The cost-effectiveness of syndromic management in pharmacies in Lima, Peru

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.

Health technology
A training programme, which aimed to inform pharmacy workers about the syndromic management of sexually transmitted diseases (STDs), was studied. The programme involved inviting all pharmacy workers to participate in training, where they were taught to recognise, diagnose, treat, or refer patients with STDs on the basis of national guidelines for syndromic management. The training seminars and materials were free.

Type of intervention
Other: training programme.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised 7 pairs of geographical districts in Lima, Peru. Pharmacies in one district from each pair received the training programme. Following the training, "simulated patients" visited 100 randomly selected pharmacies. The authors did not state whether any districts were excluded from the analysis.

Setting
The setting was the community. The economic study was carried out in Lima, Peru.

Dates to which data relate
The effectiveness data were collected from studies published between 1984 and 2001. The authors reported that the costs were gathered over the 3-year study period (1997 - 2000) and were reported in year 2000 prices.

Source of effectiveness data
The effectiveness data were derived from a review and synthesis of completed studies, supplemented with authors’ assumptions.

Modelling
A probabilistic multivariate sensitivity analysis model was used to assess the impact of the parameters on the results.

Outcomes assessed in the review
The following outcomes were assessed in the review:

population;
prevalence of gonorrhoea, chlamydia, trichomoniasis, bacterial vaginosis, syphilis, chancroid and herpes simplex virus-2 (HSV-2);

the annual incidence of HSV-2 infection;

the average duration of infection for gonorrhoea, chlamydia, trichomoniasis, bacterial vaginosis, syphilis and chancroid;

the percentage that were symptomatic for gonorrhoea, chlamydia, trichomoniasis, bacterial vaginosis, syphilis, chancroid and HSV-2;

the percentages that led to pelvic inflammatory disease (PID), that had HSV-2 recurrent episodes, and that sought treatment in a pharmacy.

Study designs and other criteria for inclusion in the review
Not reported.

Sources searched to identify primary studies
Not reported.

Criteria used to ensure the validity of primary studies
The authors tried to use published estimates for Peru. When these were not available they used global estimates.

Methods used to judge relevance and validity, and for extracting data
Not reported.

Number of primary studies included
Twenty-two primary studies were included in the review.

Methods of combining primary studies
The prevalence of STDs was estimated using a weighted average (based on sample size).

Investigation of differences between primary studies
Not reported.

Results of the review
The population comprised 634,733 males and 651,140 females.

Male prevalence of gonorrhoea was 1.4% (range: 0.8 - 2), of chlamydia 2.8% (range: 1.8 - 3.8), of syphilis 1.5% (range: 1 - 2), of chancroid 0.2% (range: 0.1 - 0.3), and of HSV-2 8% (range: 4 - 12).

Female prevalence of gonorrhoea was 2.6% (range: 1 - 4.2), of chlamydia 9% (range: 2 - 16), of trichomoniasis 9% (range: 2 - 16), and bacterial vaginosis 30% (range: 20 - 40).

The annual incidence of HSV-2 infection was 1% (range: 0.5 - 1.5) in males.

The average duration of infection in males was 6 months (range: 2.5 - 9.5) for gonorrhoea, 12 months (range: 8 - 16) for chlamydia, 6 months (range: 2.5 - 9.5) for syphilis, and 6 months (range: 2.5 - 9.5) for syphilis.
The average duration of infection in females was 6 months (range: 2.5 - 9.5) for gonorrhoea, 12 months (range: 8 - 16) for chlamydia, 36 months (range: 12 - 60) for trichomoniasis, and 7 months (range: 2 - 12) for bacterial vaginosis.

In males, 60% (range: 25 - 95) were symptomatic for gonorrhoea, 50% (range: 40 - 60) for chlamydia, 13% (range: 5 - 20) for syphilis, 85% (range: 70 - 100) for syphilis, and 40% (range: 10 - 70) for HSV-2.

In females, 40% (range: 10 - 70) were symptomatic for gonorrhoea, 35% (range: 5 - 65) for chlamydia, 35% (range: 10 - 60) for trichomoniasis, and 20% (range: 10 - 30) for bacterial vaginosis.

Fifteen per cent (range: 1 - 29) of chlamydia and gonorrhoea cases led to PID in females.

Ninety per cent of males had HSV-2 recurrent episodes.

Forty per cent (range: 10 - 70) of males and 40% (range: 10 - 70) of females sought treatment in a pharmacy.

Methods used to derive estimates of effectiveness
The authors made assumptions to supplement the estimates from published studies.

Estimates of effectiveness and key assumptions
The authors assumed the following:

the parameters were the same for the intervention and comparator districts, except for the percentage of clients adequately managed;

the population was the number of males and females of reproductive age; and

there were no multiple infections.

Measure of benefits used in the economic analysis
The summary measure of benefit used in the economic analysis was the cases adequately managed.

Direct costs
The costs were estimated from the perspectives of the programme and society. They were gathered during the 3 years of the study (1997 - 2000). Despite this, no discounting was reported. The costs were calculated as the difference between the comparison and intervention districts, rather than the actual cost.

The authors acknowledged both fixed and variable costs (i.e. those that varied with the number of people attending the clinic and those that did not). The fixed costs were capital costs such as census-taking and planning intervention materials. The variable costs included materials for pharmacy training seminars and follow-up materials, transportation, productivity losses and personnel. The costs of the simulated patients were not included, as the authors felt they were part of the research rather than the intervention itself. Other variable and societal costs, such as referral to a physician for genital ulcer disease and PID, transportation to a physician, consultation and subsequent care, were not included.

The source of the costs was not reported. The simulated patients recorded their medication costs during some of their assessment visits. The mean price per episode was computed for each syndrome for the intervention and control districts. The costs were reported in year 2000 prices.

Statistical analysis of costs
There was no statistical analysis of the costs.
**Indirect Costs**
The indirect costs were not included.

**Currency**
US dollars ($).

**Sensitivity analysis**
One-way and multi-way sensitivity analyses were carried out to assess the impact of “all parameters” on the incidence and cost-effectiveness results. The multi-way sensitivity analysis took the form of a probabilistic analysis, using 1,000 iterations to generate distributions for the outcome variables.

**Estimated benefits used in the economic analysis**
In year 1, an estimated 21,231 extra cases were adequately managed. The authors reported that during the 3 years 63,693 additional cases were, therefore, adequately managed. Approximately 74% of these cases were believed to be due to the treatment of vaginal discharge.

**Cost results**
The 3-year incremental capital programme costs were $24,243.

The 3-year incremental recurring programme costs were $193,476.

The 3-year incremental total programme costs were $217,719.

The societal costs for vaginal discharge per episode were $6.10 (standard deviation, SD=3.40) in the comparison districts and $2.55 (SD=3.06) in the intervention districts.

The societal costs for PID per episode were $2.32 (SD=2.73) in the comparison districts and $1.76 (SD=2.35) in the intervention districts.

The societal costs for urethral discharge per episode were $10.69 (SD=4.58) in the comparison districts and $11.44 (SD=5.31) in the intervention districts.

The societal costs for genital ulcer disease per episode were $9.40 (SD=8.0) in the comparison districts and $8.75 (SD=4.84) in the intervention districts.

**Synthesis of costs and benefits**
The cost per case adequately managed was $3.67 from the intervention programme perspective.

As the proportion of women seeking treatment increased from 10 to 70% the cost per case adequately managed decreased from $8.94 to $2.31.

The cost per case adequately managed was -$1.51 from the societal perspective.

The results were most affected by the proportion of women seeking treatment, the duration of bacterial vaginosis and the proportion of women with symptomatic bacterial vaginosis.

**Authors’ conclusions**
The authors concluded that, for a wide range of assumptions, pharmacy-based training in syndromic management was likely to be cost-effective.
CRD COMMENTARY - Selection of comparators
The authors compared training pharmacy workers in syndromic management of STDs with no training. The alternatives were justified through a discussion of the advantages of syndromic management, such as obviating the need for diagnostic tests. The current practice in the authors' setting was no training.

Validity of estimate of measure of effectiveness
The authors did not state that a systematic review of the literature had been carried out. Some estimates of effectiveness from the primary studies were combined using weighted averages based on sample size. This method accounted for the relative size of the studies used in the review. It was unclear whether all the estimates of effectiveness were combined using this method. Sensitivity analyses were carried out to assess the impact of differences between the estimates of effectiveness observed in the primary studies.

Validity of estimate of measure of benefit
The estimate of benefit (cases adequately managed) was obtained directly from the effectiveness analysis and was the natural measure of choice.

Validity of estimate of costs
The costs were estimated from the perspective of the programme and society. The programme perspective included all the categories of costs relevant to that perspective. However, the societal perspective failed to include a number of key costs central to this perspective, such as the costs of the patients' time in receiving treatment, transportation, and subsequent care. The authors acknowledged the omission of some of these costs. Essentially, the societal perspective focused on estimating medication costs and may, therefore, be more accurately categorised as costs to the third-party payer or costs to the individual. These omissions may have affected the results and conclusions of the study. The unit costs were not reported separately from the quantities.

Other issues
The authors made appropriate comparisons of their findings with those from other studies. They highlighted some difference and discussed some reasons for these differences. The issue of generalisability to other settings was not addressed. However, the inclusion of a number of districts suggests that the results are generalisable within the included geographical area. Wider generalisability would have to be established with further work. The authors did not report the total programme costs from the societal perspective. This information could have improved the reader's understanding of the results presented. The authors' conclusions accurately reflected the objective and scope of the analysis. However, a thorough discussion of how the intervention could be cost-saving from a societal perspective was not provided. Such a discussion would have improved the understanding and persuasiveness of the results. Limitations were presented in the form of omissions in the cost analysis.

Implications of the study
The authors did not make any recommendations for changes in policy or practice as a result of the study, and did not suggest any further work.

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Other publications of related interest


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