Genito Urinary Medicine, and the Royal College of Physicians GU Medicine Committee; one from the National Audit Development Project and the Health Advisers in Sexually Transmitted Diseases) and one was from the Canadian Federal-provincial Advisory Committee on Community Health (Millson et al. 1994). Quality assessment was limited since reporting quality was generally low. Only one guideline referred to results of a systematic review, and no guideline stated how consensus was reached. Recommendations of all guidelines were relatively unspecific regarding the process of partner notification. All guidelines recommend partner referral as a minimum. The guidelines from the UK further recommend that patients should be referred to health advisers. In addition, the guideline on chlamydia (Anon. 1999a) recommends that provider referral should be done if index patients are unwilling to refer partner(s).

We found no guideline specifically addressing partner notification for syphilis but the Canadian guideline covered all types of sexually transmitted infections (Millson et al. 1994). Patient referral was considered as a minimum and if the patient requests assistance, health care providers should notify relevant partners.

We retrieved one guideline from the USA specifically addressing HIV (Centers for Disease Control and Prevention (CDC) et al. 2003). The main topic of the guideline is on reducing the transmission of HIV. The guidelines recommends that patients should be asked at the initial visit if all of their sex and needle-sharing partners have been informed of their exposure to HIV. In addition, all patients should be referred to the appropriate health department to discuss sex and needle-sharing partners who have not been informed of their exposure and to arrange for their notification and referral for HIV testing.

**Key question 1 – partner notification for gonorrhoea, chlamydia, and non-gonococcal urethritis**

**Primary outcomes**

We identified five randomised-controlled trials: (Golden et al. 2005; Schillinger et al. 2003) (+) and (Cleveland 2001; Kissinger et al. 2005; Kissinger et al. 1998) (–).

Four of the five trials tested the effectiveness of patient-delivered partner therapy by comparing it with some kind of patient referral. All four trials showed some benefit of patient-delivered partner therapy in terms of reducing re-infection or persistent infection when compared to minimal patient referral or patient referral supported by contact slips. However, the effect size was generally small and two studies failed to show statistical evidence for benefit.
There is evidence from four large randomised controlled trials (two +; two –) that patient-delivered partner therapy plus additional information for partners reduces persistent or recurrent infections in women and men diagnosed with gonorrhoea or C. trachomatis by approximately 5% compared to patient referral (either minimal or supplemented by contact card).

In the trial by Kissinger et al. (2005) the outcomes of patient referral enhanced by additional information for partner(s) could also be compared with minimal patient referral. Results were the same as for the comparison of patient-delivered partner therapy.

There is evidence from one large randomised controlled trial (–) that patient referral supplemented by additional information about infection for index patients and partner(s) reduces persistent or recurrent infections in men diagnosed with gonorrhoea or C. trachomatis by approximately 5% when compared to minimal patient referral.

This trial also compared patient-delivered partner therapy with patient referral enhanced by additional information for partner(s). No difference in terms of reducing the proportion of index patients with persistent or recurrent infections could be observed.

There is evidence from one large randomised controlled trial (–) that patient-delivered partner therapy plus additional information for partners does not reduce persistent or recurrent infections in men diagnosed with gonorrhoea or C. trachomatis when compared to enhanced patient referral that includes providing index patients and partner(s) with additional information about the infection.

The trial by Cleveland (2001) compared to different forms of patient referral with contact cards (one supplemented by an educational videotape for index patients) with contract referral. There was no statistical evidence for differences between these three interventions.

There is evidence from one randomised-controlled trial (–) that patient referral supplemented by an educational videotape for index patients does not reduce the rate of persistent and recurrent infections in men or women with gonorrhoea when compared to patient referral with contact cards.

There is evidence from one randomised-controlled trial (–) that contract referral does not reduce the rate of persistent and recurrent infections in men or women with gonorrhoea when compared to patient referral (either supplemented by an educational videotape for index patients or not).
Intermediate outcomes

Three randomised trials compared minimal patient referral with patient referral enhanced either by additional information for index patients or by additional education: (Kissinger et al. 2005) (–) (Katz et al. 1988) (–) (Cleveland 2001) (unclear). Two trials showed no difference (Katz et al. 1988) (–) (Cleveland 2001) (unclear) but the other trial found that more partners were treated in the group with enhanced patient referral (Kissinger et al. 2005) (–).

There is evidence from three randomised controlled trials (two –; one unclear) that patient referral supplemented by additional education or information for index patients diagnosed with gonorrhoea is not more effective in terms of number of partners who get tested than patient referral with contact cards.

We found no controlled trials directly comparing minimal patient referral with patient referral supplemented by contact slips.

Two randomised trials (Andersen et al. 1998; Ostergaard et al. 2003) (both –) from the same research group from Denmark tested whether giving index patients sampling kits to deliver to their partner(s) and sending samples by post is more effective than giving index patients sampling kits to deliver to their partner(s) but requesting partners to visit a health care professional for testing (using the provided sample kits). Both trials found that home sampling increased the number of partners who got tested.

There is weak evidence from two randomised controlled trials (both –) that giving index patients diagnosed with C. trachomatis sampling kits for their partner(s) can increase the number of partners who get tested when compared to getting the partner(s) to visit their doctor for testing.

Two of the four randomised trials on patient-delivered partner therapy reported also on intermediate outcomes (Golden et al. 2005) (+) (Kissinger et al. 2005) (–). Both showed that patient-delivered partner therapy was superior compared to different forms of patient referral.

There is evidence from two randomised controlled trials (one +; one –) that patient-delivered partner therapy increases the number of partner(s) who get treated in patients diagnosed with chlamydia or gonorrhoea compared to minimal patient referral and patient referral supplemented by additional information for partner(s).

Three randomised trials compared contract referral with patient referral (Cleveland 2001) (unclear) (Potterat et al. 1977) (–) (Montesinos et al. 1990) (–). In the most recent study contract referral was superior to patient referral. However, the study by Potterat et al. (1977) showed
conflicting results since more partners got tested by contract referral but more infected partners were treated in the patient referral group. The other was too small and had major methodological weaknesses.

There is conflicting evidence from two randomised controlled trials (one –; one unclear) whether contract referral results in higher numbers of detected infection in partner(s) of index patients diagnosed with gonorrhoea when compared to patient referral supplemented by contact slips.

There is insufficient evidence (one very small randomised controlled trial; –) to say whether patient referral enhanced by monetary incentive or patient referral with follow-up by telephone are effective.

We found no controlled trial directly comparing patient and contract referral in patients with chlamydia infection or non-gonococcal urethritis.

One randomised trial compared provider with patient referral (Katz et al. 1988) (–). Provider referral more than tripled the number of partners who got treated but major methodological weaknesses preclude any final conclusions.

There is insufficient evidence to conclude whether provider referral results in more partner(s) treated compared to patient referral in men with non-gonococcal urethritis.

We found no controlled trial directly comparing patient and provider referral in patients with gonorrhoea.

We found no controlled trials on comparisons of contract and provider referral for gonorrhoea, chlamydia, or non-gonococcal urethritis.

One randomised trial (Low et al. 2005) (++) conducted in the UK tested whether patient referral for patients diagnosed with chlamydia is effective in general practice and compared it with referring patients to genitourinary medicine clinics. The trial showed that patient referral initiated in general practice was at least as effective as referring patients for partner notification to genitourinary medicine clinics.

There is evidence from one randomised controlled trial (++) that patient referral for patients with chlamydia conducted in general practice is at least as effective in terms of partners who get treated when compared to referring patients to a specialist health service.
Three studies described the results of partner notification in various forms of teenage clinics (Beddard et al. 2003; James et al. 1999; Jones et al. 2002) and compared these with results from neighbouring genitourinary medicine clinics. Results were comparable in the non-specialist setting.

*Three small studies (two –; one +) provide some indication that partner notification for patients with C. trachomatis infection in special clinics for younger patients (e.g., teenage pregnancy units) is comparable to partner notification done in specialist settings if initiated by a health adviser.*

We identified two studies evaluating different providers (Eitrem et al. 1998) (–) and (Alary et al. 1991) (–). Both studies compared partner notification done by specialised nurses/social workers with partner notification done by physicians (mostly non-specialists) or other non-specialised health professionals. Both trails showed that specialised nurses/social workers were more effective.

*Two small studies (both –) indicate that specialised health professionals other than physicians situated in specialised settings might be more effective in eliciting partners of patients diagnosed with gonorrhoea or chlamydia when compared to non-specialised health professionals.*

**Effects of characteristics of index patients on outcomes of partner notification for gonorrhoea, chlamydia, or non-gonococcal urethritis**

Three randomised trials reported stratified analysis according to the age of index patients. Two trials found that younger age was associated with higher risk of re-infection (Golden et al. 2005) (+) and (Kissinger et al. 2005) (–) but one trial failed to show any association (Schillinger et al. 2003) (+). We retrieved four other studies reporting on outcomes of partner notification in adolescents: (James et al. 1999) (+), (Apoola et al. 2004) (–), (Jones et al. 2002) (–), and (Ross et al. 1999) (+).

*Stratified analyses of three randomised controlled trials (two +; one –) and four small observational studies (one ++; two +; one –) provide conflicting results and no conclusions can be drawn whether results of partner notification for gonorrhoea or chlamydia are different in different age groups.*

Two chart reviews (David et al. 1997; Rogstad et al. 1999) (both ++) and two observational studies (Ross et al. 1999; van Duynhoven et al. 1998) (both +) reported on the results of partner notification in men who have sex with men.

*Two small retrospective chart reviews (both ++) and one observational study (+) suggest that partner notification in men who have sex with men...*
diagnosed with gonorrhoea might be less effective than partner notification in heterosexual men.

Two randomised trials reported stratified analysis according to ethnic group of index patients (Golden et al. 2005; Schillinger et al. 2003) and we retrieved three additional studies: (Apoola et al. 2004) (++), (Rogstad et al. 1998) (++), and (Ross et al. 1999) (+)

There is inconsistent evidence from two randomised controlled trials (both +; showing no difference) and three observational studies (two ++; one +; all showing less effectiveness in black patients) whether results of partner notification in Afro-Caribbean/African-American patients with gonorrhoea or chlamydia are different from results in white patients.

Key question 2 – partner notification for syphilis
We identified one randomised controlled trial (Peterman et al. 1997) (–) reporting on intermediate outcomes only. The trial tested the effectiveness of three different forms of partner referral: contract referral and two forms of provider referral (one with the possibility to draw directly in the field). No difference were observed in terms of partners treated or tested positive.

There is weak evidence from one large randomised controlled trial (–) that contract referral for patients with syphilis is at least as effective provider referral where the provider tries to notify partners in person.

Effects of characteristics of index patients on outcomes of partner notification for syphilis
We identified one observational study from Louisiana, USA reporting on adolescents with syphilis (Kohl et al. 1999) (+).

One large observational study (+) indicates that partner notification is comparable in patients diagnosed with syphilis under and over 19 years with respect to partners tested and partners testing positive.

We identified one chart review (Kingston et al. 2004) (++) and one observational study (Hogben et al. 2005) (–) reporting on men who have sex with men with syphilis.

One large observational study (–) indicates that provider referral for men who have sex with men diagnosed with syphilis in the USA results on average in 0.50 treated partners per index patient.

The trial reported by Peterman (1997) (–) also reported a stratified analysis for people described as black and white.
Stratified analysis from one large randomised trial (−) indicate that partner notification for syphilis in African-Americans is at least as effective as in white patients in regard to number of partners contacted and number of partners treated.

The trial reported by Peterman (1997) (−) also provided information on prisoners.

Stratified analysis from one large randomised trial (−) indicate that partner notification in prisoners is less effective when compared to patients in sexually transmitted disease clinics in regard to number of partners treated.

**Key question 3 – partner notification for HIV**

We identified one small randomised controlled trial (Landis et al. 1992) (−) reporting on intermediate outcomes only. Partner notification was either contract referral or patient referral. The trial showed that more partner(s) got tested and more partners tested positive if contract referral was applied compared to patient referral. However, the overall number of tested partners and partners tested positive was low.

There is insufficient evidence (one small randomised controlled trial (−)) to say whether provider referral is superior to patient referral in patients with HIV.

**Effects of characteristics of index patients on outcome of partner notification for HIV**

We identified one study reporting on outcomes for patients under 25 years of age and equal to or older than 25 years (Toomey et al. 1998) (++).

One large prospective study (++) suggests that results for contract or provider referral for HIV are not different in patients under or over 25 years of age.

We identified five relevant studies reporting on outcomes for men who have sex with men: (Toomey et al. 1998) (++), (Wells et al. 1995) (−), (Pavia et al. 1993) (+), (Spencer et al. 1993) (+), and (Giesecke et al. 1991) (++).

Five observational studies (two ++; two +; one −) report conflicting results regarding partner notification for men who have sex with men diagnosed with HIV with regard to outcomes like partners tested or tested positive.

We found four studies reporting on minority ethnic groups: (Centers for Disease Control and Prevention (CDC) 2003) (++) (Toomey et al. 1998) (++), (Pavia et al. 1993) (+), and (Spencer et al. 1993) (+)
**Four observational studies (two ++; two +) from the USA indicate that there may not be large differences in the results of partner notification of black and white patients diagnosed with HIV.**

We found four studies reporting on intravenous drug users: (Wells et al. 1995) (–), (Pavia et al. 1993) (+), (Spencer et al. 1993) (+), and (Giesecke et al. 1991) (++).

**Four observational studies (one ++; two +; one –) on partner notification of intravenous drug users with HIV report that intravenous drug users elicit higher number of partners compared to other patients. Subsequently, more partners get tested. There is no indication that the proportion of partners who got tested is lower in intravenous drug users compared to other patients.**

**Key question 4 – adverse effects of partner notification**

None of the randomised trials reported on adverse effects of partner notification. We found two relevant other studies reporting on adverse effects (Kissinger et al. 2003) (++) and (Rosenthal et al. 1995) (–).

**Two observational studies (one ++, one –) report that some patients with syphilis or HIV experienced emotional abuse or negative emotional reactions, physical violence when notifying their partner(s).**

**Key question 5 – acceptability of and barriers to partner notification**

We identified two qualitative studies on views of patients about the process of partner notification: (Chacko et al. 2000) (–) and (Gorbach et al. 2000) (+).

**Two qualitative studies (one +; one –) indicate that fear of gossip, stigma, and violence (especially in women) can be a barrier to partner notification for gonorrhoea or chlamydia.**

**Synthesis of rapid review findings**

It was difficult to summarise evidence from trials investigating different methods of partner notification because 1) methods used for partner notification differed widely between trials; 2) outcomes varied widely between trials and were often not well-defined; 3) only the trials of patient-delivered partner therapy and the trial by Cleveland (2001) reported on the primary outcomes of interest (relating to transmission of infection).

**Key findings relating to practice and research**

- The current evidence about partner notification does not suggest one single optimal strategy.
- Practical guidance about effective partner notification interventions for gonorrhoea and chlamydia should focus on effective forms of patient referral.
• Whilst there is some evidence to show that labour-intensive methods such as provider and contract referral are better (for intermediate outcomes) than patient referral for index patients with gonorrhoea or chlamydia, these methods are rarely employed in practice for these infections, which are commonly diagnosed outside specialist genitourinary medicine clinics.

• Good evidence for methods of partner notification is lacking for syphilis and HIV. However, given that these infections are usually more serious than gonorrhoea and chlamydia, healthcare professionals should be advised to consider contract and provider referral for these patients.

**Content of patient referral interventions**

• Healthcare providers could consider any of the following methods of patient referral in individual patients:
  
  o 1) providing information for partner(s) (evidence statement 1.3);
  
  o 2) home sampling for partner(s) (evidence statement 1.6),
  
  o 3) patient-delivered partner therapy (evidence statement 1.1).

• The WHO definition of partner notification states that all of these methods should be preceded by a detailed explanation of the nature of the infection, a careful sexual history to ascertain which sexual contacts require treatment, and information about avoiding future infection.
2. Background

The Department of Health has asked the National Institute for Health and Clinical Excellence (NICE) to develop public health intervention guidance on the reduction of sexually transmitted infections including HIV, and to reduce the rate of under eighteen conceptions as part of its 11th Wave. The guidance is intended to support the delivery of a range of measures for improving sexual health as set out in the public health white paper Choosing Health (Department of Health 2004), including the commitment to implement the National Chlamydia Screening Programme throughout England by March 2007. It will also support the implementation of the National Service Framework for Children, Young People and Maternity Services, which sets standards for health promotion and prevention with young people to reduce the risk of both teenage pregnancy and acquiring a sexually transmitted infection.

2.1. The need for public health guidance

2.1.1. Public health role of partner notification

Partner notification for sexually transmitted infections, which was known as contact tracing until the 1980s (Rothenberg et al. 1999), is 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 (WHO/UNAIDS 1999). The concept of partner notification has long been recognised as an essential component of public health efforts to control sexually transmitted infections (Parran 1937). By identifying and treating asymptomatic or incubating infection in the contacts of diagnosed cases, the average duration of infection is reduced, and chains of transmission are broken. At the population level this contributes to reducing the reproductive rate of the infection below the level at which epidemic transmission is possible (Anderson et al. 1992).

The objective view of partner notification as a value free public health duty is not, however, always held. Sexually transmitted infections are the most stigmatising of all diseases, affecting individual patients and at least one sexual partner. The partner(s) might or might not be a spouse or regular partner, might have paid for or been paid for sex, might or might not be contactable, might or might not know they have a sexually transmitted infection, and might or might not want to know. The social and emotional implications of asking someone to reveal their most intimate relationships, and then telling people, who are not patients and not seeking healthcare, that they have been exposed to an infection therefore go way beyond those of the logistics of location and offering clinical services. The tension between invading individuals’ right to privacy and the duty to warn people who might have been exposed to protect the public health create substantial problems for both practice and research.
2.1.2. Partner notification practice

Modern partner notification methods were introduced in Europe in the 1930s to help control syphilis, a curable bacterial infection with a long incubation period. The original model for tracing the contacts of syphilis cases involved field workers (known euphemistically as medical social workers or health visitors) going into the community to find contacts, coining the term, "shoe-leather epidemiology" (Brandt 1985). This is a process that we would now call 'provider referral'. In 1946, in the Tyneside scheme, one of the first organised contact tracing systems, 62% of contacts of syphilis or gonorrhoea were persuaded to attend a clinic by a health visitor (Wigfield 1972). By 1970, 77% of contacts attended following the efforts of the patients themselves (Wigfield 1972). 'Patient referral' developed as routine partner notification was extended to include gonorrhoea, which was much more frequent than syphilis, and probably in response to patients' preferences. We now recognise three primary approaches to partner notification:

- **Patient referral** – Where the index patient accepts full responsibility for informing partners of the possibility of exposure to a sexually transmitted infection and for referring them to the appropriate services. Patient referral can be assisted by counselling from a health professional, or by using contact slips (printed material that index patients give to their sex partners advising the partner to seek medical care).

- **Provider referral** – Where the health professional takes responsibility for confidentially notifying partners of the possibilities of their exposure to a sexually transmitted infection.

- **Contract (conditional) referral** – Where the provider and the index patient agree that the index patient will notify the 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 if not reached within the agreed time period.

The partner notification approach depends on the provider and on the sexually transmitted infection. Provider referral and contract referral are more likely to be used for syphilis and HIV infection than gonorrhoea or chlamydia. There is also great variation in the way that each approach can be carried out. For example, patient referral can vary from simply instructing index patient to tell their sexual partners to get treated, without follow up, to an interview with a specialist health adviser, advice, contact slips, condoms, and a follow up appointment.

Physicians sometimes also give their patients medications or prescriptions to give to their sex partners. This practice, now referred to as patient-delivered partner therapy (PDPT), expedited partner therapy (EPT), or accelerated partner therapy (APT), is usually used as an adjunct to enhance the success of patient therapy and partner notification. The legal status of this practice is not clear in many countries so it is difficult to determine how widely it is used. Nevertheless, it has been evaluated in randomised trials in the USA, and its feasibility in the UK is being investigated.
Ramstedt has proposed a descriptive system differentiating levels of partner notification (Figure 1, below). The scheme reflects the amount of assistance offered to index patients. According to this framework the notification process may be separated in different elements:

- Information of index patients about their diagnosis. During this consultation index patients are usually also informed about the need for partner treatment.

- The notification process itself. To enhance the notification process partner notification may be supplemented with contact cards, additional (health) information, or medication to be delivered to partner(s) by the index patient. Of note, the framework does not differentiate between different forms of referral (patient/contract/provider).

- The follow-up process. Follow-up of partner management may either be absent, via the index patients by asking them about partner management, or via health professionals caring for partner(s) and who verify testing and treatment of partner(s). The latter form of follow-up is usually done in everyday practice if partner(s) present at the same health care facility. However, if they attend other health care facilities it may be difficult or impossible to verify partner management.

**Figure 1: Levels of partner notification for sexually transmitted infections**

<table>
<thead>
<tr>
<th>Level</th>
<th>No partner notification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 0</td>
<td>Patient treated but not informed about routes of transmission or need for partner treatment.</td>
</tr>
<tr>
<td>Level I</td>
<td><strong>Minimal partner notification</strong></td>
</tr>
<tr>
<td></td>
<td>Patient treated, informed about routes of transmission and need for partner treatment.</td>
</tr>
<tr>
<td>Level Ia</td>
<td><strong>Expedited partner therapy</strong></td>
</tr>
<tr>
<td></td>
<td>Patient treated, informed about routes of transmission, partners treated by prescription or via index patient without examination and no verification and follow-up of partner management.</td>
</tr>
<tr>
<td>Level Ib</td>
<td><strong>Expedited partner therapy with restricted verification</strong></td>
</tr>
<tr>
<td></td>
<td>Patient treated, informed about routes of transmission, partners treated by prescription or via index patient without examination and non-mandatory verification and follow-up of partner treatment (informal verification of partner management via index patient).</td>
</tr>
<tr>
<td>Level Ia</td>
<td><strong>Partner notification</strong></td>
</tr>
<tr>
<td></td>
<td>Patient treated, informed about routes of transmission, referral of partners to have examination/get tested (patient/contract/provider) and no verification and no follow-up of partner management (in case of patient referral notification process is supported by contact cards or similar).</td>
</tr>
<tr>
<td>Level Ib</td>
<td><strong>Partner notification with restricted verification</strong></td>
</tr>
<tr>
<td></td>
<td>Patient treated, informed about routes of transmission, referral of partners to have examination/get tested (patient/provider/contract) and non-mandatory verification and follow-up of partner examination and treatment (informal verification of partner management via index patient).</td>
</tr>
<tr>
<td>Level IV</td>
<td><strong>Verified complete partner management</strong></td>
</tr>
<tr>
<td></td>
<td>Patient treated, informed about routes of transmission, referral of partners to have examination/get tested and mandatory verification and follow-up of partner examination and treatment (partner management verified by physician who tests/cares for partner(s)).</td>
</tr>
</tbody>
</table>

* Adapted from Ramstedt et al. (Ramstedt et al. 1991). Levels reflect greater intensity of the method, which does not necessarily translate into better control of infection.
2.1.3. Partner notification in the UK

In the UK, a national network of specialist genitourinary medicine clinics provides free and confidential care for people with sexually transmitted infections. Most clinics employ sexual health advisers to undertake partner notification. Patient referral with follow up in person or by telephone is the preferred strategy for syphilis, gonorrhoea, chlamydia, and HIV in over 80% of clinics, with conditional referral used in almost all other instances. Provider referral is very rarely used as an initial approach (Stokes et al. 1999). Contact slips were formerly a fundamental aid to patient referral and follow up (Cowan et al. 1996). Sexual contacts could attend any genitourinary medicine clinic with the contact slip and it would be returned to the issuing clinic so that treatment could be recorded in the index patient’s notes. Contact slips are not used for HIV partner notification and their use for other infections is diminishing (Low et al. 2005). Clinicians in primary care settings, where increasing numbers of cases of chlamydia are being diagnosed, often advise patients to notify their partners but do not necessarily provide risk reduction counselling or follow up the outcomes. A minority of primary care providers send patients with chlamydial infections to genitourinary medicine clinics and most patients who are referred do not attend (Low et al. 2005).

The contact period is the time period before diagnosis during which contacts should be sought. These periods should be based on knowledge about the incubation and infectious periods of syphilis, the incubation period for symptomatic gonococcal or chlamydial urethritis, or pragmatic decisions about the yield of asymptomatic contacts. In practice, different UK genitourinary medicine clinics appear to employ different contact periods; three months is the most commonly reported period for syphilis, gonorrhoea and chlamydial infection, and 6 months for HIV.

2.1.4. Partner notification in other high income countries

Research studies about partner notification in different countries are not always comparable. The organisation of health services for people with sexually transmitted infections, and the professionals providing care vary. In the USA, public health clinics provide sexually transmitted diseases clinics but these only serve a small proportion of the population, including the poor and uninsured. Partner notification is always attempted for syphilis: disease intervention specialists (equivalent to health advisers in the UK) typically employ provider referral. Partner notification practices for other infections are more variable. A survey in US cities with high levels of sexually transmitted infections in 1999 found that only 17% of all people with gonorrhoea and 12% of those with chlamydia had partner notification interviews, mostly patients seen in sexually transmitted diseases clinics. The partner notification approach for gonorrhoea was usually simple patient referral with no routine follow-up to assure that partners were treated.

Partner notification practices in the European Union are also highly variable, reflecting cultural differences and differences in health care systems and resources. Almost all European countries rely on patient referral for all infections, including syphilis and HIV. Specialist sexually transmitted diseases or dermato-venereology clinics are usually only found in big cities. At the
primary health care level clinicians therefore have the main responsibility for partner notification.

2.2. **Scope of this review**

This review covers evidence for the effectiveness of partner notification in women and men diagnosed with gonorrhoea, chlamydia, non-gonococcal urethritis, syphilis, or HIV. Partner notification may be performed in any setting including specialist and non-specialist health care settings as well as non-health care settings. In addition, information about acceptability of and barriers to partner notification as perceived by patients or providers is reviewed.

We did not review the effectiveness of partner notification in other sexually transmitted infections or syndromes with no specific diagnosis of infection.

2.2.1. **Key question 1**

What is the effectiveness of partner notification in patients diagnosed with gonorrhoea, chlamydia trachomatis, or non-gonococcal urethritis?

2.2.2. **Key question 2**

What is the effectiveness of partner notification in patients diagnosed with syphilis?

2.2.3. **Key question 3**

What is the effectiveness of partner notification in patients diagnosed with HIV or AIDS?

2.2.4. **Key question 4**

What are the adverse effects of partner notification from the point of view of patients?

2.2.5. **Key question 5**

What are the opinions about acceptability of and barriers to partner notification as perceived by patients or providers?
3. Methodology

3.1. Literature search

We searched electronic databases without language restriction from January 1990 to December 2005. We also searched the reference lists of studies included in our review to identify additional relevant studies, including those published before 1990. Since one comprehensive systematic review was published 2001 it was agreed that relevant studies published before 1990 could be retrieved by searching its reference list. We used a broad search strategy, developed with the help of information specialists at the Centre for Public Health Excellence, which did not include terms for different study designs to increase sensitivity.

3.1.1. Databases searched

Medline; Embase; Cinahl; Cochrane Library, 2005, Issue 4; PsycINFO; Sigle; DARE.

3.1.2. Search terms

We used subject headings and free text covering various sexually transmitted infections including HIV and combined these with free text terms for partner notification methods including expedited and patient-delivered partner therapy. The exact search strategies are shown in the appendix (section 7.1, p. 136).

3.1.3. Data management

We used bibliographic software (Reference Manager, Version 11) to download, de-duplicate, and organise the results of our searches. Results of the article screening and data extraction were entered into a Microsoft Access database.

3.2. Selection of studies for inclusion

Two independent reviewers screened titles and abstracts to identify potentially relevant articles, and resolved discrepancies by discussion. The full text of selected titles was then read by two independent reviewers using pre-specified criteria (see below). Discrepancies were resolved by discussion, or by adjudication by a third reviewer.

3.2.1. 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. Studies describing the provision of treatment of sexual partners by index patients ('expedited partner therapy') were also included.
Setting
We considered studies conducted in specialist health care settings (e.g. genitourinary medicine clinics), other health care settings (e.g. general practices), and non-health care settings (e.g. needle exchanges, homeless shelters). However, for the non-controlled studies only studies reporting on non-specialist settings and on different providers were included.

Study population
We applied no restrictions regarding the study population recruited in the studies. However, for the non-controlled studies we initially planned to include only studies reporting on groups of special interest: women and men under 25 years of age; men who have sex with men; people from black and minority ethnic groups; commercial sex workers; intravenous drug users; people living with HIV infection; asylum seekers; homeless people; prisoners; people in socioeconomically deprived areas; persons with low education achievement; young people in and leaving care. We included all studies that enrolled at least 80% participants belonging to one of these groups and studies reporting analyses stratified by special groups. During the review process it became clear that only one controlled trial was available for syphilis and one for HIV. We therefore decided, to include other studies comparing two methods of partner notification (e.g. before-after studies) even if they did not report on groups of special interest.

Outcome measures
The outcome measures were specified by the Scope for the review.

Primary outcomes:  
- Reduction of incidence or prevalence of sexually transmitted infection in the population  
- Reduction of incidence or prevalence of sexually transmitted infections in index patients.

Intermediate outcomes:  
- Partners treated  
- Partners tested or tested positive  
- Partners contacted, located, or elicited

Other outcomes:  
- Adverse effects  
- Acceptability of and barriers to partner notification

Study design
We included the following types of studies:

- Systematic reviews; randomised controlled trials; non-randomised comparisons (controlled clinical trials);
- Before-and-after studies and time-trend analyses reporting outcomes for groups of special interest or settings (see above);
Non-controlled studies and cross-sectional studies reporting outcomes for groups of special interest or settings (see above);

Audits and chart reviews reporting outcomes for groups of special interest or settings (see above);

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.

3.2.2. Exclusion criteria

We excluded the following types of studies:

- Studies conducted in developing countries (as defined by the Development Assistance Committee of the Organisation for Economic Co-operation and Development);
- Studies of index patients diagnosed with sexually transmitted infection syndromes and no specific diagnosis reported as well as studies on sexually transmitted infections other than gonorrhoea, non-gonococcal urethritis, genital chlamydia infection, syphilis, or HIV;
- Non-controlled studies not reporting the number of eligible participants;
- Audits or chart reviews if they did not state that charts were selected consecutively;
- Studies enrolling less than 50% of eligible participants (this criterion was not applied to studies reporting adverse effects);
- 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.

3.3. Data extraction and quality appraisal

Data extraction was done by two independent reviewers using standardised data extraction sheets. Discrepancies were resolved by discussion, or by adjudication by a third reviewer.

We used methodology checklists for each study design to assess the internal validity of the study and the quality of reporting (NICE Guideline Development Methods manual, Appendices B, C, H). Based on responses to the questions in the methodology checklist we assigned an overall quality score to each study (see section 7.2, p. 139). The score was guided by aspects of study design, specified in the methodology checklists, which we considered of particular importance in evaluations of partner notification interventions. For example, for a randomised trial to be scored (++), the outcome assessment had to be explicitly stated to be blinded, and the way in which...
participants in intervention and control groups were treated had to be identical, apart from the notification itself.

3.4. Study categorisation and structure of the summary of evidence

Our primary categorisation of studies was according to the type of infection (1. gonorrhoea, non-gonococcal urethritis, chlamydia; 2. syphilis; 3. HIV) and the type of outcome measured (primary, intermediate, or other). Each method of partner notification i.e. patient, contract, and provider referral was considered in each category followed by evidence describing different settings for providing partner notification and studies describing partner notification delivered by different providers.

We then considered whether there was any information that related directly to groups of special interest. Where possible, we extracted outcome data separately for the following populations: age under 25 years, especially adolescents; men who have sex with men; people from black and minority ethnic groups\(^1\); commercial sex workers; intravenous drug users; people living with HIV infection; asylum seekers; homeless people; prisoners; people in socioeconomically deprived areas; young people in and leaving care. Finally, we described potential adverse events of partner notification.

In answering our primary questions we considered the following elements:

- What is the aim/objective of the intervention? What is it trying to change?
- What outcome measures are used to assess effectiveness? How valid and appropriate are they?
- Content of the intervention (what?). Does it influence effectiveness?
- Delivery/mode (how?). Does the way it is carried out (the type/mode of communication, for example) influence effectiveness?
- Intervenor (who?). Does the effectiveness depend on the job title/position or other factors such as age, gender, sexuality, ethnicity, of the deliverer (leader)? What are the significant features of an effective deliverer (leader)?
- Setting (where?). Does the site/setting of delivery influence effectiveness?
- Intensity/duration (how much, how long, how often?). Does the intensity (or length) influence effectiveness/duration of effect?
- Target (with who?). Does the effectiveness vary with age, gender, sexuality, socio-economic status, ethnicity?

\(^1\) We only considered the following minority ethnic groups (described different in the various studies): "black", "black Caribbean", "African Americans".
Implementation. What are the barriers to implementing effective interventions?

Most of the questions are directly related to the process of partner notification. We addressed these in the main body of the summary of evidence (sections 0-4.4) and the evidence tables (section 0). The first two questions are also covered in sections 4.1.1, p. 31 and 4.1.5, p. 33. We addressed questions that can not be answered in controlled trials in specific subsections: studies on different settings or providers, studies on the influence of specific patient's characteristics, adverse effects, barriers and applicability.

Since most of the studies reported on intermediate outcomes we included Evidence Statements on the absence of evidence in the respective sections for each infection covered.

Key questions 4 and 5 are reported after the evidence for the effectiveness of partner notification.

3.5. Assessing applicability

We assessed applicability to UK populations and settings using the following statements (NICE Methods Manual, Version 1, Appendix D, p120-121):

1. Likely to be applicable across a broad range of settings and populations;
2. Likely to be applicable across a broad range of settings and populations, assuming appropriately adapted;
3. Applicable only to populations or settings included in the studies, and broader applicability is uncertain;
4. Applicable only to settings or populations included in the studies.

3.6. Synthesis

We used narrative methods to synthesise the findings from systematic reviews, controlled studies, and all other studies. Since trials were heterogeneous, especially with regard to definition of outcomes, we did not do any meta-analysis. However, we displayed the effect estimates of individual trials within specific categories of intervention as forest plots whenever possible.

For outcomes reported as proportions, calculations of confidence intervals or statistical tests were performed using Stata (Version 9.1) if these were not reported in the original article. We calculated exact confidence intervals and exact statistical tests if not stated otherwise. For outcomes reported as the mean number of partners treated per index case we performed no additional calculations because we could not account for the clustering of the data. If no p-value or confidence interval is presented in this review then the article did not present them and did not provide enough details to calculate them.
4. Summary of findings

4.1. Summary of studies identified

Our literature search identified 2492 unique references, 33 of which were identified by handsearching only. We retrieved 288 full text manuscripts for fulltext screening and excluded 132, mostly because the topic of the paper was outside the scope of the review, or the study design or publication type did not fulfil our inclusion criteria. Of 156 studies initially included we excluded 97 because they did not fulfil basic quality criteria or met one of the other exclusion criteria (section 7.5, p. 146). For a detailed description of the flow of articles selection see section 7.3, p. 140.

We included in our review:

– 8 systematic reviews or guidelines (3 reviews and 1 guideline covering all relevant STDs; 3 guidelines covering gonorrhoea or chlamydia only; 1 guideline covering HIV only)
– 12 randomised controlled trials: 10 on gonorrhoea, chlamydia, or NGU (5 reporting primary outcomes)
  1 on syphilis (only reporting intermediate outcomes)
  1 on HIV (only reporting intermediate outcomes)
– 2 controlled clinical trials (1 on gonorrhoea and 1 on chlamydia reporting only intermediate outcomes)
– 2 non-randomised comparative studies
– 25 non-comparative studies
– 7 audits or chart reviews
– 3 qualitative studies or studies reporting qualitative information

Table 1, p. 34 gives an overview of the topics covered by the evidence identified and the relevant study design.

4.1.1. Aims of partner notification according to the studies included

The overarching aim of partner notification is to reduce the incidence and prevalence of sexually transmitted infections in the population. In the context of partner notification this aim is achieved by preventing re-infection in the index patient and onward transmission in the community by untreated partner(s). We found no trials that aimed to reduce the number of infections in the whole population. Nonetheless, four controlled trials aimed to reduce the number of persistent and recurrent infections in index patients. The other controlled trials aimed to increase the number of partner(s) who receive medical care.
4.1.2. **Overview of populations covered by the controlled trials retrieved**

Studies retrieved for this review enrolled a variety of patients. Among other characteristics we were able to identify controlled trials covering the following populations:

- Women and men of all ages (6 RCT)
- Women of all ages (2 RCT, 1 CCT)
- Men of all ages (3 RCT, 1 CCT)
- Patients under 25 years of age (4 RCT)
- Minority ethnic groups (mostly African Americans in the USA) (5 RCT)
- Prisoners (1 RCT)

4.1.3. **Overview of settings covered by the controlled trials retrieved**

Studies retrieved for this review were conducted in several settings:

- Specialist setting with health adviser/disease intervention specialist or physician (9 RCT, CCT 1)
- General practice with trained nurses or physicians (3 RCT, 1 CCT)
- Family planning clinics (2 RCT)
- Clinics for adolescents (1 RCT)
- Emergency and other hospital departments (1 RCT)

4.1.4. **Overview of methods of partner notification covered by the controlled trials retrieved**

- Minimal patient referral with and without verification (3 RCT)
- Patient-delivered partner therapy with and without verification (4 RCT)
- Patient referral with the help of contact slips with and without verification (included trials sending urine sampling kits for collecting samples of partners at their doctors office) (4 RCT, 2 CCT)
- Patient referral enhanced by additional information sheets about the infection for the index patient and the partner(s) with and without verification (2 RCT)
- Patient referral enhanced by incentive (health care costs waived) (1 RCT)

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2 Some trials reported one more than one group of special interest or setting and some trials did not provide details regarding these aspects. Therefore, numbers do not add up.
– Patient referral enhanced by health/STI education or counselling (3 RCT)
– Patient referral enhanced by providing partner(s) with urine sampling kits for collecting samples of partners at home and sending them to a laboratory free of charge (1 RCT, 1 CCT)
– Contract referral (3 RCT, 1 CCT)
– Provider referral (3 RCT)

For a detailed description of the interventions investigated in controlled trials see Appendix section 7.6, p. 153.

4.1.5. Overview of outcomes assessed in the studies retrieved

Studies retrieved for this review assessed a lot of different outcomes. The following outcomes were assessed (precise definitions varied widely between studies and are described more fully in Table 19, p. 155):

**Primary outcomes according to the scope of the review (sections 2.2, p. 25 and 3.2.1, p. 26)**
– Proportion of persistent or recurrent infections in index patients (5 RCTs)

**Intermediate outcomes according to the scope of the review (sections 2.2, p. 25 and 3.2.1, p. 26)**
– Partners who got treated (expressed as: mean per index patient; as proportion of index patients with at least one partner treated; or as proportion of index patient with all partners treated; 5 RCT, 1 CCT)
– Mean number of partners infected/tested positive (in one trial this outcome was reported as proportion of index patient with at least one partner infected; 5 RCT, 1 CCT)
– Mean number of partners who got tested per index patient (5 RCT, 1 CCT)
– Mean number of partners contacted per index patient (3 RCT, 1 CCT)
– Mean number of partners elicited per index patient (8 RCT, 1 CCT)

**Other outcomes according to the scope of the review (sections 2.2, p. 25 and 3.2.1, p. 26)**
– Adverse effects
– Views on and experiences with partner notification by index patients and providers

**Validity and appropriateness of outcome measures used in the studies included**

Some of the outcomes measured are more clinically meaningful than others. Given that the overarching aim of partner notification is to reduce the spread and number of infections in the population the most important outcome measured in the studies included is the number of persistent or recurrent infections in index patients.
This suggests that on the track to achieve this goal partner(s) need to receive some kind of medical care. Therefore, outcomes measuring medical care of partner(s) are also clinically meaningful outcomes – although less meaningful than the reduction in infections. Three outcomes measured in the trials fit in this category: number of partners tested, tested positive, and treated. A prerequisite for successful care of patients is to know who should be treated and to locate the person. Therefore, the number of partner(s) elicited and the number of partner(s) contacted are also relevant outcomes. However, although the process of eliciting and locating partner(s) is a prerequisite it is not sufficient. In addition, the number of partner(s) may actually be viewed as some kind of baseline characteristic of the patients enrolled in the trial. Therefore, studies measuring only these outcomes do not provide the same amount of evidence compared to studies reporting also on the other outcomes (no controlled trial included in this review solely reported these outcomes).

In this review we found that outcomes described above were often not described or differ. Therefore, comparability between studies is limited. Finally, investigators often use verification of partner-related outcomes through the index patients although this might be an unreliable way. However, even outcomes are verified by treating physicians/institutions there is potential for biases and unreliability if outcome is assessed differently in the different treatment groups. This is especially problematic in trials comparing provider and (minimal) patient referral. The difficulties and pitfalls of outcome assessment are reflected in the quality assessment of studies.

Table 1: Overview of the evidence retrieved for groups of special interest

<table>
<thead>
<tr>
<th></th>
<th>Gonorrhoea (N=17)*</th>
<th>Chlamydia (N=28)*</th>
<th>Syphilis (N=9)*</th>
<th>HIV (N=22)*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Different providers</strong></td>
<td>1 Non-controlled study</td>
<td>2 Non-controlled studies</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Non-specialist setting</strong></td>
<td>–</td>
<td>1 RCT; 4 Non-controlled studies</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Age ≤ 20/25 years</strong></td>
<td>1 RCT</td>
<td>3 RCT; 4 Non-controlled studies</td>
<td>1 Non-controlled study</td>
<td>1 Non-controlled study</td>
</tr>
<tr>
<td><strong>Men who have sex with men</strong></td>
<td>2 Non-controlled studies</td>
<td>–</td>
<td>2 Non-controlled studies</td>
<td>7 Non-controlled studies</td>
</tr>
<tr>
<td><strong>Minority ethnic groups</strong></td>
<td>1 RCT, 2 Non-controlled studies</td>
<td>2 RCT, 2 Non-controlled studies</td>
<td>1 RCT</td>
<td>4 Non-controlled studies</td>
</tr>
<tr>
<td><strong>Commercial sex worker</strong></td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Intravenous drug users</strong></td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>4 Non-controlled studies</td>
</tr>
<tr>
<td><strong>Refugees</strong></td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Homeless</strong></td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Prisoners</strong></td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>1 RCT</td>
</tr>
<tr>
<td><strong>Low education achievement</strong></td>
<td>1 Non-controlled study</td>
<td>1 Non-controlled study</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>In and leaving care</strong></td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Other relevant</strong></td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Adverse effects</strong></td>
<td>1 Non-controlled study†</td>
<td>1 Non-controlled study†</td>
<td>2 Non-controlled studies†</td>
<td>2 Non-controlled studies†</td>
</tr>
<tr>
<td><strong>Applicability, barriers, and other qualitative information</strong></td>
<td>1 RCT, 3 Non-controlled studies, 2 Qualitative studies, 2 Surveys†</td>
<td>2 RCT, 4 Non-controlled studies, 2 Qualitative studies, 2 Surveys†</td>
<td>2 Surveys†</td>
<td>1 Qualitative study, 3 Surveys†</td>
</tr>
<tr>
<td>*</td>
<td>Since studies reported on several groups and enrolled patients with different infections numbers do not necessarily add up.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>†</td>
<td>The study enrolled patients with a history of sexually transmitted disease but no further details are reported (see section 4.5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>‡</td>
<td>Both studies surveyed health professionals (see section 4.5.2)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.2. **Key question1 – gonorrhoea, chlamydia, or non-gonococcal urethritis**

We identified 4 guidelines, 3 systematic reviews, 10 randomised controlled trials, and 2 controlled clinical trials relevant for this question.

4.2.1. **Guidelines reporting on partner notification for gonorrhoea, chlamydia, or non-gonococcal urethritis**

Three (Anon. 1999a; Anon. 1999b; FitzGerald et al. 1996) of the 4 guidelines retrieved were developed by organisations from the UK (2 from the Medical Society for the Study of Venereal Diseases, the Association for Genito Urinary Medicine, and the Royal College of Physicians GU Medicine Committee; 1 from the National Audit Development Project and the Health Advisers in Sexually Transmitted Diseases) and 1 is from Canadian Federal-provincial Advisory Committee on Community Health (Millson et al. 1994). Two (Anon. 1999a; Anon. 1999b) were published in 1999, 1 (FitzGerald et al. 1996) was published in 1996, and the Canadian guideline was published in 1994 (Millson et al. 1994). Quality assessment was limited since reporting quality was generally low. Only one guideline referred to results of a systematic review, and no guideline stated how consensus was reached. Recommendations of all guidelines were relatively unspecific regarding the process of partner notification.

**Results**

One of the MSSVD guidelines (Anon. 1999b) and the other UK-guideline (FitzGerald et al. 1996) covered gonorrhoea and recommended that partner notification should be pursued in all patients at the time of diagnosis or treatment. No recommendations regarding the method of partner notification to be employed were published. However, the guideline from the National Audit Development Project (FitzGerald et al. 1996) recommends that patients should be referred to a health adviser. The time frame for eliciting partners is specified in the MSSVD guideline (Anon. 1999b) based on arbitrarily chosen cut-offs: 1) partners in preceding 2 weeks in males with symptomatic urethral infections; 2) partners in preceding 3 months in patients with infection at other sites or asymptomatic infection.

The other MSSVD guideline (Anon. 1999a) covering chlamydia recommended that all patients should be referred to pursue partner notification at the time of diagnosis. However, the guideline is not explicit in stating to whom patients should be referred. The time frames for eliciting partners were arbitrarily set as follows: 1) partners in preceding 4 weeks in symptomatic patients; 2) partners in preceding 6 months or last previous sex partner in case of no partner in preceding 6 months in asymptomatic patients. Patient referral is generally recommended but if the index patient is unwilling to refer partner(s), notification should be done by the provider. Partner notification results should be ascertained and documented.
The Canadian guideline (Millson et al. 1994) found no compelling reasons to have different notification strategies for different sexually transmitted infections. Therefore, recommendations are the same for all sexually transmitted infections. Mandatory naming of partners in the initial part of any notification process is discouraged. According to the recommendations, partner referral is considered the minimum and should be attempted in every patient. If the patient requests assistance, health care providers should notify relevant partners. Every index patients should be followed-up within a few weeks to assess the effectiveness of the notification process and to repeat the offer of assistance. Mandatory notification by the health care provider is only recommended in situation where clearly the risk to the partner who is unaware is sufficient and the ability of the index patient to notify partners is considered inadequate.

4.2.2. Primary outcomes: reduction of incidence or prevalence of infection in index patients

The following sub-questions described in section 3.4, p. 29 are addressed in this section: 1) What is the content of the intervention and does it influence effectiveness? 2) Does the way it is carried out influence effectiveness? 3) Does the intensity (or length) influence effectiveness/duration of effect?

Evidence from systematic reviews

The systematic reviews identified by the literature search did not report on any of the primary outcomes.

Evidence from controlled trials

We identified five randomised controlled trials reporting on of the primary outcomes (Cleveland 2001; Golden et al. 2005; Kissinger et al. 2005; Kissinger et al. 1998; Schillinger et al. 2003). Two trials were rated as (+) (Golden et al. 2005; Schillinger et al. 2003) and three trials as (–) (Cleveland 2001; Kissinger et al. 2005; Kissinger et al. 1998) (see Table 13, p. 118). No trial used blinded outcome assessment and all trials had some poorly defined or unreliably measured outcomes. In three of the four trials of patient-delivered partner therapy patients in the experimental group (patient-delivered partner therapy) received additional information and other material that was not provided in the control group (Golden et al. 2005; Kissinger et al. 2005; Schillinger et al. 2003). The experimental intervention was compared to usual practice. It can be argued that there were important differences in the treatment of study groups besides the intervention which are likely to have biased the results. However, we considered the experimental intervention to be a complex intervention consisting of several elements since it seems not possible to simply provide index patients with antibiotics to deliver to their partner(s) without some additional information. Since the aim of the trials was to compare patient-delivered partner therapy with standard care (in the USA) we did not require that participants in the control groups received the same amount of information and material. However, results of the trials have

3 The following questions are answered in this section: Aim/objective of the intervention? Outcome measures (also reflected in quality assessment)? Content of the intervention? Delivery mode? Intensity/duration?
to be viewed against this background. The trial by Cleveland (2001) was an unpublished trial limiting its assessability.

**Interventions**

Four of the five trials tested the effectiveness of patient-delivered partner therapy by comparing it with some kind of patient referral. In the patient-delivered partner therapy group index patients received packets containing antibiotics plus drug information to deliver to their partners. In three of these studies, packets contained additional information about the sexually transmitted infection and contact information on health professionals for further advise or consultation (Golden et al. 2005; Kissinger et al. 2005; Schillinger et al. 2003). Two different forms of patient referral were employed in the control group: in two trials (Golden et al. 2005; Kissinger et al. 2005) a minimal form of partner notification was done i.e. patients were advised to tell partner(s) to seek health care. In the other two trials (Kissinger et al. 1998; Schillinger et al. 2003) index patients were also given contact cards. One trial (Kissinger et al. 2005) was a three arm comparison with patient referral enhanced by information cards for partner(s) and guidelines for the health care professional testing/treating the partner as a second intervention group. Intensity of follow up of partners varied between studies but no study employed mandatory verification of partner examination or treatment (e.g., verification by examining/treating physician of partner(s)).

The fifth trial (Cleveland 2001) was a three group comparison of two different forms of patient referral and contract referral. Patient referral with contact cards was supplemented by an educational videotape for index patients in one of the two patient referral arms and without a videotape in the other arm.

**Setting and provider**

All of the trials were done in the US in the last 10-12 years. One of the studies was conducted as multicentre trial (Schillinger et al. 2003), one trial (Golden et al. 2005) was conducted at two centres, and three were single-centre trials (Cleveland 2001; Kissinger et al. 2005; Kissinger et al. 1998). The multicentre trial used a variety of different health care facilities including clinics for sexually transmitted infections, family planning and adolescents clinics, primary care clinics as well as emergency and other hospital departments. The two centres in the study reported by Golden et al. (2005) were both specialised clinics for sexually transmitted infections as was the centre in the newer study by Kissinger et al. (2005). The single centre in the older study by Kissinger et al. (1998) was a family planning clinic and the single center in the trial by Cleveland (2001) was a public health clinic.

None of the studies specified the type of health care provider.

**Participants**

Both, gonorrhoea and chlamydia infections were covered in the patient-delivered partner therapy trials as well as both sexes. Overall more than 5000 patients were enrolled. All trials enrolled
mostly patients younger than 25 years of age. The other special groups of interest were either not reported, excluded, or represented only small fraction of all enrolled patients. In contrast to the other trials, the two trials published by Kissinger et al. (2005; 1998) almost exclusively enrolled African Americans. Of note the newer trial by Kissinger et al. (2005) reported that approximately 40% of the participants were binge drinker.

The trial by Cleveland (2001) enrolled mostly men (94%) with gonorrhoea. No information on age of the participants was provided.

**Results: Patient referral versus patient-delivered partner therapy**

All four trials showed some benefit of patient-delivered partner therapy in terms of reducing re-infection or persistent infection when compared to minimal patient referral or patient referral supported by contact slips. However, the effect size was generally small and two studies failed to show a statistical evidence for benefit. In absolute terms, patient-delivered partner therapy was able to reduce the proportion of re-infected patients or patients with persistent infections by 3% (95%-CI: 0.0 to 6.0%; p=0.04) (Golden et al. 2005) (see footnote for results of intention-to-treat analysis), 6% (p<0.01) (Kissinger et al. 2005), 3% (95%-CI: -1 to 6%; p=0.11) (Schillinger et al. 2003) (see footnote for results of intention-to-treat analysis), and 11 per person year (95%-CI: 4 to 18; p<0.05) (Kissinger et al. 1998). The study with the largest effect (Kissinger et al. 1998) was a pilot study and therefore by far the smallest.

**Figure 2: Forest plot of PDPT-trials (outcome: proportion of persistent or recurrent infections in index patients)**

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4 One of the 3 studies showed only significant benefit of accelerated partner therapy in a logistic regression model adjusting for age (see Table 10, p. 108 for details).

5 Intention-to-treat analysis: 7% versus 9%, difference 2% (95%-CI: 0 to 4%; p=0.046)

6 It remains unclear from the article if the analysis is based on all randomised patients or on all patients with follow-up information (available case analysis). Since the article reports only percentages and calculated absolute numbers do not add up to what is reported in the article we did not calculate a confidence interval. If analysis is based on index patients who provided a urine sample the absolute risk difference is 20% (p<0.001).

7 In a multivariable analysis intervention arm remained an independent factor for the outcome (besides age group, see below). Results were as follows: patient referral adjusted OR 1.0; accelerated partner therapy adjusted OR 0.38 (95%-CI: 0.19 to 0.74); enhanced patient referral adjusted OR 0.22 (95%-CI: 0.11 to 0.44)

8 Intention-to-treat analysis: 9% versus 11% difference 2% (95%-CI: 0 to 5%; p=0.11)

9 Results were reported as rates per person year: 11.5 versus 22.1 per person year. Since no exact p-value was reported the confidence interval is a conservative estimate (we used the following formula to calculate the standard error: log s.e. = log rate ratio * z = (log 22.1 – log 11.5) * 1.96 = 1.28 ⇒ s.e. = 3.60
Evidence statement 3.1.

There is evidence from four large randomised controlled trials\(^{10}\) (two +; two –) that patient-delivered partner therapy plus additional information for partners reduces persistent or recurrent infections in women and men diagnosed with gonorrhoea or C. trachomatis by approximately 5% compared to patient referral (either minimal or supplemented by contact card).

Results: Minimal patient referral versus enhanced patient referral

In the trial by Kissinger et al. (2005) the outcomes of enhanced patient referral could also be compared with minimal patient referral. The absolute reduction in rate of re-infection in patients receiving enhanced patient referral was similar to the comparison between patient-delivered partner therapy and minimal patient referral (absolute difference of infection rates in index patients favouring enhanced patient referral: 8%)\(^{7,11}\).

Evidence statement 3.2.

There is evidence from one large randomised controlled trial\(^{12}\) (–) that patient referral supplemented by additional information about infection for index patients and partner(s) reduces persistent or recurrent infections in men

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\(^{10}\) (Golden et al. 2005; Kissinger et al. 2005; Kissinger et al. 1998; Schillinger et al. 2003)

\(^{11}\) If analysis is based on index patients who provided a urine sample the absolute risk difference 28%. See also footnote 14.

\(^{12}\) (Kissinger et al. 2005)
Summary of findings: Key question 1 – gonorrhoea, chlamydia, or non-gonococcal urethritis

Results: Patient referral versus patient referral plus education

The trial by Cleveland (2001) compared the rate of persistent or recurrent infections in index patients managed with patient referral with contact cards and the same strategy supplemented by an educational videotape for index patients. There was no statistical evidence for a difference between these two strategies in the rate of persistent or recurrent infections of index patients (difference favouring patient referral + education: -1.3%; 95%-CI: -5.5% to 2.7%).

Evidence statement 3.3.

There is evidence from one randomised-controlled trial (–) that patient referral supplemented by an educational videotape for index patients does not reduce the rate of persistent and recurrent infections in men or women with gonorrhoea when compared to patient referral with contact cards.

Results: Enhanced patient referral versus patient-delivered partner therapy

One of the trials (Kissinger et al. 2005) also compared patient-delivered partner therapy with patient referral supplemented by an information booklet for partner(s) and guidelines for the health care professional caring for the partner(s). No difference in terms of reducing the proportion of index patients with persistent or recurrent infections could be observed (absolute difference favouring patient referral of 1%) if the enhanced method is compared with patient-delivered partner therapy. However, although there was no clear benefit of patient-delivered partner therapy when compared to enhanced patient referral in terms of reduced infections the authors recommended to apply patient-delivered partner therapy and considered enhanced patient referral as an alternative if patient-delivered partner therapy is not feasible. This interpretation was probably based on two facts: 1) the number of index patients who got re-tested was very low (30%); 2) patient-delivered partner therapy was more effective in terms of partners treated compared to enhanced patient referral (see below, p. 47).

Evidence statement 3.4.

There is evidence from one large randomised controlled trial (–) that patient-delivered partner therapy does not reduce persistent or recurrent infections in men diagnosed with gonorrhoea or C. trachomatis when

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13 (Cleveland 2001)
14 It remains unclear from the article if the analysis is based on all randomised patients or on all patients with follow-up information (available case analysis). Since the article reports only percentages and calculated absolute numbers do not add up to what is reported in the article we did not calculate a confidence interval. No p-values are reported for this comparison and we did not calculate them for the same reasons. If analysis is based on index patients who provided a urine sample the absolute risk difference is 9%.
15 (Kissinger et al. 2005)
compared to enhanced patient referral that includes providing index patients and partner(s) with additional information about the infection.

Results: Contract referral versus patient referral

The trial by Cleveland (2001) also compared the two forms of patient referral with contract referral. There was no statistical evidence for a difference between either of these two forms of patient referral and contract referral with regard to persistent of recurrent infections (difference in favour of patient referral with contact cards: 0.1%; 95%-CI: -4.2% to 4.3% and difference in favour of patient referral + education: -1.4%; 95%-CI: -5.4% to 2.5%).

Evidence statement 3.5.

There is evidence from one randomised-controlled trial\(^{16}\) (–) that contract referral does not reduce the rate of persistent and recurrent infections in men or women with gonorrhoea when compared to patient referral (either supplemented by an educational videotape for index patients or not).

4.2.3. Intermediate outcomes: partners treated, tested, or infected

The following sub-questions described in section 3.4, p. 29 are addressed in this section: 1) What is the content of the intervention and does it influence effectiveness? 2) Does the way it is carried out influence effectiveness? 3) Does the intensity (or length) influence effectiveness/duration of effect? 4) Does the effectiveness depend on the characteristics of the deliverer? 5) Does the site/setting of delivery influence effectiveness?

Evidence from systematic reviews

All three systematic reviews (Macke et al. 1999; Mathews et al. 2001; Oxman et al. 1994) report on intermediate outcomes (one ++; two –). The most recent and methodological rigorous one is a Cochrane review last updated in 2001 including 11 RCTs (Mathews et al. 2001) (++). Studies had to be randomised controlled trials comparing at least two methods of partner notification for patients diagnosed with any STD or STD syndrome. The other two reviews (Macke et al. 1999; Oxman et al. 1994) (both (–)) considered also non-randomised comparative trials but the review published by Oxman et al. (1994) was restricted to patients with gonorrhoea, chlamydia, syphilis, HIV, or hepatitis. Nevertheless, there is great overlap of studies included in the reviews and the conclusions drawn (see Table 7, p. 103 for details). Of note, most of the results of the reviews are not specific for gonorrhoea, chlamydia, and non-gonococcal urethritis. All of the studies included in the systematic reviews are also considered for this review.

Results

The Cochrane review (Mathews et al. 2001) (++) noted that there was some risk of bias in all included studies. The review found moderately strong evidence that: 1) provider referral alone,

\(^{16}\) (Cleveland 2001)
or the choice between patient and provider referral, when compared with patient referral among patients with any sexually transmitted infection (including HIV), increases the rate of partners presenting for medical evaluation; 2) contract referral, when compared with patient referral among patients with gonorrhoea, results in more partners presenting for medical evaluation; 3) verbal, nurse-given health education together with patient-centred counselling by lay workers, when compared with standard care among patients with any sexually transmitted infection, results in small increases in the rate of partners treated.

The review published by Macke & Maher (1999) (–) 1) found good evidence that partner notification is a means of newly detecting infections (gonorrhoea, chlamydia, syphilis, HIV); 2) They recommend to provide partner notification as a service; 3) They found fair evidence that provider referral results in more notified and evaluated partners compared to self referral without specifying specific infections; 4) Therefore, they recommend to encourage provider referral by trained persons. In addition to the above conclusions, according to the authors based on identified evidence, the following notes were made on ethical grounds 5) it is imperative that partner notification process is voluntary and confidential; 6) In absence of option of referral to a local health department, a minimal standard of care is for the provider or a staff member to counsel the infected person about self referral.

The oldest review published by Oxman et al. (1994) (–) concluded that 1) only limited conclusions regarding the effectiveness of different approaches to partner notification can be drawn on the basis of currently available comparative studies; 2) There is strong evidence that simple forms of patient assistance directed at improving patient referral (e.g., telephone calls) can be effective; 3) There is moderately strong evidence that provider referral results in more partners of HIV+ patients being notified compared to patient referral; 4) There is weak evidence that provider or contract referral is more effective compared to patient referral in patients with syphilis; 5) There is conflicting evidence regarding the effectiveness of provider or contract referral compared to patient referral in patients with gonorrhoea or chlamydia; 6) There is no evidence that trained interviewers are more effective than routine health care providers.

**Evidence from controlled trials**

We identified 12 controlled trials reporting on the relevant intermediate outcomes (9 RCTs (Cleveland 2001; Golden et al. 2005; Katz et al. 1988; Kissinger et al. 2005; Kissinger et al. 1998; Low et al. 2005; Montesinos et al. 1990; Ostergaard et al. 2003; Schillinger et al. 2003; Solomon et al. 1988) and 2 CCTs (Andersen et al. 1998; Potterat et al. 1977)). Almost all trials had methodological weaknesses limiting interpretation (e.g., no blinded outcome assessment, poorly defined outcomes, or differences in the treatment of study groups besides the intervention). Therefore, only one trial (Low et al. 2005) was rated as (++), one trial (Golden et al. 2005) was rated as (+), but all other trials were rated as (–) quality. Various

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17 One of the trials is unpublished but data could be extracted from the review by Mathews et al. (2001). Quality was therefore labelled as "unclear".
topics were addressed and no two trials compared the same interventions limiting comparisons across trials.

**Comparisons of different forms of patient referral**

Four trials compared minimal patient referral with patient referral enhanced either by additional information for index patients or by additional education (three –; one unclear).

As stated above, the trial published by Kissinger et al. (2005) (–) compared minimal patient referral with patient referral supplemented by information in men with gonorrhoea or chlamydia. The mean difference of partners treated per index patient was 0.22 favouring enhanced patient referral. In terms of proportion of partners treated per partners elicited patient referral supplemented by information increased the number of partners who get treated by 9% (95%-CI: 4 to 15%; \( p=0.001 \))\(^{18} \). Both of the other trials applied a form of additional health education in one arm. However, the control groups received slightly different methods of patient referral limiting comparability.

![Figure 3: Forest plot of trials of information for partners (outcome: proportion of partners treated per elicited partners)](#)

<table>
<thead>
<tr>
<th>Study</th>
<th>Risk ratio (95%-CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kissinger 2005 (PR+booklet vs. PR)</td>
<td>1.21 ( 1.04, 1.40)</td>
</tr>
</tbody>
</table>

Katz et al. (1988) (–) compared patient referral by a disease intervention specialist (i.e. partner names were elicited by a disease intervention specialist and index patients were told to their notify partner(s)) with patient referral initiated by a nurse supplemented by referral letters (to be delivered to partner(s)). Patients were enrolled in one clinic for sexually transmitted infections. More than 400 heterosexual men diagnosed with non-gonococcal urethritis were enrolled in this US-based trial. No further details on baseline characteristics of participants was reported. There

\(^{18} \) This outcome was reported in the article. Since the article reports only percentages and calculated absolute numbers do not add up to what is reported in the article we did not calculate more commonly used outcomes like number of partners treated per index case.
was only a small difference between both interventions in terms of patients treated favouring patient referral with education and contact slip (mean difference of partners treated: 0.04, 95%-CI: -0.04 to 0.12). However, the mean number of partners who got treated was very low in both arms (minimal: 0.18 versus education: 0.22) compared to other trials probably owing to the fact that partners treated at other health care facilities than the study clinic were not counted.

The third trial (Cleveland 2001) (quality unclear) is an unpublished trial from the US comparing patient referral with patient referral supplemented by health education. In both arms index patients received contact slips to deliver to their partner(s). More than 1000 patients with gonorrhoea were randomised. No difference was shown between both methods of patient referral in terms of partners tested (0.37 vs. 0.37, difference 0.0; 95%-CI: -0.07 to 0.07). No baseline information of participants was reported with respect to special groups of interest.

The last trial (Solomon et al. 1988) compared patient referral with contact cards supplemented by an educational videotape for index patients with patient referral with contact cards without any additional education. Patients were enrolled in public STD clinic in the USA. Overall, 902 patients with gonorrhoea were enrolled. No detailed results were reported but the authors state that "no significant difference" were found.

**Evidence statement 3.6.**

*There is evidence from three randomised controlled trials (two –; one unclear) that patient referral supplemented by additional education or information for index patients diagnosed with gonorrhoea is not more effective in terms of number of partners who get tested than patient referral with contact cards.*

**Evidence statement 3.7.**

*We found no controlled trials directly comparing minimal patient referral with patient referral supplemented by contact slips.*

Two trials (Andersen et al. 1998; Ostergaard et al. 2003) (both –) from the same research group from Denmark tested whether giving index patients sampling kits to deliver to their partner(s) and sending samples by post is more effective than giving index patients sampling kits to deliver to their partner(s) but requesting partners to visit a health care professional for testing (using the provided sample kits). The first trial (Andersen et al. 1998) may be viewed as a pilot study for the second one (Ostergaard et al. 2003).

Andersen et al. (1998) allocated female index patients diagnosed with chlamydia in general practices by date of birth to the two intervention groups. The type of provider who advised patients was not explicitly reported. Overall, 96 women were enrolled. Index patients in the

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19 (Cleveland 2001; Katz et al. 1988; Solomon et al. 1988)
experimental group were given prepaid envelopes to deliver to their partner(s). Envelopes contained sampling kits, information on how to collect urine, and a request to send samples to the laboratory. Index patients in the control group also were given envelopes but these contained a request for the partner(s) to visit their doctor as well as a contact slip and a prepaid envelope for the doctor. It remains unclear if index patients received additional information by their doctors. The trial reported by Ostergaard et al. (2003) recruited patients via the routine laboratory (not further specified). Patients were therefore enrolled from various settings. Both, men and women with a mean age of 24 years and diagnosed with chlamydia were randomised. Overall, nearly 2000 patients were randomised in the trials. However, since the patients were randomised before informed consent the number of enrolled patients is much lower (approximately 650 overall). Patients were mailed information about the study accompanied with the informed consent form. Those who consented received packages by post without additional information or counselling by a health professional. Index patients were advised to deliver packages to their partner(s) either in person or by mail. Packages in the experimental group contained prepaid, preaddressed envelopes and urine collection kits. Partner(s) were requested to send urine samples directly to the laboratory with the supplied envelopes. Packages in the control groups contained urine sample kits and a request to visit a health professional for testing (using the provided sample kits). Partner(s) had to visit their doctor for treatment and number of treated partners was not reported in neither of the trials.

In the larger, randomised trial (Ostergaard et al. 2003) home sampling more than doubled the number of partners who get tested per index patient (women: 0.31 versus 0.14; p<0.0001; men: 0.16 versus 0.04; p<0.0001). The proportion of index patients with at least one partner tested increased substantially (absolute difference depending on type of analysis: intention to treat, 13% (95%-CI: 10 to 17%; p<0.001); available case analysis, 33% (95%-CI: 26 to 41%; p<0.001)). Of note, the proportion in both trial groups was much lower in index men than in index women although the difference was the same (men: 47% with home sampling versus 13% with office sampling; women: 74% versus 41%). In the older, much smaller trial (Andersen et al. 1998) home sampling also more than doubled the mean number of partners tested per index patient (0.98 versus 0.37).
### Evidence statement 3.8.

There is weak evidence from two randomised controlled trials\(^ {20}\) (both –) that giving index patients diagnosed with *C. trachomatis* sampling kits for their partner(s) can increase the number of partners who get tested when compared to getting the partner(s) to visit their doctor for testing.

### Comparisons of patient referral and patient-delivered partner therapy

Two of the four trials testing patient-delivered partner therapy reported on the number of partners treated. Golden et al. (2005) (+) reported on the proportion of index patients with all partners treated. Patient-delivered partner therapy resulted in an increase of 12% in absolute terms compared to minimal patient referral in the available case analysis (RR 1.2; 95%-CI: 1.1 to 1.4; Intention-to-treat analysis: 38% versus 32%, difference 6% (95%-CI: 3 to 10%; p=0.001)). The second trial (Kissinger et al. 2005) (–) reported the mean number of partner(s) who got treated per index patient. Patient-delivered partner therapy was better than either minimal patient referral (minimal: 1.14 vs. 0.71, difference 0.43 partners per index case) or patient referral supplemented by information (1.14 vs. 0.93, difference 0.21 partners per index case). In terms of proportion of partners treated per partners elicited patient-delivered partner therapy increased the number of partners who got treated compared to minimal patient referral and patient referral

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\(^{20}\) (Andersen et al. 1998; Ostergaard et al. 2003)
supplemented by information by 21% (95%-CI: 15 to 26%; p=0.001) and 11% (95%-CI: 6 to 16%; p=0.007) respectively.\textsuperscript{21}

\textbf{Figure 5: Forest plot of PDPT-trials (outcome: proportion of partners treated per elicited partner)}

\begin{center}
\begin{tabular}{l|l}
\hline
\textbf{Study} & \textbf{Risk ratio (95%-CI)} \\
\hline
Golden 2005 (PDPT vs. PR) & 1.12 (1.03, 1.21) \\
Kissinger 2005 (PDPT vs. PR) & 1.38 (1.20, 1.59) \\
\hline
\end{tabular}
\end{center}

\begin{center}
\begin{tabular}{l|l}
\hline
\textbf{Study} & \textbf{Risk ratio (95%-CI)} \\
\hline
Kissinger 2005 (PDPT vs. PR+booklet) & 1.14 (1.01, 1.29) \\
\hline
\end{tabular}
\end{center}

\textbf{Evidence statement 3.9.}

\textit{There is evidence from two randomised controlled trials\textsuperscript{22} (one ; one –) that patient-delivered partner therapy increases the number of partner(s) who get treated in patients diagnosed with chlamydia or gonorrhoea compared to}

\textsuperscript{21} This outcome was reported in the article. Since the article reports only percentages and calculated absolute numbers do not add up to what is reported in the article we did not calculate more commonly used outcomes like number of partners treated per index case.

\textsuperscript{22} (Golden et al. 2005; Kissinger et al. 2005)
minimal patient referral and patient referral supplemented by additional information for partner(s).

Comparisons of patient and contract referral

Three trials compared contract referral with patient referral (two –; one unclear).

Only patients with gonorrhoea were enrolled in the unpublished trial (Cleveland 2001) (quality unclear). Patients in the experimental group were advised to refer partner(s) with the help of contact cards. If the relevant partner(s) did not attend the clinic within two days the provider notified partner(s) on the third (contract referral). Given this tight time-frame this form might also be viewed as a form of provider referral. The two control interventions consisted of patient referral either supplemented by education or by contact cards. Contract referral doubled the mean number of partners who got tested (0.62 in contract referral versus 0.37 in both patient referral arms, difference: 0.25; 95%-CI: 0.17 to 0.33). The mean number of partners who tested positive after contract referral was 50% higher than in the other groups (0.37 versus 0.24 in the group with standard contact cards, difference: 0.13 (95%-CI: 0.07 to 0.19) and 0.37 versus 0.25 in the group with education, difference: 0.12 (95%-CI: 0.06 to 0.18)). The mean number of partners treated was low in both patient referral arms compared to other trials but the reasons remain unclear.

The oldest trial (Potterat et al. 1977) (–) identified was conducted in the 1970s in the US. One-hundred-eighty-seven heterosexual men diagnosed with gonorrhoea were randomised either to patient referral with contact slips or contract referral, with health professionals contacting partners not presenting at the clinic within seven to ten days. Patients were enrolled in one specialist clinic for sexually transmitted infections but the type of provider was not described. The trial showed conflicting results: although contract referral was more effective in terms of partners tested (mean difference of partners tested favouring contract referral: 0.12, 95%-CI: -0.2 to 0.44) patient referral resulted in more infections detected in partners and more infected partners who got treated (means of infected partners per index patient favouring patient referral: 0.85 versus 0.71 (no further details available) and mean difference of infected partners treated favouring patient referral: 0.04; 95%-CI: -0.21 to 0.29). None of the results showed strong statistical evidence in favour of contract referral.

The last trial (Montesinos et al. 1990) (–) is a small study conducted in a health service at a Midwestern university in the US. Eighty-three female and male students with gonorrhoea or non-gonococcal urethritis and partners at the same university were randomised between patient referral and contract referral with providers notifying partners after five days. Index patients in both arms received contact cards. However, in the patient referral group index patients and partners were waived the $3 health-care charge at the service if partners presented for care at the health service. Notification process was initiated either by physicians or nurses in both of the groups. No baseline information of participants was reported with respect to special groups of
interest. A difference favouring contract referral could be detected in the proportion of identified partners who sought treatment (90% versus 60%; p<0.05).

**Figure 6: Forest plot of trials comparing contract and patient referral (outcome: proportion of partners treated per elicited partners)**

<table>
<thead>
<tr>
<th>Study</th>
<th>Risk ratio (95%-CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potterat 1977 (CR vs. PR)</td>
<td>0.99 (0.74, 1.32)</td>
</tr>
<tr>
<td>Cleveland 2001 (CR vs. PR)</td>
<td>1.64 (1.35, 1.99)</td>
</tr>
<tr>
<td>Cleveland 2001 (CR vs. PR+edu)</td>
<td>1.58 (1.30, 1.91)</td>
</tr>
</tbody>
</table>

**Evidence statement 3.10.**

There is conflicting evidence from two randomised controlled trials\(^{23}\) (one –; one unclear) whether contract referral results in higher numbers of detected infection in partner(s) of index patients diagnosed with gonorrhoea when compared to patient referral supplemented by contact slips.

**Evidence statement 3.11.**

There is insufficient evidence (one very small randomised controlled trial; –)\(^{24}\) to say whether patient referral enhanced by monetary incentive or patient referral with follow-up by telephone are effective.

**Evidence statement 3.12.**

We found no controlled trial directly comparing patient and contract referral in patients with chlamydia infection or non-gonococcal urethritis.

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\(^{23}\) (Cleveland 2001; Potterat et al. 1977)

\(^{24}\) (Montesinos et al. 1990)
Comparisons of patient and provider referral

The trial by Katz et al. (1988) was a three arm trial comparing patient with provider referral done by a disease intervention specialist in a stepwise procedure in patients with non-gonococcal urethritis. First, disease intervention specialist tried to reach partner(s) by telephone within 24 hours. If this was not successful a letter was sent and the disease intervention specialist attempted to contact the partner at home. If the partner was not at home at that time a second letter was left. Disease intervention specialists followed every partner up, either at the study clinic, or at other health care facility if the partner chose not to attend the study clinic. Compared to both forms of patient referral (see p. 44) provider referral more than tripled the mean number of partners who got treated (mean difference in favour of provider referral compared to patient referral with contact slip: 0.50, 95%-CI: 0.37 to 0.63) but the mean number of partners who were treated in the patient referral arms was very low compared to other trials (0.18 and 0.22 respectively). This is probably related to the fact that partner(s) seeking care at other health care facilities were not counted in these arms but in the provider referral arm.

Evidence statement 3.13.

There is insufficient evidence to conclude whether provider referral results in more partner(s) treated compared to patient referral in men with non-gonococcal urethritis.


We found no controlled trial directly comparing patient and provider referral in patients with gonorrhoea.

Comparisons of contract and provider referral

Evidence statement 3.15.

We found no controlled trials on comparisons of contract and provider referral for gonorrhoea, chlamydia, or non-gonococcal urethritis.

Comparisons of different settings

One trial (Low et al. 2005) (++) conducted in the UK tested whether patient referral for patients diagnosed with chlamydia is effective in general practice. Patients in the control group were referred to genitourinary medicine clinics for partner notification (provided as patient, provider, or contract referral depending on the judgement of the health care adviser in the clinic). Notification was initiated by trained nurses in the general-practice group and by health advisers in the genitourinary medicine clinics. The trial enrolled 140 women and men. Approximately 90% of patients were younger than 25 years of age and the majority was white (black Caribbean or other black: 5%). More partners of index patients in the general practice group were treated as compared to the group of index patients referred to specialist services. The proportion of index
patients having all partners treated was higher (absolute difference favouring GP group: 21%; 95%-CI: 4% to 37%). This effect might be due the fact that approximately one third of index patients in the control group did not receive the intervention. Nevertheless, patient referral initiated in general practice was at least as effective as referring patients for partner notification to genitourinary medicine clinics.

**Evidence statement 3.16.**

*There is evidence from one randomised controlled trial*\(^{25}\) (+++) *that patient referral for patients with chlamydia conducted in general practice is at least as effective in terms of partners who get treated when compared to referring patients to a specialist health service.*

**Other evidence**

**Different settings**

We retrieved 4 studies reporting on different settings for partner notification (three −; one +).

An audit/chart review of 44 patients with chlamydia or non-specific urethritis described the results of patient referral (with contact slips) in a family planning clinic in London, UK (Evans et al. 2004) (−). The mean number of partners tested per index patient was 0.43. No further relevant information was provided.

Three studies described the results of partner notification in various forms of teenage clinics (Beddard et al. 2003; James et al. 1999; Jones et al. 2002). All studies included patients diagnosed with chlamydia infection only.

The most recent study compared the results of provider referral by health advisers in a genitourinary medicine unit in a teenage pregnancy clinic with results using the same method in a traditional genitourinary medicine setting (Beddard et al. 2003) (−). Only a small number of patients were enrolled in the pregnancy unit as compared to the traditional setting (26 vs. 2081). About half the patients were younger than 20 years. Twenty-two partners were elicited by health advisers at the pregnancy unit (22/26: 0.85) and 0.69 partners were tested per index patient. Eighty-two percent (18/22) of elicited partners got tested at the teenage pregnancy clinic compared to 69% in the traditional setting (p=0.50).

The second study compared outcomes of partner notification in a community young people's clinic with outcomes from a genitourinary medicine clinic both in the UK (Jones et al. 2002) (−). In the community clinic, method of partner notification was patient referral initiated by health advisers but was not described in the specialist setting. Sixty-three patients were included from the young people's clinic, all under 26 years of age, and 25 patients from the genitourinary medicine clinic. There was only a small difference between the young people's clinic and the genitourinary medicine clinic in terms of partners tested per index patient (0.62 versus 0.68) and

\(^{25}\) (Low et al. 2005)
the difference of the mean number of partners who tested positive was also small (0.35 versus 0.28). The proportion of partners tested per elicited partners was lightly higher in the genitourinary medicine clinic but the samples were small (52% versus 68%; p=0.25).

James et al. (1999) (+) compared the results of partner notification done by health advisers where the index patients were allowed to choose between various methods in a teenage clinic in Nottingham, UK with a genitourinary medicine clinic. All included patients were women under 20 years of age. Only 13 patients were included from the specialist setting as compared to 73 from the teenage clinic. The mean number of partners treated was 0.56 in the teenage clinic compared to 0.46 in the specialist clinic and the difference in the proportion of partners treated per partners elicited was also small (82% versus 86%; RR=0.96; 95%-CI: 0.69 to 1.32).

**Evidence statement 3.17.**

*Three small studies* (two –; one +) *provide some indication that partner notification for patients with C. trachomatis infection in special clinics for younger patients (e.g., teenage pregnancy units) is comparable to partner notification done in specialist settings if initiated by a health adviser.*

**Different providers**

We identified one study reporting on the relevant outcomes (Alary et al. 1991) (–). This study was a Canadian study comparing partner notification for gonorrhoea or chlamydia patients either by physicians (general physicians as well as specialists) or specialised nurses. The method of notification was contract referral in both groups and patients had to choose between referral done by specialised nurses or physicians. Overall, 104 women and men were included: 60 in the nurses group and 44 in the group cared for by physicians. The mean number of partners elicited per index patient was 2.55 in the nurse group and 1.59 in the physicians group and the proportion of partners tested positive per elicited partners in the nurse group was more than two times higher compared to the physician group (50% versus 20%; p=0.002). [see evidence statement below]

**4.2.4. Intermediate outcomes: partners contacted or elicited**

The following sub-questions described in section 3.4, p. 29 are addressed in this section: 1) Does the effectiveness depend on the characteristics of the deliverer?

Since all included reviews and trials reported on more clinically meaningful outcomes, their results are not summarised here (see evidence table, section 0, p. 108).

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26 (Beddard et al. 2003; James et al. 1999; Jones et al. 2002)
Other evidence

Different settings

Results of the study by (Eitrem et al. 1998) described below are also relevant for different settings since it involved different providers in different settings.

Different providers

We identified one study reporting the number of elicited partners for different providers (Eitrem et al. 1998) (–). This Swedish study compared results of patient notification done by a social worker (situated in a sexually transmitted disease clinic) with partner notification by health professionals not qualified in conducting partner notification (physicians (specialties not reported), nurses, midwives; not situated in sexually transmitted disease clinic). The exact method of partner notification was not described. Overall, 80 women and men diagnosed with chlamydia infection and a mean age of 22 years were included (social worker: 37; physicians: 43). The mean number of partners elicited per index patient was higher in the social-workers group than in the group of patients treated other health professionals (2.6 versus 1.5; p<0.01).

Evidence statement 3.18.

Two small studies27 (both –) indicate that specialised health professionals other than physicians situated in specialised settings might be more effective in eliciting partners of patients diagnosed with gonorrhoea or chlamydia when compared to non-specialised health professionals.

4.2.5. Effects of characteristics of index patients on outcomes of partner notification for gonorrhoea, chlamydia, or non-gonococcal urethritis

The following sub-questions described in section 3.4, p. 29 are addressed in this section: 1) Does the effectiveness vary with different characteristics of index patients?

Three of the controlled trials reported relevant outcomes for different populations of index patients but only one reported it for the different treatment groups (Schillinger et al. 2003). Three of the controlled trials enrolled more than 80% of patients of one of the groups of special interest. In addition, we retrieved four uncontrolled studies relevant for this question.

Index patients under 25 years of age

Evidence from controlled trials

Golden et al. (2005) (+) reported a multivariable model with persistent or recurrent infection as the outcome variable. Besides patient referral and other factors, younger age was associated with higher risk of persistent or recurrent rate infection (<20 years: 15%; 20-24 years: 11%; 25-29 years: 9%; ≥ 30 years: 6%; adjusted RR per category change: 0.8; 95%-CI: 0.7 to 0.9).

27 (Alary et al. 1991; Eitrem et al. 1998)
The more recent trial by Kissinger et al. (2005) (−) reports on a multivariable analysis of factors associated with persistent or recurrent infection at follow-up. It remains unclear which factors were assessed. However, in the final model age group was one of two factors independently associated with the outcome (the other factor was the intervention arm). Analysis was based on all index patients who provided an urine sample at follow-up. In patients under 24 years of age 31% were positive for N. gonorrhoeae or C. trachomatis as compared to 20% in the age group equal to or older than 24 years (adjusted OR: 2.0; 95%-CI: 1.12 to 3.57; p<0.05).

A third trial on patient-delivered partner therapy also reported rates of persistent infections for different age groups. In contrast with the other two trials age seemed to be not a relevant factor for persistent or infections in the different treatment groups (Schillinger et al. 2003) (+): <20 years: 13%; 20-24 years: 14%; 25-29 years: 4%; 30-34 years: 12% (patient-delivered partner therapy) compared to <20 years: 17%; 20-24 years: 13%; 25-29 years: 11%; 30-34 years: 20% (patient referral).

In the trial by Low et al. (2005) 89% of enrolled patients were under 25 years of age (see p. 51 for results).

Other evidence

We retrieved four studies reporting on outcomes of partner notification in adolescents (one ++; two +; one −). All were done in patients diagnosed with C. trachomatis but only one study included only patients under 20 years of age (James et al. 1999) the other three studies used a cut-off of 25 years of age (Apoola et al. 2004) (Jones et al. 2002) (Ross et al. 1999).

The most recent study was a before-and-after study from a genitourinary medicine clinic in Birmingham (Apoola et al. 2004) (++). The investigators aimed to evaluate the change in the follow-up protocol of patients with chlamydia managed by patient referral (before: follow-up in person at clinic; after: follow-up by telephone) and included men and women. In contrast to other studies, the outcome assessed was the proportion of index patients managed satisfactorily. Satisfactory management was defined as at least 0.6 partners per index patient confirmed to have been treated within 4 weeks. Results stratified by age were only reported for both groups combined. Eight-hundred patients with a median age of 23 years were analysed. Overall, 41% of patients were managed satisfactorily (325/800). There was no evidence of a difference between younger and older patients (>25 years: 42% versus ≤25 years: 40%; p=0.5).

The study by Jones et al. (2002) (−) was a prospective study in a community young people's clinic in Merseyside, UK. Sixty-three patients diagnosed with chlamydia were advised by an outreach health adviser about the need to inform their partner(s) and received a contact slip. All patients were under 26 years. Seventy-five partners were elicited from the 63 analysed patients. Thirty-nine of these were tested (0.62 per index patient) and 0.35 per index patient were found to be infected.
Ross et al. (1999) (+) conducted a prospective study enrolling women and men with gonorrhoea (N=196) or chlamydia (N=417) treated in a genitourinary medicine clinic in Birmingham28. Of these, 29 were described as homosexual and, 225 lived in areas with deprivation scores higher than the median of the study population (median: 43). Notification of partners was done by index patients with the help of contact slips. Approximately one third of index patients had all their partners treated. The proportion of index patients with all partners treated was lower in those under 25 years of age in univariable analysis (chlamydia: < 25 years: 30% versus ≥ 25 years: 37%; OR 1.4; 95%-CI: 0.9 to 2.1; gonorrhoea: < 25 years: 28% versus ≥ 25 years: 34%; OR 1.3; 95%-CI: 0.7 to 2.4). In multivariable analysis age under 25 years was not independently associated with success of partner notification.

The study by James et al. (1999) (+) was also conducted at a specialised clinic for young patients (see section 4.2.3). Patients had the choice between patient, contact, or provider referral initiated by health advisers. All 73 patients analysed from the teenage clinic were females under 20 years. Therefore, no comparison to older age groups is possible. Overall, 0.68 partners were elicited per index patient of which 82% were treated resulting in 0.56 partners treated per index patient.

Evidence statement 3.19.

Stratified analyses of three randomised controlled trials29 (two +; one −) and four small observational studies30 (one ++; two +; one −) provide conflicting results and no conclusions can be drawn whether results of partner notification for gonorrhoea or chlamydia are different in different age groups.

Men who have sex with men

Evidence from controlled trials

We found no evidence from controlled trials on this group of special interest.

Other evidence

Two chart reviews (both ++) reported on the results of partner notification for gonorrhoea in men who have sex with men. In addition we identified two observational studies (+) analysing men with gonorrhoea or chlamydia.

The chart review reported by Rogstad (1999) (++) analysed 278 patient records of a genitourinary clinic in Birmingham, UK, of whom 25 were men who have sex with men. Index patients were advised by a health adviser to notify partners by themselves using contact slips. Similar numbers of partners per index patient were elicited from heterosexual men and men who have sex with men (1.38 versus 1.36, respectively). However, the mean number of partners tested per index patient was lower in men who have sex with men (0.52 versus 0.76) as well as

28 Unit of analyses were episodes of infection. One-hundred-three patients had 196 episodes of gonorrhoea and 405 patients had 417 episodes of chlamydia.
29 (Golden et al. 2005; Kissinger et al. 2005; Schillinger et al. 2003)
30 (Apoola et al. 2004; James et al. 1999; Jones et al. 2002; Ross et al. 1999)
the proportion of partners who got tested (38% of partners in men who have sex with men and 55% in heterosexual men; relative risk: 1.45; 95%-CI: 0.94 to 2.25; p=0.054).

The other chart review reported on 237 men treated in a genitourinary medicine clinic in Coventry, UK (David et al. 1997) (++). The number of men who have sex with men was also low compared to heterosexual men (36 versus 201). Patients could choose between two methods of partner notification: patient referral (with contact slips) or provider referral, both guided by a health adviser. The only outcome reported was the number of elicited partners per index patient which was slightly lower in men who have sex with men (1.56 versus 1.63).

One of the observational studies (Ross et al. 1999) (+) was already described in the section on adolescents. In univariable analysis the proportion of index patients with all partners treated was slightly lower in patients described as homosexual compared to heterosexual patients (24% versus 33%; RR 0.73; 95%-CI: 0.38 to 1.40) but sexual orientation was not independently associated with the outcome in the multivariable analysis. However, heterosexual men and women were not analysed separately\(^{31}\).

Van Duynhoven (1998) (+) reported on 143 men with gonorrhoea or chlamydia diagnosed in a clinic for patients with sexually transmitted infections. Of these 120 were heterosexual and 23 were described as homo/bisexual. Heterosexual men elicited 2.49 partner(s) as compared to 3.87 in the group of homo/bisexual men. Of these, 0.49 partners per heterosexual index patient attended the clinic compared to 0.22 partners of homo/bisexual men. The number of partner(s) of index patients believed to seek care at other health care facilities was 0.65 for heterosexual men and 0.35 for homo/bisexual men. Men who have sex with men were excluded from a multivariable analysis on factors independently associated with the outcome 'referring at least one partner' because of their small number. Therefore, only univariable results are reported here.

**Evidence statement 3.20.**

Two small retrospective chart reviews\(^{32}\) (both ++) and one observational study\(^{33}\) (+) suggest that partner notification in men who have sex with men diagnosed with gonorrhoea might be less effective than partner notification in heterosexual men.

**Minority ethnic groups**

**Evidence from controlled trials**

Two randomised controlled trials reported rates of recurrent infection according to minority ethnic group. Both of the trials reported above also described outcomes for minority ethnic groups. In the study reported by Golden et al. (2005) (–) 7% of Hispanic patients had recurrent or

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\(^{31}\) Sex without considering sexual orientation was also evaluated as possible factor but was also not independently associated in the multivariable analysis.

\(^{32}\) (David et al. 1997; Rogstad et al. 1999)

\(^{33}\) (van Duynhoven et al. 1998)
persistent infection compared with 11% in Whites 11 and 12% in Blacks. The other trial (Schillinger et al. 2003) (−) showed similar results: 11% for Whites and 12% for Blacks in the patient-delivered partner therapy group compared to 13% in Whites and 15% in Blacks in the patient referral group.

In both trials reported by Kissinger et al. (2005; 1998) more than 80% of enrolled patients were black (see p. 39 for results).

**Other evidence**

We found three studies (two ++; one +) reporting on partner notification in minority ethnic groups (all from the UK).

The study by Apoola et al. (Apoola et al. 2004) (++) has been described in the section on adolescents (see p. 55). Briefly, 800 patients with chlamydia managed by patient referral were analysed of which 41% (325/800) were managed satisfactorily. Patients described as "black" were less likely to be treated satisfactorily compared to Whites (proportion treated satisfactorily: 34% versus 47%; p=0.001).

The second study was an observational study analysing 452 women and heterosexual men with gonorrhoea of which 152 were described as Afro-Caribbean and 292 were white (Rogstad et al. 1998) (++). Results were reported separately for both sexes. Afro-Caribbean patients reported more partners than white men but Afro-Caribbean women reported less partners than white women (1.49 versus 1.29 and 1.11 versus 1.24). The proportion of partners tested per elicited partners was however lower in Afro-Caribbean women and men (men, 50% versus 60%; p=0.045; relative risk = 1.21; 95%-CI: 1.0 to 1.47; women, 43% versus 63%; p=0.016; relative risk = 1.47; 95%-CI: 1.02 to 2.12).

The study by Ross et al. (1999) (+) (see p. 55) found that the proportion of index patients with all partners treated was slightly higher in black Caribbean patients compared to white patients (RR 1.17; 95%-CI: 0.92 to 1.48) but ethnicity was not independently associated in the multivariable analysis.

**Evidence statement 3.21.**

*There is inconsistent evidence from two randomised controlled trials (Golden et al. 2005; Schillinger et al. 2003) (both showing no difference) and three observational studies (Apoola et al. 2004; Rogstad et al. 1998; Ross et al. 1999) (two ++; one +; all showing less effectiveness in black patients) whether results of partner notification in Afro-Caribbean/African-American patients with gonorrhoea or chlamydia are different from results in white patients.*
Low educational achievement

The study by van Duynhoven (1998) also considered education as a possible independent factors for the outcome ‘proportion with at least one referred partner’. No association was observed. Results for three education groups were as follows: low education (0-12 years; N=72), 60%; middle education (13-16 years; N=42), 62%; high education (≥ 17 years; N=19), 68% (p>0.10).

Other groups of special interest

We found no evidence from controlled trials or uncontrolled studies on other groups of special interest.
### Table 2: Summary table of evidence of partner notification for gonorrhoea, chlamydia, or non-gonococcal urethritis

<table>
<thead>
<tr>
<th>Study</th>
<th>Population Setting (Intervention)</th>
<th>Comparison (N)</th>
<th>Intermediate outcomes¹</th>
<th>Quality</th>
<th>Evidence statements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Reduction of infection</td>
<td>Proportion of all partners treated</td>
<td>Partners treated</td>
<td>Partners tested</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Proportion of ≥ 1 partners treated</td>
<td>Proportion partner tested (per partners elicited)</td>
<td></td>
</tr>
<tr>
<td><strong>Different methods of partner notification</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Golden et al. 2005)</td>
<td>Gonorrhoea and chlamydia; ♂ and ♀; mean age 23 years GUM clinics; USA</td>
<td>1: Patient-delivered partner therapy (1375) C: Minimal patient referral (1376)</td>
<td>Patient-delivered partner therapy better</td>
<td>* No difference</td>
<td>+</td>
</tr>
<tr>
<td>(Kissinger et al. 2005)</td>
<td>Gonorrhoea and chlamydia; ♂; 48% &lt; 24 years STD clinics; USA</td>
<td>1: Patient-delivered partner therapy (344) C: Minimal patient referral (285)</td>
<td>Patient-delivered partner therapy better</td>
<td>* No difference</td>
<td>–</td>
</tr>
<tr>
<td>(Schillinger et al. 2003)</td>
<td>Chlamydia; ♀; 83% &lt; 25 years FPC, STD clinic, adolescents and primary care clinics, emergency departments; USA</td>
<td>1: Patient-delivered partner therapy (946) C: Patient referral (943)</td>
<td>No difference</td>
<td>+</td>
<td>1.1.</td>
</tr>
<tr>
<td>(Kissinger et al. 1998)</td>
<td>Chlamydia; ♂; mean age 21 years FPC, USA</td>
<td>1: Patient-delivered partner therapy (43) C: Patient referral (135)</td>
<td>Patient-delivered partner therapy better</td>
<td>–</td>
<td>1.1.</td>
</tr>
<tr>
<td>(Kissinger et al. 2005)</td>
<td>Gonorrhoea and chlamydia; ♂; 48% &lt; 24 years STD clinics; USA</td>
<td>1: Patient referral + booklet (348) C: Minimal patient referral (285)</td>
<td>Patient referral + booklet better</td>
<td>* No difference</td>
<td>–</td>
</tr>
<tr>
<td>(Kissinger et al. 2005)</td>
<td>Gonorrhoea and chlamydia; ♂; 48% &lt; 24 years STD clinics; USA</td>
<td>1: Patient-delivered partner therapy (344)</td>
<td>Patient-delivered partner therapy better</td>
<td>* No difference</td>
<td>1.3.; 1.8.</td>
</tr>
</tbody>
</table>

¹ * Indicating comparisons with no statistical test or confidence interval reported and not enough information reported to calculate them.
<table>
<thead>
<tr>
<th>Study</th>
<th>Condition</th>
<th>Setting</th>
<th>Interventions</th>
<th>Outcome</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Katz et al. 1988)</td>
<td>Non-gonococcal urethritis; ♂; age n/r</td>
<td>STD clinics; USA</td>
<td>I1: Patient referral counselling (240)</td>
<td>No difference</td>
<td>Patient referral better</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C: Patient referral + education (217)</td>
<td></td>
<td>No difference</td>
<td></td>
</tr>
<tr>
<td>(Solomon et al. 1988)</td>
<td>Gonorrhoea; ♂; mean age 23 years</td>
<td>Public STD clinic; USA</td>
<td>I1: Patient referral + education (240)</td>
<td>No difference</td>
<td>- 1.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C: Patient referral</td>
<td></td>
<td>No difference</td>
<td></td>
</tr>
<tr>
<td>(Cleveland 2001)</td>
<td>Gonorrhoea; gender and age n/r</td>
<td>Public health clinic; USA</td>
<td>I1: Patient referral + education (634)</td>
<td>No difference</td>
<td>Home sampling better</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C: Patient referral</td>
<td></td>
<td>No difference</td>
<td></td>
</tr>
<tr>
<td>(Andersen et al. 1998)</td>
<td>Chlamydia; ♀; age n/r</td>
<td>General practice; Denmark</td>
<td>I: Home sampling (45)</td>
<td>No difference</td>
<td>Home sampling better</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C: Practice sampling (Patient referral) (51)</td>
<td></td>
<td>No difference</td>
<td></td>
</tr>
<tr>
<td>(Ostergaard et al. 2003)</td>
<td>Chlamydia; ♀ and ♂; mean age 24 years</td>
<td>Different settings not specified; Denmark</td>
<td>I: Home sampling (932)</td>
<td>No difference</td>
<td>Home sampling better</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C: Practice sampling</td>
<td></td>
<td>No difference</td>
<td></td>
</tr>
<tr>
<td>(Cleveland 2001)</td>
<td>Gonorrhoea; gender and age n/r</td>
<td>Public health clinic; USA</td>
<td>I2: Contract referral (632)</td>
<td>No difference</td>
<td>Contract referral better</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C: Patient referral</td>
<td></td>
<td>No difference</td>
<td></td>
</tr>
<tr>
<td>(Cleveland 2001)</td>
<td>Gonorrhoea; gender and age n/r</td>
<td>Public health clinic; USA</td>
<td>I1: Patient referral + education (634)</td>
<td>No difference</td>
<td>Contract referral better</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C: Contract referral</td>
<td></td>
<td>No difference</td>
<td></td>
</tr>
<tr>
<td>(Potterat et al. 1977)</td>
<td>Gonorrhoea; ♂; age n/r</td>
<td>Public health department; USA</td>
<td>I: Patient referral (93)</td>
<td>No difference</td>
<td>* No difference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C: Contract referral</td>
<td></td>
<td>* No difference</td>
<td></td>
</tr>
<tr>
<td>(Montesinos et al. 1990)</td>
<td>Gonorrhoea, non-gonococcal urethritis; ♀ and ♂</td>
<td>University health service; USA</td>
<td>I: Patient referral + incentive (19)</td>
<td>* No difference</td>
<td>* No difference</td>
</tr>
<tr>
<td></td>
<td>and students; age 18-23 years</td>
<td></td>
<td></td>
<td>* No difference</td>
<td></td>
</tr>
<tr>
<td>(Katz et al. 1988)</td>
<td>Non-gonococcal urethritis; ♂; age n/r</td>
<td>Provider referral</td>
<td>Provider referral</td>
<td>Patient referral +</td>
<td>- 1.12</td>
</tr>
</tbody>
</table>
# Summary of findings: Key question - gonorrhoea, chlamydia, or non-gonococcal urethritis

STD clinics; USA

<table>
<thead>
<tr>
<th>(Katz et al. 1988)</th>
<th>Non-gonococcal urethritis; ♂, age n/r</th>
<th>STD clinics; USA</th>
<th>♀; age n/r</th>
<th>contact cards (217)</th>
<th>better</th>
<th>better</th>
<th>education better</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1: Patient referral + counselling (240)</td>
<td></td>
<td>2: Provider referral (221)</td>
<td>Provider referral better</td>
<td>Provider referral better</td>
<td>* No difference</td>
<td>1.12.</td>
</tr>
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</table>

## Different settings

<table>
<thead>
<tr>
<th>(Low et al. 2005)</th>
<th>Chlamydia; ♀ and ♂; 89% &lt; 25 years</th>
<th>UK</th>
<th>Chlamydia; ♀ and ♂; 48% ≤19 years</th>
<th>UK</th>
<th>Provider referral by health adviser</th>
<th>Patient referral at GP (72)</th>
<th>Patient referral at GP better</th>
<th>Patient referral at GP better</th>
<th>Patient referral at GUM clinic (68)</th>
<th>* No difference</th>
<th>1.15.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I: GUM clinic in teenage pregnancy unit (93)</td>
<td></td>
<td>II: Specialist GUM clinic (2081)</td>
<td></td>
<td></td>
<td>No difference</td>
<td>No difference</td>
<td>In teenage pregnancy unit: 0.69 (no comparison)</td>
<td>In teenage pregnancy unit: 0.85 (no comparison)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(Beddard et al. 2003)</th>
<th>STIs (Chlamydia 48%); ♀ and ♂; 48% ≤19 years</th>
<th>UK</th>
<th>Provider referral by health adviser</th>
<th>Patient referral (77)</th>
<th></th>
<th>Patient referral better</th>
<th>Patient referral better</th>
<th>Patient referral better</th>
<th>Patient referral better</th>
<th>+ 1.16.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I: GUM clinic in teenage pregnancy unit (93)</td>
<td></td>
<td>II: Specialist GUM clinic (2081)</td>
<td></td>
<td></td>
<td>No difference</td>
<td>No difference</td>
<td>No difference</td>
<td>No difference</td>
<td>* No difference</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(Jones et al. 2002)</th>
<th>Chlamydia; ♀ and ♂; all &lt; 25 years</th>
<th>UK</th>
<th>Patient referral</th>
<th>Patient referral (63)</th>
<th></th>
<th>In young people’s clinic: 0.62 (no comparison)</th>
<th>* No difference</th>
<th>* No difference</th>
<th>* No difference</th>
<th>* No difference</th>
<th>1.16.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I: Health adviser in young people’s clinic (63)</td>
<td></td>
<td>II: Health adviser in GUM clinic (25)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(James et al. 1999)</th>
<th>Chlamydia; ♀; all &lt; 20 years</th>
<th>UK</th>
<th>Choice of patient, contract, or provider referral</th>
<th>Teenage clinic (73)</th>
<th></th>
<th>* No difference</th>
<th>No difference</th>
<th>* No difference</th>
<th>* No difference</th>
<th>1.16.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I: Teenage clinic (73)</td>
<td></td>
<td>II: GUM clinic (17)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Different providers

<table>
<thead>
<tr>
<th>(Alary et al. 1991)</th>
<th>Gonorrhoea, chlamydia; ♀ and ♂</th>
<th>Canada</th>
<th>Contract referral</th>
<th>Specialised nurse (60)</th>
<th>GP or specialist physician (44)</th>
<th>Specialised nurse better</th>
<th>Specialised nurse better</th>
<th>1.17.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I: Specialised nurse (60)</td>
<td></td>
<td>II: GP or specialist physician (44)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(Eitrem et al. 1998)</th>
<th>Chlamydia; ♀ and ♂; mean age 22 years; Various health settings, Sweden</th>
<th>Partner notification method not reported</th>
<th>Specialised social worker (37); Health professional (43)</th>
<th>Specialised social worker better</th>
<th>Specialised social worker better</th>
<th>1.17.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I: Specialised social worker (37)</td>
<td></td>
<td>II: Health professional (43)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Index patients under 25 years of age

<table>
<thead>
<tr>
<th>(Golden et al. 2005)</th>
<th>Gonorrhoea and chlamydia; ♀ and ♂; mean</th>
<th>&lt; 20 years (714)</th>
<th>Younger patients had</th>
<th>+ 1.18.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I: &lt; 20 years (714)</td>
<td></td>
<td>Younger patients had</td>
<td>+ 1.18.</td>
</tr>
</tbody>
</table>
### Summary of findings: Key question 1 – gonorrhoea, chlamydia, or non-gonococcal urethritis

#### Age 23 years
- **GUM clinics; USA**
- Patient-delivered partner therapy (1375) or minimal patient referral (1376)
- Fewer reinfections

#### II: 20-24 years (~639)
- **Kissing er et al. (2005)**
  - Gonorrhoea and chlamydia; 48% < 24 years
  - STD clinics; USA
  - Patient-delivered partner therapy (344) or minimal patient referral (285)
  - Patients < 24 years had fewer reinfections (Kissinger et al. 2005)

#### III: 25-29 years (~255)
- **Schillinger et al. (2003)**
  - Chlamydia; 83% < 25 years
  - FPC, STD clinic, adolescents and primary care clinics, emergency departments; USA
  - Patient-delivered partner therapy (946) or patient referral (943)
  - Patients < 24 years had fewer reinfections (Schillinger et al. 2003)

#### IV: ≥ 30 years (~252)
- **Jones et al. (2002)**
  - Chlamydia; all < 25 years
  - Young people’s clinic; UK
  - Patient referral
  - No difference (Jones et al. 2002)

#### (Ross et al. 1999)
- **GUM clinic; UK**
- No comparison
- 0.35  0.62  1.19  –  1.18.

#### (Ross et al. 1999)
- **GUM clinic; UK**
- No comparison
- 0.56  0.68  +  1.18.
<table>
<thead>
<tr>
<th>Study (Year)</th>
<th>Population</th>
<th>Sex</th>
<th>Mean Age</th>
<th>Setting</th>
<th>Referral Method</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Rogstad et al. 1999)</td>
<td>Men who have sex with men</td>
<td>MSM (25)</td>
<td>Male</td>
<td>GUM clinic; UK</td>
<td>Patient referral</td>
<td>No difference</td>
</tr>
<tr>
<td>(David et al. 1997)</td>
<td>Men who have sex with men</td>
<td>MSM (36)</td>
<td>Male</td>
<td>GUM clinic; UK</td>
<td>Choice of patient or contract referral</td>
<td>No difference</td>
</tr>
<tr>
<td>(van Duynhoven et al. 1998)</td>
<td>Minority ethnic groups</td>
<td>MSM (23)</td>
<td>Male</td>
<td>STD clinic; Netherlands</td>
<td>Patient referral</td>
<td>More tested in Heterosexuals</td>
</tr>
<tr>
<td>(Golden et al. 2005)</td>
<td>Minority ethnic groups</td>
<td>Black (619)</td>
<td>Male</td>
<td>GUM clinics; USA</td>
<td>Patient-delivered partner therapy (1375) or minimal patient referral (1376)</td>
<td>No difference</td>
</tr>
<tr>
<td>(Schillinger et al. 2003)</td>
<td>Minority ethnic groups</td>
<td>Black (864)</td>
<td>Male</td>
<td>FPC, STD clinic, adolescents and primary care clinics, emergency departments; USA</td>
<td>Patient-delivered partner therapy (946) or patient referral (943)</td>
<td>No difference</td>
</tr>
<tr>
<td>(Apoola et al. 2004)</td>
<td>Minority ethnic groups</td>
<td>Black (340)</td>
<td>Male</td>
<td>GUM clinic; UK</td>
<td>Patient referral</td>
<td>More treated in White (proportion with ≥ 0.6 partners treated)</td>
</tr>
<tr>
<td>(Rogstad et al. 1998)</td>
<td>Minority ethnic groups</td>
<td>Black (152)</td>
<td>Male</td>
<td>GUM clinic; UK</td>
<td>Patient referral</td>
<td>More tested in White</td>
</tr>
</tbody>
</table>
(Ross et al. 1999)  
Gonorrhoea, chlamydia; ♀ I: Black (272)  
and ♂ II: White (282)  
GUM clinic; UK  
Patient referral  
No difference  
+ 1.20.
4.3. **Key question 2 – syphilis**

We identified 1 guideline, 3 systematic reviews, and 1 randomised controlled trials.

4.3.1. **Guidelines reporting on partner notification for syphilis**

As stated above the Canadian guideline (Millson et al. 1994) found no compelling reason to give separate recommendations for separate infections. All recommendations reported above therefore apply also to syphilis and we refer to the previous section 4.2.1, p. 36.

4.3.2. **Primary outcomes: reduction of incidence or prevalence of infection in index patients**

*Evidence from systematic reviews*

The systematic reviews identified by the literature search did not report on any of the primary outcomes.

*Evidence from controlled trials*

The only randomised trial included (Peterman et al. 1997) did not report on any of the primary outcomes.

4.3.3. **Intermediate outcomes: partners treated, tested, or infected**

The following sub-questions described in section 3.4, p. 29 are addressed in this section: 1) what is the content of the intervention and does it influence effectiveness? 2) Does the way it is carried out influence effectiveness? 3) Does the intensity (or length) influence effectiveness/duration of effect?

*Evidence from systematic reviews*

Only one study on syphilis was included in two of the three reviews (Macke et al. 1999; Mathews et al. 2001) (--; ++). The study was also retrieved for this review and is reported below. The review published by Oxman et al. (Oxman et al. 1994) included two additional studies: 1) one ecological study from Arkansas, USA published in 1948 compared intensive provider referral and field notification with routine provider referral and field notification; 2) the second study was a before-and-after comparison from Poland published in 1970 comparing results of interviews of patients done by physicians with those done by trained interviewers. We did not retrieve one of these studies. The study in Arkansas found that intensive provider referral was more effective and the Polish study showed that trained interviewer elicit more partners than physicians. Both studies were classified as low quality and therefore the evidence from these studies was described as weak. Since the Cochrane review included studies enrolling mixed populations (i.e. patients with any sexually transmitted infection) the conclusions for any sexually transmitted infection described above (section 4.2.3, p. 42) apply to syphilis also.
Evidence from controlled trials

We identified one randomised controlled trial (Peterman et al. 1997) (–) reporting on the relevant outcomes. Methodological weaknesses with this study limit conclusions that can be drawn: investigators used open random lists for allocation (making concealed allocation impossible), the number of patients in each trial arm was very different, and outcome assessment was not blinded.

Interventions

The trial tested the effectiveness of three different forms of partner referral. All three methods were reported to be standard practice in the USA. The first intervention consisted of provider referral by disease intervention specialists employed if the partner(s) were not notified within 2 days by the index patient (contract referral). In the second group provider referral was done in person by disease intervention specialists. The third group was also managed by provider referral as described but disease intervention specialists could draw blood in the field if partner(s) seemed unlikely to come to the clinic. Given the tight time frame for index patients to notify their partners, the contract referral arm might also be viewed as provider referral. The time frame for eliciting partners was tailored to stage of the disease (up to 1 year for early latent syphilis).

Setting and providers

The study was conducted as a multi-centre trial in the USA. No description of the type of health care facilities was provided. However, all participants were cared for by a disease intervention specialist.

Participants

Overall, more than 1900 women and men were enrolled in the early 1990s with 25% being under 25 years of age (mean age 33 years) and almost 80% were described as black. Approximately 15% were men who have sex with men and almost 15% were prisoners. Stages of syphilis were primary 8%, secondary 18%, and early latent 72%.

Results: contract versus provider referral

In contrast to the study protocol, 9% of the patients in the contract referral and provider referral arm had blood drawn in the field. This might have reduced differences compared with the other arm. The number of partners treated per index patient were almost the same for all three types of partner referral: contract referral 0.67, provider referral 0.61, provider referral with field blood 0.62. Similar small differences were observed for the other outcomes (see Table 10, p. 108 for details). There was no apparent benefit of drawing blood directly in the field in terms of partners treated, partners tested positive or even in terms of the number of partners who got tested (0.86 in the group with blood drawn in the field versus 0.87).
Evidence statement 3.22.

There is weak evidence from one large randomised controlled trial\(^1\) (\(\rightarrow\)) that contract referral for patients with syphilis is at least as effective as provider referral where the provider tries to notify partners in person.

**Different settings**

We found no evidence reporting on the influence of different settings on the outcome of partner notification.

**Different providers**

We found no evidence reporting on the influence of different providers on the outcome of partner notification.

**Evidence from other comparative studies**

We retrieved two before-and-after studies (both \(\rightarrow\)) reporting on complex interventions to enhance partner notification during outbreaks of syphilis epidemics.

The most recent study was conducted between 2000 and 2003 in Vancouver, Canada (Ogilvie et al. 2005) \(\rightarrow\). Before the outbreak provider referral was provided for all patients diagnosed with syphilis. During the outbreak a social network approach incorporating various methods to improve results of provider referral was implemented. The social network approach included

\(^1\) (Peterman et al. 1997)
increased presence of nurses and social workers 'on the street', mapping of patients and partners with the help of computer programmes, and more thorough interviews of index patients. Overall 570 cases were included: 249 from the time before and 321 from the time during the outbreak. The outcome reported was different to any other outcome reported in this report limiting comparability. Overall, 32% (104/321) of cases could be linked to another case by the innovative approach compared to 24% (60/249) cases with the standard approach (p=0.03). No other relevant outcomes were reported.

The other study was conducted in Alabama, USA between 1990 and 1991 (Engelgau et al. 1995) (−). The type of partner notification was the same before and during the epidemic with provider referral conducted by disease intervention specialists. During the epidemic, the number of public health workers was increased and they were provided with additional training in partner notification/cluster investigation techniques and with intensified supervision. However, the exact content of the campaign remains unclear. Overall, 229 patients were analysed: 78 before the campaign and 151 from the early phase of the campaign. Partner notification in the pre-campaign era resulted in 0.37 partners testing positive (per index patient) and 2.5 partners treated prophylactically. In comparison, 0.48 partners were tested positive during the early campaign and 3.9 received prophylactic treatment (tested positive p=0.66; treated p<0.01).

**Different settings**

We found no evidence reporting on the influence of different settings on the outcome of partner notification.

**Different providers**

We found no evidence reporting on the influence of different providers on the outcome of partner notification.

### 4.3.4. Intermediate outcomes: partners contacted or elicited

Since all included reviews and trials reported on more clinically meaningful outcomes, we have not summarised results here (see evidence table in section 0, p. 108).

### 4.3.5. Effects of characteristics of index patients on outcome of partner notification for syphilis

The following sub-questions described in section 3.4, p. 29 are addressed in this section: 1) Does the effectiveness vary with different characteristics of index patients?

The one randomised controlled trial reported results of partner notification in stratified analysis for minority ethnic groups and prisoners (Peterman et al. 1997). We identified 4 additional studies.
Index patients under 25 years of age

Other evidence

We identified one observational study from Louisiana, USA reporting on more than 12000 women and men with syphilis (Kohl et al. 1999) (+). Partner notification was done by disease intervention specialists for all patients (provider referral) and resulted in comparable number of partners elicited (2.46 for patients younger than 20 years and 2.21 for patients over 19 years). Partner notification resulted in 1.92 partners tested in patients under 20 years of age of which 0.68 were tested positive. In the age group of patients older than 19 years 1.77 partners were tested of which 0.74 were infected. The proportion of partners who were tested (per all elicited partners) was 27% in the younger group compared to 28% in the older group (p=0.17).

Evidence statement 3.23.

One large observational study\(^2\) (+) indicates that partner notification is comparable in patients diagnosed with syphilis under and over 19 years with respect to partners tested and partners testing positive.

Men who have sex with men

Other evidence

We identified one chart review (++) and one observational study (–). The most recent study reported on more than 1500 men who have sex with men diagnosed with syphilis 2003 in the USA (Hogben et al. 2005) (–). This study covers approximately 20% of all reported cases in the US in this year. All patients received provider referral by a disease intervention specialist. On average, 0.72 partners were tested per index patient and 0.50 partners were treated. No comparison with heterosexual men was reported. The second study was a chart review of 72 patients treated at a genitourinary medicine clinic in Manchester, UK (Kingston et al. 2004) (++). Women and men were included but 90% of all patients were men who have sex with men. Of note, two commercial sex workers were among the patients. The method of partner notification was not reported. Overall, 1848 partners were elicited from the 72 index patients (mean per index patient: 3.26), with a maximum of 480 partners. Of these, 72 were tested resulting in 1.0 tested partners per index patient and 0.24 partners tested positive. No details were reported for the two commercial sex workers. Assuming that the two commercial sex workers accounted for the maximum number of partners the figure would still be low with approximately 70 tested partners per approximately 1000 partners.

Evidence statement 3.24.

One large observational study\(^3\) (–) indicates that provider referral for men who have sex with men diagnosed with syphilis in the USA results on average in 0.50 treated partners per index patient.

\(^2\) (Kohl et al. 1999)
**Minority ethnic group**

The trial reported by Peterman (1997) (–) also reported a stratified analysis for people described as black and white. More than 1500 black patients were enrolled compared to almost 400 white patients. The partner notification method was contract referral or one of two forms of provider referral. White patients reported higher numbers of partners (9.3 versus 4.9) but the number of contacted partners was similar (1.2 versus 1.0). On average, 0.47 partners of black patients received treatment as compared to 0.34 partners of white patients.

**Evidence statement 3.25.**

*Stratified analysis from one large randomised trial*\(^4\) (–) *indicate that partner notification for syphilis in African-Americans is at least as effective as in white patients in regard to number of partners contacted and number of partners treated.*

**Prisoners**

The trial reported by Peterman (1997) (–) also provided information on prisoners. Twohundred-eighty-one patients were from jails as compared to 1093 patients diagnosed in sexually transmitted disease clinics. Although the number of partners elicited was much higher in prisoners (9.1 versus 5.4) the mean number of partners receiving treatment was comparable between both groups of patients (0.45 in prisoners and 0.48 in patients treated at sexually transmitted disease clinics.

**Evidence statement 3.26.**

*Stratified analysis from one large randomised trial*\(^5\) (–) *indicate that partner notification in prisoners is less effective when compared to patients in sexually transmitted disease clinics in regard to number of partners treated.*

**Other groups of special interest**

We found no evidence from controlled trials or uncontrolled studies on other groups of special interest.

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\(^3\) (Hogben et al. 2005)
\(^4\) (Peterman et al. 1997)
\(^5\) (Peterman et al. 1997)
Table 3: Summary table of evidence of partner notification for syphilis

<table>
<thead>
<tr>
<th>Study</th>
<th>Population Setting (Intervention)</th>
<th>Comparison</th>
<th>Primary outcome</th>
<th>Intermediate outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Reduction of infection</td>
<td>Proportion of all partners treated</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controlled trials</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Peterman et al. 1997)</td>
<td>Syphilis; ♂ and ♀; 25% &lt; 25 years Setting n/r; USA</td>
<td>I1: Contract referral</td>
<td>* No difference</td>
<td>* No difference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I2: Provider referral + field notification</td>
<td>* No difference</td>
<td>* No difference</td>
</tr>
<tr>
<td>(Peterman et al. 1997)</td>
<td>Syphilis; ♂ and ♀; 25% &lt; 25 years Setting n/r; USA</td>
<td>I1: Contract referral</td>
<td>* No difference</td>
<td>* No difference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I2: Provider referral + field notification</td>
<td>* No difference</td>
<td>* No difference</td>
</tr>
<tr>
<td>(Peterman et al. 1997)</td>
<td>Syphilis; ♂ and ♀; 25% &lt; 25 years Setting n/r; USA</td>
<td>I2: Provider referral + field notification</td>
<td>* No difference</td>
<td>* No difference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I3: Provider referral + field blood</td>
<td>* No difference</td>
<td>* No difference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Index patients under 25 years of age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Kohl et al. 1999)</td>
<td>Syphilis; ♂ and ♀; median age 28 years Setting n/r; USA Provider referral</td>
<td>I: ≤ 19 years</td>
<td>* No difference</td>
<td>* No difference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>II: &gt; 19 years</td>
<td>* No difference</td>
<td>* No difference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Men who have sex with men</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Hogben et al. 2005)</td>
<td>Syphilis; ♂; age n/r Setting n/r; USA Provider referral</td>
<td>No comparison</td>
<td>I: MSM</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minority ethnic group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Peterman et al. 1997)</td>
<td>Syphilis; ♂ and ♀; 25% &lt; 25 years Setting n/r; USA</td>
<td>Contract referral, provider referral + field notification, or provider referral + field blood</td>
<td>I: African Americans</td>
<td>African Americans slightly better</td>
</tr>
<tr>
<td></td>
<td></td>
<td>II: White</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 * Indicating comparisons with no statistical test or confidence interval reported and not enough information reported to calculate them.
<table>
<thead>
<tr>
<th>Setting</th>
<th>Referral Type</th>
<th>Outcome</th>
<th>Summary</th>
</tr>
</thead>
</table>
| Prisoners (Peterman et al. 1997) | Contracts + field notification or provider referral + field notification | No difference | Syphilis; ♂ and ♀; < 25 years; USA | *Prisoners (RCT) 1.25.*

**Prisoners**

- Patients in STD clinic
- Setting: n/r
- Referral: contracts; USA
- Outcome: Syphilis; ♂ and ♀; < 25 years; blood

---

**Patients in STD clinic**

- Setting: n/r
- Referral: contracts; USA
- Outcome: Syphilis; ♂ and ♀; < 25 years; blood

---

**Summary of findings: Key question 2 – syphilis**

- No difference
- Prisoners more
-Prisoners (RCT) 1.25.
4.4. **Key question 3 – HIV**

We identified 2 guidelines, 3 systematic reviews, and 1 randomised controlled trial.

4.4.1. **Guidelines reporting on partner notification for HIV**

One of the two guidelines identified by our search was the Canadian guideline (Millson et al. 1994) described above. As stated, the Canadian guideline found no compelling reason to give separate recommendations for separate infections. All recommendations therefore apply also to HIV (see section 4.2.1, p. 36).

The other guideline (Centers for Disease Control and Prevention (CDC) et al. 2003) was published in 2003 by the Centers for Disease Control and Prevention, the National Institutes of Health, the Infectious Disease Society of America, and the Health Resources and Services Administration all from USA. The main topic of the guideline is on reducing the transmission of HIV. Although the authors state that the guideline was developed "by using an evidence-based approach" no systematic review was reported or cited and the consensus method was not described. The recommendations relevant to partner notification were relatively non-specific: stating that partner(s) who have not been informed about their exposure should be notified. No specific method of partner notification was recommended. The recommendations in detail are as follows:

- In HIV health-care settings, all applicable requirements for reporting sex and needle-sharing partners of HIV-infected patients to the appropriate health department should be followed.
- At the initial visit, patients should be asked if all of their sex and needle-sharing partners have been informed of their exposure to HIV.
- At routine follow-up visits, patients should be asked if they have had any new sex or needle-sharing partners who have not been informed of their exposure to HIV.
- All patients should be referred to the appropriate health department to discuss sex and needle-sharing partners who have not been informed of their exposure and to arrange for their notification and referral for HIV testing.
- In HIV health-care settings, access to available community partner counselling and referral resources should be established.

4.4.2. **Primary outcomes: reduction of incidence or prevalence of infection in index patients**

*Evidence from systematic reviews*

The systematic reviews identified by the literature search did not report on any of the primary outcomes.
Evidence from controlled trials

The one trial (Landis et al. 1992) included did not report on any of the primary outcomes.

4.4.3. Intermediate outcomes: partners treated, tested, or infected

The following sub-questions described in section 3.4, p. 29 are addressed in this section: 1) What is the content of the intervention and does it influence effectiveness? 2) Does the way it is carried out influence effectiveness? 3) Does the intensity (or length) influence effectiveness/duration of effect?

Evidence from systematic reviews

All included systematic reviews included studies partner notification for HIV and relevant studies are also included in this rapid review. The most recent review (Mathews et al. 2001) (++) concluded that 1) there is moderately strong evidence that provider referral alone, or the choice between provider and patient referral, results in more partner(s) tested compared to patient referral and 2) verbal, nurse-given health education together with patient-centred counselling by lay workers, when compared with standard care among patients with any sexually transmitted infection, results in small increases in the rate of partners treated.

Evidence from controlled trials

We identified one randomised controlled trial (Landis et al. 1992) (–). The trial had substantial methodological limitations: randomisation procedure was not reported and outcome assessment was not blinded.

Interventions

Patients in this trial were randomised in one of two groups: 1) participations could choose to notify partner(s) by themselves (with the help of contact slips) or to have the public health counsellor notify partner(s). However, if partner(s) did not present within 2 weeks public health counsellors notified partner(s); 2) in the second group patients were advised to contact partner(s) with the help of contact slips and to tell partner(s) that they should present at the health department for counselling and testing. If partner(s) did not attend within one month a public health adviser attempted to contact partner(s) to determine whether they were aware of HIV-exposure. The intervention in group 1 may actually be better classified as a special form of contract referral than as choice between patient and provider referral.

Setting and providers

The trial was conducted between 1988 and 1990 in three large county health departments in North Carolina, USA. Partner notification was conducted by public health counsellers.

Participants

Women and men knowing at least one partner by name were recruited. This, and the fact that only 74 of the 162 eligible patients agreed to participate limit generalisability of the results. Of
the 74 randomised patients 87% were black, 35% intravenous drug users, and 76% of enrolled men homo- or bisexual. Mean age of enrolled patients was 30 years.

**Results: Patient versus contract referral**

The trial showed that more partner(s) got tested and more partners tested positive if contract referral was applied compared to patient referral (difference in means per index patient: 0.78). However, the number of tested partners and partners tested positive was low (tested: 36 versus 5; infected: 9 versus 1).

**Evidence statement 3.27.**

*There is insufficient evidence (one small randomised controlled trial1 (−)) to say whether provider referral is superior to patient referral in patients with HIV.*

**Different settings**

We found no evidence reporting on the influence of different settings on the outcome of partner notification.

**Different providers**

The study by Giesecke et al. (1991) (++) reports on 365 patients of which 40 were men who have sex with men and 165 heterosexual (probably including women). Patients were seen at various centres in Sweden but the exact setting was not described. Patients had the choice between patient of provider referral (mostly done by specially trained counsellors at specialised settings and by physicians in other settings; no further detail reported) but mandatory verification by the physician caring for these partners was required. Patients seen by physicians reported less partners that could be contacted compared to patients seen by counsellors (1.1 versus 2.6; p<0.01) but the number of newly diagnosed partners was the same in both groups (no details reported).

**Evidence from other comparative studies**

We found no relevant evidence from other comparative studies.

**4.4.4. Intermediate outcomes: partners contacted or elicited**

Since all included reviews and trials reported on more clinically meaningful outcomes results are not summarised here and we refer to the evidence table in section 0, p. 108.

**4.4.5. Effects of characteristics of index patients**

The following sub-questions described in section 2.4, p. 17 are addressed in this section: 1) Does the effectiveness vary with different characteristics of index patients?

---

1. Landis et al. 1992
The one randomised controlled trial (Landis et al. 1992) did not report results of partner notification in stratified analysis for any group of special interest. We identified 10 additional studies.

**Index patients under 25 years of age**

We found no studies reporting on partner notification for HIV in adolescents.

We identified one study reporting on outcomes for patients under 25 years of age and equal to or older than 25 years (Toomey et al. 1998) (++). The study was planned as a four-arm randomised controlled trial. However, high numbers of patients received interventions from the other trial groups (cross-over). Analyses were therefore based on three trial groups combined and one trial group was excluded (patient referral enhanced by role play on how to notify partner(s) and contact cards. Referral methods in the other three groups were either: 1) contract referral: patients were advised to notify partner within three days and they were told that disease intervention specialists would notify any partner who did not present at the clinic; 2) provider referral with field notification: disease intervention specialist notified any named partner(s) in the field; 3) provider referral with field phlebotomy: same as above plus possibility to draw blood in the field. The study was conducted in several clinics for sexually transmitted infections and partner notification was done by disease intervention specialists. Overall, 1070 patients were included in the study. These patients reported on 8633 partners but sufficient information to contact partners was only available for 1290 of them. Of these, 560 were tested (248 had previously tested positive). Three age groups were analysed separately. The number of partners tested per index patient were: < 25 years (N=203): 0.7 (positive: 0.17); 25-34 years (N=501): 0.5 (positive: 0.11); > 34 years (N=306): 0.6 (positive: 0.09).

**Evidence statement 3.28.**

One large prospective study\(^2\) (++) suggests that results for contract or provider referral for HIV are not different in patients under or over 25 years of age.

**Men who have sex with men**

We identified seven studies (two ++; two +; three –) reporting on outcomes for men who have sex with men.

The chart review published by Tomnay et al (2004) (–) analysed 105 Australian men (number of men who have sex with men not reported) diagnosed with HIV and a median age of 35 years. Patients could choose between different forms of referral (patient, provider, or contract). Partner notification was initiated by disease intervention specialists. The setting of the study was not described. Men who have sex with men preferred patient referral (41% versus 9% in heterosexual men) and used provider referral less commonly than heterosexual men (12% versus

\(^2\) (Toomey et al. 1998)
53%). Eighty-three (MSM: 51) of the 105 index patients reported 103 contactable partners (64 from MSM versus 39 from non-MSM) and 97 of whom were traced (61 from MSM (61/64: 95%) and 36 from non-MSM (36/39: 93%)). Since the number of index patients (N=105) was not reported according to sexual orientation no conclusions can be drawn.

The study by Toomey et al (1998) (++) described above also reports on men who have sex with men. Overall 674 men were analysed 255 (38%) of whom were men who have sex with men. The number of partners elicited from men who have sex with men was nearly twice the number elicited from heterosexual men (10.5 versus 5.7). 0.8 partners per index patient could be located in the MSM group compared to 0.9 in the group of heterosexual men. The mean number of partners who got tested was 0.5 in heterosexual men (positive 0.09) and 0.4 (positive 0.13) in men who have sex with men.

An observational study from Kansas City, USA analysed 319 men diagnosed at the city's health department (Wells et al. 1995) (−). Partner notification was by contract referral with the possibility for patients to directly choose provider referral if they were unwilling to notify partner(s) by themselves. Notification was done by field investigators of the sexually transmitted disease programme. Eighty-one percent of men who have sex with men reported at least one partner compared to 72% of heterosexuals with no "admitted risk factors" (N=36; including 5 women). The number of contacted or tested partners was not reported but "the percentage of locatable partners was nearly the same for each index risk category [including intravenous drug users and patients with partners at risk], averaging 70%".

The chart review published Pattman & Gould (1993) (−) examined the results of a choice of partner or provider referral in a genitourinary medicine clinic in Newcastle upon Tyne, UK. Provider referral was done by health advisers. One-hundred-forteen patients were newly diagnosed with HIV between 1985 and 1992. Of these, 25 attended the clinic as a result of partner notification. No other outcomes were reported.

The study by Pavia et al. (1993) (+) evaluated results of a two year statewide partner notification programme in Utah, USA. Patients could choose between patient or provider referral both initiated/done by a disease intervention specialist. Median age of all 308 index patients was 32 years and 274 were male. Men who have sex with men (N=190) elicited the same number of partners compared to heterosexual patients (probably including women): 2.4 versus 2.3. The number of located partners was also very similar between these two groups: 1.6 versus 1.5 (proportion of located per elicited partners was 75% in MSM and 72% in heterosexual patients).

Spencer et al. (1993) (+) report on a observational study of 159 men. Patients were analysed if they practised unsafe behaviour (not defined). The study was conducted in Colorado, USA. Patients could choose between patient and provider referral but partner(s) were contacted by disease intervention specialists if partner(s) did not attend the clinic (contract referral). Men who have sex with men (N=140) elicited 1.1 partners compared to 2.1 elicited by heterosexual men (N=19) and 0.36 partners were tested compared to 0.89.
Rapid review – partner notification for sexually transmitted infections

Summary of findings: Key question 3 – HIV

The last study published in 1991 (Giesecke et al.) (++) reports on 365 patients of which 40 were men who have sex with men and 165 heterosexual (probably including women). Patients were seen at various centres in Sweden but the exact setting was not described. Patients had the choice between patient of provider referral (mostly done by specially trained counsellors at specialised settings and by physicians in other settings; no further detail reported) but mandatory verification by the physician caring for these partners was required. Men who have sex with men reported 1.76 partners compared to 1.36 elicited from heterosexual patients (including women). The mean number of partners who got tested per index case for men who have sex with men was 1.14 (newly diagnosed: 0.17) compared to 0.81 (newly diagnosed: 0.10) in heterosexual patients (including women). The proportion of tested per elicited partners was 65% in men who have sex with men and 59% in the other patients.

Evidence statement 3.29.

Five observational studies (two ++; two +; one –) report conflicting results regarding partner notification for men who have sex with men diagnosed with HIV with regard to outcomes like partners tested or tested positive.

Minority ethnic group

We found four studies (two ++; two +). The most recent study was an observational study from North Carolina, USA (Centers for Disease Control and Prevention (CDC) 2003) (++). Partner notification was done by disease intervention specialist (provider referral). Patients were diagnosed in a variety of settings not further described. Overall 1379 patients diagnosed with HIV were included. Of these, 1117 (71%) were black and 291 (18%) were white. Black patients reported 1168 (1.2) partners compared to 242 (1.0) elicited from white patients. Fifty-four (22%) partners of white patients and 310 (27%) partners of black patients had already tested positive. Of the remaining patients, 93 partners of white patients were tested (0.38 per index patient; 0.07 positive) and 468 (0.47 per index patient; 0.10 positive) of black patients.

Three studies described in the previous section also reported results for black patients:

The study by Toomey (1998) (++) analysed 1063 patients for this question 37% of which were females and 74% (N=789) black. The number of partners elicited from black patients was 7.8 compared to 9.0 reported by white patients. The number of partners located was slightly higher in black patients (1.1 versus 0.8) as was the number of partners tested (0.6 versus 0.4 in Whites; tested positive: 0.6 versus 0.4).

The study by Pavia et al. (1993) (+) analysed 286 patients relevant for this question 260 (91%) of which were white. Black patients elicited 50% more partners compared to white patients (4.2 per index patient versus 2.8) and the number of located partners was also higher in Blacks compared

3 (Giesecke et al. 1991; Pavia et al. 1993; Spencer et al. 1993; Toomey et al. 1998; Wells et al. 1995)
to Whites (2.7 versus 1.9; proportion of located per elicited partners was 77% in Blacks and 73% in Whites).

Spencer et al. (1993) (+) analysed 159 patients relevant for this question, 130 (82%) of which were white. Black patients reported nearly twice as many partners as white patients (1.8 per index patient versus 1.1) and the number of tested partners was also higher in Blacks compared to Whites (0.72 versus 0.35; proportion of partners tested per elicited partners was 40% in Blacks and 35% in Whites). Nonetheless, the number of partners tested positive was nearly the same in both groups (0.07 in black patients and 0.08 in white).

**Evidence statement 3.30.**

*Four observational studies*4 *(two ++; two +) from the USA indicate that there may not be large differences in the results of partner notification of black and white patients diagnosed with HIV.*

**Intravenous drug users**

Four of the studies *(one ++; two +; one −) described above also report on intravenous drug users.

Wells et al (1995) (−) included 40 injecting drug users and 36 patients with no admitted risk factors. Eighty-five percent of intravenous drug users reported at least one partner compared to 72% of partners with no admitted risk factors. Number of contacted or tested partners is not reported but "the percentage of locatable partners was nearly the same for each index risk category [includes gay/bisexual men and patients with partners at risk], averaging 70%”.

Pavia et al. (1993) (+) report on 54 injecting drug users, 18 homosexual injecting drug users, and 29 heterosexual patients. The number of elicited partners was highest among injecting drug users (5.7) followed by homosexual injecting drug users (3.4) and heterosexuals (2.3). Higher number of partners of injecting drug users could be located (3.3) compared to homosexual injecting drug users (2.6) and heterosexuals (1.5). Proportion of located per elicited partners was 70% in intravenous drug users, 81% in homosexual drug users, and 72% in heterosexual patients.

Spencer et al. (1993) (+) analysed 190 patients relevant for this question 53 (28%) of which were intravenous drug users. Intravenous drug users reported 1.4 partners per index patient compared to 1.2 elicited from other patients but the number of tested partners was much higher in intravenous drug users (1.13 versus 0.44). Nonetheless, the number of partners tested positive was higher in the other patients (0.10) compared to drug users (0.06). Proportion of tested per elicited partners was 27% in drug users and 37% in the other patients.

The last study relevant for this question was the study by Giesecke et al. (1991) (++) Two-hundred-eight patients were reported relevant for this question 43 of which were intravenous drug users and 165 described as heterosexual. Drug users reported 1.91 partners compared to

---

4 (Centers for Disease Control and Prevention (CDC) 2003; Pavia et al. 1993; Spencer et al. 1993; Toomey et al. 1998)
1.36 elicited from heterosexual patients. Mean number of partners who got tested per index drug user was 1.14 (newly diagnosed: 0.28) compared to 0.81 (newly diagnosed: 0.10) in heterosexual patients. Proportion of tested per elicited partners was 60% in drug users and 59% in the other patients.

**Evidence statement 3.31.**

Four observational studies\(^5\) (one ++; two +; one –) on partner notification of intravenous drug users with HIV report that intravenous drug users elicit higher number of partners compared to other patients. Subsequently, more partners get tested. There is no indication that the proportion of partners who got tested is lower in intravenous drug users compared to other patients.

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\(^5\) (Giesecke et al. 1991; Pavia et al. 1993; Spencer et al. 1993; Wells et al. 1995)
### Table 4: Summary table of evidence of partner notification for HIV

<table>
<thead>
<tr>
<th>Study</th>
<th>Population Setting (Intervention)</th>
<th>Comparisons (N)</th>
<th>Primary outcomes</th>
<th>Intermediate outcomes¹</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Reduction of infection</td>
<td>Proportion of all partners treated</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Controlled trials</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Landis et al. 1992) &amp; (Wells et al. 1995)</td>
<td>HIV;♀ and ♂; mean age n/r; Health department; USA</td>
<td>I: Provider referral (39) C: Patient referral (35)</td>
<td>* Provider referral slightly better</td>
<td>* Provider referral better</td>
</tr>
<tr>
<td><strong>Index patients under 25 years of age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Toomey et al. 1998)</td>
<td>HIV;♀ and ♂; mean age n/r; STD clinics; USA</td>
<td>I: ≤25 years (203) II: &gt;25 years (867)</td>
<td>* No difference</td>
<td>* No difference</td>
</tr>
<tr>
<td><strong>Men who have sex with men</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Toomey et al. 1998)</td>
<td>HIV;♀ and ♂; mean age n/r; STD clinics; USA</td>
<td>I: MSM (255) II: non-MSM (419)</td>
<td>* No difference</td>
<td>* No difference</td>
</tr>
<tr>
<td>(Wells et al. 1995)</td>
<td>HIV;♀ and ♂; mean age n/r; Health department; USA</td>
<td>I: MSM (242) II: &quot;No admitted risk factor&quot; (36)</td>
<td>* No difference</td>
<td>* No difference</td>
</tr>
<tr>
<td>(Pavia et al. 1993)</td>
<td>HIV;♀ and ♂; median age n/r; Health department; USA</td>
<td>I: MSM (190) II: Heterosexuals (118)</td>
<td>* No difference</td>
<td>* No difference</td>
</tr>
<tr>
<td>(Spencer et al. 1993)</td>
<td>HIV;♂; age n/r; Health department, USA</td>
<td>I: MSM (140) II: non-MSM (19)</td>
<td>* Non-MSM higher numbers</td>
<td>* Non-MSM higher numbers</td>
</tr>
</tbody>
</table>

¹ * Indicating comparisons with no statistical test or confidence interval reported and not enough information reported to calculate them.
### Summary of findings: Key question 3 – HIV

<table>
<thead>
<tr>
<th>Study Authors</th>
<th>Study Design</th>
<th>HIV Status</th>
<th>Age</th>
<th>Setting</th>
<th>Referral Type</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Comparison</th>
<th>Study Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Giesecke et al. 1991)</td>
<td>Rapid review</td>
<td>♂ and ♀</td>
<td>31 years</td>
<td>Different settings (not specified); Sweden</td>
<td>Patient or provider referral</td>
<td>MSM (140)</td>
<td>Heterosexual (165)</td>
<td>* MSM slightly higher numbers</td>
<td>1.28. (Observational study)</td>
</tr>
<tr>
<td>(Centers for Disease Control and Prevention (CDC) 2003)</td>
<td>Rapid review</td>
<td>♂ and ♀</td>
<td>n/r</td>
<td>Specialist service; USA</td>
<td>Provider referral</td>
<td>Black (1117)</td>
<td>White (291)</td>
<td>* No difference</td>
<td>1.29. (Observational study)</td>
</tr>
<tr>
<td>(Toomey et al. 1998)</td>
<td>Rapid review</td>
<td>♂ and ♀</td>
<td>n/r</td>
<td>STD clinics; USA</td>
<td>Contract or provider referral</td>
<td>Black (789)</td>
<td>White (274)</td>
<td>* No difference</td>
<td>1.29. (Observational study)</td>
</tr>
<tr>
<td>(Pavia et al. 1993)</td>
<td>Rapid review</td>
<td>♂ and ♀</td>
<td>32 years</td>
<td>Health department; USA</td>
<td>Patient or provider referral</td>
<td>Black (26)</td>
<td>White (260)</td>
<td>* No difference</td>
<td>1.29. (Observational study)</td>
</tr>
<tr>
<td>(Spencer et al. 1993)</td>
<td>Rapid review</td>
<td>♂</td>
<td>n/r</td>
<td>Health department; USA</td>
<td>Contract referral</td>
<td>Black (29)</td>
<td>White (130)</td>
<td>* No difference</td>
<td>1.30. (Observational study)</td>
</tr>
<tr>
<td>(Wells et al. 1995)</td>
<td>Rapid review</td>
<td>♂ and ♀</td>
<td>n/r</td>
<td>Health department; USA</td>
<td>Contract or provider referral</td>
<td>IDU (40)</td>
<td>&quot;No admitted risk factor&quot; (36)</td>
<td>* No difference</td>
<td>1.30. (Observational study)</td>
</tr>
<tr>
<td>(Pavia et al. 1993)</td>
<td>Rapid review</td>
<td>♂ and ♀</td>
<td>32 years</td>
<td>Health department; USA</td>
<td>Patient or provider referral</td>
<td>IDU (54)</td>
<td>Heterosexual</td>
<td>* IDU higher numbers</td>
<td>1.30. (Observational study)</td>
</tr>
<tr>
<td>(Spencer et al. 1993)</td>
<td>Rapid review</td>
<td>♂ and ♀</td>
<td>n/r</td>
<td>Health department; USA</td>
<td>Contract or provider referral</td>
<td>IDU (53)</td>
<td>* Non-IDU</td>
<td>* IDU higher</td>
<td>1.30.</td>
</tr>
<tr>
<td>Health department, USA</td>
<td>II: Non-IDU (137)</td>
<td>Contract referral</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>-----------------------</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Giesecke et al. 1993</td>
<td>HIV; ± and ♀ and ♂; median age 31 years</td>
<td>Observational study</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Different settings (not specified), Sweden</td>
<td>Patient or provider referral</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IDU (43)</th>
<th>Heterosexual (Observational study)</th>
</tr>
</thead>
<tbody>
<tr>
<td>* No difference in numbers</td>
<td>* IDU higher numbers</td>
</tr>
<tr>
<td>* IDU higher numbers</td>
<td>++ Numerical study</td>
</tr>
<tr>
<td>1.30</td>
<td>1.90</td>
</tr>
</tbody>
</table>
4.5. **Key question 4 – adverse effects of partner notification**

The following sub-questions described in section 3.4, p. 29 are addressed in this section: 1) What are the barriers to implementing effective interventions?

4.5.1. **Adverse effects of partner notification for gonorrhoea, chlamydia, or non-gonococcal urethritis**

None of the controlled trials reported on adverse effects of partner notification and we could not identify any study addressing adverse effects related to specific forms of partner notification. Furthermore, we did not find any studies about adverse effects related to partner notification for patients diagnosed with gonorrhoea, chlamydia, or non-gonococcal urethritis. We found one cross-sectional study from the US reporting on the experiences of female adolescents with a sexually transmitted disease (not specified) about partner notification (Rosenthal et al. 1995) (−). The sample consisted of 102 analysed participants with a history of sexually transmitted disease. Mean age was 17 years and 85% were black. Forty-four percent reported on negative emotional reactions (not further specified) when they notified their partner(s) but 24% also reported on positive emotional reactions in this situation. Twenty-six percent reported that the discussion during notification focussed mainly on blaming each other who infected who.

4.5.2. **Adverse effects of partner notification for syphilis**

The comparative studies identified did not report on adverse effects of partner notification. The one study described above (section 4.5.1) about experience of adolescents with history sexually transmitted infections not further specified might also be relevant for syphilis.

We retrieved one prospective study conducted in New Orleans, USA (Kissinger et al. 2003) (++) . The study analysed 81 patients diagnosed with syphilis. Almost all patients were black (>90%) and more than 80% were heterosexual. Method of partner notification was contract referral: patients could choose to notify partners themselves but disease intervention specialists notified partners who did not attend the sexually transmitted disease clinic within one month. Overall, six months after initial diagnosis 48% of patients reported that their partnership had ended. Breakdown of relationships was reported to be less in patients for whom the disease intervention specialist documented contacting and notifying the partner(s) (complete partner notification) (24%) compared to 76% of patients for whom notification was incomplete (HIV and syphilis combined). Twenty-one percent of patients reported about emotional abuse by their partners and 8% reported some kind of physical violence.

4.5.3. **Adverse effects of partner notification for HIV**

The randomised controlled trial did not report on adverse effects of partner notification. We retrieved two studies (one ++; one −) reporting on adverse effects of partner notification for HIV.
Kissinger et al. (2003) (++) report on a prospective study conducted in a STD clinic in New Orleans, USA. The study was already described in the section above since it also reports on patients with syphilis. Seventy-six patients with HIV were analysed. More than 90% were African American, 42% were women, and three quarters were heterosexual. Index patients reported 1.24 partners and 0.39 partners were contacted. Six months after initial diagnosis 46% of patients reported that their partnership had ended. Breakdown of relationship was reported to be less in patients for whom the disease intervention specialist documented contacting and notifying the partner(s) (complete partner notification) (24%) compared to 76% of patients for whom notification was incomplete (HIV and syphilis combined). Twenty-four percent of patients reported about emotional abuse by their partners and 9% reported on physical violence.

Schnell et al. (1992) (–) conducted an observational study in men who have sex with men. Forty-four patients were included. Of these, 39 told sex partner HIV test result. Status of the relationship six months later was strong as ever in 82% of patients, weaker in 5%, and 13% reported to be single now.

Evidence statement 3.32.

Two observational studies¹ (one ++, one –) report that some patients with syphilis or HIV experienced emotional abuse or negative emotional reactions, physical violence when notifying their partner(s).

¹ (Kissinger et al. 2003; Rosenthal et al. 1995)
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Population</th>
<th>Intervention</th>
<th>Study size</th>
<th>Outcomes</th>
<th>Results</th>
<th>Quality</th>
<th>Evidence statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Kissinger et al. 2003)</td>
<td>Observational study</td>
<td>HIV and syphilis; ♀ and ♂; 50% ≥ 30 years; &gt; 90% black; &gt; 80% heterosexual; ca. 50% LEA STD clinic; USA</td>
<td>Contract referral</td>
<td>157 (76 HIV; 81 syphilis)</td>
<td>Negative outcomes of partner notification especially with regard to breakdown of partnerships</td>
<td>- 9% experienced physical violence - 24% experienced emotional abuse - 47% reported that partnerships broke down</td>
<td>++</td>
<td>1.31.</td>
</tr>
<tr>
<td>(Rosenthal et al. 1995)</td>
<td>Observational study</td>
<td>STD; ♀; mean age 17 years</td>
<td>Patient referral</td>
<td>102</td>
<td>Experience of adolescent girls with partner notification</td>
<td>- 44% reported on negative emotional reactions by partner(s) - 24% reported on positive emotional reactions by partner(s) - 26% reported that they and their partner(s) blamed each other about who infected who</td>
<td>–</td>
<td>1.31.</td>
</tr>
</tbody>
</table>
4.6. **Key question 5 – acceptability and barriers of partner notification**

The following sub-questions described in section 3.4, p. 29 are addressed in this section: 1) What are the barriers to implementing effective interventions?

4.6.1. **Acceptability and barriers of partner notification for gonorrhea, chlamydia, and non-gonococcal urethritis**

In this section studies on views of patients or providers on the process of partner notification are described. The focus was on barriers related to partner notification and applicability issues. These data were usually obtained by qualitative interviews or surveys. We also included studies analysing factors associated with success of partner notification if these factors are not already reported in the section of groups of special interest (see section 4.2.5, p.54). Some of the qualitative studies and surveys did not report the specific diagnosis of patients or covered sexually transmitted infections in general. Nonetheless, these studies were included since they provide relevant information.

**Views of patients**

We identified two qualitative studies (one +; one –) on views of patients about the process of partner notification. All studies used face-to-face interviews to gather information.

Chacko et al. (2000) (–) interviewed 31 female patients (median age 18 years) with a history of gonorrhoea or chlamydia treated in a family planning clinic in Houston, Texas. All patients had notified at least one partner. One half notified partners by telephone and the other half directly talked to partners face-to-face. Percentages are reported by the authors. Patients usually approached partners in a direct fashion (48%). However, 20% showed anger and made accusations during the notification talk. Almost all patients informed partners on the name of the disease (94%) and almost 40% talked about the source of infection. Approximately 60% advised partner to seek treatment and almost 30% informed partner(s) where to get treatment. The vast majority of patients (90%) perceived no barriers in regard to the notification process. Seven percent felt uncomfortable and 3% expressed fear related to the notification of partner(s).

The second study was also conducted in the US and enrolled women and men diagnosed with gonorrhoea, chlamydia, or non-gonococcal urethritis treated in a sexually transmitted disease clinic (Gorbach et al. 2000) (+). Women were younger than men with mean ages of 22 and 28 years respectively. Overall 79 patients were interviewed (30 heterosexual men, 19 men who have sex with men, and 30 women). Fear of gossip and stigma emerged as a strong barrier to partner notification especially in young heterosexual men and women. Some women also expressed fear of violence. Fear of rejection was particularly expressed by men who have sex with men. Interviewers explored reasons for not notifying partner(s) or notifying only a proportion of
partners. Patients stated the following reasons besides the ones reported above: 1) can't locate partner; 2) don't care (blaming partner for infection); 3) assumed that partner(s) already knows; 4) partner(s) not perceived as exposed especially in men who have sex with men where only oral sex was reported; 5) no further contact wanted.

Evidence statement 3.33.

Two qualitative studies\(^1\) (one +; one –) indicate that fear of gossip, stigma, and violence (especially in women) can be a barrier to partner notification for gonorrhoea or chlamydia.

Patient-related factors associated with success of partner notification

Two randomised trials reported multivariable analyses of factors independently associated with success of patient-delivered partner therapy. Reporting of the analyses performed was poor, limiting the assessment of quality. Kissinger et al. (2005) (–) reported that older age was independently associated with success (see p. 54 for details). Golden et al. (2005) (–) found that the following factors were associated with persistent or recurrent infection: younger age; initial diagnosis of chlamydia or chlamydia plus gonorrhoea; diagnosis at public health clinic other than STD clinic; non-Hispanic ethnicity; any sex since treatment; greater number of sex partners since treatment.

We included four other studies (one ++; three +) reporting on factors associated with success of partner notification. All used multivariable methods.

The most recent study used data from general practitioners in the Netherlands of 93 women and men diagnosed with chlamydia (van Valkengoed et al. 2002) (++) Patient referral was the method of partner notification with the help of information leaflets and urine sample kits plus prestamped envelopes. Being in a steady relationship was associated with success of partner notification (defined by at least one partner notified). This association was independent of gender, inconsistent condom use, or changing sexual partners.

The only study conducted in the UK was published 1999 (Ross et al.) (+) and enrolled women and men with gonorrhoea (N=196) or chlamydia (N=417) treated in a genitourinary medicine clinic in Birmingham (see p. 55). Notification of partners was done by index patients with the help of contact slips. Approximately one third of index patients had all their partners treated. Factors associated with this outcome were 'more than one partner elicited' for index patients with gonorrhoea and 'history of gonorrhoea' for patients with chlamydia. Factors (among others) investigated but without statistical evidence of any association were race, age < 25 years, socioeconomic status, and sexual orientation.

Two other studies conducted in sexually transmitted infection clinics in the Netherlands investigated various factors associated with success of partner notification. Both studies analysed

\(^1\) (Chacko et al. 2000; Gorbach et al. 2000)
women and men with gonorrhoea or chlamydia. Patient referral supplemented by contact slips to notify partners was used in both studies. Van Duynhoven (1998) (+) reported on 250 patients of which 61% referred at least one partner. Factors associated unsuccessful partner notification included 1) born in Surinam or other foreigners; 2) type of sexual contact "one-night stand"; 3) age of sexual partner(s) \( \leq 25 \) years. Furthermore, the time period between diagnosis and the respective sexual contact was related to success of partner notification i.e. the shorter the time the more patients referred at least one partner. Van de Laar (1997) (+) reported on 355 patients which elicited 580 partners. Of these, 41% were tested. Factors associated with the outcome 'all partners tested' were: 1) sex (notification was successful in female patients more often than in men); 2) subsequent visits at the clinic; 3) absence of symptoms in index patients; 4) steady partner as last sexual partner. Additionally, being Dutch by birth and a history of sexually transmitted infection improved results of partner notification in men.

**Evidence statement 3.34.**

*Studies on factors associated with success of partner notification for gonorrhoea or chlamydia investigated different possible factors limiting comparability. However, two observational studies*\(^2\) *(one ++; one +) provide some indication that being in a steady relationship is associated with better results of partner notification.*

**Views of providers**

We retrieved two surveys (both +) using postal questionnaires which reported on views of providers on the partner notification process. None of the studies was specifically addressing partner notification in gonorrhoea, chlamydia, or non-gonococcal urethritis but covered sexually transmitted infections in general.

Niccolai et al. surveyed 111 non-specialist physicians on their opinions toward patient-delivered partner therapy (2005) (+). Physicians agreed on several issues related to providing patients with medication to deliver to their partners (closed questions expressed as statements on which physicians could agree or not using Likert scales). The most important once were: 1) inability to determine if medication was actually delivered (>90%); 2) patients or partners might not understand adverse effects of drugs (>80%); concerns on dispensing multiple doses of the medication (>80%); 4) partner might not get medication (>70%); 5) missed opportunities for other clinical services and counselling of the partner (>70%); creation of liability (>70%).

The second study surveyed personnel at health departments in 78 cities with the highest prevalence of sexually transmitted diseases in the US (Golden et al. 2003a) (+). Open ended questions were asked on perceived barriers in the context of partner notification. Response rate was good with 77% completed questionnaires (60/78). The most important barrier to conducting partner notification was perceived to be insufficient funding (40%; 24/60). Other barriers

\(^2\) (van de Laar et al. 1997; van Valkengoed et al. 2002)
reported were inability to retain personnel (10%; 6/60), non-cooperation by private providers and community based organisations, political opposition of organisations for men who have sex with men, and absence of mandatory HIV infection reporting (all 5-10%). When asked about suggestions to improve partner notification 40% (23/60) of respondents asked for improved ongoing training opportunities for partner notification staff.

Evidence statement 3.35.

There is insufficient evidence on views of physicians about barriers to partner notification and what might help to improve partner notification.

4.6.2. Acceptability and barriers of partner notification for syphilis

We identified no study reporting specifically on barriers or applicability of partner notification for syphilis. However, the two surveys presented in section 4.5.2, p. 85 are also relevant for syphilis.

4.6.3. Acceptability and barriers of partner notification for HIV

We found two studies (one +; one –) relevant for this question. The two surveys presented in section 4.5.2, p. 85 are also relevant for HIV and we refer to this section.

Views of patients

Golden et al. (2003b) (+) conducted a questionnaire survey of patients attending a HIV/AIDS clinic in Seattle, USA or reported to the health department of Seattle and King County. The response rate was 65% (95/146) but was very different for patients in the clinic (50/52; 96%) and patients reported to the health department: 46/146; 32%. However, non-responders did not differ from the responders with respect to age, ethnicity, sexual orientation, HIV risk factors, or CD4 count. The majority of participants was white (65%) and over 35 years of age (62%). More than 80% were men who have sex with men and 23% had a history of injecting drugs. Nearly 20% wanted some help to notify at least one partner of the last six months. Among men who have sex with men, 45% preferred partner notification from someone of the same sexual orientation but 44% had no preference. Fifty-five percent preferred to be interviewed by disease intervention specialists face-to-face, 32% preferred interviews by telephone, and 14% computer-assisted interviews. Patients were more willing to give information on partners to doctors (64%) and nurses (62%) than to someone from the health department (48%) or someone from the gay men’s community (45%). Factors that might influence decision to provide names of partners were: anonymous HIV test (50%), if information on partners could be provided anonymously (42%), and payment of $20 (24%).

Rogers et al. (1998) (−) interviewed 25 heterosexual intravenous drug users in New York, USA. Participants were recruited at a methadone maintenance programme and a sexually transmitted disease clinic. A diagnosis of sexually transmitted infection was not required for study participation. Nonetheless, the study was included in this review since intravenous drug users
often suffer from infections especially HIV and are a special group of interest in this report. Half of the interviewees would refuse to participate in partner notification of sex partners if provider referral would be employed instead of partner referral. Participants reported that partner notification for needle-sharing partners is not practical and may result in gossip in the community. Therefore, they would be less likely to participate in partner notification for needle-sharing partners.

Evidence statement 3.36.

One survey\(^3\) (+) and one qualitative study\(^4\) (−) indicate that confidentiality is a key factor for ensuring willingness of index patients with HIV to cooperate in partner notification issues.

Evidence statement 3.37.

One qualitative study\(^4\) (−) indicates that intravenous drugs users view notification of needle-sharing partners as not practical compared to notification of sex partners.

Views of providers

Rogers et al. (1998) (−) also interviewed 23 health professionals at methadone maintenance programmes and STD clinics. Health professionals preferred provider referral because it was felt to be more successful than patient referral. Several barriers were expressed in the interviews for example: if patients are angry, partner notification with female patients was felt to be more difficult, negative political climate especially with regard to condom use.

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\(^3\) (Golden et al. 2003b)
\(^4\) (Rogers et al. 1998)
### Table 6: Summary table of evidence of acceptability and barriers of partner notification

<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Population</th>
<th>Intervention</th>
<th>Study size</th>
<th>Outcomes</th>
<th>Results</th>
<th>Quality</th>
<th>Evidence statements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Views of patients</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Chacko et al. 2000)</td>
<td>Qualitative study</td>
<td>History of gonorrhoea or chlamydia; ♂; median age 18 years Family planning clinic; USA</td>
<td>Patient referral</td>
<td>31</td>
<td>Views of index patients about the process of partner notification</td>
<td>- The vast majority of patients perceived no barriers in regard to the notification process (90% reported in article).&lt;br&gt;- 7% felt uncomfortable in regard to the notification process (percentage reported in article)&lt;br&gt;- 3% expressed fear during the notification process (percentage reported in article)</td>
<td>-</td>
<td>1.32.</td>
</tr>
<tr>
<td>(Gorbach et al. 2000)</td>
<td>Qualitative study</td>
<td>Gonorrhoea, chlamydia, or non-gonococcal urethritis; ♂ (38%); ♂ (62%); mean age ♂ 22 years and ♂ 28 years; 24 % MSM STD clinic; USA</td>
<td>Not reported</td>
<td>79</td>
<td>Patterns of partner notification reported by index patients</td>
<td>- Fear of gossip and stigma strong barrier to partner notification especially in young heterosexual women and men&lt;br&gt;- Women also expressed fear of violence&lt;br&gt;- Fear of rejection was particularly expressed by men who have sex with men</td>
<td>+</td>
<td>1.32.</td>
</tr>
<tr>
<td>(Golden et al. 2003b)</td>
<td>Survey</td>
<td>HIV; ♂ (6%) and ♂ (94%); 62% &gt; 35 years; 65% white; 86% MSM STD clinic and other settings; USA</td>
<td>Not reported</td>
<td>95</td>
<td>Factors that might influence decision to provide names of partner</td>
<td>- HIV test anonymous: 50%&lt;br&gt;- Information on partners can be provided anonymously: 42%&lt;br&gt;- Payment of US$ 20: 24%</td>
<td>+</td>
<td>1.35.</td>
</tr>
<tr>
<td>(Rogers et al. 1998)</td>
<td>Qualitative study</td>
<td>Intravenous drug users; heterosexual; age 20-40 years STD clinic and methadone maintenance programme; USA</td>
<td>Not reported</td>
<td>25</td>
<td>Information from drug users on partner notification</td>
<td>- 50% would refuse partner notification if provider referral would be employed in stead of patient referral (percentages reported in article)&lt;br&gt;- Drug users report to be less willing to participate in partner notification of needle-sharing partner(s)</td>
<td></td>
<td>1.35.; 1.36.</td>
</tr>
<tr>
<td>(van Valkengoed et al. 2002)</td>
<td>Observational study</td>
<td>Chlamydia; ♂ and ♂ General practice; Netherlands</td>
<td>Patient referral</td>
<td>93</td>
<td>Factors associated with success of partner notification (≥ 1 partner notified)</td>
<td>- Being in a steady relationship was independently associated with success in a multivariable analysis</td>
<td>++</td>
<td>1.33.</td>
</tr>
</tbody>
</table>
5. Synthesis of rapid review findings

In this chapter we give an overall synthesis of the findings of this review. We begin by summarising the methodological limitations of the review so that the findings can be interpreted in the context of the available data. We then present the findings, where we have selected key evidence statements that should help formulate the public health guidance. We end by presenting issues that should be considered for practice and research.

5.1. Methodological issues

5.1.1. Evidence about different methods of partner notification

We found it difficult to summarise evidence from trials investigating different methods of partner notification because:

- Methods used for partner notification differed widely between trials. Even within interventions that we have described as being similar, e.g. ‘minimal patient referral’, there are differences in the content of the intervention between trials that could affect the results;
- Outcomes varied widely between trials and were often not well-defined. This makes it difficult to compare the results of trials directly;
- Only the trials of patient-delivered partner therapy and the trial by Cleveland (2001) reported on the primary outcomes of interest (relating to transmission of infection). Because we first present the results of trials that report on primary outcomes of interest, the evidence appears to prioritise expedited methods of partner therapy. The strength of evidence for other more commonly used forms of partner notification is lower.

5.1.2. Presentation of results

We present the results of trials graphically using forest plots. Not all trials provided enough information to construct forest plots. As noted above, most trial reports did not provide information about the primary outcomes of partner notification. The intermediate outcomes reported are the number of partners treated/infected in relation to the number of partners elicited. This outcome should be interpreted with caution. The denominator is the number of elicited partners. If this is low, because of poor sexual history taking, the ratio of the number of partners treated per partner elicited could be higher than in a trial where a larger number of partners was elicited.
5.2. Methods of partner notification included in rapid review

There was most information about the effectiveness of partner notification for gonorrhoea and chlamydia. We have summarised the findings for these trials in a ‘network of evidence’ Figure 8. Below, we summarise the methods used for managing index patients and their sexual partner(s), together with the abbreviations used in the network of evidence.

<table>
<thead>
<tr>
<th>Method</th>
<th>Description (abbreviation)</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal patient referral</td>
<td>Index patients are advised on the need for partner treatment, but no specific advice or other information are offered and outcomes are not followed up (PRmin).</td>
<td>As experimental group: None As control group: Golden et al. 2005; Kissinger et al. 2005</td>
</tr>
<tr>
<td>Patient referral</td>
<td>A sexual history is taken. Patients are informed about their infection, its implications, the need for partner treatment, and how to prevent future infection (PR).</td>
<td>As experimental group: None As control group: None</td>
</tr>
<tr>
<td>Patient referral + contact cards</td>
<td>Patient referral as above, plus index case is given contact cards to give to partner(s) (PR+).</td>
<td>As experimental group: None As control group: Potterat 1977; Katz et al. 1988; Kissinger et al. 1988; Solomon et al. 1988; Cleveland 2001; Schillinger et al. 2003</td>
</tr>
<tr>
<td>Patient referral + education</td>
<td>Patient referral plus additional structured education for index case about the infection (e.g. videotape, standardised written material) (Edu).</td>
<td>As experimental group: Solomon et al. 1988 As control group: None</td>
</tr>
<tr>
<td>Patient referral + counselling</td>
<td>Patient referral, plus information for index patients involves interactive discussion with the healthcare provider, in counselling or question-and-answer sessions (QaA). Can be combined with incentives for index case (QaA+$), or written information for index case (QaA+Edu).</td>
<td>As experimental group: Katz et al. 1988 As control group: None</td>
</tr>
<tr>
<td>Patient referral + information for partners</td>
<td>Patient referral plus index patients receive information about the infection to give to their partner(s) (InfoPartner)</td>
<td>As experimental group: Kissniger et al. 2005</td>
</tr>
<tr>
<td>Patient-delivered partner therapy</td>
<td>Patient referral enhanced by provision of prescriptions or drugs for index patient to give to partner(s), without need for a medical assessment (PDPT).</td>
<td>As control group: None</td>
</tr>
<tr>
<td>Office sampling</td>
<td>Patient referral where index patients receive sampling kits to give to their partner(s) who should take these kits to their doctors for sampling of diagnostic specimens (OS).</td>
<td>As experimental group: Andersen et al. 1998; Ostergaard et al. 2003 As control group: None</td>
</tr>
<tr>
<td>Home sampling</td>
<td>Patient referral where index patients receive sampling kits to give to their partner(s) who should sample diagnostic specimens at home and send the kits to a local laboratory (HS).</td>
<td>As control group: Andersen et al. 1998; Ostergaard et al. 2003 As control group: None</td>
</tr>
<tr>
<td>Provider referral</td>
<td>The health care professional takes responsibility for confidentially notifying sexual partner(s) (ProvRef).</td>
<td>As experimental group: Katz et al. 1988 As control group: None</td>
</tr>
<tr>
<td>Contract referral</td>
<td>The health professional confidentially notifies sexual partner(s) that are not notified by the index patient in an agreed time period (CR).</td>
<td>As experimental group: Potterat et al. 1977; Cleveland et al. 2001 As control group: Montesinos et al. 1990</td>
</tr>
</tbody>
</table>
We assigned each trial to one of the interventions described above. Classification of interventions was, however, difficult because of differences between the interventions. For some trials, the description of the contents of the intervention was limited so classification might be subject to interpretation (e.g. Katz et al. 1988).

Figure 8: Network of evidence for effectiveness of partner notification for gonorrhoea and chlamydia

Legend:
See table above for abbreviations for interventions;
Arrows are used for trials in which one intervention was superior to the comparison group;
Lines without arrows are used for trials in which there was no evidence that one intervention was superior to another;
Names along arrows are the first author of the trial report. Year of publication is also given for authors of multiple trials;
The direction of the arrow indicates the superior intervention;
The thickness of the lines/arrows is proportional to number of trials evaluating the respective methods;
The number of arrowheads indicates the number of trials showing the superiority of one method.

Several key points appear from this network:
- Overall, there is very limited evidence from randomised-controlled trials within particular partner notification methods which makes assessment difficult.
- The network is dominated by evaluations of patient-delivered partner therapy because these included the largest number of trials with the largest numbers of participants making
direct comparisons with methods of patient referral (Kissinger et al. 1998; Schillinger et al. 2003; Golden et al. 1005; Kissinger et al. 2005). It should be noted that therefore there is a bias of evidence for this particular method.

− There are methods of enhancing patient referral for gonorrhoea and chlamydia, e.g. home sampling, providing information for partner(s), which might be effective, but for which there were few trials (Andersen 1998; Ostergaard 2003; Kissinger 2005).

− The network shows that home sampling has not been directly compared with standard forms of patient referral (Andersen et al. 1998; Ostergaard et al. 2003).

− Providing information for index cases to give to partners appears to be more effective than minimal patient referral and, in a direct comparison, achieved outcomes that were similar to patient-delivered partner therapy (Kissinger et al. 2005).

− Trials comparing a range of methods of providing additional information for index cases, including structured educational materials, interactive question-and-answer discussions, and financial incentives (right side of the network) seem to show that there is little additional impact compared to less intensive forms of patient referral. Indirect comparisons suggest that these methods are comparable to each other.

− Provider and contract referral for gonorrhoea and chlamydia have generally only been compared with patient referral in single trials (Potterat et al. 1977; Katz et al. 1988; Cleveland 2001). There are two trials comparing contract referral with patient referral supplemented by contact cards, but results were conflicting.

5.3. **Key findings relating to practice and research**

- The current evidence about partner notification does not suggest one single optimal strategy.

- Practical guidance about effective partner notification interventions for gonorrhoea and chlamydia should focus on effective forms of patient referral.

- Whilst there is some evidence to show that labour-intensive methods such as provider and contract referral are better (for intermediate outcomes) than patient referral for index patients with gonorrhoea or chlamydia (section 5.2, p. 95), these methods are rarely employed in practice for these infections, which are commonly diagnosed outside specialist genitourinary medicine clinics.

- Good evidence for methods of partner notification is lacking for syphilis and HIV. However, given that these infections are usually more serious than gonorrhoea and chlamydia, healthcare professionals should be advised to consider contract and provider referral for these patients.
5.3.1. Patient-delivered partner therapy

Whilst not legal in the UK, expediting treatment for sexual partners to reduce the duration of infection and likelihood of onward transmission is one of the goals of partner notification. Interventions for accelerated partner therapy (the term used in the UK for an expedited intervention that involves a medical assessment of the partner) might be able to learn from evidence about patient-delivered partner therapy in the USA.

We found relatively good evidence that patient-delivered partner therapy was better than patient referral at reducing re-infection rates and increasing numbers of partners treated. The contents of the patient-delivered partner therapy interventions sometimes included giving the index patient additional materials such as condoms, and information about how to contact health professionals. These elements were not given to patients in control groups so the package comprising patient-delivered partner therapy is actually a complex multi-component intervention. The absolute reduction in re-infection rates has to be interpreted in the context of the complexity of the intervention.

Evidence statement 3.1 (relating to practice)

There is evidence from four large randomised controlled trials (two +; two –)\(^1\) that patient-delivered partner therapy plus additional information for partners reduces persistent or recurrent infections in women and men diagnosed with gonorrhoea or C. trachomatis by approximately 5% compared to patient referral (either minimal or supplemented by contact card).

See also Figure 2, p. 39.

The benefits of patient-delivered partner therapy and other forms of expedited partner therapy also need to be considered in relation to the control intervention. The greatest benefits were seen when the control intervention consisted only of advising index cases that their partners needed to be treated. If patient referral includes additional information about the infection for patients and partners, the added benefits of giving the index case drugs for their partner(s) are not so clear. This highlights the need for further large randomised controlled trials that will be able to disentangle the effects of the expedited (or accelerated) partner therapy from other enhancements of patient referral.

Evidence statement 3.4 (relating to practice and research needs)

There is evidence from one large randomised controlled trial (−)\(^2\) that patient-delivered partner therapy does not reduce persistent or recurrent infections in men diagnosed with gonorrhoea or C. trachomatis when compared to

---

\(^1\) Kissinger et al. 1998; Schillinger et al. 2003; Golden et al. 2005; Kissinger et al. 2005

\(^2\) Kissinger et al. 2005
enhanced patient referral that includes providing index patients and partner(s) with additional information about the infection.

5.3.2. Content of patient referral interventions

- Healthcare providers could consider any of the following methods of patient referral in individual patients:
  - 1) providing information for partner(s) (evidence statement 1.3);
  - 2) home sampling for partner(s) (evidence statement 1.6),
  - 3) patient-delivered partner therapy (evidence statement 1.1).
- The WHO definition of partner notification states that all of these methods should be preceded by a detailed explanation of the nature of the infection, a careful sexual history to ascertain which sexual contacts require treatment, and information about avoiding future infection.

Additional information

It is difficult to define the exact content of any additional information that should be given to index patients. Randomised-controlled trials amongst patients with gonorrhoea, comparing additional structured educational materials or interactive question-and-answer sessions with patient referral that includes providing contact cards have not found a benefit in terms of the numbers of partners treated. It is possible that there were not enough differences between the experimental and control interventions, and the limited descriptions in trial reports made it difficult to determine the precise content. It is likely that providing contact cards requires the healthcare professional to elicit some kind of sexual history and to provide some explanation about the infection that form part of the experimental interventions. The network of interventions shows that there are no direct comparisons between interventions that provide additional information and the minimal form of patient referral (Figure 8). What is required, therefore, are trials with well-defined experimental and control interventions that can provide this information.

Evidence statement 3.6 (revised version, relating to practice and research needs)

There is evidence from three randomised controlled trials (two ; one unclear)\(^3\) that patient referral supplemented by additional education or information for index patients diagnosed with gonorrhoea is not more effective in terms of number of partners who get tested than patient referral with contact cards.

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\(^3\) Katz et al. 1988; Solomon et al. 1988; Cleveland 2001
5.3.3. Obtaining home-collected specimens from sexual partners

There are methods other than providing information that could enhancing the outcomes of patient referral. In particular, the availability of nucleic acid amplification test for diagnosis of *C. trachomatis* mean that non-invasive samples collected and mailed by sexual contacts could be used to motivate partners to seek treatment. The trials of this relatively simple innovation have been conducted amongst patients with chlamydia in Denmark. As mentioned above, the network of evidence (Figure 8) shows that there is no direct comparison with patient referral as currently practised. Given that index patients in the control groups were also provided with kits for partners, but told that the partner needed to visit their doctor for samples to be taken, the effectiveness is more likely to have been underestimated than overestimated.

Evidence statement 3.8 (relating to practice and research needs)

> There is weak evidence from two randomised controlled trials (both −)\(^4\) that giving index patients diagnosed with *C. trachomatis* sampling kits for their partner(s) can increase the number of partners who get tested when compared to getting the partner(s) to visit their doctor for testing.

See also Figure 4, p. 47.

5.3.4. Location of intervention

Formal partner notification has usually been done in genitourinary medicine clinics and most trials have therefore also been in specialist settings. Increasingly, sexually transmitted infections, especially chlamydia, are diagnosed in general practice or community settings. The only randomised controlled trial of partner notification to have been completed in the UK examined the effectiveness of having trained general practice nurses providing patient referral. Sexual health advisers provided the follow up of outcomes. The success of this strategy seems to have been due to the fact that about a third of patients referred to the genitourinary medicine clinic did not attend.

Evidence statement 3.16 (relating to practice)

> There is evidence from one randomised controlled trial (++\(^5\)) that patient referral for patients with chlamydia conducted in general practice is at least as effective in terms of partners who get treated when compared to referring patients to a specialist health service.

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\(^4\) Andersen et al. 1998; Ostergaard et al. 2003

\(^5\) Low et al. 2005
5.3.5. Barriers to partner notification

Sexually transmitted infections are some of the most stigmatising of all conditions. It is therefore not surprising that perceived stigma by index cases can prevent them from informing their partner(s). It would seem to be good practice for healthcare professionals to acknowledge this in their discussion with patients. This might be most relevant to HIV infection. Reassuring index patients of the confidentiality of the partner notification process is therefore especially important.

Evidence statement 3.343 (relating to practice)

Two qualitative studies (one +; one –) indicate that fear of gossip, stigma, and violence (especially in women) can be a barrier to partner notification for gonorrhoea or chlamydia.

Evidence statement 3.376 (relating to practice)

One survey (+) and one qualitative study (–) indicate that confidentiality is a key factor for ensuring willingness of index patients with HIV to cooperate in partner notification issues.

5.4. Additional research needs

− Randomised controlled trials of the effectiveness of partner notification should be large enough to show that the intervention reduces the risk of re-infection or persistent infection in the index case, or that the intervention reduces the incidence of infection in the population.
− Randomised controlled trials should include as the control arm a form of partner notification that is the existing standard of care, for example minimal patient referral, or minimal patient referral supplemented by contact cards.
− Randomised controlled trials should ensure that the only difference between the experimental and control groups in the way that study participants are treated and evaluated is the experimental intervention itself. Otherwise, the only intervention that can be recommended is one that includes all the components of the experimental intervention.
− There are two relatively simple methods: providing information for partners; and home sampling, for which large randomised controlled trials comparing these methods with minimal and comprehensive patient referral are required.
− Randomised controlled trials of accelerated partner notification for chlamydia and gonorrhoea are required.
− Large randomised controlled trials of partner notification for syphilis and HIV are lacking. Therefore, large randomised controlled trials are need for these infections.
- Further trials that investigate the adverse effects of partner notification are required.
- More research is needed about the way in which the outcomes of partner notification differ in particular patient groups, such as adolescents, men who have sex with men, people from minority ethnic groups.
6. Evidence tables

Table 7: Characteristics of systematic reviews of partner notification

<table>
<thead>
<tr>
<th>First author date ID</th>
<th>Search strategy and dates</th>
<th>Target population</th>
<th>Review questions</th>
<th>Inclusion criteria</th>
<th>Total hits</th>
<th>Included studies</th>
<th>Evidence reviewed</th>
<th>Conclusions of authors</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Mathews et al. 2001) PN 303</td>
<td>Medline: 1966- n/r; Embase: 1974- n/r; Psychological Abstracts: 1967- n/r; Sociological Abstracts 1967- n/r; CENTRAL: n/r</td>
<td>Patients diagnosed in health care setting with STD or STD syndromes</td>
<td>To compare effects of various partner notification strategies.</td>
<td>RCTs comparing at least two alternative partner notification strategies.</td>
<td>n/r</td>
<td>11</td>
<td>Syphilis: 1 RCT (Peterman et al. 1997): two different provider referrals versus contract referral</td>
<td>Provider referral alone, or the choice between patient and provider referral, when compared with patient referral among patients with HIV or any STD, increases the rate of partners presenting for medical evaluation. Contract referral, when compared with partner referral among patients with gonorrhoea, results in more partners presenting for medical evaluation. Verbal, nurse-given health education together with patient-centred counselling by lay workers, when compared with standard care, among patients with any STD, results in small increases in the rate of partners treated.</td>
<td>Overall assessment: ++ Limitations: 1) Last update of review Jul 2001; 2) No trials of patient-delivered partner therapy included. Interpretation: Keeping in mind the relatively low quality of included studies: 1) Both, provider referral (mandatory or offered) and contract referral result in more tested partners compared to patient referral; 2) The effectiveness of additional counselling of index patients is limited given its time and effort. Applicability: 3 (conclusions are based on some trials from developing countries).</td>
</tr>
<tr>
<td>(Macke et al. 1999) PN 518</td>
<td>Medline: 1980-08/1997; PsychLit: 1980-08/1997; Current Contents: 1980-08/1997</td>
<td>Not explicitly reported. Patients diagnosed with HIV or other STDs in the US.</td>
<td>To examine effectiveness of partner notification to newly detect and treat HIV and other STDs in partners of infected patients.</td>
<td>Primary studies (RCTs and quasi-experimental studies, observational and uncontrolled studies). Studies conducted in the US. Full journal articles only.</td>
<td>212</td>
<td>13</td>
<td>Syphilis: 1 controlled study (Peterman et al. 1997): provider versus contract referral</td>
<td>Good evidence that partner notification is a means of newly detecting infections. Recommendation to provide partner notification as a service. Fair evidence that provider referral results in more notified and evaluated partners compared to self referral. Recommendation to encourage provider referral by trained persons. Impressive that partner notification process is voluntary and confidential. In absence of option of referral to a local health department, a minimal standard of care is for the provider or a staff member to counsel the infected person about self-referral</td>
<td>Overall assessment: – Limitations: 1) Search strategy may be too specific; 2) Only trials from the USA included; 3) Data extracted by one reviewer only; 4) Quality assessment of studies subjective without valid and appropriately specified criteria. Interpretation: Given the unclear quality assessment of studies, conclusions are limited: 1) Partner notification increases the rate of newly detected infections; 2) Provider...</td>
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<tr>
<td>Patients with gonorrhoea, chlamydia, syphilis, HIV, or hepatitis B</td>
<td>Studies comparing at least 2 partner notification strategies (either concurrent or historical control group).</td>
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<td>English. (Katz et al. 1988): two different patient referrals versus provider referral; 2 cohort studies (patient referral (Oh et al. 1996); provider referral (Katz et al. 1992; Oh et al. 1996))</td>
<td>104 of 167</td>
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<td>HIV: 1 controlled study (2 arms (Landis et al. 1992): patient referral versus provider referral); 4 cohort studies (patient referral; provider referral (Pavia et al. 1993; Rutherford et al. 1991; Wells et al. 1995); contract referral (Spencer et al. 1993; Wells et al. 1995))</td>
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<td>Syphilis: 1 RCT (3 arms (Toomey et al. 1998): two different provider referrals versus contract referral); 2 other comparative studies (1 x 2 arms (Capinski et al. 1970): physicians versus trained interviewers; 1 x 2 arms (Bisley et al. 1948): two different provider referrals)</td>
<td>328</td>
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<td>Gonorrhoea: 3 RCTs (2 x educational interventions (Montesinos et al. 1990; Solomon et al. 1988); 1 x 3 arms (Cleveland 2001): two different patient referrals versus contractual referral); 5 other comparative studies (2 x 2 arms (Judson et al. 1978; Woodhouse et al. 1985): patient referral versus provider referral; 1 x 2 arms (Potterat et al. 1977): patient referral versus contract referral; 2 x physician versus specially trained social worker/nurse (Alary et al. 1991; Hammar et al. 1972))</td>
<td>13</td>
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<td>Chlamydia and NGU: 2 RCT (1 x 2 arms (Katz et al. 1988): patient referral versus provider referral; educational interventions (Montesinos et al. 1990) 1 other comparative study (physician versus specially trained social worker/nurse (Alary et al. 1991))</td>
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<tr>
<td>HIV: 1 RCT (3 arms (Toomey et al. 1998): two different provider referrals versus contract referral)</td>
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</table>
### Table 8: Quality assessment of systematic reviews of partner notification

<table>
<thead>
<tr>
<th>First author, date</th>
<th>Appropriate and clearly focused question</th>
<th>Description of methodology used</th>
<th>Literature search sufficiently rigorous</th>
<th>Study quality assessed and taken into account</th>
<th>Results directly applicable to patient group targeted</th>
<th>Study helps to answer key questions</th>
<th>How well was study done to minimise bias and what is likely direction of bias (if applicable)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Mathews et al. 2001) PN 303</td>
<td>Well covered</td>
<td>Well covered</td>
<td>Well covered</td>
<td>Yes</td>
<td>Yes</td>
<td>++</td>
<td>Cochrane review (date of most recent substantive amendment: 24 July 2001).</td>
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</tr>
<tr>
<td>(Macke et al. 1999) PN 518</td>
<td>Adequately covered</td>
<td>Adequately covered</td>
<td>Adequately addressed</td>
<td>Adequately addressed</td>
<td>Yes</td>
<td>No</td>
<td>Direction of bias remains unclear</td>
<td>Only published studies in English and conducted in the US included. Quality assessment of studies not reliable.</td>
</tr>
<tr>
<td>(Oxman et al. 1994) PN 881</td>
<td>Well covered</td>
<td>Poorly addressed</td>
<td>Adequately addressed</td>
<td>Adequately addressed</td>
<td>Yes</td>
<td>No</td>
<td>Direction of bias remains unclear</td>
<td>Assessment of methodology restricted since search strategy and method of quality assessment is not reported. Methodological quality of studies was assessed but not in a reliable way.</td>
</tr>
<tr>
<td>First author date ID</td>
<td>Organisation, Country</td>
<td>Topic</td>
<td>Evidence base</td>
<td>Consensus method</td>
<td>Recommendations</td>
<td>Comments</td>
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<td>(Anon. 1999b) PN 531</td>
<td>Medical Society for the Study of Venereal Diseases, UK Association for Genito Urinary Medicine, UK Royal College of Physicians GU Medicine Committee, UK</td>
<td>Gonorrhoea (Management of gonorrhoea in adults)</td>
<td>Medline (1990-1998) – MeSH: &quot;gonorrhoea&quot;, &quot;Neisseria gonorrhoeae&quot; (limit: English abstract) Cochrane Library (1998) – Textword: &quot;gonorrhoea&quot;</td>
<td>n/r</td>
<td>Patients should be advised to avoid unprotected intercourse until they, and their partner(s), have completed treatment and follow. Contact tracing should be pursued in all patients identified with gonococcal infection at initial diagnosis. The action and outcome should be documented at this and subsequent visits. Male patients with symptomatic urethral infection should refer for testing and treatment all partners with whom they had sexual contact within preceding 2 weeks. Patients with infection at other sites or asymptomatic infection should trace all partners for the preceding 3 months.</td>
<td>Limitations: 1) Search strategy to specific; 2) Results of systematic review insufficiently reported; 3) Unable to locate systematic review; 4) Consensus method not reported. Interpretation: The recommendations of this low quality guideline are very unspecific. All patients with gonorrhoea should receive some kind of partner notification.</td>
<td>Applicability: 2 (UK guideline; unspecific recommendations)</td>
<td></td>
</tr>
<tr>
<td>(Anon. 1999a) PN 533</td>
<td>Medical Society for the Study of Venereal Diseases, UK Association for Genito Urinary Medicine, UK Royal College of Physicians GU Medicine Committee, UK</td>
<td>Chlamydia (Management of Chlamydia trachomatis genital tract infection)</td>
<td>Medline (1970-&quot;present&quot;) – Keywords: &quot;Chlamydia trachomatis&quot;, AND (&quot;polymerase chain reaction&quot; OR &quot;PCR&quot; OR &quot;ligase chain reaction&quot; OR &quot;lcr&quot; OR &quot;lcx&quot; OR &quot;immunoenzymatic techniques&quot; OR &quot;enzyme linked immunosorbent assay&quot; &quot;Chlamydia trachomatis&quot; AND (&quot;detection&quot; OR &quot;diagnosis&quot; OR &quot;treatment&quot;) Cochrane Library - &quot;Chlamydia trachomatis&quot;</td>
<td>n/r</td>
<td>All patients identified with Chlamydia trachomatis should be referred (not specified) to discuss partner notification, where possible at initial diagnosis. An arbitrary cut off of 4 weeks is used to identify those sexual partner(s) potentially at risk if the index patient is symptomatic. An arbitrary cut off of 6 months or until the last previous sexual partner is used if index patients are asymptomatic (common sense needs to be used in assessing which sexual partner(s) may have been at risk in this situation). Method of partner referral may be patient led or provider led if the index patient is unwilling to undertake it. Those at risk should be informed and invited to attend for evaluation and epidemiological treatment even if tests are negative. The method of partner notification agreed for each partner/contact identified should be documented. At subsequent follow up, partner notification outcomes should be ascertained and documented.</td>
<td>Limitations: 1) Search strategy to specific; 2) Results of systematic review insufficiently reported; 3) Unable to locate systematic review; 4) Consensus method not reported. Interpretation: The recommendations of this low quality guideline are unspecific. All patients with chlamydia should receive some kind of partner notification.</td>
<td>Applicability: 2 (UK guideline; unspecific recommendations)</td>
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<tr>
<td>(FitzGerald et al. 1996) PN 773</td>
<td>National Audit Development Project, UK Health Advisers in Sexually Transmitted Diseases</td>
<td>Gonorrhoea (National standards for contact tracing in gonorrhoea)</td>
<td>n/r</td>
<td>Each clinic should provide health adviser with adequate time, sufficient administrative support and soundproof rooms. Partner notification should be discussed with all patients diagnosed with gonorrhoea at the time of treatment and all patients should be referred to health adviser. Failure or refusal to see health adviser should be documented and</td>
<td>Limitations: 1) No systematic review reported; 2) Consensus method not reported; 3) ≥ 10 years old. Interpretation: The recommendations of this very low quality guideline are unspecific.</td>
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</table>
partner notification undertaken by doctor. Work of the health adviser should follow a protocol agreed upon by health adviser and doctor. The whole process of partner notification should be documented. Full sexual history should be obtained for relevant period (not specified). Protocol should specify: action to be taken for each contact (e.g., type of referral), follow up of partner notification. Use of contact slips is encouraged.

| (Millson et al. 1994) | PN 879 | Federal-provincial Advisory Committee on Community Health, Canada | Sexually transmitted infections (Partner notification for sexually transmitted diseases) | Systematic review (see (Oxman et al. 1994)) Expert opinions of the authors Survey of partner notification practices in Canada (Rasooly et al. 1994) | Authors not convinced that there is compelling reason to have different partner notification strategies for different infections. Recommendations therefore relate to every STI. Training of health care providers to enhance appropriate partner notification. Patient referral is considered to be the minimum. If index patient requests assistance, health care provider should notify partners with or without index patient present. Follow-up with index patient to assess effectiveness of notification and repeat offer to assist. Mandatory provider notification in situations where clearly the risk to the partner who is unaware is sufficient and ability of the index patient is considered inadequate. Mandatory naming of partners as an initial part of any partner notification should be discouraged. | Limitations: 1) Consensus method not reported; 2) ≥ 10 years old. Interpretation: This fair quality guideline recommends patient referral as standard method of partner notification. In case of index patient's unwillingness partners should be notified by the health care provider. Applicability: 2 (US guideline; unspecific recommendations) |
| (Centers for Disease Control and Prevention (CDC) et al. 2003) | PN 165 | Centers for Disease Control and Prevention, USA Health Resources and Services Administration, USA National Institutes of Health, USA HIV Medicine Association of the Infectious Diseases Society of America, USA | HIV (Incorporating HIV prevention in the management of HIV-infected persons) | Unclear | Unclear | Unclear | In HIV health-care settings, all applicable requirements for reporting sex and needle-sharing partners of HIV-infected patients to the appropriate health department should be followed. At the initial visit, patients should be asked if all of their sex and needle-sharing partners have been informed of their exposure to HIV. At routine follow-up visits, patients should be asked if they have had any new sex or needle-sharing partners who have not been informed of their exposure and to arrange for their notification and referral for HIV testing. In HIV health-care settings, access to available community partner counselling and referral resources should be established. | Limitations: 1) No systematic review reported; 2) Consensus method not reported; 3) ≥ 10 years old. Interpretation: The recommendations of this very low quality guideline are unspecific. All patients with HIV should receive some kind of partner notification. Applicability: 2 (US guideline; unspecific recommendations) |
Table 10: Characteristics of controlled trials of partner notification for gonorrhoea, chlamydia, or non-gonococcal urethritis

<table>
<thead>
<tr>
<th>Studies addressing primary outcomes</th>
<th>Study type</th>
<th>Participants, study duration</th>
<th>Setting</th>
<th>Topic question</th>
<th>Power</th>
<th>Interventions (I)</th>
<th>Control group (C)</th>
<th>Randomised Enrolled</th>
<th>Outcomes</th>
<th>Analysed</th>
<th>Partners or means</th>
<th>Effect estimate</th>
<th>Overall quality, comments, applicability to UK settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Golden et al. 2005) 2 GUM clinics in King County, WA, USA</td>
<td>RCTn/r</td>
<td>Gonorrhoea or chlamydia Women and heterosexual men with at least one partner with contact information Age mean: 23 y, Sep 1998 – Mar 2003</td>
<td>Treatment of partners To test if expedited partner treatment is effective in reducing persistent or recurrent infections Power: Yes (2 x 917)</td>
<td>Patient-delivered partner therapy [Ib] 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)</td>
<td>Overall: 2751 (♀: 2105; ♂: 646)</td>
<td>Patient referral [I] Advise index patients to tell partners to seek care and that care is free.</td>
<td>Overall: 2751</td>
<td>1. Proportion of index patients free of persistent or recurrent infection</td>
<td>I: 94% C: 90%</td>
<td>I: 90% C: 87% I: 93% C: 91%</td>
<td>1. ACC</td>
<td>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</td>
<td>Overall assessment: + Limitations: 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 not based on intention-to-treat principle but on available cases. Interpretation: Patient-delivered partner therapy plus condoms and additional information about STDs slightly reduces persistent infection rates in selected populations compared to minimal partner notification. Applicability: 3 (selected population, trial conducted in USA)</td>
</tr>
<tr>
<td>(Kissing et al. 2005) Public STD clinics in New Orleans, LA, USA</td>
<td>RCT, clusters</td>
<td>Gonorrhoea, Chlamydia</td>
<td>Referral and treatment of partners To test if patient-delivered Patient-delivered partner therapy [Ib] Packages for up to four partners containing</td>
<td>Patient referral [Ib] Instruction to tell their partners that they needed to go to a health care facility</td>
<td>Overall: 977 (♀: n/a; ♂: 977)</td>
<td>Overall: 977 (♀: n/a; ♂: 977)</td>
<td>Overall: 977 (♀: n/a; ♂: 977)</td>
<td>1. Proportion of index patients free of persistent or recurrent infection</td>
<td>I: 344</td>
<td>I: 94% C: 88% I: 94% C: 91% I: 94% C: 91% I: 94% C: 91%</td>
<td>1. ACC</td>
<td>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</td>
<td>Overall assessment: – Limitations: 1) Number of participants in the control group (PR arm) much lower compared to investigational arms; 2) Patients were</td>
</tr>
</tbody>
</table>

---

1. RCTn/r denotes to trials reported to be randomised trials but generation of sequence not reported.
2. Code in square-brackets relates to "levels of STD management" described in section 2.1.2. For a detailed description of interventions see Table 18 in Appendix
3. For a definition of outcomes see Table 19, if not stated otherwise denominator is index cases.
4. Intention to treat numbers extracted if possible. Analysis in original studies may be based on available-case analysis or similar. Numbers may therefore differ between this review and the original article.
5. Some outcomes were modified so that higher numbers denote better outcomes (e.g., 'number of index patients with persistent infections' was changed to 'number of index patients free of persistent infections')
6. Limitations relate to the topic of the review and might not be relevant for the trial itself.
Revised Review of effectiveness - partner notification

Rapid review – partner notification for sexually transmitted infections

Evidence tables

Men with at least one female partner
Age <24 y.: 48%
Dec 2001 – Mar 2004

1. Antibiotics), written instructions about how to take medication, adverse effects, and pager number of nurse for questions.
2. Patient referral + booklet [IIIb] (I2)
   Booklets containing tear-out cards with information for partner and treatment guidelines for health care professional.

For STD evaluation and treatment. I2: 348
C: 285

Power: n/r

Antibiotics), written instructions about how to take medication, adverse effects, and pager number of nurse for questions.

1. Patient referral + booklet [IIIb] (I2)
   Booklets containing tear-out cards with information for partner and treatment guidelines for health care professional.

2. Partners treated
   I: 11: 1.14
   I2: 0.93
   C: 0.71

3. Partners elicited
   I: 11: 2.05
   I2: 2.03
   C: 2.03

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 minimal patient referral. However, PDPT was not different to (enhanced) patient referral.

Applicability: 2 (relatively simple intervention; trial conducted in USA)

Overall assessment: +

Limitations: 1) Patients in the intervention group received more information about chlamydia and STDs to deliver to their partners.

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.

Applicability: 2 (relatively simple intervention; trial conducted in USA)

Overall assessment: –

Limitations: 1) Randomisation was to a

(Pennings 2003) RCT
Clustering
Group A
Group B

n=50
n=50

PATIENTS

Index patients instructed to tell partners he had been exposed to chlamydial infection, encourage him to seek treatment, and to offer packets; maximum of 4 packets to deliver to partners (content: individually labelled antibiotics, drug information, fact sheet about Chlamydia, advice to abstain from intercourse for 7 days, contact information of health care provider)

Index patient were advised to tell partner that he had been exposed to chlamydia, he should seek treatment, and information sheet for each partner stating that he had been exposed to a STD and contact information of clinics.

Overall: 1889
I: 946
C: 943

Proportion of index patients free of persistent or recurrent infections

1. ACA:
   I: 88%
   C: 85%
   ITT: 89%

2. ACC
   I: 11.5
   C: 22.1

3. I vs. C 11 per person year (95%-CI: 4 to 18; p<0.05);

Overall assessment: –

Limitations: 1) Patients in the intervention group received more information about chlamydia and STDs to deliver to their partners.

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.

Applicability: 2 (relatively simple intervention; trial conducted in USA)

Overall assessment: –

Limitations: 1) Randomisation was to a
### Rapid review – partner notification for sexually transmitted infections

#### Evidence tables

<table>
<thead>
<tr>
<th>Study Details</th>
<th>Design</th>
<th>Participants</th>
<th>Referral of partners</th>
<th>Patient referral + education [unclear]</th>
<th>Patient referral with contact cards [Hfca]</th>
<th>Overall</th>
<th>Partners treated</th>
<th>n/a</th>
<th>n/a</th>
<th>n/a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Katz et al. 1988 (PN 2379)</td>
<td>RCT, USA clinic in USA NGU Heterosexual men Age n/r Dates of the study n/r (6 months in mid 1980s)</td>
<td>Referral of partners To compare different methods of partner referral. Power: n/r</td>
<td>Patient referral + counselling [unclear] (I1) Disease intervention specialist gathers names of partners, but no other identifying information with subsequent patient referral</td>
<td>Patient referral with contact cards [Hfca] Patient referral with nurse providing health education, referral letters, and follow-up.</td>
<td>Overall: 678 &lt;br&gt; C: 217</td>
<td>1. Partners treated</td>
<td>I: 240 &lt;br&gt; I2: 221 &lt;br&gt; C: 217</td>
<td>I: 0.18 &lt;br&gt; I2: 0.72 &lt;br&gt; C: 0.22</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td>1. Mean difference favouring C (vs. I1): -0.04 (95%-CI: -0.12 to 0.04); Mean difference favouring I2 (vs. C): 0.50 (95%-CI: 0.37 to 0.63)</td>
<td>Overall assessment: – Limitations: 1) Data were also extracted from Mathews 2001; 2) Definition of outcomes unclear but probably favouring provider referral group. 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. Applicability: 3 (time-consuming method of provider referral, trial conducted in USA)</td>
<td></td>
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</tr>
</tbody>
</table>

**Interpretation:** Patient-delivered partner therapy might reduce the number of recurrent infections compared to partner referral.

**Applicability:** 2 (relatively simple intervention; trial conducted in USA)

---

(--) 178; (--) n/a

---

1) Power: n/r
2) Analysis based on available-case principle.
3) 70% of index patients were retested for chlamydia.

---

1. Partners treated
2. Partners infected
3. Partners elicited

---

1. Mean difference favouring C (vs. I1): -0.04 (95%-CI: -0.12 to 0.04); Mean difference favouring I2 (vs. C): 0.50 (95%-CI: 0.37 to 0.63)
2. Mean difference of I1 vs. C: 0.00 (95%-CI: -0.03 to 0.03); Mean difference favouring I1 (vs. C): 0.06 (95%-CI: 0.01 to 0.11)
3. Mean difference favouring C (vs. I1): -0.41 (95%-CI: -0.59 to -0.23); Mean difference favouring C (vs. I2): -0.36 (95%-CI: -0.55 to -0.17)

---

Overall assessment: – Limitations: 1) No details on
Revised Review of effectiveness - partner notification

Rapid review – partner notification for sexually transmitted infections

Evidence tables

PN 2381

Gonorrhoea

Men

Age n/r

05/1984-

01/1985

To compare different methods of partner referral.

Power: n/r

Patient referral with contact cards and educational videotape

Patient referral with contact cards

I: 456

C: 446

Revised Review of effectiveness - partner notification 111 of 167

Rapid review – partner notification for sexually transmitted infections

Evidence tables

PN 2377

RCT*, individuals

Public health clinic in USA

Gonorrhoea

Sex n/r

Age n/r

Dates of study n/r

Referral of partners

To test different forms of referring partners.

Power: n/r

Patient referral with contact cards and standard interview plus educational pamphlet and health education.

Patient referral + education [unclear] (II)

Patient referral with contact cards and standard interview.

1. Persistent or recurrent infections

2. Partners infected

3. Partners tested

4. Partners elicited

Overall: 1898

I: 333

C: 302

I: 634

C: 632

I: 632

C: 632

I: 634

C: 632

I: 634

C: 632

I1: 634

I2: 632

C: 632

1. I1 vs. C: Δ = -1.3%; 95%-CI: % -5.5% to 2.7%; I2 vs. C: Δ = -0.1%; 95%-CI % -4.2% to 4.3%; I1 vs. I2: Δ = -1.4%; 95%-CI % -5.4% to 2.5%

2. Mean difference favouring I1 vs. C: 0.01 (95%-CI: -0.04 to 0.06); Mean difference favouring I2 vs. C: 0.13 (95%-CI: 0.07 to 0.19); I1 vs. I2: 0.01 (95%-CI: 0.06 to 0.18)

3. Mean difference of I1 vs. C: 0.0 (95%-CI: -0.07 to 0.07); Mean difference favouring I2 vs. C: 0.25 (95%-CI: 0.17 to 0.33); I1 vs. I2: 0.25 (95%-CI: 0.17 to 0.33)

4. Mean difference of I1 vs. C: 0.0 (95%-CI: -0.20 to 0.20); Mean difference favouring C vs. I2: -0.40 (95%-CI: -0.59 to -0.21); I1 vs. I2: -0.40 (95%-CI: -0.59 to -0.21)

Overall assessment:

Unclear

Limitations:

1) This is an unpublished trial. Data were extracted from Mathews 2001 and an internal report. No assessment of methodology possible.

Interpretation:

Contract referral might increase the number of partners who get tested compared to standard and counselling-enhanced patient referral.

Applicability:

3 (trial conducted in USA; since trial is unpublished applicability remains uncertain)

PN 674

CCT, individuals

General practices in Aarhus County, Denmark

Chlamydia

Testing of partners

To test if home sampling of

Home sampling [unclear]

Index patients take an envelope to male partner containing

Practice sampling [unclear]

Index patients take an envelope to male partner containing

Overall: 96

I: 45

C: 51

1. Partners tested

I: 45

C: 51

I: 0.98

C: 0.37

1. I better than C (p<0.01; based on proportion of tested partners / contacted partners = 68% vs.

Overall assessment:

Unclear

Limitations:

1) Short report limiting assessment of methodology; 2) Allocation by date of birth.
<table>
<thead>
<tr>
<th>Women</th>
<th>Age n/r</th>
<th>Dates not reported</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

- 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.

- Mean difference favouring I: 0.13 (95%-CI: -0.03 to 0.20)
- Mean difference favouring I: 0.11
- Mean difference favouring I: 5.1 days (95%-CI: -1.6 to 11.8 days)

### 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.

### Limitations:
- 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 to be very unlikely to be successful in this setting (communication between index patient and partners; index patients may have opened the kits).

### 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.

### Limitations:
- 1) Data were also extracted from Mathews 2001; 2) Trial conducted in 1975; 3) 9 of the infected partners in intervention group were also extracted from Mathews 2001.}

### Applicability:
- 2 (simple intervention; trial conducted in Denmark)
### Referral of partners

**To test if incentive increases effectiveness of patient referral**

**Power:** n/r

**Patient referral + incentive**

Counselling session by nurse or physician plus a selection of contact cards (different styles) containing information about the relevant STD plus request for seeking health care (not specified where) to be given to partners. If partner referral successful 3S charge for health care at health service was waived for index patient and partner.

### Contract referral

**[IV]** Counselling session by nurse or physician plus a selection of contact cards (different styles) containing information about the relevant STD plus request for seeking health care (not specified where) to be given to partners. If partner referral not successful a professional at health service (same sex as partner) contact partners by telephone within 5 days.

### Referral to health adviser at GUM clinic

**at GUM clinic [IIb]**

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 assessment:

**– Limitations:** 1) Very small study; 2) Selected population of university students only having partners at same university. **Applicability:** 3

### Overall assessment:

**++ Limitations:** 1) Percentage of patients not receiving intervention in control group is high (ca. 31%); 2) Relatively small study. **Applicability:** 2 (relatively

---

**Evidence tables**

<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Population</th>
<th>Referral method</th>
<th>Outcome</th>
<th>Power</th>
<th>Applicability</th>
<th>Limitations</th>
<th>Applicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Montesinos et al. (1999)</td>
<td>RCT, individuals</td>
<td>Health service of large midwestern university, USA Gonorrhoea, NGU Female and male students with partners at same university</td>
<td>Referral of partners</td>
<td>To test if incentive increases effectiveness of patient referral</td>
<td>Power: n/r</td>
<td>Based on partner notification</td>
<td>Percentage of patients not receiving intervention in control group is high (ca. 31%); Relatively small study.</td>
<td>3</td>
</tr>
<tr>
<td>Low et al. (2005)</td>
<td>RCT, individual</td>
<td>GPs and GUM clinics in UK</td>
<td>Referral of partners</td>
<td>To test if partner notification by trained practice nurses and health advisers is effective.</td>
<td>Power: Yes (2 x 10^7)</td>
<td>Reference based partner notification with referral of partners by index patients is at least as effective as referring partners to GUM clinic (various referral methods).</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

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**Interpretation:**

- Contract referral might not increase the number of partners who get tested or treated.
0.6) simple intervention; trial conducted in the UK
### Table 11: Characteristics of controlled trials and other comparative evidence of partner notification for syphilis

<table>
<thead>
<tr>
<th>First author</th>
<th>Study type</th>
<th>Setting, Participants, study duration</th>
<th>Topic question Power</th>
<th>Control group (C)</th>
<th>Randomised Enrolled</th>
<th>Outcomes</th>
<th>Analysed</th>
<th>Partners or means</th>
<th>Effect estimate</th>
<th>Overall quality, comments, applicability to UK settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Peterman et al. 1997) RCT, individuals</td>
<td>PN 702</td>
<td>Not reported, individuals</td>
<td>Referral of partners To test effectiveness of different forms of partner referral Power: Yes (3 x 172)</td>
<td>No control group</td>
<td>Overall: 1966 (♀: 928; ♂: 1038)</td>
<td>1. Partners treated</td>
<td>1. I1: 586</td>
<td>I1: 0.67</td>
<td>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</td>
<td>Overall assessment: – Limitations: 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. Applicability: 3 (time-consuming and costly intervention only applicable in GUM clinic)</td>
</tr>
<tr>
<td>Dec 1990 – Mar 1993</td>
<td></td>
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<tr>
<td>Referral of partners Contracting index cases to notify partners within 2 days otherwise disease intervention specialist notifies partners on third day.</td>
<td>No control group</td>
<td></td>
<td>2. Partners infected</td>
<td>2. I1: 586</td>
<td>I1: 0.20</td>
<td>2. Mean difference favouring I1 (vs. I2): 0.10; Mean difference favouring I1 (vs. I3): 0.10; Mean difference favouring I3 (vs. I2): 0.01</td>
<td></td>
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<tr>
<td>Referral+field notification Disease intervention specialist notifies sex partners.</td>
<td></td>
<td></td>
<td>2. I2: 742</td>
<td>I2: 0.15</td>
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<td></td>
<td></td>
<td></td>
<td>2. I3: 638</td>
<td>I3: 0.13</td>
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<tr>
<td></td>
<td></td>
<td>3. Partners tested</td>
<td>3. I1: 586</td>
<td>I1: 0.92</td>
<td>3. Mean difference favouring I1 (vs. I2): 0.20; Mean difference favouring I1 (vs. I3): 0.20; Mean difference favouring I3 (vs. I2): 0.01</td>
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<td></td>
<td></td>
<td></td>
<td>3. I2: 742</td>
<td>I2: 1.2</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>3. I3: 638</td>
<td>I3: 1.06</td>
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<td></td>
<td>4. Partners contacted</td>
<td>4. I1: 586</td>
<td>I1: 1.02</td>
<td>4. Mean difference favouring I1 (vs. I2): 0.05; Mean difference favouring I1 (vs. I3): 0.05; Mean difference favouring I3 (vs. I2): 0.05</td>
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<td>4. I2: 742</td>
<td>I2: 1.14</td>
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<tr>
<td></td>
<td></td>
<td>5. Partners elicited</td>
<td>5. I1: 586</td>
<td>I1: 1.00</td>
<td>5. Mean difference favouring I1 (vs. I2): 0.04; Mean difference favouring I1 (vs. I3): 0.04; Mean difference favouring I3 (vs. I2): 0.04</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>5. I2: 742</td>
<td>I2: 1.2</td>
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<td></td>
<td></td>
<td></td>
<td>5. I3: 638</td>
<td>I3: 1.4</td>
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</tr>
</tbody>
</table>

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7 RCTn’s denotes to trials reported to be randomised trials but generation of sequence not reported.
8 Code in square-brackets relates to "levels of STD management" described in section 2.1.2. For a detailed description of interventions see Table 18 in Appendix
9 For a definition of outcomes see Table 19, if not stated otherwise denominator is index cases.
10 Intention to treat numbers extracted if possible. Analysis in original studies may be based on available-case analysis or similar. Numbers may therefore differ between this review and the original article.
11 Some outcomes were modified so that higher numbers denote better outcomes (e.g., ‘number of index patients with persistent infections’ was changed to ‘number of index patients free of persistent infections’)
12 Limitations relate to the topic of the review and might not be relevant for the trial itself.
<table>
<thead>
<tr>
<th>Study</th>
<th>Before-After</th>
<th>Referral of partners</th>
<th>Provider referral</th>
<th>Provider referral?</th>
<th>Cases linked to another case identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ogilvie et al. (2005)</td>
<td>PN 40</td>
<td>Street nurses in Vancouver, Canada</td>
<td>Syphilis Sex n/r (probably both sexes) Age n/r Oct 2000 – Mar 2002 versus Apr 2002 – Sep 2003</td>
<td>Complex intervention to enhance identification of partners and index patients (especially 'on the street').</td>
<td>All cases from British Columbia Centre for Disease Control in time period</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>1: I: 32% (104/321) C: 24% (60/249)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1. Absolute difference 8% (p=0.03)</td>
</tr>
<tr>
<td>Engelgau et al. (1995)</td>
<td>PN 826</td>
<td>STD clinics, Montgomery County, USA</td>
<td>Syphilis Women and men Age n/r 1990 – 1991</td>
<td>Provider referral by DIS</td>
<td>Partner referral To describe the yield of new cases from index case interviews</td>
</tr>
<tr>
<td></td>
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<td>Campaign: increase in number of DIS and opening hours of STD clinics</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>78 (Before-campaign) 151 (campaign)</td>
</tr>
<tr>
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<td></td>
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<td></td>
<td>1: I: 78 C: 151</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td>1. 2.5 (Before-campaign) vs. 3.9 (campaign) 2. 0.37 (Before-campaign) vs. 0.48 (campaign)</td>
</tr>
<tr>
<td></td>
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<td></td>
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<td></td>
<td>1. p&lt;0.01 2. p=0.66</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td>Overall assessment: –</td>
</tr>
<tr>
<td></td>
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<td>Comments: 1) Campaign unclear.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Applicability: 3 (US study; no description of campaign)</td>
</tr>
</tbody>
</table>
### Table 12: Characteristics of controlled trials of partner notification for HIV

<table>
<thead>
<tr>
<th>First author date ID</th>
<th>Study type</th>
<th>Setting, Participants, study duration</th>
<th>Topic question Power</th>
<th>Interventions (I)</th>
<th>Control group (C)</th>
<th>Randomised Enrolled</th>
<th>Outcomes</th>
<th>Analysed</th>
<th>Partners or means</th>
<th>Effect estimate</th>
<th>Overall quality, comments, applicability to UK settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Landis et al. 1992)</td>
<td>RCTn/r</td>
<td>Large health departments in North Carolina, USA</td>
<td>HIV</td>
<td>Referral of partners</td>
<td>Provider referral</td>
<td>Overall: 74 (♂: 23; ♀: 51)</td>
<td>1. Partners tested</td>
<td>1. I: 39</td>
<td>C: 35</td>
<td>Mean difference favouring I: 0.78</td>
<td></td>
</tr>
<tr>
<td>PN 1041</td>
<td></td>
<td>Women and men knowing at least one name of partner</td>
<td>Age mean: 30 y. Nov 1988 – Jun 1990</td>
<td>Referral of partners</td>
<td>Patient referral [IIa]</td>
<td>I: 39</td>
<td>C: 35</td>
<td>Mean difference favouring I: 0.20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2. Partners infected</td>
<td>2. I: 39</td>
<td>C: 35</td>
<td>3. Better than C (p&lt;0.001; based on proportion of partners contacted / partners elicited = 50% vs. 7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3. Partners contacted</td>
<td>3. I: 2</td>
<td>C: 0.29 + 1.2 contacted by counsellor</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13 RCTn/r denotes to trials reported to be randomised trials but generation of sequence not reported.
14 Code in square-brackets relates to "levels of STD management" described in section 2.1.2. For a detailed description of interventions see Table 18 in Appendix
15 For a definition of outcomes see Table 19; if not stated otherwise denominator is index cases.
16 Intention to treat numbers extracted if possible. Analysis in original studies may be based on available-case analysis or similar. Numbers may therefore differ between this review and the original article.
17 Some outcomes were modified so that higher numbers denote better outcomes (e.g., 'number of index patients with persistent infections' was changed to 'number of index patients free of persistent infections')
18 Limitations relate to the topic of the review and might not be relevant for the trial itself.
Table 13: Quality assessment of controlled trials of partner notification

<table>
<thead>
<tr>
<th>First author, date</th>
<th>1.1 Appropriate and clearly focused question</th>
<th>1.2 Random assignment</th>
<th>1.3 Concealment method</th>
<th>1.4 Subjects, investigators, and outcome assessors blinded</th>
<th>1.5 Baseline comparison</th>
<th>1.6 Differences in treatment of intervention and control groups</th>
<th>1.7 Outcome measurement</th>
<th>1.8 Percentage dropped out before completion (per outcome)</th>
<th>1.9 Intention to treat analysis</th>
<th>1.10 Comparability in multicentre studies</th>
<th>2.1 Overall assessment</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Golden et al. 2005) PN 35</td>
<td>Well covered</td>
<td>Not reported/unclear</td>
<td>Not reported/unclear</td>
<td>Not addressed</td>
<td>Well covered</td>
<td>Adequately addressed</td>
<td>Adequately addressed</td>
<td>Re-infection: 32% (891/2751) Partners treated: 33% (918/2751)</td>
<td>Not addressed</td>
<td>Not applicable</td>
<td>+</td>
<td>Inclusion criteria required that index patients had contact information for at least one partner limiting its comparability to other studies. In addition, analyses are not based on all patients randomised but on cases with available information (available case analysis). Reporting of methods is poor (no information about randomisation, allocation procedure, analyses approach). In the PDPT group patients were provided with condoms and background info regarding STD but not in control group.</td>
</tr>
<tr>
<td>(Kissinger et al. 2005) PN 2342</td>
<td>Well covered</td>
<td>Poorly addressed</td>
<td>Poorly addressed</td>
<td>Not addressed</td>
<td>Adequately addressed</td>
<td>Well covered</td>
<td>Poorly addressed</td>
<td>Re-infection: 70% (688/977) Partners treated/elicited: 20% (195/977)</td>
<td>Not addressed</td>
<td>Not addressed</td>
<td>–</td>
<td>No concealed allocation. Patients were allocated according to month of admission and months were randomised to the interventions. Number of participants in the control group (PR arm) much lower compared to investigational arms. Method of outcome assessment in BEPR and PR arm unclear. Reporting of outcomes/effect sizes unclear.</td>
</tr>
<tr>
<td>(Schilling et al. 2003) PN 2356</td>
<td>Well covered</td>
<td>Not reported/unclear</td>
<td>Well covered</td>
<td>Not addressed</td>
<td>Well covered</td>
<td>Adequately addressed</td>
<td>Adequately addressed</td>
<td>Re-infection: 23% (435/1889)</td>
<td>Well covered</td>
<td>Adequately addressed</td>
<td>+</td>
<td>The methodological quality of the study is good. However, patients in the PDPT arm received more information about C. trachomatis and STDs to deliver to their patients. Therefore, it is unclear if</td>
</tr>
</tbody>
</table>

19 Drop-outs may differ for different outcomes. In addition, for some interventions no drop-outs are expected or part of the outcome e.g. in case of provider referral where the outcome is not verified via the index patient (labelled by n/a).
<table>
<thead>
<tr>
<th>Study Reference</th>
<th>Quality</th>
<th>Reporting of Methods</th>
<th>Effectiveness</th>
<th>Re-infection</th>
<th>Other Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kissinger et al. (1998) PN 1738</td>
<td>Adequately addressed</td>
<td>Not applicable</td>
<td>Poorly addressed</td>
<td>Adequately addressed</td>
<td>Re-infection: 30% (78/256)</td>
</tr>
<tr>
<td>(Katz et al. 1988 PN 2379)</td>
<td>Adequately addressed</td>
<td>Not applicable</td>
<td>Poorly addressed</td>
<td>Adequately addressed</td>
<td>n/a</td>
</tr>
<tr>
<td>Solomon et al. 1988 PN 2381</td>
<td>Adequately addressed</td>
<td>Unclear</td>
<td>Well covered</td>
<td>Adequately addressed</td>
<td>n/r</td>
</tr>
<tr>
<td>Cleveland 2001 PN 2377</td>
<td>Adequately addressed</td>
<td>Poorly addressed</td>
<td>Not applicable</td>
<td>Adequately addressed</td>
<td>n/r (0%)</td>
</tr>
<tr>
<td>Andersen et al. (1998) PN 674</td>
<td>Adequately addressed</td>
<td>Poorly addressed</td>
<td>Not applicable</td>
<td>Well covered</td>
<td>n/a</td>
</tr>
<tr>
<td>Ostergaard et al. 2003 PN 2372</td>
<td>Adequately addressed</td>
<td>Poorly addressed</td>
<td>Not applicable</td>
<td>Well covered</td>
<td>n/a</td>
</tr>
<tr>
<td>Potter et al. (1977) PN 2380</td>
<td>Adequately addressed</td>
<td>Poorly addressed</td>
<td>Not applicable</td>
<td>Well covered</td>
<td>n/a</td>
</tr>
</tbody>
</table>

The reduction of chlamydial infections is due to PDPT or the additional information provided to the partners.
<table>
<thead>
<tr>
<th>Study Reference</th>
<th>Adequately covered</th>
<th>Not reported/unclear</th>
<th>Poorly addressed</th>
<th>Not addressed</th>
<th>Not reported/unclear</th>
<th>Well covered</th>
<th>n/a</th>
<th>Not reported/unclear</th>
<th>Not applicable</th>
<th>Outcome Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Montesinos et al. 1990) PN 1127</td>
<td>Adequately covered</td>
<td>Not reported/unclear</td>
<td>Poorly addressed</td>
<td>Not addressed</td>
<td>Not reported/unclear</td>
<td>Well covered</td>
<td>n/a</td>
<td>Not reported/unclear</td>
<td>Not applicable</td>
<td>Very small study in a highly selected population. Reporting of methods poor limiting assessability. Reporting of results only by means and percentages. Calculations of absolute numbers susceptible to errors.</td>
</tr>
<tr>
<td>(Low et al. 2005) PN 2368</td>
<td>Well covered</td>
<td>Well covered</td>
<td>Well covered</td>
<td>Well covered</td>
<td>Well covered</td>
<td>Well covered</td>
<td>Partners treated: 26% (36/140)</td>
<td>Well covered</td>
<td>Not addressed</td>
<td>++ The study was designed to randomise 107 participants (index cases) in each arm. However, only 72 and 68 respectively were randomised in the study. No comment regarding the lower number is available in the article. However, the study was designed to superiority of referral arm. Results indicate that practice nurses are at least as effective as health adviser.</td>
</tr>
<tr>
<td>(Peterman et al. 1997) PN 702</td>
<td>Adequately covered</td>
<td>Well covered</td>
<td>Poorly addressed</td>
<td>Not addressed</td>
<td>Well covered</td>
<td>Well covered</td>
<td>n/a</td>
<td>Well covered</td>
<td>Well covered</td>
<td>Group assignment was not concealed. The number of participants in the three groups is very different. 9% (103/1,184) of patients in groups I and II was drawn blood in the field although this was not allowed in these groups resulting in potential reduction of group differences. The contract referral arm was not very different given that index cases had only 2 days to notify partners before provider started to notify them.</td>
</tr>
<tr>
<td>(Landis et al. 1992) PN 1041</td>
<td>Adequately covered</td>
<td>Not reported/unclear</td>
<td>Not reported/unclear</td>
<td>Not addressed</td>
<td>Not reported/unclear</td>
<td>Well covered</td>
<td>n/a</td>
<td>Not reported/unclear</td>
<td>Poorly addressed</td>
<td>Reporting of methodology poor. Only a small fraction of screened and eligible patients recruited in the study limiting its external validity. Both interventions were some kind of contract referral.</td>
</tr>
</tbody>
</table>
It is unclear what the public health counsellor did in the control group if partners did not come to health department within one month.

<table>
<thead>
<tr>
<th>Other comparative</th>
<th>Adequately addressed</th>
<th>Not applicable</th>
<th>Not applicable</th>
<th>Not addressed</th>
<th>Not addressed</th>
<th>Not addressed</th>
<th>Adequately addressed</th>
<th>0%</th>
<th>Not applicable</th>
<th>Adequately addressed</th>
<th>Not applicable</th>
<th>Adequately addressed</th>
<th>0%</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Ogilvie et al. 2005) PN 40</td>
<td>Adequately addressed</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not addressed</td>
<td>Not addressed</td>
<td>Not addressed</td>
<td>Adequately addressed</td>
<td>0%</td>
<td>Not applicable</td>
<td>Adequately addressed</td>
<td>Not applicable</td>
<td>Adequately addressed</td>
<td>0%</td>
<td>Not applicable</td>
</tr>
<tr>
<td>(Engelgau et al. 1995) PN 826</td>
<td>Adequately addressed</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not addressed</td>
<td>Well covered</td>
<td>Not addressed</td>
<td>Adequately addressed</td>
<td>0%</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Adequately addressed</td>
<td>0%</td>
<td>Not applicable</td>
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</tbody>
</table>
Table 14: Characteristics of other evidence of partner notification

<table>
<thead>
<tr>
<th>First author date ID</th>
<th>Study type</th>
<th>Special group</th>
<th>Setting, Participants, study duration</th>
<th>Topic Study question</th>
<th>Interventions (I)</th>
<th>Sampling method</th>
<th>Eligible Included Analysed</th>
<th>Outcomes</th>
<th>Quantitative results&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Effect size or qualitative results</th>
<th>Overall quality, comments, applicability to UK settings&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Evans et al. Chart 2004) PN 121</td>
<td>Non-specialist health-care setting</td>
<td>FPC outer London, UK Chlamydia, non-specific urethritis Sex n/r Age n/r Dec 2000 – Feb 2001; Dec 2001 – Feb 2002</td>
<td>Referral of partners To test the feasibility of managing STIs in community FPCs.</td>
<td>Patient referral [IIIb] Patient referral with contact slips</td>
<td>All diagnosed patients included</td>
<td>44 (♀: n/r; ♂: n/r) 44 (37 received PN) 44</td>
<td>1. Partners tested 1. 0.43 (39/44) n/a</td>
<td>Overall assessment: Comments: 1) Small study; 2) Follow-up of index patients unclear; 3) Result comparable to other studies in GUM settings. Applicability: 2 (FPC in UK)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Beddard et al. 2003) PN 183</td>
<td>Observational study</td>
<td>GUM clinic in teenage pregnancy unit and GUM clinic in Withington Hospital both in Manchester, UK STIs (chlamydia 34%) Age≤ 19 y: 48% Oct 2000 – Mar 2001</td>
<td>GUM clinic in non-specialist setting To investigate whether situating a GUM clinic within a teenage pregnancy unit is successful compared to traditional setting</td>
<td>Provider referral by health adviser Provider referral by health adviser in GUM clinic in teenage pregnancy clinic Provider referral by health adviser in specialist setting</td>
<td>All patients seen by health adviser included</td>
<td>Teen: 93 (attended clinic) (♀: 76; ♂: 17) 60 (seen by health adviser) 26 (PN by health adviser) Specialist setting: 2081</td>
<td>1. Partners tested 1. Teen: 0.69 (18/26); 82% (18/22) of elicited partners vs. 69% in specialist setting 2. Partners elicited 2. 0.85 (22/26) 82% versus 69%; p=0.50</td>
<td>Overall assessment: Comments: 1) Very low number of patients. Applicability: 2 (UK setting)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Jones et al. 2002) PN 262</td>
<td>Observational study</td>
<td>Community young people's clinic and GUM clinic at Royal Liverpool University both in Liverpool, UK</td>
<td>Provider referral [IIIb] Interview and advise about the need for testing of partners provided by health adviser</td>
<td>Patient referral [IIIb] Interview and advise about the need for testing of partners provided by health adviser</td>
<td>All diagnosed included (community clinic) All diagnosed in 10/1999 (GUM)</td>
<td>GUM: 25 63 63</td>
<td>1. Partners treated 1. 0.62 2. 0.35 vs. 0.28 2. n/r</td>
<td>Overall assessment: Comments: 1) Small study. Applicability: 3 (no baseline characteristics reported)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>20</sup> Code in square-brackets relates to "levels of STD management” described in section 2.1.2. For a detailed description of interventions see Table 18 in Appendix

<sup>21</sup> If possible, absolute numbers and percentages were extracted or calculated. Otherwise only percentages are given.

<sup>22</sup> Limitations relate to the topic of the review and might not be relevant for the trial itself.
<table>
<thead>
<tr>
<th>Study</th>
<th>Setting</th>
<th>Qualitative Description</th>
<th>Quantitative Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>James et al. (1999)</td>
<td>Nottingham, UK</td>
<td>Chlamydia Females Age &lt; 20 y.</td>
<td>100% Aug 1999 – Mar 2000 Young people's clinic versus GUM clinic</td>
</tr>
<tr>
<td>Alary et al. (1991)</td>
<td>Quebec, Canada</td>
<td>Community health department</td>
<td>104 (60 nurse; 44 physician) 1. Proportion of partners tested positive per partners elicited: 50% (54/108; nurse) vs. 20% (7/35; physician) 2. Partners treated: 2.55 (nurse) vs. 1.59 (physician) p=0.002; RR=2.5 (95%-CI: 1.26 to 4.98) p=0.0042 (Sex distribution was different in both groups: stratified analysed by sex: 2.38 vs. 1.21; p=0.0001)</td>
</tr>
<tr>
<td>Eitrem et al. (1998)</td>
<td>Various health settings, Sweden</td>
<td>Various age ranges</td>
<td>159 149 80 (37 social worker; 43 health professional) 1. Partners elicited: 2.6 (social worker) versus 1.5 (health professional) 1. p&lt;0.01</td>
</tr>
</tbody>
</table>
### Rapid review – partner notification for sexually transmitted infections

#### Evidence tables

<table>
<thead>
<tr>
<th>Study</th>
<th>Type</th>
<th>Setting</th>
<th>Gender</th>
<th>Sex</th>
<th>Patient referral</th>
<th>Patient referral</th>
<th>First 400 cases in each period</th>
<th>1. Proportion with ≥ 0.6 partners treated</th>
<th>1. ≤ 25 y.: 42% (128/303)</th>
<th>1. p = 0.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ross et al. 1999</td>
<td>Observatio</td>
<td>GUM clinic Birmingham, UK</td>
<td>Women and men</td>
<td>Homosexual: 29</td>
<td>Health adviser for contact tracing and 2-week follow-up</td>
<td>Health adviser for contact tracing and 2-week telephone follow-up</td>
<td>800 (♀: 390; ♂: 410)</td>
<td>800 (♀: 25y.; &gt; 25y: 497; black: 340; white: 350)</td>
<td>p &lt; 0.001</td>
<td>Overall assessment: +</td>
</tr>
<tr>
<td>Rogstad et al. 1999</td>
<td>Audit/char</td>
<td>GUM clinic Nottingham, UK</td>
<td>Men</td>
<td>MSM: 36</td>
<td>Provider referral</td>
<td>Health adviser with help of contact slips</td>
<td>196 (gonorrhoea) 417 (chlamydia)</td>
<td>32% (62/196; gonorrhoea); 33% (139/417; chlamydia)</td>
<td>1.56 (MSM) vs. 1.38 (hetero)</td>
<td>Overall assessment: ++</td>
</tr>
<tr>
<td>David et al. 1997</td>
<td>Audit/char</td>
<td>STD clinic Coventry, UK</td>
<td>Men</td>
<td>MSM: 36</td>
<td>Choice of patient or provider referral</td>
<td>Both guided by health adviser</td>
<td>237 (36 MSM; 201 heterosexual)</td>
<td>1.56 (MSM) vs. 1.63 (non-MSM)</td>
<td>n/r</td>
<td>Overall assessment: ++</td>
</tr>
</tbody>
</table>

#### Barriers

<table>
<thead>
<tr>
<th>Study</th>
<th>Type</th>
<th>Setting</th>
<th>Gender</th>
<th>Race</th>
<th>Socioeconomic status</th>
<th>Sexual orientation</th>
<th>Proportion of index patients with all partners tested</th>
<th>Factors associated with all partners treated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ross et al. 1999</td>
<td>Observatio</td>
<td>GUM clinic Birmingham, UK</td>
<td>Women and men</td>
<td>Homosexual: 29</td>
<td></td>
<td></td>
<td>32% (62/196; gonorrhoea); 33% (139/417; chlamydia)</td>
<td>Gonorrhoea: &gt; 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 &lt; 25 y.; socioeconomic status; sexual orientation</td>
</tr>
<tr>
<td>Rogstad et al. 1999</td>
<td>Audit/char</td>
<td>GUM clinic Nottingham, UK</td>
<td>Men</td>
<td>MSM: 36</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

#### Overall assessment

- **++**: High confidence in the effect estimate
- **+**: Moderate confidence in the effect estimate
- **n/r**: Insufficient data or other reasons prevent the assessment

#### Applicability

- **2 (UK study)**
- **3 (small study; UK based study)**
- **3 (GUM clinic in UK)**
- **2 (UK based study)**

---

**Not in STD clinic**
### Rapid review – partner notification for sexually transmitted infections

**Evidence tables**

<table>
<thead>
<tr>
<th>Study Authors</th>
<th>Observational Study</th>
<th>Partner referral</th>
<th>Patient referral</th>
<th>Consecutive patients</th>
<th>Factors associated with ≥ 1 self referred partners:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(van Duynhoven et al. 1998)</td>
<td>MSM clinic Rotterdam, Netherlands</td>
<td>To study characteristics of index patients and partnerships related to outcome of partner notification</td>
<td>Patient referral guided by public health nurse plus contact slip (plus offering assistance in notifying)</td>
<td>454 250 250 (55 gonorrhoea; 182 chlamydia; 13 both)</td>
<td>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 &gt; 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); &gt;90 days (0.1; 95%-CI: 0.01 to 0.4)</td>
</tr>
</tbody>
</table>

**Overall assessment:** +

**Comments:** 1) Short report limiting assessability.

**Applicability:** 3 (European study)

<table>
<thead>
<tr>
<th>Study Authors</th>
<th>Observational Study</th>
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<td>(Rogstad et al. 1998)</td>
<td>MEG (Afro-Caribbean)</td>
<td>To determine if success of partner notification is related to sex or ethnicity</td>
<td>Patient referral guided by health adviser with help of contact slips</td>
<td>All primary attendees diagnosed with gonorrhoea</td>
<td>Black versus white</td>
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</thead>
<tbody>
<tr>
<td>(Rosenthal et al. 1995)</td>
<td>Adverse effects USA</td>
<td>Experience how adolescent girls experience partner notification</td>
<td>Unclear</td>
<td>Unclear</td>
<td>Black 85% STD not specified Females Age mean 17 y.</td>
</tr>
</tbody>
</table>

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<tr>
<th>Study Authors</th>
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<td>All primary attendees diagnosed with gonorrhoea</td>
<td>Black versus white</td>
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</table>

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<th>Study Authors</th>
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<th>Partner referral</th>
<th>Patient referral</th>
<th>Consecutive patients</th>
<th>Factors associated with ≥ 1 self referred partners:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Rosenthal et al. 1995)</td>
<td>Adverse effects USA</td>
<td>Experience how adolescent girls experience partner notification</td>
<td>Unclear</td>
<td>Unclear</td>
<td>Black 85% STD not specified Females Age mean 17 y.</td>
</tr>
</tbody>
</table>

**Overall assessment:** ++

**Comments:** 1) Short report limiting assessability.

**Applicability:** 2 (UK based study)

<table>
<thead>
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<td>Black versus white</td>
</tr>
</tbody>
</table>
### Barriers: None (90%); Uncomfortable with discussion (7%); Fear (3%)

1. Method of notification: Face-to-face (52%); Phone (45%)
2. Content: Disease name (94%); Source of infection (39%); Need for treatment (58%); Where to get treated (29%)
3. Setting: Direct (48%); Direct and sensitive (32%); Accusatory and angry (20%)

### Observational study (multivariable analysis)

#### STD clinic
- Amsterdam, Netherlands
- Gonorrhoea, chlamydia
- Women and men
- Age n/r
- Sep 1986 - Dec

**Barriers**
- To identify characteristics associated with outcome of partner notification

**Patient referral**
- [IIIb]
- Patient referral guided by public health nurse with contact slips

**All patients**
- 396
- 355
- 355

1. Proportion of tested partners per elicited partners: 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

**Overall assessment:** ++

**Comments:**
1. Small study
2. No MSM included

**Applicability:** 2 (Dutch study)
1988

<table>
<thead>
<tr>
<th>Study</th>
<th>Survey</th>
<th>Areas</th>
<th>Age range</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Nicolai et al. 2005)</td>
<td>Survey of physicians</td>
<td>USA Physicians (no STI)</td>
<td>Women and men</td>
<td>Random sample 500 (send out) 265 responded 154/265 no STI managed or undeliverable 111 (35%)</td>
</tr>
<tr>
<td>(Golden et al. 2003a)</td>
<td>Survey of providers</td>
<td>78 cities (highest prevalence of STI/HIV)</td>
<td>Health departments</td>
<td>Random sample 78 (sent out) 61 (returned) 60 (complete)</td>
</tr>
<tr>
<td>(Kohl et al. 1999)</td>
<td>Observational study</td>
<td>1517</td>
<td></td>
<td>Overall assessment: + Comments: 1) Barriers and suggestions mentioned by respondents not specific enough to guide partner notification practice; 2) Some US specific. Applicability: 4 (US specific)</td>
</tr>
<tr>
<td>(Hogben et al. 1999)</td>
<td>Observational study</td>
<td>12927 (96% of all reported syphilis cases)</td>
<td></td>
<td>Overall assessment: + Comments: 1) Response rate (although non-respondents did not differ from respondents) Applicability: 3 (US study)</td>
</tr>
</tbody>
</table>

**Evidence tables**

<table>
<thead>
<tr>
<th>Contact Time</th>
<th>OR (95%-CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 20 y.</td>
<td>0.29 (0.11 to 0.76)</td>
</tr>
<tr>
<td>26-30</td>
<td>0.44 (0.21 to 0.91)</td>
</tr>
<tr>
<td>&gt; 31</td>
<td>0.35 (0.15 to 0.80)</td>
</tr>
<tr>
<td>&lt; 1 week</td>
<td>0.35 (0.15 to 0.83)</td>
</tr>
<tr>
<td>&gt; 1 month</td>
<td>0.78 (0.38 to 1.64)</td>
</tr>
</tbody>
</table>

**Other relevant factors**

- 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)
<table>
<thead>
<tr>
<th>Study Reference</th>
<th>Design</th>
<th>Setting</th>
<th>Participants</th>
<th>Methods</th>
<th>Outcomes</th>
<th>Results</th>
<th>Overall Assessment</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Kingston et al. 2004)</td>
<td>Observational study</td>
<td>GUM clinic, Manchester, UK</td>
<td>MSM, Syphilis</td>
<td>Age n/r, Jan 1999 – Dec 2001</td>
<td>Provider referral by DIS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Toomey et al. 1998)</td>
<td>Observational study</td>
<td>STD clinics in Florida and New Jersey, USA</td>
<td>HIV, Women and men</td>
<td>Age n/r</td>
<td>Partner referral</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Evidence Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Title</th>
<th>Data</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>All diagnosed patients included</td>
<td>72</td>
<td>2. Partners tested positive 0.72 (254 index patients missing) 3. Partners contacted 1.04</td>
</tr>
<tr>
<td>2</td>
<td>Number of partners tested of all elicited partners is 72/1848 (4%).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Overall assessment: ++ Comments: 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. Applicability: 3 (PN method unclear, GUM clinic in UK)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Overall assessment: ++ Comments: 1) Low number of participants; 2) Transparent definition of outcomes. Applicability: 2 (heterosexual men and women)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Comments
- 1) Large cohort study covering approx. 20% of all syphilis cases in USA.
- Applicability: 3 (US study; only MSM)
- 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.
- Applicability: 3 (PN method unclear, GUM clinic in UK)
Revised Review of effectiveness - partner notification

<table>
<thead>
<tr>
<th>Reference</th>
<th>Methodological Approach</th>
<th>Setting</th>
<th>Study Population</th>
<th>Partner Notification Methods</th>
<th>Participants</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tommay et al. 2004</td>
<td>Audit/char review</td>
<td>Victoria, Australia (setting n/r)</td>
<td>HIV 74% MSM</td>
<td>Referral of partners To evaluate role of PN in HIV</td>
<td>215 (♀: 22; ♂: 191; trans.: 2) 105 (no partner = 66; partner known HIV = 44) 83 (MSM: 51; non-MSM: 32)</td>
<td>1. Proportion of index patients who elicited ≥ 1 partner 2. Overall: 0.76 MSM: 8% non-MSM: 95% (61/64) non-MSM: 92% (36/39) 3. Partners contactable</td>
</tr>
<tr>
<td>Wells et al. 1995</td>
<td>Audit/char review</td>
<td>Health Department Kansas City, USA HIV Women and Men Jan 1990 – Dec 1993</td>
<td>Partner referral n/r</td>
<td>Choice of contract or provider referral Details n/r</td>
<td>36Q (MSM: 242; IDU: 40; no risk factor: 36)</td>
<td>1. Proportion of newly diagnosed HIV patients as a result of partner notification (per all newly diagnosed HIV cases) 2. 81% (MSM) vs. 85% (IDU) vs. 90% (heterosexuals with partners at risk) vs. 72% (no risk factor)</td>
</tr>
<tr>
<td>Pattman et al. 1993</td>
<td>Audit/char review</td>
<td>GUM clinic in Newcastle upon Tyne, UK HIV Age n/r 1985 – 1992</td>
<td>Partner referral n/r</td>
<td>Choice of patient and provider referral Details n/r</td>
<td>114</td>
<td>1. Proportion of newly diagnosed HIV patients as a result of partner notification (per all newly diagnosed HIV cases) 2. 22% (25/114)</td>
</tr>
<tr>
<td>Pavia et al. 1993</td>
<td>Observational study</td>
<td>County Health Department Salt Lake City, USA HIV Women and men Age median: 32</td>
<td>Partner referral To evaluate utility of partner notification and to identify subgroups in</td>
<td>Choice of patient or provider referral Details n/r</td>
<td>308 (♀: 34; ♂: 274 (MSM 190))</td>
<td>1. Partners contacted 2. 1.6 (MSM) vs. 1.5 (hetero); 2.7 (black) vs. 1.9 (white); 3.3 (IDU) 2. Partners vs. 2.4 (MSM) vs. Black vs. white</td>
</tr>
<tr>
<td>Barriers</td>
<td>y. Oct 1988 – Sep 1990</td>
<td>which it may be the most effective</td>
<td>by DIS</td>
<td>elicited</td>
<td>2.3 (hetero); 4.2 (black) vs. 2.8 (white); 5.7 (IDU)</td>
<td>p=0.02 (includes hispanic as additional race); MSM vs. hetero vs. IDU: p&lt;0.0001 (includes additional risk groups not extracted)</td>
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<tr>
<td>(Spencer et al. 1993) Observatio nal study</td>
<td>MSM vs. Heterosexual; Black vs. white; IDU</td>
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<tr>
<td>Department of Health Colorado, USA</td>
<td>HIV Women and men</td>
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<td>Age n/r</td>
<td>1988</td>
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<tr>
<td>Partner referral</td>
<td>To examine the outcome of patient referral. If partner did not attend DIS conducted provider referral</td>
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<td>(Giesecke et al. 1991) Observatio nal study</td>
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<td>MEG (African American)</td>
<td>IDU</td>
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<td>To evaluate outcome of partner notification in Sweden</td>
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<td>Counselor vs. physician</td>
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<tr>
<td>Choice between patient and provider referral [IV]</td>
<td>Partner notification was initiated by trained counsellors or physicians</td>
<td></td>
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<tr>
<td>All diagnosed included</td>
<td>231 (met priority criteria) 226 190 (unsafe behaviour) (MSM: 140; non-MSM: 19; black: 29; white: 130; IDU: 53; non-IDU: 137)</td>
<td>1. Partners tested</td>
<td>1. 0.362 (MSM) vs. 0.89 (non-MSM); 0.72 (black) vs. 0.35 (white); 0.38 (IDU) vs. 0.44 (non-IDU)</td>
<td>1. n/r</td>
<td>Overall assessment: ++ Comments: 1) Priority criteria probably result in non-comparability to other populations; 2) In addition, only results for patients with unsafe behaviour reported. Applicability: 4 (US study; inclusion based on risk behavior)</td>
<td></td>
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<tr>
<td>(Centers for Disease Control and Prevention (CDC) 2003) (Foust) Observatio nal study</td>
<td>Specialist service, North Carolina, USA</td>
<td>HIV Age n/r 2001</td>
<td>Referral of partners</td>
<td>To evaluate a new introduced service for partner notification</td>
<td>Provider referral [IV]</td>
<td>Provider referral by disease intervention specialist</td>
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<tr>
<td>(Schnell et al. 1992) Observatio nal study</td>
<td>Adverse effects</td>
<td>USA HIV</td>
<td>Adverse effects of partner</td>
<td>Patient referral</td>
<td>All tested positive</td>
<td>Unclear</td>
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### Revised Review of effectiveness - partner notification

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<tr>
<th>PN 993</th>
<th>MSM</th>
<th>1987 – 1990</th>
<th>notification</th>
<th>DIS</th>
<th>Weak: 5% (2/44) Now single 13% (5/44)</th>
<th>Applicability: 3 (US study; only MSM included)</th>
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<td></td>
<td>To examine the impact of disclosing HIV antibody status on partnership</td>
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| (Golden et al. 2003b) | Survey of patients | HIV clinic and health department Seattle, WA, USA HIV MSM: > 80% Age > 35 y.: 62% White: 65% Jan 2001 – Nov 2001 | Barriers What patients with HIV especially MSM think about partner notification | Partner notification Questionnaire 6-pages questionnaire | All patients diagnosed 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% | Overall assessment: + Comments: 1) Survey with a low rate of recruited patients; representativeness remains unclear. Applicability: 3 (MSM in USA) |

| (Rogers et al. 1998) | Qualitative study IDU | Methadone maintenance programme and STD clinic all in New York, USA IDU, heterosexual, age 20-40 y. health professionals 1995 | Barriers 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 | Overall assessment: – Comments: 1) Drug users not diagnosed with STI. Applicability: 3 (US based study) |

### Summary of findings:

- **PN 993**
  - MSM
  - 1987 – 1990
  - To examine the impact of disclosing HIV antibody status on partnership
  - DIS: Weak: 5% (2/44) Now single 13% (5/44)
  - Applicability: 3 (US study; only MSM included)
  - **Comment:** Survey with a low rate of recruited patients; representativeness remains unclear.

- **PN 199**
  - Survey of patients
  - HIV clinic and health department Seattle, WA, USA
  - MSM: > 80%
  - Age > 35 y.: 62%
  - White: 65%
  - Jan 2001 – Nov 2001
  - **Barriers:** What patients with HIV especially MSM think about partner notification
  - **Partner notification:** Questionnaire 6-pages questionnaire
  - All patients diagnosed 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%
  - **Overall assessment:** +
  - **Comments:** Survey with a low rate of recruited patients; representativeness remains unclear.
  - **Applicability:** 3 (MSM in USA)

- **PN 616**
  - Qualitative study IDU
  - Methadone maintenance programme and STD clinic all in New York, USA
  - IDU, heterosexual, age 20-40 y.
  - Health professionals 1995
  - **Barriers:** 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
  - **Overall assessment:** –
  - **Comments:** Drug users not diagnosed with STI.
  - **Applicability:** 3 (US based study)
Table 15: Quality assessment of other evidence of partner notification

<table>
<thead>
<tr>
<th>First author date</th>
<th>C 1.1 Appropriateness and clearly focused question</th>
<th>H 1.2 Study type appropriate</th>
<th>H 3.1 Recruitment or sampling strategy appropriate</th>
<th>H 3.2 Methods of data collection appropriate</th>
<th>H 3.4 Ethical issues addressed</th>
<th>H 4.1 Data analysis appropriate</th>
<th>H 2.2 Methods adequate to research question</th>
<th>C 1.7 Outcomes measured in standard, valid, and reliable way</th>
<th>Number of participant(s) given 1. eligible 2. analysed</th>
<th>H 5.2 Relevance of findings judged</th>
<th>H 6.1 Implication of study clearly reported</th>
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<td>Unclear</td>
<td>1. Yes; 2. Yes</td>
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</tr>
<tr>
<td>Pavia et al. 1993</td>
<td>PN 941</td>
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<td>Yes</td>
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<tr>
<td>(Centers for Disease Control and Prevention (CDC) 2003) (Foust) PN 145</td>
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<td>Yes</td>
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<td>1. Yes; 2. Yes</td>
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<td>(Schnell et al. 1992)</td>
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<td>(Golden et al. 2003b) PN 199</td>
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<td>(Rogers et al. 1998) PN 616</td>
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<td>Unclear</td>
<td>Unclear</td>
<td>1. No; 2. Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>(-)</td>
<td>Qualitative study</td>
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</table>
7. Appendix

7.1. Search strategies

7.1.1. Medline search strategy
1. exp Sexually Transmitted Diseases/
2. exp HIV Infections/
3. exp Chlamydia Infections/
4. exp Condylomata Acuminata/
5. exp Gonorrhea/
6. exp Herpes Genitalis/
7. exp Syphilis/
8. sexually transmitted infection$.mp.
9. sexually transmitted disease$.mp.
10. veneral disease$.mp.
11. (STI or STIs or STD or STDs).mp.
12. (Acquired Immunodeficiency Syndrome or HIV or AIDS).mp.
13. chlamydia.mp.
14. genital wart$.mp.
15. (gonorrhea or gonorrhoea).mp.
16. genital herpes.mp.
17. or/1-16
18. exp Contact Tracing/
19. partner notification.mp.
20. contact tracing.mp.
21. (contract referral or conditional referral).mp.
22. provider referral.mp.
23. patient referral.mp.
24. (patient$ adj deliver$ adj (treat$ or therap$)).mp.
25. (patient$ adj partner$ adj (treat$ or therap$)).mp.
26. expedited partner.mp.
27. or/18-26
28. 17 and 27
29. limit 28 to (humans and yr="1990 - 2006")

7.1.2. Embase search strategy
1. exp Sexually Transmitted Disease/
2. exp Human Immunodeficiency Virus Infection/
3. exp Acquired Immune Deficiency Syndrome/
4. exp Chlamydia/
5. exp Chlamydiasis/
6. exp Condyloma/
7. exp Gonorrhea/
8. exp Genital Herpes/
9. exp Syphilis/
10. sexually transmitted infection$.mp.
11. sexually transmitted disease$.mp.
12. (STI or STIs or STD or STDs).mp.
13. (Acquired Immunodeficiency Syndrome or HIV).mp.
14. chlamydia.mp.
15. genital wart$.mp.
16. (gonorrhea or gonorrhoea).mp.
17. genital herpes.mp.
18. venereal disease$.mp.
19. 19 or/1-18
20. exp Contact Examination/
21. partner notification.mp.
22. contact tracing.mp.
23. (contract referral or conditional referral).mp.
24. provider referral.mp.
25. patient referral.mp.
26. (patient$ adj deliver$ adj (treat$ or therap$)).mp.
27. (patient$ adj partner$ adj (treat$ or therap$)).mp.
28. expedited partner.mp.
29. or/20-28
30. 19 and 29
31. limit 30 to (human and yr="1990 - 2006")

7.1.3. Cinahl search strategy
1. exp Sexually Transmitted Diseases/
2. exp HIV Infections/
3. exp Chlamydia Infections/
4. exp Warts, Venereal/
5. exp Gonorrhea/
6. exp Herpes Genitalis/
7. exp Syphilis/
8. sexually transmitted infection$.mp.
9. sexually transmitted disease$.mp.
10. (STI or STIs or STD or STDs).mp.
11. (Acquired Immunodeficiency Syndrome or HIV).mp.
12. chlamydia.mp.
13. genital wart$.mp.
14. (gonorrhea or gonorrhoea).mp.
15. venereal disease$.mp.
16. genital herpes.mp.
17. or/1-16
18. exp Contact Tracing/
19. partner notification.mp.
20. contact tracing.mp.
21. (contract referral or conditional referral).mp.
22. provider referral.mp.
23. patient referral.mp.
24. (patient$ adj deliver$ adj (treat$ or therap$)).mp.
25. (patient$ adj partner$ adj (treat$ or therap$)).mp.
26. expedited partner.mp.
27. or/18-26
28. 17 and 27
29. limit 28 to yr="1990 - 2005"

7.1.4. PsychInfo search strategy
1. exp Sexually Transmitted Diseases/
2. exp Acquired Immune Deficiency Syndrome/
3. exp Gonorrhea/
4. exp Herpes Genitalis/
5. exp Syphilis/
6. sexually transmitted infection$.mp.
7. sexually transmitted disease$.mp.
8. (STI or STIs or STD or STDs).mp.
9. (Acquired Immunodeficiency Syndrome or HIV).mp.
10. chlamydia.mp.
11. genital wart$.mp.
12. (gonorrhea or gonorrhoea).mp.
13. genital herpes.mp.
14. venereal disease$.mp.
15. or/1-14
16. partner notification.mp.
17. contact tracing.mp.
18. (contract referral or conditional referral).mp.
19. provider referral.mp.
20. patient referral.mp.
21. (patient$ adj deliver$ adj (treat$ or therap$)).mp.
22. (patient$ adj partner$ adj (treat$ or therap$)).mp.
23. expedited partner.mp.
24. or/16-24
25. 15 and 24
26. limit 26 to (human and yr="1990 - 2006")
7.2. **Criteria for assessment of overall quality of different study designs**

Table 16: Criteria for assessment of overall quality of different study designs

<table>
<thead>
<tr>
<th>Score</th>
<th>NICE Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>++</td>
<td>All or most of the criteria are fulfilled. Where they have not been fulfilled the conclusions of the study or review are thought very unlikely to alter.</td>
</tr>
<tr>
<td>+</td>
<td>Some of the criteria have been fulfilled. Those criteria that have not been fulfilled or adequately described are thought unlikely to alter the conclusions.</td>
</tr>
<tr>
<td>–</td>
<td>Few or no criteria fulfilled. The conclusions of the study are thought likely or very likely to alter.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operationalisation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Systematic reviews</strong> (Appendix B)</td>
</tr>
<tr>
<td>The following criteria are at least adequately addressed: B1.2. Description of the methodology includes dates covered by search, databases searched, and heterogeneity between studies was assessed; B1.3. Rigorous literature search of at least two databases, including Medline, reference lists checked or experts contacted to identify further studies. B1.4. Study quality is assessed and taken into account, using a recognised instrument.</td>
</tr>
<tr>
<td><strong>Controlled trials</strong> (Appendix C)</td>
</tr>
<tr>
<td>The following criteria are at least adequately addressed: C1.2. Generation of random allocation sequence (RCTs only); C1.4. Outcome assessment blinded; C1.5. Baseline comparison of Intervention and control groups; C1.6. The only difference between groups is the treatment under investigation; C1.7. Outcomes measured in a standard, valid, and reliable way.</td>
</tr>
<tr>
<td><strong>Non-controlled studies</strong></td>
</tr>
<tr>
<td>The following criteria are at least adequately addressed: C1.2. Generation of random allocation sequence (RCTs only); C1.4. Outcome assessment blinded; C1.5. Baseline comparison of Intervention and control groups; C1.6. The only difference between groups is the treatment under investigation; C1.7. Outcomes measured in a standard, valid, and reliable way.</td>
</tr>
<tr>
<td><strong>Qualitative studies</strong> (Appendix H)</td>
</tr>
<tr>
<td>The following criteria are at least adequately addressed: B1.2. Description of the methodology includes dates covered by search, databases searched, and heterogeneity between studies was assessed; B1.3. Rigorous literature search of at least two databases, including Medline, reference lists checked or experts contacted to identify further studies. B1.4. Study quality is assessed and taken into account, using a recognised instrument.</td>
</tr>
<tr>
<td>In between ++ and –</td>
</tr>
<tr>
<td>In between ++ and –</td>
</tr>
<tr>
<td>In between ++ and –</td>
</tr>
<tr>
<td>In between ++ and –</td>
</tr>
<tr>
<td>Study population not representative of target population, or study does not define outcomes.</td>
</tr>
<tr>
<td>Study population not representative of target population, or study does not define outcomes.</td>
</tr>
<tr>
<td>Study reports all three of: number of people eligible for partner notification, number of included patients, and number analysed.</td>
</tr>
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<td>The following criteria are at least adequately addressed: C1.2. Generation of random allocation sequence (RCTs only); C1.4. Outcome assessment blinded; C1.5. Baseline comparison of Intervention and control groups; C1.6. The only difference between groups is the treatment under investigation; C1.7. Outcomes measured in a standard, valid, and reliable way.</td>
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<td>The following criteria are at least adequately addressed: C1.2. Generation of random allocation sequence (RCTs only); C1.4. Outcome assessment blinded; C1.5. Baseline comparison of Intervention and control groups; C1.6. The only difference between groups is the treatment under investigation; C1.7. Outcomes measured in a standard, valid, and reliable way.</td>
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<td><strong>Operationalisation</strong></td>
</tr>
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<td><strong>Operationalisation</strong></td>
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<td><strong>Operationalisation</strong></td>
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<td><strong>Operationalisation</strong></td>
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<tr>
<td>Study population not representative of target population, or study does not define outcomes.</td>
</tr>
<tr>
<td>Study reports all three of: number of people eligible for partner notification, number of included patients, and number analysed.</td>
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<tr>
<td>The following criteria are at least adequately addressed: C1.2. Generation of random allocation sequence (RCTs only); C1.4. Outcome assessment blinded; C1.5. Baseline comparison of Intervention and control groups; C1.6. The only difference between groups is the treatment under investigation; C1.7. Outcomes measured in a standard, valid, and reliable way.</td>
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7.3. Flow diagram of results of literature searches, screening and assessment

References identified
N=2492
(MEDLINE=1192, EMBASE=926, CINAHL=257, PsycINFO=84, Handsearching=33)

Duplicate search
Excluded, N=654

References screened
N=1838

Title screening
Excluded, N=1254
Topic not relevant, N=1255

Potentially relevant
N=584

Articles not available by 3 Mar, 06
Excluded, N=22

Abstract screening
Excluded, N=274
Disease not relevant, N=14
Topic not relevant, N=161
Study design not relevant, N=76
Other, N=23

Full manuscript retrieved
N=288

Fulltext screening
Excluded, N=132
Disease not relevant, N=8
Topic not relevant, N=93
Study design not relevant, N=26
Duplicates, N=4
No translation, N=1

Fulltext
N=156

Assessment*
Excluded, N=9
Quality, N=2
Country, N=4
Other, N=3

Systematic reviews/guidelines
N=8
Randomised controlled trials
N=12
Controlled clinical trials
N=2
Other evidence
N=37

* See section 7.5, p. 146 for the list of articles with reasons for exclusion.
7.4. **Included studies**

7.4.1. **Systematic reviews and guidelines**


7.4.2. **Randomised controlled trials**

Cleveland J. A cost-effective study of alternate methods for Gonorrhea contact referral and rescreening. 2001. [Unpublished; Data from Mathews 2001]


7.4.3. Controlled clinical trials


7.4.4. Other evidence


### 7.5. Excluded studies

#### Table 17: List of excluded studies with reason for exclusion

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<tr>
<th>Reference</th>
<th>Type of study</th>
<th>Reason for exclusion</th>
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<tr>
<td>Brewer DD. Case-finding effectiveness of partner notification and cluster investigation for STD/HIV, unabridged technical report. Interdisciplinary Scientific Research, Seattle, WA, 2004.</td>
<td>(Systematic) Review</td>
<td>Study design not relevant</td>
</tr>
<tr>
<td>Chalker J, Chuc NT, Falkenberg T, et al. Private pharmacies in Hanoi, Vietnam: a randomized trial of a 2-year multi-component intervention on knowledge and stated practice regarding ARI, STD and antibiotic/steroid requests. Tropical Medicine &amp; International Health. 2002;7:803-810.</td>
<td>Randomised controlled trial</td>
<td>Study conducted in developing country</td>
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<tr>
<td>Scenario</td>
<td>Study Type</td>
<td>Quality/Group of Interest</td>
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<tr>
<td>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. Sexually Transmitted Infections. 2003;39:372-373.</td>
<td>Qualitative study</td>
<td>No special group of interest reported</td>
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<tr>
<td>de Souza L, Munday PE. Audit of HIV partner notification in a district general hospital.[see comment]. International Journal of STD &amp; AIDS. 2003;14:854-855.</td>
<td>Audit/chart review</td>
<td>Very low (reporting) quality</td>
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<tr>
<td>Ellison G, Moniez V, Stein J. Improving partner notification for sexually transmitted disease using a standardised health message and patient-centred counseling. 2001. [Unpublished; Data from Mathews 2001]</td>
<td>Randomised controlled trial</td>
<td>Study conducted in developing country</td>
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<tr>
<td>Fagan P. Sexual health service provision in remote Aboriginal and Torres Strait Islander settings in Far North Queensland: Sexual health symptoms and some outcomes of partner notification. Venerology-The Interdisciplinary International Journal of Sexual Health. 2001;14:55-61.</td>
<td>Audit/chart review</td>
<td>No special group of interest reported</td>
</tr>
<tr>
<td>Fernando I, Clutterbuck DJ. Audit of treatment and contact-tracing rates in immediate (presumptive) versus delayed (polymerase chain reaction) diagnosis of chlamydial infection. International Journal of STD &amp; AIDS. 2005;16:502-504.</td>
<td>Audit/chart review</td>
<td>No special group of interest reported</td>
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<tr>
<td>Study Reference</td>
<td>Design and Methods</td>
<td>Quality</td>
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<td>Hogben M, St Lawrence JS, Montano DE, et al. Physicians' opinions about partner notification methods: case reporting, patient referral, and provider referral. Sexually Transmitted Infections. 2004;80:30-34.</td>
<td>Cross-sectional study</td>
<td>No (relevant) outcomes reported</td>
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<tr>
<td>Jarhult B. [Decreased incidence of Chlamydia infection in a primary care district, thanks to screening and reinforced contact tracing]. [Swedish]. Lakartidningen. 1991;88:3819-3821.</td>
<td>Cohort study</td>
<td>Very low (reporting) quality</td>
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<tr>
<td>Study Title</td>
<td>Study Type</td>
<td>Quality</td>
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<tr>
<td>Kassler WJ, Meriwether RA, Klimko TB, et al. Eliminating access to anonymous HIV antibody testing in North Carolina: effects on HIV testing and partner notification. Journal of Acquired Immune Deficiency Syndromes &amp; Human Retrovirology. 1997;14:281-289.</td>
<td>Before-after study/interrupted time series</td>
<td>Topic not relevant</td>
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<tr>
<td>Katz BP, Cane VA, Jones R. Evaluation of field follow-up in a sexually transmitted disease clinic for patients at risk for infection with Neisseria gonorrhoeae and Chlamydia trachomatis. Sexually Transmitted Diseases. 1992;19:99-104.</td>
<td>Audit/chart review</td>
<td>No special group of interest reported</td>
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<tr>
<td>King D, Chown R, Clarke J. Forty years on--contact tracing in Wakefield. International Journal of STD &amp; AIDS. 1996;7:362-364.</td>
<td>Audit/chart review</td>
<td>No special group of interest reported</td>
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<tr>
<td>Kuchimanchi U, McClean H. A multidistrict audit of the management of chlamydial PID in genitourinary medicine clinics in Yorkshire. International Journal of STD &amp; AIDS. 2002;13:264-267.</td>
<td>Audit/chart review</td>
<td>Disease not relevant</td>
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<tr>
<td>Lech MM. Non-effective partner notification system: a missed opportunity for the reduction of sexually transmitted infections in sub-Saharan Africa. Medycyna Wieku Rozwojowego. 2003;7:303-509.</td>
<td>Non-comparative prospective study</td>
<td>Study conducted in developing country</td>
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<tr>
<td>Lee JH, Branan L, Hoff GL, et al. Voluntary human immunodeficiency virus testing, recidivism, partner notification, and sero-prevalence in a sexually transmitted disease clinic: a need for mandatory testing. Sexually Transmitted Diseases. 1990;17:169-174.</td>
<td>Audit/chart review</td>
<td>No special group of interest reported</td>
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<tr>
<td>Levy JA, Fox SE. The outreach-assisted model of partner notification with IDUs. Public Health Reports. 1998;113 (Suppl 1):160-169.</td>
<td>Randomised controlled trial</td>
<td>Very low (reporting) quality</td>
</tr>
<tr>
<td>Lim SW, Coupey SM. Are adolescent girls with Chlamydia infection notifying their partners? Journal of Pediatric &amp; Adolescent Gynecology. 2005;18:33-38.</td>
<td>Cross-sectional study</td>
<td>Very low (reporting) quality</td>
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<tr>
<td>Liu H, Detels R, Li X, et al. Stigma, delayed treatment, and spousal notification among male patients with sexually transmitted disease in China. Sexually Transmitted Diseases. 2002;29:335-343.</td>
<td>Cross-sectional study</td>
<td>Topic not relevant</td>
</tr>
<tr>
<td>Maher JE, Peterson J, Hastings K, et al. Partner violence, partner notification, and women's decisions to have an HIV test. Journal of Acquired Immune Deficiency Syndromes: JAIDS. 2000;25:276-282.</td>
<td>Qualitative study</td>
<td>No (relevant) outcomes reported</td>
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<tr>
<td>Mak DB, Plant AJ, Bulsara MK. Quality of sexually transmitted infection clinical management and contact tracing outcomes in a remote area of high sexually transmitted infection endemicity. Sexually Transmitted Diseases. 2004;31:449-454.</td>
<td>Audit/chart review</td>
<td>No special group of interest reported</td>
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<tr>
<td>Mathews C, Guttmacher SI, Coetzee N, et al. Evaluation of a video based health education strategy to improve sexually transmitted disease partner notification in South Africa. Sexually Transmitted Infections. 2002;78:53-57.</td>
<td>Prospective study/interrupted time series</td>
<td>Study conducted in developing country</td>
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<tr>
<td>McCadden A, Fenton KA, McManus S, et al. Chlamydia trachomatis testing in the second British national survey of sexual attitudes and lifestyles: respondent uptake and treatment outcomes. Sexually Transmitted Diseases. 2005;32:387-394.</td>
<td>Cross-sectional study</td>
<td>No (relevant) outcomes reported</td>
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<tr>
<td>Mertens TE, Davey SG, Kantharaj K, et al. Observations of sexually transmitted disease consultations in India. Public Health. 1998;112:123-128.</td>
<td>Cross-sectional study</td>
<td>Study conducted in developing country</td>
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<tr>
<td>Michaud JM, Ellen J, Johnson SM, et al. Responding to a community outbreak of syphilis by targeting sex partner meeting location: an example of a risk-space intervention. Sexually Transmitted Diseases. 2003;30:533-538.</td>
<td>Non-comparative prospective study</td>
<td>No special group of interest reported</td>
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<tr>
<td>Mir N, Scoular A, Lee K, et al. Partner notification in HIV-1 infection: a population based evaluation of process and outcomes in Scotland. Sexually Transmitted Diseases. 2003;29:335-343.</td>
<td>Audit/chart review</td>
<td>No special group of interest reported</td>
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<tr>
<td>Title</td>
<td>Study Design</td>
<td>Quality of Evidence</td>
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<td>Monteiro EF, Harris J, Gilliatt P. A multidistrict audit on the management of Chlamydia trachomatis in genitourinary medicine clinics in Yorkshire. International Journal of STD &amp; AIDS. 1997;8:792-795.</td>
<td>Audit/chart review</td>
<td>No special group of interest reported</td>
</tr>
<tr>
<td>Ogman GL, Doyle L. A comparison of the case-finding effectiveness and average costs of screening and partner notification.[see comment]. Sexually Transmitted Diseases. 1996;23:51-57.</td>
<td>Cohort study</td>
<td>Topic not relevant</td>
</tr>
<tr>
<td>Powderly WG, Mayer KH. Centers for Disease Control and Prevention (Systematic) Review</td>
<td>Topic not relevant</td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Study Type</td>
<td>Quality Rating</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>----------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Senauru K, Kuhn L, Wvalica C, et al. Women in couples antenatal HIV counseling and testing are not more likely to report adverse social events. AIDS. 2005;19:603-609.</td>
<td>Cross-sectional study</td>
<td>Study not conducted</td>
</tr>
<tr>
<td>Siddiqui F, Kirkman RJ, Chandio S. Re-audit of referral compliance of chlamydia-positive women from a family planning clinic.[see comment]. Journal of Family Planning &amp; Reproductive Health Care. 2004;30:86-87.</td>
<td>Audit/chart review</td>
<td>No special group of interest reported</td>
</tr>
<tr>
<td>Sonnex C, Williams O. The management of chlamydial infection: setting standards at a regional level. International Journal of STD &amp; AIDS. 1998;9:600-603.</td>
<td>Audit/chart review</td>
<td>No special group of interest reported</td>
</tr>
<tr>
<td>Tait IA, Hart CA. Chlamydia trachomatis in non-gonococcal urethritis patients and their heterosexual partners: routine testing by polymerase chain</td>
<td>Audit/chart review</td>
<td>No (relevant) outcomes reported</td>
</tr>
<tr>
<td>Study</td>
<td>Study Design</td>
<td>Special Group</td>
</tr>
<tr>
<td>-----------------------------------------------------------</td>
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<tr>
<td>Warszawski J, Meyer L. Sex difference in partner notification: results from three population based surveys in France. Sexually Transmitted Infections. 2002;78:45-49.</td>
<td>Cross-sectional study</td>
<td>Topic not relevant</td>
</tr>
<tr>
<td>Wright A, Chippindale S, Mercey D. Investigation into the acceptability and effectiveness of a new contact slip in the management of Chlamydia trachomatis at a London genitourinary medicine clinic. Sexually Transmitted Infections. 2002;78:422-424.</td>
<td>Non-randomised controlled trial</td>
<td>No special group of interest reported</td>
</tr>
<tr>
<td>Zimmerman-Rogers H, Potterat JJ, Muth SQ, et al. Establishing efficient partner notification periods for patients with chlamydia. Sexually Transmitted Diseases. 1999;26:49-54.</td>
<td>Audit/chart review</td>
<td>No special group of interest reported</td>
</tr>
</tbody>
</table>
### 7.6. Description of interventions in controlled trials

**Table 18: Description of interventions in controlled trials**

<table>
<thead>
<tr>
<th>First author date ID</th>
<th>Intervention</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Golden et al. 2005 PN 35</td>
<td>Patient delivered partner therapy</td>
<td>Before randomisation patients were offered that study personal contact partners (intervention was delivered in the same manner regardless who contacted partners). PDPT: Patients were offered to give medication to up to 3 partners. Partner packets were distributed to patients or their partners through commercial pharmacies (12 chosen to ensure wide geographic access), a specific STD clinic (study centre); or direct mailing. Pharmacies were called 1 week after prescribing the packet. If packets had not been picked up by patient or partner they were reminded by telephone once. Patients received packets directly if interviewed personally (in two specific STD clinics). Packets contained: 1 x 400 mg of cefixime and 1 x 1 g of azithromycin (for GN) or 1 x 1g of azithromycin (for CT); condoms; drug information (including adverse effects); instructions to call study staff with questions or concerns; brochure about preventing STD; information that care is free at STD clinic.</td>
</tr>
<tr>
<td>Kissinger et al. 2005 PN 2342</td>
<td>Patient delivered partner therapy</td>
<td>Packages for up to four partners containing azithromycin (1 g) and cefixime (400 mg), written instructions about how to take medication, adverse effects, and pager number of nurse for questions.</td>
</tr>
<tr>
<td>Kissinger et al. 2005 PN 2368</td>
<td>Patient referral</td>
<td>Patient were advised to tell partner that he had been exposed to C. trachomatis and that he should seek treatment. In addition patients were given an information sheet for each partner stating that he had been exposed to a STD and contact information of clinics.</td>
</tr>
<tr>
<td>Schillinger et al. 2000(3) PN 2356</td>
<td>Patient delivered partner therapy</td>
<td>Patient received a maximum of 4 doses of azithromycin 1 g (one dose/partner) powder. Patients were instructed to tell partners he had been exposed to chlamydia infection, encourage him to seek treatment, and to offer azithromycin. Medication was individually labelled with name and phone number of health care provider. Instructions for handling were included as well as information on contraindications and adverse events. In addition a fact sheet about C. trachomatis was included plus advice to abstain from intercourse until 7 days.</td>
</tr>
<tr>
<td>Kissinger et al. 1998 PN 2368</td>
<td>Patient referral</td>
<td>Patient were advised to tell that he had been exposed to C. trachomatis and that he should seek treatment. In addition patients were given an information sheet for each partner stating that he had been exposed to a STD and contact information of clinics.</td>
</tr>
<tr>
<td>Low et al. 2005 PN 2368</td>
<td>Patient referral</td>
<td>Partner notification at GP</td>
</tr>
<tr>
<td>(Ostergaard et al. 2003) PN 2372</td>
<td>Home sampling</td>
<td>Same as in control group. However, test kit was to be used at home. Partners were advised to send a first void urine sample (males) or a sample obtained by flushing saline in vagina and aspirating it (females) with a prepaid preaddressed envelope.</td>
</tr>
<tr>
<td>Practice sampling</td>
<td>Package mailed to index patient containing five specimen collection kits. Packages for home and office sampling were identical. Index patient was advised to give or mail the package to partners in previous twelve months. Partners were advised to bring the sampling kit to a healthcare provider accompanied by a letter explaining the study. Test results were sent home or to physician (choice of partner). If positive, partner was advised to seek healthcare provider.</td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Intervention Type</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-----------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>(Andersen et al. 1998) Home sampling</td>
<td>Provider referral</td>
<td>Index cases take an envelope to male partner containing 10 ml sterile container, information on collecting urine, and a prepaid return-envelope. Male partner should send prepaid envelope to laboratory at Aarhus University Hospital.</td>
</tr>
<tr>
<td>(Landis et al. 1992) Provider referral</td>
<td></td>
<td>Participants could choose to notify some or all partners by themselves. Public health counsellor attempted to notify in person remaining partners and partners not attending health department within two weeks after enrolment. Index partners received contact cards to give to partners.</td>
</tr>
<tr>
<td>(Montesinos et al. 1990) Patient referral+incentive</td>
<td></td>
<td>Counselling session by nurse or physician (nature and treatment of STD, obtain names of sexual partners in previous 6 weeks, ask index patient to procure partners for treatment, assured confidentiality including notice that health would not contact partner). In addition, a selection of contact cards (different styles) containing information about the relevant STD plus request for seeking health care (not specified where) was offered to index patients to be given to partners. If index patient successfully recruited partner to health service the 3C charge for health care at health service was waived for index patient and partners.</td>
</tr>
<tr>
<td>(Peterman et al. 1977) Contract referral</td>
<td></td>
<td>Short interview (3-5 min) with study group discussing nature and implications, of the disease and the importance of self-referral of contacts, handed contact slips to give to his partner(s) without eliciting names or identifying information. Patients were not informed of follow-up that took place 7-10 days later to elicit contact information of partners.</td>
</tr>
<tr>
<td>(Potterat et al. 1988) Patient referral+education</td>
<td></td>
<td>Counselling provided by DIS who gathered names of partner(s) but not further information. Index patients were advised of the importance of referring their partner(s) to the clinic but no referral letter was distributed.</td>
</tr>
<tr>
<td>(Potterat et al. 1997) Contract referral</td>
<td></td>
<td>Interview by disease intervention specialist to identify sex partners (timeframe for history was tailored to stage of disease). Contracting index cases to notify partners within 2 days. If partners did not come to clinic within 2 days disease intervention specialist would notify partners on third day.</td>
</tr>
<tr>
<td>(Peterman et al. 1997) Provider referral+field notification</td>
<td></td>
<td>Interview by disease intervention specialist to identify sex partners (timeframe for history was tailored to stage of disease). Disease intervention specialist notified sex partners and had possibility to draw blood for testing in the field if partner seemed unlikely to come to clinic.</td>
</tr>
<tr>
<td>(Peterman et al. 1997) Provider referral+field blood</td>
<td></td>
<td>Interview by disease intervention specialist to identify sex partners (timeframe for history was tailored to stage of disease). Disease intervention specialist notified sex partners and had possibility to draw blood for testing in the field if partner seemed unlikely to come to clinic.</td>
</tr>
<tr>
<td>(Peterman et al. 1997) Provider referral+field blood</td>
<td></td>
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</tr>
<tr>
<td>(Peterman et al. 1997) Patient referral</td>
<td></td>
<td>Only nurse treating patient provided counselling. Patient advised about importance of referring partners to the clinic plus handing out as many brief referral letters as requested. No information on partners was elicited.</td>
</tr>
<tr>
<td>(Katz et al. 1998) Contract referral+education</td>
<td></td>
<td>Patient referral with contact cards and standard interview, pluses educational pamphlet and health education.</td>
</tr>
<tr>
<td>(Katz et al. 1998) Contract referral</td>
<td></td>
<td>Standard interview (15-20 min) with eliciting names and identifying information of partners. Asked patient to refer his partner(s) by himself (unless he explicitly requested the study group to do it) and informed him that study group would week partner(s) who did not appear in 7-10 days.</td>
</tr>
<tr>
<td>(Cleveland 2000)</td>
<td>Patient referral+call</td>
<td>Counselling session by nurse or physician (nature and treatment of STD, obtain names of sexual partners in previous 6 weeks, ask index patient to procure partners for treatment, assured confidentiality including notice that health would not contact partner). In addition, a selection of contact cards (different styles) containing information about the relevant STD plus request for seeking health care (not specified where) was offered to index patients to be given to partners. If partner did not arrive a professional at health service (same sex as partner) would contact partners by telephone within 5 days.</td>
</tr>
<tr>
<td>(Andersen et al. 1998) Patient referral+call</td>
<td></td>
<td>Counselling session by nurse or physician (nature and treatment of STD, obtain names of sexual partners in previous 6 weeks, ask index patient to procure partners for treatment, assured confidentiality including notice that health would not contact partner). In addition, a selection of contact cards (different styles) containing information about the relevant STD plus request for seeking health care (not specified where) was offered to index patients to be given to partners. If partner did not arrive a professional at health service (same sex as partner) would contact partners by telephone within 5 days.</td>
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</tr>
<tr>
<td>(Cleveland 2000)</td>
<td>Contract referral</td>
<td>Patient referral with contact cards and standard interview.</td>
</tr>
<tr>
<td></td>
<td>Contract referral</td>
<td>Patient referral with contact cards and standard interview. If partners did not present within 3 days, then provider referral.</td>
</tr>
<tr>
<td></td>
<td>Patient referral</td>
<td>Patient referral with contact cards and standard interview.</td>
</tr>
<tr>
<td>(Katz et al. 1998) Patient referral+DIS</td>
<td></td>
<td>Counselling provided by DIS who gathered names of partner(s) but not further information. Index patients were advised of the importance of referring their partner(s) to the clinic but no referral letter was distributed.</td>
</tr>
<tr>
<td>(Katz et al. 1998) Provider referral by DIS</td>
<td></td>
<td>Extensive interview by DIS followed by attempt to contact all named partners. Contacting partners was a stepwise approach: 1) Search of computerised clinic records; 2) if not already seen in clinic partner(s) were tried to be reached by telephone (phone numbers were obtained by several ways); 3) if partner could not be reached by telephone a letter was sent and DIS tried to contact partner(s) at home leaving a second letter of partner(s) was not at home. If partner(s) choose to be treated at other health care facilities DIS followed up with their physician if proper treatment was given.</td>
</tr>
<tr>
<td>(Katz et al. 1998) Patient referral with nurse</td>
<td></td>
<td>Only nurse treating patient provided counselling. Patient advised about importance of referring partners to the clinic plus handing out as many brief referral letters as requested. No information on partners was elicited.</td>
</tr>
<tr>
<td>(Cleveland 2000)</td>
<td>Patient referral+education</td>
<td>Patient referral with contact cards and standard interview, pluses educational pamphlet and health education.</td>
</tr>
<tr>
<td>(Cleveland 2000)</td>
<td>Contract referral</td>
<td>Patient referral with contact cards and standard interview. If partners did not present within 3 days, then provider referral.</td>
</tr>
<tr>
<td>(Cleveland 2000)</td>
<td>Patient referral</td>
<td>Patient referral with contact cards and standard interview.</td>
</tr>
<tr>
<td>(Katz et al. 1998) Patient referral with DIS</td>
<td></td>
<td>Counselling provided by DIS who gathered names of partner(s) but not further information. Index patients were advised of the importance of referring their partner(s) to the clinic but no referral letter was distributed.</td>
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<td>(Katz et al. 1998) Provider referral by DIS</td>
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<td>(Cleveland 2000)</td>
<td>Contract referral</td>
<td>Patient referral with contact cards and standard interview. If partners did not present within 3 days, then provider referral.</td>
</tr>
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<td>Patient referral</td>
<td>Patient referral with contact cards and standard interview.</td>
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<tr>
<td>(Katz et al. 1998) Patient referral+DIS</td>
<td></td>
<td>Counselling provided by DIS who gathered names of partner(s) but not further information. Index patients were advised of the importance of referring their partner(s) to the clinic but no referral letter was distributed.</td>
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<tr>
<td>(Katz et al. 1998) Provider referral by DIS</td>
<td></td>
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<tr>
<td>(Katz et al. 1998) Patient referral with nurse</td>
<td></td>
<td>Only nurse treating patient provided counselling. Patient advised about importance of referring partners to the clinic plus handing out as many brief referral letters as requested. No information on partners was elicited.</td>
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## 7.7. Definition of outcomes in controlled clinical trials

### Table 19: Table of outcome definitions in controlled trials

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<thead>
<tr>
<th>First author date ID</th>
<th>Outcome</th>
<th>Definition</th>
</tr>
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<tbody>
<tr>
<td>(Golden et al. 2005) PN 35</td>
<td>Persistent or recurrent infection in index patients (proportion of index patients)</td>
<td>Infection was defined as persistent or recurrent if test was positive for patient's initial type of infection obtained 21 to 133 days after the patient's initial treatment. Tests (LCx ligase chain reaction (Abbott Diagnostics) or Aptima Combo 2 (Gen-Probe)) were performed on urine samples. Time period for outcome was changed after end of study (from 21-126 to 21-133 days) to maximize the number of patients for whom data was available. Investigator were blinded to results stratified by study arm.</td>
</tr>
<tr>
<td>(Golden et al. 2005) PN 35</td>
<td>All partners treated (proportion of index patients)</td>
<td>Described by study authors as &quot;partners 'very likely' to have been treated. Definition: Attempt to interview all index patients 10 to 18 weeks after treatment. Partners were classified as not &quot;very likely&quot; to have been treated if 1) an index patient reported not telling a partner about his/her diagnosis; 2) refused to contact a partner or allow study staff to do so; 3) claimed to have no information on how to contact a partner.</td>
</tr>
<tr>
<td>(Golden et al. 2005) PN 35</td>
<td>Partners elicited (mean per index patient)</td>
<td>This was not an actual outcome of the study but reported in the baseline characteristics. Definition: Number of sex partners of index patients elicited during interview (interviewer and method n/r). Time frame for sex partner 60 days before diagnosis of STD or most recent partner if denying any sex partner during this period.</td>
</tr>
<tr>
<td>(Kissinger et al. 2005) PN 2342</td>
<td>Persistent or recurrent infection in index patients (proportion of index patients)</td>
<td>Urine or urethral swab sample tested (urine strand-displacement amplification assay or swab Gen-Probe Pace 2 test) 2-8 weeks after treatment.</td>
</tr>
<tr>
<td>(Kissinger et al. 2005) PN 2342</td>
<td>Partners treated (mean per index patient)</td>
<td>According to follow-up interview of index patient 2-8 weeks after diagnosis and treatment. Partner was defined as treated if index patient affirmed question &quot;Did [partner name] tell you that [he/she] took the medicine?&quot;. Time-frame to define 'sex partner' not reported.</td>
</tr>
<tr>
<td>(Kissinger et al. 2005) PN 2342</td>
<td>Partners elicited (mean per index patient)</td>
<td>Number of partners reported at follow-up interview of index patient 2-8 weeks after diagnosis and treatment. No time frame to define 'sex partner' reported.</td>
</tr>
<tr>
<td>(Schillinger et al. 2003) PN 2356</td>
<td>Persistent or recurrent infection in index patients (proportion of index patients)</td>
<td>Detection of C. trachomatis DNA in urine samples of index patients collected at least 21 days after the initial diagnosis. Nucleic acid amplification tests were either the ligase chain reaction (LCR; Abbott Diagnostics) or polymerase chain reaction (PCR; Roche Diagnostics).</td>
</tr>
<tr>
<td>(Kissinger 1998) PN 580</td>
<td>Persistent or recurrent infection in index patients (proportion of index patients)</td>
<td>Recurrence of C. trachomatis infection at follow-up. Retests were usually done at annual visit. Mean follow-up was 17.7 months. Rates are measured per person year. Tests were done with DNA probe test (GenProbe Pace 2, GenProbe Inc).</td>
</tr>
<tr>
<td>(Low et al. 2005) PN 2368</td>
<td>Partners treated (mean per index patient)</td>
<td>Partners defined as treated if issued contact slip returned to study centre, confirmed visit of GUM by partner after index case received intervention, or index case said at telephone follow-up (no time frame reported) that partner had been treated. Treatment must had been finished within six weeks after randomisation. Partners lost to follow-up were handled as treatment failure (had not been treated).</td>
</tr>
<tr>
<td>(Ostergaard et al. 2003)</td>
<td>At least one partner treated (proportion of index patients)</td>
<td>See above</td>
</tr>
<tr>
<td>(Ostergaard et al. 2003)</td>
<td>Partners contacted (mean per index patient)</td>
<td>n/r</td>
</tr>
<tr>
<td>(Andersen et al. 1998)</td>
<td>Partners contacted (mean per index patient)</td>
<td>n/r</td>
</tr>
</tbody>
</table>

1 All information from the articles extracted. If no information was reported (e.g. on time frames) this is not explicitly mentioned.
<table>
<thead>
<tr>
<th>Reference</th>
<th>Parameter</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Katz et al. 1988</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PN 2379 | Partners treated (mean per index patient) | Patient referral groups: partner attended clinic and presented referral letter or statement by partner that she had been referred to the clinic by a sexual partner (verified by use of computerized hospital database); partners treated outside the study clinic could not be identified. Provider referral group: partner attended clinic or if she chose to be treated somewhere else DIS verified with treating physician that proper treatment was given. |
| Cleveland 2001 | 
PN 2377 | Partners infected (mean per index patient) | "Cultures for C. trachomatis were performed as previously described [unclear]. McCoy monolayers in microtiter plates were used, and inclusions were identified by immunofluorescence. Each culture was passed once to a fresh monolayer before being read as negative." |
| Montesinos et al. 1990 | 
PN 1127 | Partners tested (mean per index patient) | Number of partners who sought treatment within 1 month at the study clinic. |
| Montesinos et al. 1990 | 
PN 1127 | Partners elicited (mean per index patient) | Number of sex partners in last 6 weeks who were also university students. |
| Potterat et al. 1977 | 
PN 2380 | Inferred partners treated, partners infected, contacted, elicited (each, mean per index patient) | |
| Peterman et al. 1997 | 
PN 702 | Partners treated (mean per index patient) | Partners who came for treatment: Partners with newly discovered syphilis treated or partners treated preventively as defined by treatment of partners with no signs, no symptoms, or no laboratory evidence and who reported sexual contact index case within 90 days. |
| Peterman et al. 1997 | 
PN 702 | Partners infected (mean per index patient) | |
| Peterman et al. 1997 | 
PN 702 | Partners tested (mean per index patient) | Partners who came for syphilis testing. |
| Peterman et al. 1997 | 
PN 702 | Partners contacted (mean per index patient) | |
| Peterman et al. 1997 | 
PN 702 | Partners elicited (mean per index patient) | Definition of partner dependent on stage of disease – primary syphilis: 3 months; secondary syphilis: 6 months; early latent: 12 months. |
| Landis et al. 1992 | 
PN 1041 | Partners tested (mean per index patient) | |
| Landis et al. 1992 | 
PN 1041 | Partners infected (mean per index patient) | |
| Landis et al. 1992 | 
PN 1041 | Partners contacted (mean per index patient) | Provider referral: unclear; probably all patients attending the study clinic with contact slip. Patient referral: Counsellor attempted to contact every partner who had not come to the study clinic at the end of 1 month and ask if they were aware of their exposure to HIV. |
| Landis et al. 1992 | 
PN 1041 | Partners elicited (mean per index patient) | Might be inferred from the inclusion criteria: All sex or needle-sharing partners in previous year. |
8. References


Cleveland J. A cost-effective study of alternate methods for Gonorrhoea contact referral and rescreening. 2001. [Unpublished; Data from Mathews 2001]


Ellison G, Moniez V, Stein J. Improving partner notification for sexually transmitted disease using a standardised health message and patient-centred counseling. 2001. [Unpublished; Data from Mathews 2001]


Ensley EJ, Parkhurst GE, Weank RR. The 100 day experiment in contact investigation in Arkansas. Journal of Venereal Disease Information. 1948;13-19.


Rapid review – partner notification for sexually transmitted infections

References


9. Summary of additions and changes after stakeholder comments

9.1. Supplementary figures for graphical display of results

Not all trials provided enough information to construct forest plots. In addition, most trial reports provided no information on the outcomes reported in this review. The following figures on intermediate outcomes relate the number of partners treated of the number of infected partners to the number of partners elicited. This outcome should be interpreted with caution since the number of elicited partners might vary between different trial groups and between trials if the number of partners elicited is low because of poor sexual history taking.

*Relates to section: 4.2.2 Primary outcomes: reduction of incidence or prevalence of infection in index patients – Evidence from controlled trials*

**Forest plot of PDPT-trials (outcome: proportion of persistent or recurrent infections in index patients)**

<table>
<thead>
<tr>
<th>Study</th>
<th>Risk ratio (95%-CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kissinger 1998 (PDPT vs. PR)</td>
<td>0.52 (0.22, 1.26)</td>
</tr>
<tr>
<td>Schillinger 2003 (PDPT vs. PR)</td>
<td>0.80 (0.61, 1.05)</td>
</tr>
<tr>
<td>Golden 2005 (PDPT vs. PR)</td>
<td>0.76 (0.59, 0.98)</td>
</tr>
<tr>
<td>Kissinger 2005 (PDPT vs. PR)</td>
<td>0.47 (0.28, 0.80)</td>
</tr>
</tbody>
</table>
Relates to section: 4.2.3 Intermediate outcomes: partners treated, tested, or infected – Comparisons of patient referral and patient-delivered partner therapy

Forest plot of PDPT-trials (outcome: proportion of partners treated per elicited partners)

<table>
<thead>
<tr>
<th>Study</th>
<th>Risk ratio (95%-CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Golden 2005 (PDPT vs. PR)</td>
<td>1.12 (1.03, 1.21)</td>
</tr>
<tr>
<td>Kissinger 2005 (PDPT vs. PR)</td>
<td>1.38 (1.20, 1.59)</td>
</tr>
</tbody>
</table>

Relates to section: 4.2.3 Intermediate outcomes: partners treated, tested, or infected – Comparisons of different forms of patient referral

Forest plot of trials of information for partners (outcome: proportion of partners treated per elicited partners)

<table>
<thead>
<tr>
<th>Study</th>
<th>Risk ratio (95%-CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kissinger 2005 (PDPT vs. PR+booklet)</td>
<td>1.14 (1.01, 1.29)</td>
</tr>
</tbody>
</table>
Rapid review – partner notification for sexually transmitted infections

References

Study Risk ratio (95%-CI)

- Kissinger 2005 (PR+booklet vs. PR) 1.21 (1.04, 1.40)

Forest plot of trials comparing home and office sampling of for partners (outcome: proportion of infected partners per elicited partners)

Study Risk ratio (95%-CI)

- Andersen 1998 (HomeSample vs. OfficeSample) 1.67 (0.70, 4.01)
- Ostergaard 2003 (HomeSample vs. OfficeSample) 1.44 (1.05, 1.97)

Relates to section: 4.2.3 Intermediate outcomes: partners treated, tested, or infected – Comparisons of patient and contract referral

Forest plot of trials comparing contract and patient referral (outcome: proportion of partners treated per elicited partners)
References

Rapid review – partner notification for sexually transmitted infections

Relates to section: 4.3.3 Intermediate outcomes: partners treated, tested, or infected – Evidence from controlled trials

**Forest of one trial in patients with syphilis (outcome: proportion of partners treated per elicited partners)**

<table>
<thead>
<tr>
<th>Study</th>
<th>Risk ratio (95%-CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potterat 1977 (CR vs. PR)</td>
<td>0.99 (0.74, 1.32)</td>
</tr>
<tr>
<td>Cleveland 2001 (CR vs. PR)</td>
<td>1.64 (1.35, 1.99)</td>
</tr>
<tr>
<td>Cleveland 2001 (CR vs. PR+edu)</td>
<td>1.58 (1.30, 1.91)</td>
</tr>
<tr>
<td>Peterman 1997 (ProvRef+fieldblood vs. CR)</td>
<td>0.95 (0.86, 1.06)</td>
</tr>
<tr>
<td>Peterman 1997 (ProvRef+fieldnot vs. ProvRef+fieldblood)</td>
<td>0.99 (0.89, 1.10)</td>
</tr>
<tr>
<td>Peterman 1997 (ProvRef+fieldnot vs. CR)</td>
<td>0.94 (0.85, 1.05)</td>
</tr>
</tbody>
</table>
9.2. Changes in description of interventions

The study by Katz et al. was described as "patient referral + education" for the group advised by a nurse and "minimal patient referral" for the group advised by the disease intervention specialist (see also Table 10). We changed this as follows:

Group advised by disease intervention specialist (I1)  \(\Rightarrow\) patient referral + counselling

Group advised by nurse (C)  \(\Rightarrow\) patient referral with contact cards

The description of the intervention in the patient referral groups is poor in the trial by Katz et al. (1988). No exact description is provided about what constituted "counselling". We assumed that disease intervention specialists are more knowledgeable about the respective infection and its management and therefore provide more counselling than nurses. This re-classification is debatable. However, the re-classifications do not change the interpretation or conclusions drawn.

The terms "accelerated partner therapy", "expedited partner therapy", and "patient-delivered partner therapy" were used interchangeable in previous versions of the review. However, the terms "expedited partner therapy" and "patient-delivered partner therapy" are usually used in the USA and refer to the practice of providing index patients directly with medication for their partner(s) (see Glossary for a detailed explanation). The term "accelerated partner therapy" is usually used in the UK and refers to the practice of expediting the treatment of sexual partners following a medical assessment, which could be performed by telephone or by a pharmacist (see Glossary for a detailed explanation). Because all relevant trials included in this review were conducted in the USA the term "patient-delivered partner therapy" will be used only in later versions of the review.

9.3. Changes in Evidence statements

Because we were able to obtain an internal report of one of the unpublished trials (see below) we included two additional Evidence statements. Therefore, the numbering of the statements changed (+2 from Evidence statement 1.4 onwards).

Evidence statement 3.6 (1.4 in old version) has been changed to:

There is conflicting evidence from three randomised controlled trials\(^1\) (two\(\_\_\_\_\)one unclear) that patient referral supplemented by additional education or information for index patients diagnosed with gonorrhoea and their partner(s) is not more effective in terms of number of partners who get tested than minimal patient referral with contact cards.

Evidence statement 1.5 (old version) was deleted.

\(^1\) (Cleveland 2001; Katz et al. 1988; Kissinger et al. 2005; Solomon 1988)
9.4. *Missed trials*


<table>
<thead>
<tr>
<th>Study ID</th>
<th>Study type</th>
<th>Setting</th>
<th>Interventions</th>
<th>Outcomes</th>
<th>Number of patients</th>
<th>Age</th>
<th>Sex</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solomon 1988</td>
<td>RCT, individuals</td>
<td>1 public STD clinic, USA Gonorrhoeae 05/1984-01/1985</td>
<td>Intervention: Educational videotape and patient referral with contact cards. Control: Patient referral with contact cards</td>
<td>Unclear (partners tested)</td>
<td>Overall: 902 Intervention: 456 Control: 446</td>
<td>Median Overall: 23 years</td>
<td>Only eligible</td>
<td>Partners tested: “no significant difference” (denominator unclear)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Study ID</th>
<th>1.1 Appropriate and clearly focused question</th>
<th>1.2 Random assignment</th>
<th>1.3 Concealment method</th>
<th>1.4 Subjects, investigators, and outcome assessor blinded</th>
<th>1.5 Baseline comparison</th>
<th>1.6 Differences in treatment of intervention and control groups</th>
<th>1.7 Outcome measurement</th>
<th>1.9 Intentions to treat analysis</th>
<th>1.10 Comparability in multiple studies</th>
<th>Overall assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solomon 1988</td>
<td>Adequately addressed</td>
<td>Not reported/unclear</td>
<td>Unclear</td>
<td>Not addressed</td>
<td>Well covered</td>
<td>Adequately addressed</td>
<td>Not addressed</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>–</td>
</tr>
</tbody>
</table>

This new information does not change the conclusions drawn in Evidence statement 3.6, p. 45.

9.5. *Additional information on studies received after completion of review*

We were able to obtain the unpublished report of one of the unpublished trials: Cleveland 2001.

In the unpublished report details regarding the primary outcomes of interest were provided: persistent or recurrent infections in index patients. Based on all index patients reexamined (available case analysis) The results are as follows:

Persistent or recurrent infections:

Patient referral + education (I1): 6.3% (21/333)

Contract referral (I2): 7.7% (26/337)

Patient referral (C): 7.6% (23/302)

I1 vs. C: Δ = -1.3%; 95%-CI: % -5.5% to 2.7%
I2 vs. C: Δ = 0.1%; 95%-CI: % -4.2% to 4.3%
I1 vs. I2: Δ = -1.4%; 95%-CI: % -5.4% to 2.5%

No differences could be detected between the three different interventions. Evidence statement 3.10, p. 50 states that there is conflicting evidence from randomised-controlled trials whether contract referral results in higher numbers of detected infections in partner(s) when compared to patient referral. The updated results on primary outcomes of interest (persistent or recurrent infections) are in line with these findings.

9.6. **Synthesis of rapid review findings**

In order to provide a comprehensive summary and interpretation of findings we included an additional chapter: 5. Synthesis of rapid review findings, p. 94.