Medicare reimbursement for preventive care: changes in performance of services, quality of life, and health care costs


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
Full Medicare reimbursements and office systems, for the provision of packages of preventative care and of health promotion to elderly persons.

Type of intervention
Primary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
Persons aged 65 years and over.

Setting
The practice setting was primary care. The economic study was carried out in North Carolina, USA.

Dates to which data relate

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

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

Study sample
1,914 patients, who were eligible and who consented, were enrolled into the study. This sample was 45% of those eligible to participate.945 persons were allocated to the intervention group and 960 were allocated to the control group.39.9% of the intervention group was aged 75 and over, compared with 40.1% of the control group.61.7% of the intervention group was female, compared with 60.5% of the control group.61.7% of the intervention group was married, compared with 60.5% of the control group.56% of the intervention group and 57.9% of the control group was white.35.5% of the intervention group had received post high school education, compared with 34.5% of the control group.51% of the intervention group and 49.2% of the control group had an annual income of at least $10,000. Power calculations were not used to determine sample size.
Study design
The study was a multi-centre, randomised control trial, consisting of ten primary-care medical practices, located at 13 sites. Patients were stratified by age (65-74 and 75 years or more) and by gender and then randomly allocated to the intervention or the control group. The follow up period was 2 years. Loss to follow up was 18% overall and this was reported to be the case for both intervention and control groups. Of those lost to follow up, 30.8% refused the second interview, 46.1% died, and the remaining 23.1% either dropped out of the study owing to transportation problems, moved, or could not be located. Assessors were blinded to the research question; the control group was not identified to primary care practices.

Analysis of effectiveness
Three outcomes were used to measure effectiveness, each analysed on a different basis.

(1) The first outcome was the percentage of procedure performance, both before and after randomisation. Nine of these procedures were intervention activities (including 4 functional screens) and 2 were non-intervention activities. Performance included the offer or discussion of a service, irrespective of whether the service was completed. The analysis of this outcome was based on a review of medical charts for a sub-sample of 455 patients (231 in the intervention group), located at 3 of the 10 study practices and all of whom were randomised during the first year of the study. The review period for the chart audit varied in length, covering the time from date of randomisation (RD) up to the end of 1988.

(2) The percentage of abnormal screening test results and the associated rate of follow up were also reported. The analysis for these outcomes was based on a review of all patient encounter forms, which were completed only for the intervention group.

(3) Three health-related quality of life scores were measured at baseline (results reported for the study sample as a whole) and at the two-year follow up patient interview (results reported by treatment group for all those completing the interview).

At the time of analysis, groups were demonstrated to be comparable in terms of demographic characteristics, but not in terms of clinical characteristics.

Effectiveness results
At baseline, there was 'little difference' in the percentage performance of preventive procedures between the two groups. At the end of the review period, the percentage of intervention activities performed was statistically significantly higher in the intervention group, relative to the control group (p<0.001). No significant difference was detected between the groups in the percentage of non-intervention activities performed.

The percentage of abnormal test results in the intervention group ranged from 2.8% of the faecal occult blood tests (FOBT) to 31.9% of the hearing tests. Whereas 9.5% of abnormal clinical breast examinations were not followed up, 90.2% of those with urinary incontinence had no treatment, referral or test.

At the 2-year follow-up interview the mean Quality of Well-Being (QWB) score for survivors in the intervention group (N=718) was 0.66 and for the control group (N=744) it was 0.65, (p<0.05). This difference disappeared when deaths were included in the analysis. The mean Perceived Quality of Life (PQOL) score for survivors in the intervention group (N=751) was 81.52, compared with 79.93 in the control group (N=763), (p<0.01). The mean Self-Perceived Health Status (SPHS) score for survivors in the intervention group (N=773) was 2.97 and in control group (N=791) it was 2.83, (p<0.01).

Clinical conclusions
The performance of screening tests dramatically increased in the intervention group relative to control, but there was evidence of lack of follow-up of abnormal findings by physicians. At the 2-year follow-up, there were minimal
differences between intervention and control groups in the health-related quality-of-life indicators.

**Measure of benefits used in the economic analysis**
Measures of effectiveness were not converted to a single measure of health benefit.

**Direct costs**
Costs were analysed from the perspective of the Health Care Financing Administration (HCFA) and covered a 2-year pre-RD period and a three-year post-RD period. Only post-RD costs were included in the analysis, which included Medicare reimbursement costs and Medicare charges (relating to all health care received) and the cost of wavered services (annual capitated payments to physicians for preventive care visits and for health promotion counselling visits). The mean number of hospital admissions and of hospital days was also calculated. Reimbursement costs and charges were derived from Medicare reimbursement records. Unit costs for wavered services were reported; otherwise, costs and quantities were not reported separately. All charges and reimbursements were reported in 'current' dollars, but the price year was not stated. Costs were not discounted, but reimbursements were deflated in line with the Hospital and Related Services component of the Consumer Price Index.

**Statistical analysis of costs**
Probit multiple regression models were used to analyse the impact of the intervention, adjusted for various demographic and baseline measures, on the reimbursed costs of both groups.

**Indirect Costs**
Not included.

**Currency**
US dollars ($).

**Sensitivity analysis**
A sensitivity analysis was not performed.

**Estimated benefits used in the economic analysis**
Not applicable.

**Cost results**
Pre-RD costs were reported to be higher in the intervention group, relative to the control group, in terms of both health care utilisation and average cumulative costs. The statistical significance of this result was not reported. The total Medicare per-patient charge over the post-RD period was $10,143 (SD=$21,413) in the control group and $8,937 (SD=$17,009) in the intervention group, yielding a difference of means of $1,206. The total Medicare per-patient reimbursement cost over the period was $5,110 (SD=$10,024) in the control group and $4,607 (SD=$8,453) in the intervention group, yielding a difference of means of $503. Over the same period, the mean per-patient cost of wavered services for survivors in the intervention group was $294.

**Synthesis of costs and benefits**
Since the intervention was found to be cost saving, a synthesis of costs and benefits was not performed.

**Authors’ conclusions**
Relative to the per-patient cost for wavered services, the intervention was reimbursed-cost neutral or slightly cost saving. However, adding reimbursement for preventive services to Medicare -even with the office systems changes - will not by itself lead to effective implementation of preventive services in community medical practices. To enhance patient benefit from preventive services, greater attention needs to be focussed on an organised approach to patient follow-up.

CRD COMMENTARY - Selection of comparators
The reason for the choice of comparator was clear, namely that the absence of incentive and office systems, to encourage preventive care, represented ‘usual practice’. You, the user of the database, should decide if this is true of your own setting.

Validity of estimate of measure of benefit
Study patients were randomised and assessors were blinded to the research question. However, the method of concealment of allocation was not reported, and the validity of the randomisation process is therefore unclear. Only the quality of life scores were measured for all available patients in both groups. The results of baseline interviews were reported in terms of the whole sample, with no separate reporting for intervention and control groups. Other measures of effectiveness related to sub-groups of the study. These factors may limit the interpretability of the effectiveness results.

Validity of estimate of costs
The cost saving or cost neutral finding of the study was based on observed differences in the level of Medicare reimbursements between the two groups over the 3-year post-intervention period. It is unclear whether changes in these costs can be attributed to the intervention, which did not modify treatment of many diseases found typically to be costly in this age group. No detail of the clinical characteristics of each group was reported, either at baseline or at follow-up and only brief details of cost data, relating to the 24 months prior to randomisation, were given. The existence of confounding factors cannot therefore be ruled out. The mechanism by which the intervention might have produced net healthcare cost savings was not addressed. In the short term, health care costs would be expected to rise as screening leads to earlier intervention.

Other issues
As the authors acknowledged, the study has an inadequate length of follow-up to determine whether any long-term savings are obtained from earlier intervention. In addition, it is unclear how generalisable the study findings are to other settings, particularly those outside the USA. Qualitatively, the study provided some useful insights into physician behaviour. Although the intervention considerably improved the uptake of screening activities, abnormal results from these were often not pursued. Semi-structured interviews suggested a multiplicity of factors, for example, physicians perceived follow up to be of little benefit to patients. It is unclear whether a systematic approach to follow-up would guarantee patient benefit, and the authors acknowledged the need for further studies to determine this issue.

Implications of the study
To establish the cost-effectiveness of Medicare reimbursement for preventive care packages and the use of office systems, relative to no intervention, a larger study sample with longer follow up would be needed. Further studies are also needed to determine the cost-effectiveness of a systematic approach to patient follow-up.

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