The impact of prophylaxis on outcome and resource utilization in Pneumocystis carinii pneumonia

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
Chemoprophylaxis for pneumocystis carinii pneumonia in HIV infected patients.

Type of intervention
Secondary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
HIV-infected patients with PCP on sputum or bronchoalveolar lavage smears.

Setting
One acute hospital in the USA. The economic study took place in the USA.

Dates to which data relate
Effectiveness data was based on the period January 1 to December 31, 1991.

Source of effectiveness data
Single study.

Link between effectiveness and cost data
The costing was undertaken retrospectively on the same patient sample as that used in the effectiveness study.

Study sample
The study sample comprised 79 patients. 43 patients (54%) had never had prophylaxis prescribed. Of these, 26 (60%) had not been diagnosed with HIV before the episode of PCP and 17 had a diagnosis of HIV but had never received chemoprophylaxis. 36 patients (46%) had been prescribed prophylaxis. Of these, 18 (50%) were assessed to be noncompliant. Therefore, 61 patients (77%) were not receiving PCP prophylaxis. There were no significant differences by race, sex or HIV transmission category between groups who were prescribed prophylaxis and those who were not, or between those who were compliant or non-compliant(p>0.05).

Study design
Retrospective cohort study. Follow-up was not specified.
Analysis of effectiveness
Analyses of the clinical study were based both on intention to treat, and compliance. The primary health outcome used in the analysis was a confirmed diagnosis of PCP. There were no significant differences by race, sex or HIV transmission category between groups who were prescribed prophylaxis and those who were not, or between those who were compliant or non-compliant (p>0.05). However, when these two reasons for lack of prophylaxis were combined, white patients and homosexuals were more likely to be taking prophylaxis than non-whites (p<0.05) and injection drug users (p<0.05) respectively.

Effectiveness results
Only 1 patient who had been prescribed prophylaxis (3%) required admission to the ICU, compared with nine (21%) of those not prescribed prophylaxis (p<0.05). No patient who took prophylaxis required ICU admission. 11 of 18 (61%) patients who took prophylaxis were hospitalized, compared with 54 of 61 (89%) who did not take prophylaxis (p<0.05). 12 (20%) of the latter group died during hospitalisation, whereas all patients who took prophylaxis survived their episode of PCP (p<0.05).

Clinical conclusions
Patients who developed PCP despite receiving prophylaxis were less likely to require hospitalisation or ICU admission for treatment of their pneumonia.

Measure of benefits used in the economic analysis
Number of deaths averted.

Direct costs
Total hospital charges were obtained from computerised hospital billing records for all patients who required admission to the hospital. Outpatient charges were not included. The inpatient charges were complete, with the exception of professional fees. Hospital charges reflected the cost in Maryland according to regulations established by the Maryland Cost Review Commission.

Currency
US dollars ($).

Sensitivity analysis
None carried out.

Estimated benefits used in the economic analysis
Implementation of prophylaxis could have averted 62 deaths.

Cost results
Data on hospital charges for hospitalised patients were available on 63 of the 65 patients who required admission. The total hospital charges for the 63 patients were $849,540. The median charge was $9,014 (range $2,127 to $148,842). Although differences in charges and length of stay based on prophylaxis status were not significant, charges for patients who were not taking prophylaxis were $753,608 (89% of the total charges).

Synthesis of costs and benefits
After extrapolating the findings to the state of Maryland, effective implementation of prophylaxis could have averted
62 deaths and approximately $4.7 million in hospital costs. Prophylaxis is the dominant strategy.

**Authors' conclusions**
This study showed the negative consequences of inadequate therapy for advanced HIV disease and illustrated the disproportionate use of medical resources by patients without appropriate primary care. The findings emphasized the importance of early diagnosis of HIV infection and of institution of prophylaxis in patients at risk for PCP.

**CRD Commentary**
No sensitivity analysis was carried out. In addition, the authors highlighted a number of limitations to their study:

1. hospital stay and death are only indirect measures of the severity of PCP
2. patients receiving prophylaxis may have better access to medical care than patients not receiving prophylaxis
3. patients not receiving primary care may have concurrent untreated illnesses that could contribute to mortality or prolonged hospital stay
4. the need for hospitalization is not necessarily a good indicator of severity of disease
5. the selection criteria used would tend to identify a disproportionate number of sicker patients requiring hospitalisation.

**Bibliographic details**

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**Other publications of related interest**

**Indexing Status**
Subject indexing assigned by NLM

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