Replicating the hospital elder life program in a community hospital and demonstrating effectiveness using quality improvement methodology


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
Patients entering the geriatric section of a community teaching hospital were assessed for their risk of suffering delirium. Treatment, a slightly modified version of the Hospital Elder Life Program (HELP) based on the Yale Delirium Prevention Program, was then concentrated on patients with one or two risk factors. The risk factors considered were cognitive impairment, sleep deprivation, immobility, visual or hearing impairment, and dehydration. The other patients received some of the HELP treatment. HELP was described in another study (Inouye et al. 2000, see 'Other Publications of Related Interest' below for bibliographic details). The comparator technology was the treatment that was given before the introduction of HELP.

Type of intervention
Treatment and prevention.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised all patients aged at least 70 entering hospital.

Setting
The setting was secondary care. The economic study was carried out in the USA.

Dates to which data relate
The effectiveness data were from 2001 to 2004. Dates for the resource data were not given, but were probably 2002 to 2004. No price year was given. It was unclear whether a common price year was used.

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

Link between effectiveness and cost data
The patients who provided the effectiveness data also provided the cost data. The information given on the cost data did not permit any conclusions as to whether the costing was carried out prospectively or retrospectively. The costs given were those for a delirious patient compared with those for a non-delirious patient, they were not the costs with or without HELP.

Study sample
No power calculations were reported. The study sample consisted of the patients entering the geriatric section of a community hospital. There were 704 patients under HELP and 1,225 patients in the control group before HELP was introduced.

**Study design**
This was a non-randomised study with historical controls. The study was carried out in a single centre. The patients were not followed up after hospital discharge.

**Analysis of effectiveness**
The analysis was conducted on an intention to treat basis. The primary health outcome was the incidence of delirium. The patients' characteristics at baseline showed the two groups to be similar in many respects, although there were differences in the incidence of some diseases.

**Effectiveness results**
The delirium rate was 40.8% (standard deviation, SD=3.0) in 2001 before the introduction of HELP, 33.0% (SD=3.3) while HELP was being phased in during the first half of 2002, and 26.4% (SD=3.3) during the second half of 2002 just after HELP had been fully implemented.

In the second year of HELP, 2003, the delirium rate was 34.3% (SD=2.7). In 2004 the delirium rate was 32.3% (SD=3.6).

**Clinical conclusions**
The authors concluded that introducing HELP to the geriatric department of a community hospital had reduced the delirium rate.

**Measure of benefits used in the economic analysis**
No summary measure of benefit was used as the authors carried out a cost-consequences analysis, using one health-related outcome.

**Direct costs**
Discounting was not carried out as the costs were incurred during less than 2 years. The quantities and the costs were not analysed separately. The estimation of the costs was based on actual costs obtained from the hospital. The dates when the resources were measured were not given, but it was probably between 2002 and 2004. No price year was given.

**Statistical analysis of costs**
No statistical analysis of the costs was carried out.

**Indirect Costs**
No indirect costs were estimated.

**Currency**
US dollars ($).

**Sensitivity analysis**
The effect on the costs of changing the estimate of delirium before HELP was introduced, reducing it by a third, was investigated.

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

**Cost results**
The total cost-saving to the hospital in treating patients over a 6-month period was estimated to be $626,261.

The cost of HELP was $63,650, so the marginal cost-saving was $562,611.

When the estimate of delirium before the introduction of HELP was reduced by a third, the marginal cost-saving was $151,454.

It was unclear whether the costs of adverse effects were included or not.

**Synthesis of costs and benefits**
The costs and benefits were not combined as the study was a cost-consequences analysis.

**Authors' conclusions**
The introduction of the Hospital Elder Life Program (HELP) was a dominant intervention. It reduced hospital costs and reduced the delirium rate.

**CRD COMMENTARY - Selection of comparators**
The choice of the comparator, no HELP, was justified by it being current practice in many settings. You should decide if the comparator represents current practice in your own setting.

**Validity of estimate of measure of effectiveness**
The effectiveness data were derived from a single study. The analysis was based on a non-randomised trial with historical controls. This design is affected by potential confounding variables, which arise from changing factors in the two study periods (before and after). The study sample was representative of the study population. The patient groups were shown to be comparable in many, but not all, respects at analysis. In particular, there were certain diseases that were more common in one group than the other. For example, cerebrovascular disease was more common in the control group while gastrointestinal disease was more common in the HELP group. It was unclear whether these differences would have affected the incidence of delirium in the two groups. The analysis of effectiveness was handled credibly. The authors had to evaluate data retrospectively in order to estimate the prevalence of delirium before the introduction of HELP, but the assumptions they made seemed plausible.

**Validity of estimate of measure of benefit**
The authors did not derive a summary measure of health benefit as they carried out a cost-consequences analysis. The comments in the 'Validity of estimate of measure of effectiveness' field (above) therefore apply.

**Validity of estimate of costs**
From the cost perspective adopted (i.e. that of the hospital), the authors did not give details of the costs measured and, therefore, it was unclear whether all the relevant categories of cost were included. The costs were not reported separately from the quantities. The resource use quantities were taken from a single study, while the unit costs were taken from the authors' setting. No statistical, sensitivity or any other kind of analysis of the quantities or prices was
conducted. No price year was reported. These factors clearly hinder the internal and external validity of the findings.

**Other issues**
The authors made appropriate comparisons of their results with the findings from other studies. The issue of generalisability to other settings was addressed, and the authors described many of the factors that might be different in other hospitals and could thus produce different results in effectiveness and costs. They did not discuss the fact that HELP uses volunteers, and the availability of volunteers who can be attracted might also vary in different settings. The authors did not present their results selectively, but their conclusions about the efficacy of HELP were largely based on the largest reduction in delirium which occurred at the beginning of the programme. This reduction was not as large in subsequent years. The authors were aware that a randomised controlled trial would be a more rigorous way of evaluating HELP, and that the measurement of delirium retrospectively for the control group produces uncertainty in the estimate.

**Implications of the study**
The authors acknowledged that a time period longer than 6 months might be a more reliable way of assessing the cost implications of introducing HELP. A randomised controlled trial would increase the validity of the study findings.

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None stated.

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**Other publications of related interest**

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