The cost-effectiveness of HIV voluntary counseling and testing in China
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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 study assessed the cost-effectiveness of free HIV voluntary counselling and testing in the general population and among men who have sex with men. The authors concluded that the HIV voluntary counselling and testing programme provided value-for-money in a high-risk population (such as men who have sex with men), but it was not cost-effective in the general population. The study used a conventional cost-effectiveness framework. The authors' conclusions appear robust.

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

Study objective
The study assessed the cost-effectiveness of free HIV voluntary counselling and testing in the general population and among men who have sex with men.

Interventions
The interventions examined were HIV voluntary counselling and testing for the general population, and HIV voluntary counselling and testing for men who have sex with men. The main aim of counselling was to increase condom use. The comparator was no active intervention.

Location/setting
China/primary care.

Methods
Analytical approach:
The analysis was based on a published HIV transmission model in a hypothetical cohort of 10,000 individuals. A lifetime horizon was used. The authors stated that the study adopted a societal perspective.

Effectiveness data:
A selective approach appeared to be used to identify relevant sources for model inputs. Limited information on these sources was generally given. Epidemiological and behavioural parameters where taken from Chinese studies, whenever possible. The probability of HIV-transmission came from studies conducted in Africa and the USA because of the lack of local sources. Similarly, the efficacy estimates for the voluntary counselling and testing programme (one of the key inputs of the model) were taken from an African study that used US-based evidence. Some assumptions were also made, such as 100% participation rate to the programme.

Monetary benefit and utility valuations:
Disability weights from HIV infection and AIDS were taken from the Global Burden of Disease study.

Measure of benefit:
The summary benefit measures were the number of HIV infections averted and the number of disability-adjusted life-years (DALYs). A 3% annual discount rate was applied.

Cost data:
The costs included were those of the HIV voluntary counselling and testing programme (programme development and update, training of counsellors, counselling and testing, increased condom use among clients, administration, and
evaluation), and the lifetime costs of HIV care and treatment. The lifetime cost of HIV was taken from a study carried out in China that involved in-patient and out-patient costs for the Chinese province of Shandong. All economic data on the voluntary counselling and testing programme were based on official statistical reports and expert opinion. The price year was 2002. Costs were estimated in Chinese Yuan (CNY) and were also presented in International dollars (INT$) using the official purchasing power parity in 2002. Costs were discounted at an annual rate of 3%.

Analysis of uncertainty:
One-way sensitivity analyses were carried out on all inputs using published and assumed ranges of values.

Results
In the high-risk group of men who have sex with men, the programme cost CNY 920,000, averted 36 HIV infections, and saved 734.4 DALYs. As the lifetime costs of HIV care and treatment per person were higher than the cost per person of the programme, HIV voluntary counselling and testing was dominant as it was more effective and cost-saving over usual care.

In the general population, the programme cost CNY 876,915, averted 0.7 HIV infections, and saved 14.3 DALYs. The incremental cost per HIV infection averted with voluntary counselling and testing programme over usual care (including averted costs) was CNY 1,087,669 (INT$ 604,261). The incremental cost per DALY saved was CNY 53,317 (INT$29,621). Both figures would not be regarded as cost-effective using the criterion of the gross domestic product (GDP) per capita.

These results were robust when tested with one-way sensitivity analyses. The most influential inputs were condom use, number of partners, and number of sex acts; in most simulations the base-case results did not qualitatively change.

Authors’ conclusions
The authors concluded that the HIV voluntary counselling and testing programme provided value-for-money for a high-risk population (such as men who have sex with men), but it was not cost-effective for the general population.

CRD commentary
Interventions:
The rationale for the selection of the comparators was clear as the proposed programme was compared with usual care in the study setting.

Effectiveness/benefits:
Limited information was given on the methodological aspects of the clinical side of the study. The approach used to identify data sources was not reported and few details were given. Some data were derived from Chinese databases, but other inputs were based on estimates from other countries, which raised issues on the differences in epidemiological patterns of disease transmission across countries (as acknowledged by the authors). However, no local data were available; the authors tried to overcome this by performing extensive sensitivity analyses. Extensive details of the methods used to calculate benefit measures were reported. Both benefit measures appeared appropriate for capturing the burden of the disease. In particular, DALYs would allow cross-diseases comparisons.

Costs:
A broad perspective was adopted, so long-term costs of HIV management were taken into account. No formal justification was given for the exclusion of costs associated with HIV-related productivity costs. Costs and quantities associated with the voluntary counselling and testing programme were broken down, which enhanced the transparency of the analysis. All cost items included were presented in detail. Costs were treated deterministically and varied in the sensitivity analyses. Other details, such as the discount rate and price year, were reported, with appropriate conversions to international dollars. The authors highlighted the fact that these costs were representative of a specific area of China (Shandong province) which might be different from other Chinese areas.

Analysis and results:
Projected costs and benefits were synthesised using an incremental approach, which allowed the identification of the optimal intervention using the conventional benchmark of the pro capita GDP. Uncertainty was investigated using a
deterministic approach, which considered variations of model inputs singly rather than simultaneously. The results were presented in detail for the two populations examined. The authors acknowledged some limitations of their analysis in the discussion, mainly the lack of local data for some clinical inputs and the poor quality of other estimates. They also stated that behavioural parameters were based on self-reported values that might be biased. The analysis was based on a one-year programme, so the effect of a longer counselling and testing programme was unclear. The results are specific to the local context of China and did not appear to be transferable to other countries.

Concluding remarks:
The study used a conventional cost-effectiveness framework. The authors’ conclusions appear robust.

Funding
The authors received no financial support for the research, authorship, and/or publication of this article.

Bibliographic details

PubMedID
21727082

DOI
10.1177/1010539511412576

Original Paper URL
http://aph.sagepub.com/content/23/4/620.abstract

Indexing Status
Subject indexing assigned by NLM

MeSH
Adolescent; Adult; Algorithms; China; Cost-Benefit Analysis; Counseling /economics; Female; HIV Infections; HIV Seropositivity /diagnosis; Humans; Male; Mass Screening; Middle Aged; Young Adult

AccessionNumber
22012000196

Date bibliographic record published
22/02/2012

Date abstract record published
25/07/2012