A firm trial of interdisciplinary rounds of the inpatient medical wards: an intervention designed using continuous quality improvement.

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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.

Health technology
The health technology examined in the study was a service of interdisciplinary rounds on inpatient medical wards. The team members included interns and residents in medicine, staff nurses, nursing supervisors, and representatives of other disciplines active in patient care. The intervention enhanced the interaction among all disciplines involved in patient care. It also made pharmacy, nursing and ancillary workloads more predictable and efficient since orders were written during the rounds.

Type of intervention
Patient care management.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised all patients admitted to the medical inpatient units. Patients were excluded if their hospital stay was not on the medical firm they had been assigned to, if they were transferred from medicine to another service (e.g. surgery), or if less than 50% of their stay occurred on the medical floor.

Setting
The setting was a university-affiliated, tertiary care county hospital. The economic study was carried out at the MetroHealth Medical Center, Cleveland (OH), USA.

Dates to which data relate
The effectiveness and resource use data were gathered from 8 November 1993 to 31 May 1994. The price year was not reported.

Source of effectiveness data
The effectiveness evidence was derived from a single study.

Link between effectiveness and cost data
The costing was conducted on the same sample of patients as that used in the effectiveness study. It was unclear whether it was carried out prospectively.

Study sample
Power calculations do not appear to have been performed. All consecutive eligible patients admitted to the study
centre over the timeframe reported (8 November 1993 to 31 May 1994) were enrolled into the study. An overall sample of 1,102 patients was included. Of these, 535 patients received traditional medical rounds (TR) and 567 received interdisciplinary rounds (IR). The mean age in the TR group was 53.9 (+/- 18.6) years and 51.4% were women. The mean age in the IR group was 52.7 (+/- 18.8) years and 52% were women. It was not stated whether some patients refused to participate or were excluded from the initial study sample.

**Study design**
This was a randomised, controlled firm trial, which was carried out in six ward services at the MetroHealth Medical Center. The Department of Medicine consisted of three firms, and both the physicians and patients were randomised to one of these firms on their first encounter with the medical service. The average length of follow-up was not stated, although it was based on the length of stay. It would appear that no patient was lost to follow-up. A blind method of assessment was not used in the analysis.

**Analysis of effectiveness**
All of the patients included in the initial study sample were taken into consideration when estimating the effectiveness. Thus, it appears that the basis of the clinical study was intention to treat. The outcomes evaluated in the effectiveness study were:

- the hospital death rate,
- the percentage of patients discharged home,
- the percentage of patients discharged to a skilled or interim care facility,
- provider satisfaction,
- the actual implementation of the recommendations made by the two teams, and
- the readmission rates.

The study groups were comparable at baseline in terms of their gender, race, insurance status, age and case-mix characteristics. However, those in the IR group had a lower rate of urinary tract infections or obstructions. Several statistical tests were conducted to evaluate the impact of potential confounders on the results of the effectiveness study.

**Effectiveness results**
The hospital death rate was 1.9% in the TR group and 1.8% in the IR group, (p=0.90).

The proportion of patients discharged home was 73.1% in the TR group and 73.9% in the IR group, (p=0.79).

The proportion of patients discharged to a skilled or interim care facility was 12.3% in the TR group and 9.4% in the IR group, (p=0.12).

The hospital readmission rate was 13.1% in the TR group and 12.4% in the IR group, (p>0.05).

In terms of provider satisfaction, a factor analysis identified three main clusters of related items. These were overall understanding of patient care, effective communication, and team work. The analysis showed that the providers in the IR group (n=21) had significantly better scores in all three fields than did those in the TR group (n=19).

The actual implementation of the recommendations made by the two teams was similar in the respiratory therapy department, but was better for the IR group in nutrition services.
Clinical conclusions
The effectiveness study showed that there was no statistically significant difference between the two interventions, although staff members were more satisfied with the new IR.

Measure of benefits used in the economic analysis
The two study interventions were considered similar in terms of the outcome measures. A cost-minimisation analysis was therefore carried out.

Direct costs
Discounting was irrelevant and was not carried out. The unit costs and the quantities of resources used were not analysed separately. A detailed breakdown of the costs was not provided. The costs were derived from the hospital's administrative and billing system. Thus, charges were used to estimate the costs. The cost/resource boundary adopted was not explicitly stated. Resource use was estimated using actual data derived from the charts of the patients included in the effectiveness trial. No price year was mentioned, but the prices were likely to have referred to 1993 to 1994.

Statistical analysis of costs
Statistical tests were conducted to test whether the differences in length of hospitalisation and overall charges reached statistical significance. An analysis based on a multivariate propensity scores was carried out to represent the sampling differences between the patients in the two groups. A sub-group analysis considered a stratification of the sample by transfer status, which was considered a possible confounding factor.

Indirect Costs
The indirect costs were not included in the economic analysis.

Currency
US dollars ($).

Sensitivity analysis
Sensitivity analyses were not conducted.

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

Cost results
The average length of stay was 6.06 (standard deviation, SD=7.65) days in the TR group and 5.46 (SD=7.26) days in the IR group, (p=0.006).

The estimated average charges were $8,090 (SD=11,985) in the TR group and $6,681 (SD=7,651) in the IR group, (p=0.002).

These differences remained statistically significant when statistical tests were applied.

Synthesis of costs and benefits
Not relevant because a cost-minimisation analysis was carried out.
Authors' conclusions
The multidisciplinary health care team was associated with substantial cost-savings when compared with the traditional approach used for ward rounds. The intervention did not lead to an increase in readmission rates, but the authors did not make any statement on the fact that the study intervention improved the patients' health.

CRD COMMENTARY - Selection of comparators
The rationale for the choice of the comparator was clear. The authors compared the new approach with the usual practice before the introduction of the new IRs. You should decide whether it represents a valid comparator in your own setting.

Validity of estimate of measure of effectiveness
The effectiveness analysis used a randomised controlled trial, which was appropriate for the study question. The methods of randomisation and patient allocation to the study groups were reported. The study sample was unselected and it appears to have been representative of the study population. The study groups were comparable at baseline, with the exception of one factor of case-mix, which was more severe in the control group. Several statistical analyses were conducted to test the impact of potential confounding factors on the estimated outcome measures.

Power calculations were not reported, but the sample size was fairly large. The length of follow-up was not stated. The authors acknowledged that the outcome measures were not appropriate to detect the effect of the study intervention on patient health. Thus, they were unable to state that the IRs improved the quality of the service provided. Instead, surrogate measures were used. The authors also noted that there was concern that the firm system did not perform perfect randomisation.

Validity of estimate of measure of benefit
The two interventions were considered equally effective. Thus, the analysis was categorised as a cost-minimisation study.

Validity of estimate of costs
The perspective adopted in the study was not stated and it was unclear which categories of costs were included in the analysis. A breakdown of the costs was not provided. The costs were estimated from the billing system of the study hospital and charges rather than true costs were used. The price year was not stated. The cost estimates were specific to the study setting and no sensitivity analyses were performed. Overall, few details of the cost analysis were reported and the reproducibility of the study in other settings was difficult. Several statistical tests were conducted to analyse the impact of other factors on the estimated costs of the study interventions.

Other issues
The authors compared their findings with those reported in published studies and found some differences. In particular, more favourable results were observed in the present study, maybe due to the inclusion of a healthier and younger study sample. Caution is therefore required when interpreting the results of the present study in relation to other study populations. The authors did not address the issue of the generalisability of the study results to other settings and did not perform a sensitivity analysis. Thus, the external validity of the analysis was low. The authors noted some limitations of their study.

Implications of the study
The study results suggested that IRs led to a statistically significant reduction in length of stay and charges for patients admitted to medical services.

Source of funding
NHS Economic Evaluation Database (NHS EED)
Bibliographic details

PubMedID
9708578

Indexing Status
Subject indexing assigned by NLM

MeSH
Communication; Efficiency, Organizational; Female; Hospital Charges /statistics & numerical data; Hospital Units /standards; Hospitals, County; Hospitals, Teaching; Humans; Inpatients /psychology; Interprofessional Relations; Length of Stay /statistics & numerical data; Male; Management Quality Circles /organization & administration; Medical Audit /methods /organization & administration; Middle Aged; Multivariate Analysis; Ohio; Patient Satisfaction; Regression Analysis; Total Quality Management /organization & administration

AccessionNumber
21999008111

Date bibliographic record published
29/02/2004

Date abstract record published
29/02/2004