The effect of a hospitalist service with nurse discharge planner on patient care in an academic teaching hospital


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
Patients who were examined in a hospital internal medicine ward were treated by a medical team that included a hospitalist and a nurse discharge planner. The hospitalists were junior faculty members from the General Internal Medicine Department who received no specialist training, but were spending 4 months a year (instead of the usual 1 month) on the wards without any outpatient responsibilities. The hospitalists were told to be involved with the formulation and implementation of practice guidelines, and to focus on reducing the costs as long as patient care did not suffer. A nurse discharge planner trained in case management was assigned to the hospitalist. She helped decide on admissions and discharges, educated other staff as to the cost implications of tests, and negotiated with insurance companies. The two comparator treatments were treatment by a team with a generalist and treatment by a team with a specialist. Neither of the comparator treatments had a nurse discharge planner.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The patient population in the study were patients admitted to the inpatient general internal medicine service, with the exception of Medicare length-of-stay outliers and those who had major surgery while in the hospital. Patients treated by the cardiology and haematology-oncology departments were not included.

Setting
The setting was tertiary care. The economic study was carried out in West Virginia, USA.

Dates to which data relate
The effectiveness and resource evidence related to 1998 to 1999. The price year was not explicitly reported, but it is presumed to have been 1998 or 1999.

Source of effectiveness data
The effectiveness data were derived from a single study.

Link between effectiveness and cost data
The same patients provided both the effectiveness and cost data, but it was unclear whether the costing was carried out prospectively or retrospectively.
**Study sample**
No power calculations were reported. There was no sample selection. There were 2,577 patients admitted to general internal medicine ward services. Of these, 30 were excluded from the hospitalist group, 35 from the generalist group and 48 from the specialist group. Thus, 2,464 patients were included in the analysis. There were 829 patients in the hospitalist group, 761 in the generalist group and 874 in the specialist group.

**Study design**
This was a single-centred non-randomised trial. The patients were allocated to the type of treatment depending on which day they were admitted. The admitting team made the decisions on admission versus observational status. The patients were followed up until 30 days after hospital discharge. There was no loss to follow-up.

**Analysis of effectiveness**
The analysis was conducted on an intention to treat basis. The primary health outcomes used were 30-day readmission rates, mortality rates and the patient(s), resident(s) and student(s) satisfaction. Satisfaction was scored on a 5-point Likert scale. There were no significant differences between the patient groups at baseline in terms of age, gender or case-mix index. However, specialist-staffed services had more patients on Medicaid, (p=0.03) and fewer who were members of managed care organisations than the other two groups, (p<0.01). Hospitalists had more patients in observation (as opposed to admission) than the other two groups, (p<0.0001).

**Effectiveness results**
The mortality rate was higher in the specialist group. Mortality was 2.2% in the hospitalist group, 2.6% in the generalist group and 5.0% in the specialist group, (p=0.002). This difference persisted after adjusting for age, payer status and case-mix index, (p=0.003).

The 30-day readmission rates were similar in all groups. Readmission was 5.1% for the hospitalist group, 5.7% for the generalist group and 6.4% for the specialist group, (p=0.7).

Satisfaction was uniformly high in all groups, with no significant differences.

**Clinical conclusions**
The authors concluded that the quality of care provided by the team with the hospitalist and the nurse discharge planner was as good as that provided by the specialist and generalist teams. They also highlighted the results of a patient satisfaction survey which showed no statistically significant difference in the percentage of patients rating their physician very good or excellent.

**Measure of benefits used in the economic analysis**
No summary measure of benefits was produced. As such, the authors carried out a cost-consequences analysis.

**Direct costs**
This study considered only the hospital costs. The hospital costs included inpatient stay, length of hospital stay and diagnostic tests (chemistry, haematology, radiology and computed tomography scans). The inpatient costs included those for resident and support staff, but not staff physicians. The costs were not broken down into quantities and unit prices. The costs were estimated using actual data from the hospital using the Trendstar Clinical Cost Accounting System. No price year was given. Discounting was not carried out since all the costs were incurred during less than 2 years. The costs were included for the duration of the hospital stay. The average costs per patient were reported.

**Statistical analysis of costs**
Simple descriptive statistics were produced for the costs.
Indirect Costs
No indirect costs were included.

Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was carried out.

Estimated benefits used in the economic analysis
See the 'Effectiveness Results' section.

Cost results
The mean cost per patient was $4,290 (standard deviation, SD=6,512) for the hospitalist group, $4,850 (SD=7,027) for the generalist group and $6,066 (SD=7,550) for the specialist group, (p<0.0001 for hospitalists versus specialists; p=0.11 for hospitalists versus generalists).

After adjusting for age, payer status and case-mix index, hospitalist-staffed services had approximately 25% lower costs than specialist-staffed services, (p<0.0001) and approximately 10% lower costs than generalist-staffed services, (p=0.08).

Not all knock-on costs would have been included, as Medicare length-of-stay outliers and patients having major surgery were excluded from the study.

Synthesis of costs and benefits
The costs and benefits were not combined as the study was, in effect, a cost-consequences analysis.

Authors’ conclusions
Hospitalist services with a nurse discharge planner were associated with lower average costs and a shorter length of hospital stay, without any apparent compromise in clinical outcomes or patient satisfaction.

CRD COMMENTARY - Selection of comparators
The choice of the comparators was justified by them having been commonly used in the authors’ setting. You should decide if this is a widely used health technology in your own setting.

Validity of estimate of measure of effectiveness
The effectiveness data were derived from a single study. The study was a non-randomised trial, which was less appropriate than a randomised trial for the study question. Although the patients were shown to be comparable in terms of demographic characteristics, the specialist group had a higher percentage of patients on Medicaid. However, it would appear that appropriate statistical techniques were undertaken to account for potential biases and confounding factors. The aim of the study was to compare the outcomes resulting from three kinds of medical team, but the hospitalist team included a nurse discharge planner whose main purpose was to reduce the costs. Therefore, it is unclear to what extent the results from the hospitalist team can be attributed to the type of doctor or to the nurse discharge planner. The study sample excluded cost outliers and this exclusion reduces the value of the study. It would have been useful to have results which also included cost outliers.
Validity of estimate of measure of benefit
The authors did not derive a summary measure of health benefit. The study was, in effect, a cost-consequences analysis. The reader is therefore referred to the comments in the ‘Validity of estimate of measure of effectiveness’ field (above).

Validity of estimate of costs
Although the authors reported that the costs were estimated from a hospital perspective, staff physician costs were not included. It is not clear how this omission would have affected the authors’ conclusions. The costs were not reported separately from the quantities, though some information on the quantities was given. This limits the generalisability of the authors’ results to other settings. The resource use quantities were taken from a single study, while the prices were taken from the authors’ setting. Cost-differences between the two treatment groups were tested for significance using appropriate statistical techniques. No sensitivity analysis or any other kind of analysis of the prices was conducted. The price year was not given, which will hinder future reflation exercises. Discounting was, appropriately, not carried out as all the costs were incurred during less than 2 years.

Other issues
The authors made comparisons of their results with the findings from other studies. They also discussed some issues of generalisability. The authors do not appear to have presented their results selectively and their conclusions reflected the scope of the analysis. The authors were aware that the small number of hospitalists (3) used in the study may limit generalisability. Also, the results did not make clear the contribution of the discharge planner. The authors did not show that they were aware of the usefulness of breaking down the costs into prices and quantities in order to assess generalisability to other settings. The authors thought it was possible that the higher percentage of Medicaid patients in the specialist group might have affected the results.

Implications of the study
The authors recommended further research that breaks down the effect of the hospitalist and the nurse discharge planner, and which includes a larger number of hospitalists. Although the authors argued for the exclusion of surgical and length-of-stay outliers, it would still be of interest to see what effect they have on the results.

Source of funding
None stated.

Bibliographic details

PubMedID
11755506

Indexing Status
Subject indexing assigned by NLM

MeSH
Adult; Aged; Attitude of Health Personnel; Female; Health Care Rationing /economics; Hospital Mortality; Hospitalists /economics; Hospitalization /economics; Hospitals, Teaching /economics; Humans; Length of Stay /economics; Male; Middle Aged; Nurses; Outcome and Process Assessment (Health Care) /economics; Patient Admission /economics; Patient Care /economics; Patient Discharge /economics; Patient Satisfaction /economics; Quality of Health Care /economics

AccessionNumber