Mental health costs and outcomes under alternative capitation systems in Colorado: early results

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
Mental health costs and outcomes under three alternative payments systems: two models of capitation versus one Fee For Service (FFS) system.

Type of intervention
Payment systems.

Economic study type
Cost-effectiveness analysis.

Study population
Severely and persistently mentally ill adult patients, aged 18 and over, with diagnoses of schizophrenia, bipolar disorder or at least one 24-hour inpatient stay.

Setting
State hospital, local hospital and outpatient care. The economic study was carried out in the State of Colorado, USA.

Dates to which data relate
The effectiveness data were taken from 1995. For the outcome indicators the period of study was six months. For the economic indicators, two study periods were considered: the nine months prior to capitation (from October 1994 to June 1995) and a nine month period post-capitation (from October 1995 to June 1996). The price year used was not stated.

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

Link between effectiveness and cost data
The costing was undertaken retrospectively on a patient sample containing a subset of that used in the effectiveness study.

Study sample
Power calculations were not used to determine the sample size. The stratified (by gender) random sample included 513 consumers: 188 subjects for model I, 179 subjects for model II and 146 subjects for FFS areas. Patients were randomly selected from 1994 Medicaid files and 1995-1996 admission rolls from the Community Mental Health Centers (CMHCs). 170 subjects were excluded from the original sample.
Study design
This was a non-randomised controlled trial with concurrent controls carried out using three aggregate service types (multicentre): state hospital, local hospital and outpatient care. The follow-up period was six-months for the outcome indicators prior to capitation. The follow-up period was intended to be two years post-capitation on outcomes. The loss to follow-up of subjects in the study was not stated.

Analysis of effectiveness
The analysis of effectiveness was based on intention to treat. The primary health outcomes included general health (measured by the MOS-SF36), mental health symptoms (measured by the Brief Psychiatric Rating scale), functional status, quality of life, finances and consumer satisfaction (evaluated using the Colorado consumer satisfaction survey). The groups in the study were shown to be comparable in terms of gender, although the ethnicity and age distributions were significantly different.

Effectiveness results
Examination of pre-measures of outcomes across capitated areas suggests that samples drawn from the FFS, model I and model II do not present changes in clinical outcomes. Given the number of individual measures analysed, the potential for chance results exists. A 95% confidence interval and P values less than 0.05 were used.

Clinical conclusions
No change in short-term clinical outcomes during this period was found between the two capitated models and the comparison (FFS) group.

Modelling
A two-step regression procedure was used in the study to compare mental health costs under the three alternative payment systems. The first step in this procedure adjusted for the presence of individuals with service use or no service use during the period of study while the second step (ordinary least-squares regression) was applied to the sample of patients who utilized services. The regression models included socio-demographic factors, whether patients were high cost or low cost prior to capitation, and patients' service utilisation pattern.

Measure of benefits used in the economic analysis
Since the interventions and the comparator proved to be of similar effectiveness, the analysis was based on differences in costs only.

Direct costs
Cost discounting was not reported. Quantities and costs were not reported separately. Direct costs to the health services included the costs of treatment for each individual (individual or group therapy, crisis and evaluative services, case management and day treatment programmes) and costs for supported residential arrangements, namely inpatient costs and outpatient costs in the pre- and post-capitation periods. Direct treatment costs of services data were taken from the Medicaid claims data and a shadow billing data system (post-capitation). The price date was not stated.

Statistical analysis of costs
Costs were subject to statistical analyses (student's t-test, Chi-squared test, etc).

Indirect Costs
Indirect costs were not considered in the analysis as they were deemed to be insignificant, based on the findings of previous studies.
Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was carried out.

Cost results
A nine month period prior to capitation was compared to a nine month period post-capitation. The cohort was followed for up to two years prior to capitation and for two years following capitation for both service utilisation and costs. The results on the pre- and post-capitation costs per person were:

Average total (SD) costs per person prior to capitation:
- FFS: $5,421 (13,982),
- Model I: $4,086 (8,542), and
- Model II: $7,253 (14,851)

Average total (SD) costs per person post-capitation:
- FFS: $4,454 (12,543),
- Model I: $4,797 (11,275), and
- Model II: $3,581 (8,000).

The estimated total cost per person for model I suggests virtually no change from the pre- to post-capitation period. Model II had the highest pre-capitation and the lowest post-capitation estimated cost per person.

The results for the two-part model analysis of inpatient and outpatient costs found that inpatient user costs were lower and statistically significant for model I (p=0.06) and model II (p=0.04) in comparison to FFS after capitation. Pre-capitation outpatient costs for model I and model II were higher than the FFS area (p=0.005 and 0.08, respectively), and higher for model I than model II. Total user costs were higher than FFS (p=0.015) for model II, but lower (p=0.10) following capitation in comparison to the other two models.

Authors' conclusions
In the short term, capitation can reduce service costs per person without significant change in clinical status.

CRD COMMENTARY - Selection of comparators
The reason for the choice of comparator is clear. The FFS system was the common method of payment used in this setting.

Validity of estimate of measure of benefit
It would have been useful to have had evidence of whether the initial study sample was appropriate for the clinical study question. The outcomes of each alternative (FFS, model I and Model II) could, usefully, have been compared between the pre- and post-capitation periods. The authors acknowledged that the short follow-up period represents a limitation of the study.
**Validity of estimate of costs**
It is difficult to assess the validity of the costs results since the source of data related to outpatient service data (shadow billing data system) suffers from a lack of detail and possible under-reporting of outpatient services (a limitation acknowledged by the authors).

**Other issues**
Sensitivity analysis would have strengthened the validity and generalisability of the results. Appropriate comparisons with other studies were made.

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