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Editorials

Screening for chlamydia

Information on prevalence and risks is insufficient for trials to inform policy

Many developed countries offer screening for *Chlamydia trachomatis* to young people, with the aim of controlling high rates of chlamydia infection and reducing the reproductive health risks associated with such infection.¹ In England alone, more than £100m (€111m; \$150m) has been spent on delivering screening since 2003.² However, the benefits of screening are uncertain for many reasons, not least because evidence that screening reduces the incidence of pelvic inflammatory disease, which can lead to chronic pelvic pain, tubal factor infertility, and ectopic pregnancy, has been questioned because of "methodological inadequacies" in the trials carried out to date.³

In the linked study (doi:10.1136/bmj.c1642), the Prevention of Pelvic Infection (POPI) trial, **Oakeshott** and colleagues' primary objective was to examine whether screening sexually active young women reduced the incidence of pelvic inflammatory disease.⁴ They tackled this important question by exploiting a window of opportunity that arose because the English national chlamydia screening programme, established as part of the strategy to improve sexual health in young people, was introduced in some areas before others.⁵ This enabled them to conduct a randomised controlled trial in parts of London where the screening programme was not yet available. The trial recruited more than 2500 female students and after the women had taken vaginal swabs to screen for chlamydia infection, the samples were randomised to either immediate testing and referral for treatment if positive or deferred testing at 12 months.

It is disappointing but not surprising that this study could not provide a clear answer as to whether screening is effective in reducing the incidence of pelvic inflammatory disease. The risk of pelvic inflammatory disease in women who were screened immediately was lower than in control participants (relative risk 0.57, 95% confidence interval 0.29 to 1.11) after adjustment for symptoms at baseline, but this reduction was not statistically significant. However, the study's value lies in the insights it provides into the risks of acquiring pelvic inflammatory disease from chlamydia.

The justification for investing in chlamydia screening rests primarily on the assumption that pelvic inflammatory disease is common enough to constitute a public health problem, and that chlamydia is a major cause of the condition. However, estimates of its incidence vary greatly; in an audit of records from just one clinical centre, rates of diagnosis ranged from 0% to 5.7%.⁶ The authors of the POPI trial based their sample size on the assumption of a 3% incidence of pelvic inflammatory disease in the control group. However, the incidence of pelvic inflammatory disease was only 1.9% in the unscreened control women. Despite achieving an impressive 94% follow-up, the study was not adequately powered to detect a statistically significant effect of screening, but in itself this suggests that the incidence of pelvic inflammatory disease in the population studied may be lower than previously estimated.

In the POPI trial most cases of pelvic inflammatory disease occurred in women who tested negative for chlamydia at baseline. The authors argue that this may be because chlamydia was acquired after screening in many women, particularly those at high risk of becoming infected (women reporting two or more sexual partners during the year), and they conclude that to prevent pelvic inflammatory disease in women at high risk of infection, screening should take place more than once a year. An alternative explanation may be that chlamydia was not the cause of pelvic inflammatory disease in those cases. Chlamydia infection increases women's risk of pelvic inflammatory disease but may be responsible for a minority of cases only; other sexually transmitted infections and risky sexual behaviour independently increase the risk.⁷ The POPI trial assessed the effectiveness of one episode of chlamydia screening on reducing pelvic inflammatory disease and was not designed to measure any effect of other infections. When England's national chlamydia screening programme is delivered as intended, chlamydia tests should be accompanied by sexual health advice and, after a positive result, by treatment of the current sexual partner. Therefore, it has the potential to confer greater benefit than screening alone by reducing the risk of other sexually transmitted infections and by reducing the overall prevalence of chlamydia.

Whether the national screening programme can fulfil its potential is the subject of debate. According to a recent National Audit Office report, local areas deliver the programme in different ways with varying success, but, overall, the programme has not been delivered as intended. Forty per cent of young people did not receive safer sex advice when tested, 72% of areas failed to meet recommended standards for treatment of partners, and the proportion of young people tested by the programme fell short of target levels of coverage.² Furthermore, international data cast doubt on the capacity of screening to reduce the prevalence of chlamydia. In Sweden and the United States, the proportion of screening tests with positive results fell initially after screening was introduced but has since increased.^{8 9}

As the authors of the POPI trial point out, another trial of this nature is not feasible in England because the chlamydia screening programme is now available nationally. The study also illustrates the problems of obtaining the evidence that is required to inform policy in this controversial field.² Without an improved understanding of the prevalence of chlamydia and the extent of the risk of complications associated with infection, other trials of chlamydia screening will face challenges of design and interpretation similar to those encountered in the POPI trial. Statistical approaches such as "multiparameter evidence synthesis," which combine results from different study designs to make best use of available evidence without requiring further data collection, have been used to investigate screening strategies for other infections.¹⁰ The application of these approaches to chlamydia may advance our understanding of the course of the infection and offer directions for future studies.

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