The program cost and cost-effectiveness of screening men for Chlamydia to prevent pelvic inflammatory disease in women

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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
This study examined the cost-effectiveness of strategies including screening men for chlamydia to prevent pelvic inflammatory disease (PID) in women. The authors concluded that screening high-risk men was a cost-effective alternative to screening more women for the prevention of PID. The methods largely appeared to be satisfactory, but it is not clear if the authors' conclusions were appropriate given the confusing incremental analysis and the selection of strategies.

Type of economic evaluation
Cost-effectiveness analysis, cost-utility analysis

Study objective
This study examined the cost-effectiveness of strategies for screening high-risk men for chlamydia to prevent pelvic inflammatory (PID) disease in women.

Interventions
The basic screening strategy was to screen 35% of women only. The alternative strategies were screening women plus partner notification, extended screening for women, screening women plus 1% of men, screening women and men plus notification for the men, screening women and men plus notification for both, and screening women plus 3% of men plus notification for the men. Men and women were aged between 15 and 34 years.

Location/setting
USA/community.

Methods
Analytical approach:
This economic evaluation was based on a dynamic decision analytic model with a hypothetical cohort of 50,000 men and 50,000 women aged between 15 and 34 years. The model had a 20-year time horizon and the authors stated that the study was conducted from a societal perspective.

Effectiveness data:
The clinical data came from a selection of known, relevant published studies and primary data collection. The main evidence, which was the chlamydia prevalence and the rate of chlamydia infection among men, came from a longitudinal study of repeat chlamydia infection conducted in four US cities with 23,000 male participants between 2001 and 2003. The venues for screening included correctional institutions, school clinics, community-based organisations, adolescent primary care, drug treatment centres, and street outreach settings. Other data were from the literature. The key clinical endpoint was the prevalence of disease.

Monetary benefit and utility valuations:
The utility estimates were obtained from published studies.

Measure of benefit:
The summary benefit measures were the quality-adjusted life-year (QALY), number of prevented cases of PID in women, and number of prevented cases of PID sequelae in women and men. These benefits were discounted at an NHS Economic Evaluation Database (NHS EED)  
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annual rate of 3%.

Cost data:
The economic analysis included the costs associated with the screening tests, treatment for PID and its sequelae, and partner notification. The resource use data were not reported. The costs were derived from various sources, including published studies, the association of public health laboratories, and a private company. The price year was 2006. All costs were in US dollars ($) and were discounted at an annual rate of 3%.

Analysis of uncertainty:
Both univariate and bivariate sensitivity analyses were performed on the key model parameters, such as the prevalence of disease, screening cost, and screening coverage. Alternative values were based on published ranges or on authors’ assumptions.

Results
The societal costs for screening the cohort of 50,000 men and 50,000 women were $5,812,690 for women; $5,840,680 for women plus partner notification; $5,866,080 for more women; $5,861,280 for screening women and men (1%); $5,866,320 for women and men plus notification for men; $5,894,190 for women and men plus notification for both; and $5,973,220 for women and more men (3%) plus notification for men.

The expected cases of sequelae in women were 1,104.4 for screening women; 1,103.8 for women plus notification; 1,100.6 for more women; 1,097.6 for women and men; 1,095.9 for women and men plus notification for men; 1,095.3 for women and men plus notification for both; and 1,079.2 for women and more men (3%) plus notification for men.

The QALYs lost for men and women combined were 448.52 for screening women; 448.23 for women plus notification; 447.07 for more women; 445.91 for women and men; 445.25 for women and men plus notification for men; 444.96 for women and men plus notification for both; and 438.82 with women and more men plus notification for men.

The incremental costs per case prevented and per QALY saved were calculated for all the strategies. For example, compared with women plus notification, the strategy of screening more women was associated with a cost of $8,038 per case prevented and $21,991 per QALY saved. The strategy of screening women and men was cost saving (i.e. generating fewer QALYs lost at lower costs), compared with screening more women. Screening women and men plus notification for men was cost-effective over screening women and men alone.

The sensitivity analysis showed that the strategy of screening women and men was not always cost saving, but had an average of $10,520 per QALY gained over screening more women.

Authors' conclusions
The authors concluded that screening for high-risk men was a cost-effective alternative to screening women for the prevention of PID.

CRD commentary
Interventions:
The screening strategies were reasonably well described. A strategy that screened women aged up to 25 years was not included, even though the authors stated that existing guidelines suggested this was appropriate. The authors also noted that they didn't include a strategy on repeat screening of women or men who tested positive. The inclusion of these strategies might have changed the cost-effectiveness of the other strategies, and so this is a partial evaluation.

Effectiveness/benefits:
The clinical data were appropriately taken from several sources, including a longitudinal study conducted in four US cities and published literature. The source of the screening percentage for the baseline strategy was not reported and details of the review of the literature were not given. The key clinical inputs were varied in the sensitivity analysis. Both disease-specific (number of PID cases prevented) and broad (QALYs) health outcomes were applied as benefit measures. The source of the utility data was reported, but the methods, such as the instrument used to elicit them, were not.
Costs:
The categories of costs were appropriate for the perspective stated and the unit costs were presented. Details on the price year and discount rate were appropriately given. In general, providing more details in the cost analysis would have increased the transparency of the study.

Analysis and results:
The expected costs and benefits were presented. An incremental analysis of the costs and benefits was performed, but the method was confusing. The authors did not eliminate two dominated strategies for different reasons, but all dominated strategies, whether strictly dominated or by extension, should be eliminated. It would have been less confusing if the authors had completed an incremental analysis eliminating all the dominated strategies and then redone this analysis excluding the strategies that were less relevant according to their new selection criteria. Deterministic analysis and Monte Carlo sampling were extensively conducted to address the issue of uncertainty.

Concluding remarks:
The methods largely appeared to be satisfactory, but it is not clear if the authors’ conclusions were appropriate given the confusing incremental analysis, the selection of strategies, and the lack of information on the literature review.

Funding
Not stated.

Bibliographic details

PubMedID
18830137

DOI
10.1097/OLQ.0b013e31818b6ac

Original Paper URL
http://journals.lww.com/stdjournal/Fulltext/2008/11001/The_Program__Cost__and__Cost_Effectiveness__of.12.aspx

Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
Adolescent; Adult; Chlamydia Infections /diagnosis /economics /microbiology /transmission; Chlamydia trachomatis /isolation & purification; Contact Tracing /economics; Cost-Benefit Analysis /economics; Female; Humans; Male; Mass Screening /economics; Pelvic Inflammatory Disease /epidemiology /microbiology /prevention & control; Prevalence; Program Evaluation; Quality-Adjusted Life Years; Sexual Partners; United States; Urban Health; Young Adult

AccessionNumber
22009100377

Date bibliographic record published
05/08/2009

Date abstract record published