Assessment of the routine, occupation-based gonorrhea and syphilis screening program in Moscow, Russia: an analysis of sexually transmitted infection prevalence and cost-effectiveness

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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
The objective was to conduct a cost-effectiveness analysis of occupation-based screening for syphilis and gonorrhoea. The authors concluded that modifications to occupation-based screening, including more focus on higher-risk populations, could improve the allocation of prevention resources. Overall the methodology was satisfactory, and the methods and results were adequately reported. Given the scope of the analysis, the authors’ conclusions appear to be appropriate.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The objective was to conduct a cost-effectiveness analysis of occupation-based screening for syphilis and gonorrhoea. The four occupational groups were: food handlers and other food industry workers; market salespeople; education and health care providers; and hotel and public utility workers.

Interventions
The interventions were: screening for gonorrhoea only; screening for syphilis only; screening for gonorrhoea and syphilis; and no screening.

Location/setting
Russia/primary care.

Methods
Analytical approach:
The authors reported that, to examine the cost-effectiveness of screening, a decision tree model was adapted from one reported in Kraut, et al. 2002 (see 'Other Publications of Related Interest' below for bibliographic details). The time horizon was not explicitly reported. The authors adopted a limited societal perspective.

Effectiveness data:
The prevalence of syphilis and gonorrhoea in each of the occupational groups, together with the performance of the screening tests, was derived from a cohort study conducted in Moscow from June to October 2001. From each occupational group, 250 participants were recruited consecutively and screened for gonorrhoea and syphilis. Other data, such as the disease progression rates, treatment rates, and treatment effectiveness were derived from other sources, including published and unpublished data.

Monetary benefit and utility valuations:
None.

Measure of benefit:
The measure of benefit was the number of sexually transmitted infections (STI) treated successfully.
The direct costs included those relating to: screening; treatment of gonorrhoea in the acute stage, epididymitis, and pelvic inflammatory disease; and treatment of syphilis in the primary, secondary, latent, and late benign states, cardiovascular syphilis, and neurosyphilis. The costs included within these categories were not reported; the authors stated that all direct medical care costs were included regardless of who incurred them. The treatment costs were estimated by the authors based on expert opinion, published studies, and a series of assumptions. Future costs were discounted at an annual rate of 3%. All costs were reported in US dollars ($) and Russian rubles (RUB), using an exchange rate of RUB 1 equals $0.03. The price year was 2003.

Analysis of uncertainty:
A series of one-way sensitivity analyses was performed to determine how the results were affected by changes in baseline estimates. The base-case values were varied for screening costs; treatment costs; probability of progression to sequelae; STI prevalence; and test performance.

Results
In a cohort of 1,000 women, the number of STI cases treated successfully was 7.4 with no screening, 8.9 with gonorrhoea screening, 12.4 with syphilis screening, and 13.9 with syphilis and gonorrhoea screening. The total costs were RUB 33,981 ($1,019) with no screening, RUB 99,295 ($2,979) with gonorrhoea screening, RUB 76,173 ($2,285) with syphilis screening, and RUB 106,487 ($3,195) with syphilis and gonorrhoea screening.

In a cohort of 1,000 men, the number of STI cases treated successfully was 8.7 with no screening, 9.5 with gonorrhoea screening, 13.7 with syphilis screening, and 14.5 with syphilis and gonorrhoea screening. The total costs were RUB 31,057 ($932) with no screening, RUB 97,173 ($2,915) with gonorrhoea screening, RUB 73,249 ($2,197) with syphilis screening, and RUB 104,365 ($3,131) with syphilis and gonorrhoea screening.

These costs and benefits were combined in an incremental cost-effectiveness ratio (ICER), which was the incremental cost per STI successfully treated. Compared with no screening, gonorrhoea screening was associated with an ICER of RUB 8,409 ($252) both for men and women. Compared with syphilis screening, gonorrhoea screening was dominated, which means it was both more costly and less effective, in both men and women. Compared with syphilis screening, syphilis and gonorrhoea screening was associated with an ICER of RUB 20,179 ($605) in women and RUB 41,325 ($1,240) in men.

The sensitivity analysis showed that combined syphilis and gonorrhoea screening was less sensitive to changes in the probability of sequelae than in other parameters such as screening and treatment costs, prevalence, and test performance.

Authors' conclusions
The authors concluded that modifications to occupation-based screening, including an increased focus on higher risk populations, could help with the more effective use of prevention resources.

CRD commentary
Interventions:
The interventions were reported clearly and in detail.

Effectiveness/benefits:
Details were adequately reported for the cohort study, which was used to obtain the prevalence data for the four occupational groups and the screening performance. The authors did not report a systematic review of the literature to identify those data not derived from the cohort study, which makes it unclear if all the relevant evidence was included. They did report all of the clinical and effectiveness parameters and their sources.

Costs:
A limited societal perspective was adopted, but it appears that no indirect costs, such as productivity losses, were included. The costs included within each of the treatment and screening categories were not reported. Brief details of how the costs were derived were reported. All the adjustments to cost data were adequately reported including the exchange rates and discounting. The time horizon was not reported, but it is clear that long-term costs were included.
The price year was adequately reported.

Analysis and results:
The costs and benefits were adequately reported using an incremental cost-effectiveness ratio. The impact of uncertainty was investigated in detail using a one-way sensitivity analysis. A probabilistic sensitivity analysis, which is considered to be the gold standard in the UK, would have captured the overall model uncertainty better. The limitations of the study were adequately reported and included a lack of information available on the medical costs of STI diagnosis and treatment, and the small sample size for each occupational group.

Concluding remarks:
Overall the methodology was satisfactory, and the methods and results were adequately reported. Given the scope of the analysis, the authors’ conclusions appear to be appropriate.

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