Cost-effectiveness of a hospital-based smoking cessation intervention

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
A programme to treat hospitalized adult smokers: a hospital-based smoking cessation intervention consisting of a 20-minute bedside counselling session with an experienced counsellor, a 12-minute video, self-help materials, and one to two follow-up calls.

Type of intervention
Treatment and secondary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
Hospitalised adult smokers (aged 18 years and older) who reported smoking regularly any time in the three months before admission.

Setting
Hospital. The economic study was carried out in Oregon and Washington, USA.

Dates to which data relate
The effectiveness and resource use data were obtained from a trial completed in 1991, the clinical results of which were published in 1993 and 1994. The fiscal year was 1994.

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

Link between effectiveness and cost data
The costing was prospectively undertaken on the same patient sample as that used in the effectiveness analysis.

Study sample
Power calculations were not reported to have been used in determining the sample size. The intervention and usual care groups consisted of 453 and 666 patients, respectively.

Study design
This was a randomised controlled trial, carried out in 2 centres. The duration of follow-up was 1 year. No loss to follow-up was reported.
Analysis of effectiveness
The analysis of the clinical study was based on intention to treat. The primary health outcome used in the analysis was a "quit" rate (self-reported consecutive abstinence from all tobacco use at both 3 and 12 months) attributable to the intervention.

Effectiveness results
The quit rate was 9.2% in the usual care (UC) group and 13.5% in the intervention programme group (Chi Square=5.15, P=0.023). The 95% confidence interval based on a two-tailed t test for the incremental quit rate of 4.3% was 0.6% to 8%.

Clinical conclusions
The hospital-based smoking cessation intervention was more effective than other routine medical procedures to help smokers.

Modelling
A simulation analysis was used to estimate costs associated with the implementation of the intervention programme in a non-research environment, involving economies of scale, utilizing pre-existing materials in order to reduce development costs, and integrating programme management into the hospital.

Measure of benefits used in the economic analysis
Quit rate and life-years saved (LYS) by quitting were the main benefit measures adopted in the economic analysis. The conversion of each quit rate to LYS estimate was based on the combination of published data on smoking-related changes in life expectancy with overall life expectancy estimates.

Direct costs
Intervention costs were not discounted due to their occurring in the first year after the implementation of the programme. Quantities of resources were not systematically reported separately from the costs. The cost items were reported separately in two categories of fixed and variable costs. The usual care (UC) costs were not reported. The cost analysis for the intervention programme above UC covered the costs of identifying newly admitted smokers, soliciting cooperation, delivering bedside counselling, and follow-up after discharge. The perspective adopted in the cost analysis was that of a hospital. The cost data were collected from project surveys, expense reports, retrospective labour estimates, and the health maintenance organisation's financial staff. The price data referred to 1994. The research intervention costs included were development costs (software, video, hotline, newsletter), other fixed costs (counselling administrative, video equipment, hotline equipment, newsletter graphic design, tipsheet production, single session, computer time, Facility space), variable costs including labour (admissions, patient counselling, monitor clerk) and other variable costs such as quit kit, manual, hotline materials, newsletter printing, and postage. In the simulation model which excluded the especial research and development costs, the incremental replication costs included were counselling-administrative, video acquisition and equipment and facility space, admissions, patient counselling, supplies and brochures.

Indirect Costs
Not considered.

Currency
US dollars ($).
Sensitivity analysis
A sensitivity analysis was carried out varying the discount rate for LYS and the (incremental) quit rate, the method used being a one-way simple sensitivity analysis.

Estimated benefits used in the economic analysis
The quit rate was 9.2% in the “usual care” (UC) group and 13.5% in the intervention programme group (Chi Square=5.15, P=0.023). The 95% confidence interval based on a two-tailed t test for the incremental quit rate of 4.3% was 0.6% to 8%. The estimates of LYS were not reported. LYS were discounted at a rate of 5% (2% and 8% were alternative rates considered in the sensitivity analyses).

Cost results
The total incremental cost of hospital-based intervention was $72,021, resulting in an incremental cost of $158.99 per smoker. The simulated incremental replication costs per smoker for a cohort of 50, 500 and 5,000 smokers were $25.55, $16.45, and $15.70 respectively.

Synthesis of costs and benefits
The estimated benefits and costs were combined as an incremental cost per incremental quit attributable to the intervention and incremental cost per incremental discounted life-year saved (DLYS) attributable to the intervention. An incremental analysis was performed. The incremental cost per incremental quit was $3,697. The incremental cost per incremental discounted life years saved (DLYS) at a 5% discount rate and at incremental quit rates of 8.0%, 4.3%, 0.6% were $1,978, $3,680 and $26,374, respectively. The (simulated incremental replication) costs per (incremental) quit were $594 (n=50), $383 (n=500), 365 (n=5000), respectively, at 4.3% (incremental) quit rate. The simulated incremental costs per incremental discounted life-year saved (DLYS) for a 500 strong cohort of hospital-based smokers ranged from $94 to $5,520 depending on the incremental quit rate and discount rate ranges.

Authors’ conclusions
Providing brief smoking cessation advice to hospitalized smokers is relatively inexpensive, cost-effective, and should become a part of standard inpatient care.

CRD COMMENTARY - Selection of comparators
The reason for the choice of the comparator is clear.

Validity of estimate of measure of benefit
The estimates of benefit measures are likely to be internally validity give the use of a randomised study design.

Validity of estimate of costs
Quantities of resources were not systematically reported separately from the costs. However, adequate details of methods of cost estimation were given.

Other issues
The generalisability of the results to other settings or countries was addressed.

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