The cost-effectiveness of a multifactorial targeted prevention program for falls among community elderly persons


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
Prevention programmes: a targeted intervention (TI) versus usual care (UC) for the prevention of falls among elderly people in the community.

Type of intervention
Primary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
Patients older than 69 years who were independently ambulatory, not resident in a nursing home, not currently enrolled in another study of ageing, with a score of at least 20 on the Folstein mini mental state examination, no participation in vigorous physical activity or exercise within the past month and with at least one of the targeted risk factors.

Setting
Community. The study was carried out in USA.

Dates to which data relate
Effectiveness and resource data were taken from a report published in 1994. 1993 prices were used.

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

Link between effectiveness and cost data
The costing was not undertaken on the same patient sample as that used in the effectiveness study.

Study sample
Power calculations were not stated. 301 patients were included in the study (85% of the eligible sample); the remainder did not agree to participate. The patients were allocated randomly: 153 to the TI group and 148 to the usual care (UC) group. Sixteen physicians were frequency-matched into 4 groups of four physicians each according to the number of their patients aged 70 or over and the mean number of prescriptions written per office visit. From each quartet, 2 physician were assigned randomly to the TI and 2 to the UC group. 20 (SD 5) subjects were enrolled randomly from each physician's practice.
Study design
This was a multi-centred randomised controlled trial. The centres were hospital, emergency department and home care. The duration of follow up was 1 year after the start of the intervention. The loss to follow-up was not clearly stated. A blinding method for assessment of outcomes was used.

Analysis of effectiveness
The principle used to analyse the data in the clinical study was treatment completers only. The study focused on two health outcomes: total falls prevented and falls requiring medical attention prevented. The instruments used to value this data were: a “fall calendar” and interviews. Although it was stated that groups were comparable in demographic and health characteristics and number of targeted risk factors at baseline, it was not clear whether this referred to the restricted sample or was based upon the total 301 patients enrolled. The group of refusals was reported to be comparable to enrolled participants (whole 301 patient sample) in terms of age, gender and group assignment.

Effectiveness results
The TI group had a lower incidence of falls than the UC group, 86 (148 patients) versus 152 (140 patients). When falls were standardised by 100-participant years, the incidence was 58 and 109, respectively. The incidence of falls requiring medical attention was also lower for the TI group than the UC group: 22 versus 35 (standardised figures per 100 participant years were 15 and 25, respectively). The number of falls for the UC group was 106 among high risk and 46 among low risk subjects and the corresponding figures for the TI group were 50 and 36. The number of falls requiring medical attention for the TI group among high risk and low risk subjects was 11 whilst the number of medical falls for the UC group was 22 among high risk subject and 13 among low risk subjects.

Clinical conclusions
The targeted risk factor abatement strategy (TI) was effective in preventing falls among elderly persons, particularly among individuals at high risk. It was not very clear whether TI was sufficiently cost-effective among low-risk subjects to warrant its adoption for this group.

Measure of benefits used in the economic analysis
The benefit measures were total falls prevented and falls requiring medical attention prevented. The instruments used to value this data were: a “fall calendar” and interviews.

Direct costs
Quantities and costs were not reported separately. The intervention costs to implement the fall prevention strategy in clinical practice were categorised as developmental and training costs, costs associated with identifying and enrolling participants, overhead, equipment, and staff-related expenses. Charge data rather than true costs of health services were used to value resource utilisation. Estimates of resource use were based on actual data from a sub-sample of patients included in the clinical study that estimated the benefits associated with the intervention. Quantity and cost data were based upon information from the emergency department, hospital and outpatients databases, along with self-report data obtained from the ‘fall follow up’ questionnaires. 1993 price data were used.

Currency
US dollars ($).

Sensitivity analysis
One-way sensitivity analysis was carried out, the parameters used being total health-care costs (using 25th and 75th percentiles of the final distribution of health care costs), and intervention costs (ranging from the minimum to the maximum of the actual costs obtained in the study).
Estimated benefits used in the economic analysis
The TI group had a lower incidence of falls than the UC group, 86 (148 patients) compared to 152 (140 patients). When falls were standardised by 100-participant years, the figures were 58 and 109, respectively. The incidence of falls requiring medical attention was also lower for the TI group than the UC group, 22 compared to 35 (standardised figures per 100 participant-years were 15 and 25, respectively).

Cost results
The mean intervention cost per subject in the TI group was $905 (range: $588 - $1,346). The total mental health-care costs were approximately $2,000 less in the TI group ($8,310) than in the UC group ($10,439). Among participants at high risk of falling, the mean annual health-care costs per subject were higher among the UC group ($14,232) than the TI group ($10,537). Among participants at low risk of falling, the total average cost per participant in the UC group was $5,232 (approximately $800 less than in the TI group ($6,026)).

Synthesis of costs and benefits
The estimated benefits and costs were combined as cost per fall prevented. An incremental analysis was performed. The use of mean figures showed the intervention to be the dominant strategy (except for the sub-group of low-risk patients who were associated with a figure of $2,771). When median figures were used, the overall cost per fall prevented with TI was $2,150. The TI cost for each fall prevented was $1,528 among high-risk subjects and $4,146 among low-risk subjects. In the analysis of the overall cost per fall requiring medical attention prevented, the use of mean costs showed the intervention to be the dominant strategy, except for the low-risk group which had an incremental estimate of $11,417. The use of median costs yielded a corresponding overall figure of $10,709. TI cost was $7,848 per fall requiring medical attention prevented among the high-risk subjects and $17,082 among low-risk subjects. When only intervention costs were considered, the average cost per fall prevented was $1,772. The mean cost among high-risk group was $1,496 compared with $2,886 among low-risk subjects. The average cost per fall requiring medical attention prevented was $8,824 ($7,580 among high risk, $11,892 among low risk subjects).

Authors' conclusions
The targeted risk factor abatement strategy was cost-effective in preventing falls among elderly people, particularly among individuals at high risk.

CRD COMMENTARY - Selection of comparators
The study design was appropriate for the problem considered, with the comparator (usual care) involving social worker visits so as to control for the psychological effect of increased attention upon health outcomes (placebo-type effect).

Validity of estimate of measure of benefit
Power calculations were not used to determine the sample size. Some patients originally included in the clinical trial were excluded from the economic analysis (in part due to cost reasons), and this may have introduced bias into the results of health outcomes. The method of random allocation was not stated.

Validity of estimate of costs
The estimates were based on charges rather than true costs. The study design seems to have tried to minimise bias in the administration of data collection. The study did not include the costs of time incurred by patients while receiving treatment and illness.

Other issues
The generalisability of the study to other settings or countries was not addressed.

Source of funding
Supported by grants U01AG0987 (FICSIT) and P60AG10487 (Claude D Pepper Older Americans Independence Center) from the National Institute on Aging.
Bibliographic details

PubMedID
8792783

Indexing Status
Subject indexing assigned by NLM

MeSH
Accidental Falls /prevention & control; Aged; Cost-Benefit Analysis; Health Care Costs; Health Maintenance Organizations /economics; Health Resources /economics /utilization; Health Services Research; Health Services for the Aged /economics; Home Care Services /economics; Humans; Incidence; Primary Prevention /economics; Risk Factors; Sensitivity and Specificity; United States

AccessionNumber
21996008214

Date bibliographic record published
31/08/1999

Date abstract record published
31/08/1999