Functional incidental training: applicability and feasibility in the Veterans Affairs nursing home patient population
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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
The use of functional incidental training (FIT) for older patients in Veterans Administration (VA) nursing homes. The FIT intervention included prompted voiding combined with individualised, functionally oriented endurance and strength training exercises offered by a trained research staff four times per day, 5 days per week, for 8 weeks.

Type of intervention
Rehabilitation.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised patients aged 60 years or older. Patients were eligible if they met the following criteria:
they resided in the facility at least 30 days and were not admitted for short-term care;
they were able to state name or, in the presence of aphasia, capable of reliably pointing to two objects;
they required assistance by two people at most for transfer from bed to chair;
they were incontinent of urine and/or stool, or would be without assistance from staff;
they were not severely behaviourally disturbed and were potentially capable of cooperating with the protocol;
they were not known to be terminally ill, with life expectancy of at least 6 months; and
they were not receiving active physical therapy.

Setting
The setting was VA nursing homes. The economic study was carried out in the USA.

Dates to which data relate
The dates when the effectiveness and resource use data were collected were not reported. Year 2003 to 2004 prices were reported.

Source of effectiveness data
The effectiveness data were derived from a single study.
Link between effectiveness and cost data
The same patient sample provided both the effectiveness data and the cost data. It was unclear whether the costing was carried out prospectively or retrospectively.

Study sample
Power calculations were not reported. Of the 528 patients in the VA nursing homes, 178 patients were eligible for participation and consent was obtained for 146 (80%) of them. These patients had a mean age of 78.3 (+/- 6.7) years and 92% were males. Thirty-nine patients were subsequently excluded from the study because of deterioration in health, medical status, death, discharge, or inability to complete at least half of the baseline assessment procedures. Thus, 107 patients were included in the analysis and were randomly assigned to the two groups. In the immediate intervention phase, 52 patients received the FIT intervention (group 1) and the remaining 55 patients received routine care (group 2). In a delayed intervention phase, group 2 received the FIT intervention and group 1 crossed over to no intervention.

Study design
The study was a randomised, controlled crossover trial that was conducted in four VA nursing homes. The trial was carried out in two waves (immediate and delayed). The entire protocol took 9 to 10 months to complete for each wave. Forty-six patients dropped out of the protocol (29 during the immediate phase and 17 during the delayed phase).

Analysis of effectiveness
The basis of the analysis was treatment completers only (n=61). The primary health outcomes assessed in this study were participant adherence to and satisfaction with the FIT intervention. Satisfaction with the protocol was assessed by interviews. It was unclear whether adherence was derived from the patients' records or from interviews with nursing staff. Primary analyses of the clinical and functional outcomes of the trial were reported elsewhere (Ouslander et al., see 'Other Publications of Related Interest' for bibliographic details). These outcomes included:

- improvements in measures of endurance, strength, mobility independence, and urinary and faecal incontinence;
- rates of adverse events; and
- the number of 'responders'.

The authors did not compare the two groups at baseline, but they reported summary statistics for the whole study sample.

Effectiveness results
Adherence to prompted voiding and upper arm strengthening exercises were the highest (62 - 68%) and lowest (33 - 37%) for the endurance and sit-to-stand exercises.

Overall adherence to FIT, defined as prompted voiding plus at least one exercise, was high (72 - 78%).

At the facility level, overall adherence ranged from a mean of 68% (in the facility with the highest proportion of individuals with psychiatric illness) to 81%.

Overall satisfaction with participation in FIT was high, with 75% indicating that they enjoyed FIT. However, 62% indicated that the exercise was too frequent, and 28% indicated they were offered opportunities to toilet too often.

Clinical and functional outcomes were not shown in the present study but were presented elsewhere. The authors reported them briefly as follows.

The FIT intervention resulted in statistically and clinically significant improvements in measures of endurance, strength, and urinary and faecal incontinence, but not in mobility independence.
Two thirds of the participants who completed the intervention were considered to be "responders", based on maintenance or improvement in at least one measure of endurance, strength and urinary incontinence.

No adverse events related to FIT occurred during the trial.

Improved outcomes achieved during the 8-week FIT intervention were not maintained during the 8-week crossover phase, thus emphasising the importance of an ongoing intervention.

**Clinical conclusions**
The authors did not report any summary clinical conclusions.

**Measure of benefits used in the economic analysis**
No summary measure of benefits was used. The study was, in effect, a cost-consequences analysis.

**Direct costs**
The costs were assessed over the course of the trial (9 to 10 months for each wave), and were calculated on the basis of the time of each episode of care (changing, toileting and exercises). The costs of licensed nursing staff to perform initial evaluations of residents for the FIT programme and costs of supervising the staff were not included in the analysis. The costs and the quantities were reported separately. The resource use data were taken from the patients' records and from interviews with nursing staff and physicians. The costs were estimated by assuming that, on average, continence care and FIT would be carried out 4 times per day by one nursing assistant. A salary was quoted by the VA for the fiscal year 2003 to 2004. Discounting was not carried out as the costs were incurred during less than 2 years.

**Statistical analysis of costs**
The costs were expressed as the mean value +/- standard deviation.

**Indirect Costs**
The indirect costs were not included.

**Currency**
US dollars ($).

**Sensitivity analysis**
No sensitivity analysis was reported.

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

**Cost results**
The estimated cost per day per patient was $19.39 with the FIT intervention and $4.76 for routine care.

The annual additional cost of the FIT intervention would be $84,000 in a 100-bed VA nursing home.

**Synthesis of costs and benefits**
The costs and benefits were not combined.
Authors' conclusions
Functional incidental training (FIT) is applicable to a substantial number of patients in Veterans Administration (VA) nursing homes. The protocol tested here could, on the basis of patient preferences and adherence to various FIT components, be further refined and individualised to make it more feasible, efficient and cost-effective in practice. However, the costs of maintaining such an intervention in all VA nursing home patients who may benefit are high and "must be justified largely by potential positive effects on function and quality of life, as opposed to cost savings resulting from the intervention".

CRD COMMENTARY - Selection of comparators
The authors explicitly justified their choice of the comparator (routine toileting care). You should judge whether this comparator is relevant in your setting, or whether other comparators could have been relevant as well.

Validity of estimate of measure of effectiveness
The analysis was based on a randomised, controlled crossover trial, which was appropriate given the study question. It is not possible to comment on the internal validity of the trial, as details on power calculations, methods of randomisation, and blinding of the assessment were not reported. However, another paper was referred to. The authors did not report how representative the study sample was of the study population, or the comparability of the groups. It was hard to assess the internal validity of the study from this paper.

Validity of estimate of measure of benefit
The authors did not derive a measure of health benefits. The analysis was, in effect, a cost-consequences study.

Validity of estimate of costs
Although the perspective adopted was unclear, it appears that categories of costs relevant to the VA perspective were included. The costs and the quantities were reported separately, which will aid the extrapolation of this analysis to other settings. The resource use quantities were derived from the clinical study and authors' assumptions, and a statistical analysis was carried out. The unit costs were derived from a national source, but no statistical or sensitivity analyses of the prices were conducted. This limits any assessment of the sensitivity and transferability of the results. The price year was reported, which will aid any future reflation exercises. Discounting was, appropriately, not carried out since all the costs were incurred during less than 2 years.

Other issues
The authors did not compare their findings with those from other studies. The generalisability of the findings to other populations and countries was addressed throughout the study question. Although the authors do not appear to have presented their results selectively, they acknowledged that the paper was limited by incomplete information on the effectiveness analysis. Quality of life benefits would have been more appropriate to assess the real benefits of the FIT intervention over routine care. However, the authors' conclusions reflected the scope of the analysis since their objective was to evaluate the applicability and feasibility of the FIT intervention in the VA nursing home population. No limitations to the study were reported.

Implications of the study
The authors did not make any specific recommendations for changes in policy or practice. They pointed out that the translation of FIT and other similar interventions into everyday practice in VA nursing units would have to be based on an assessment of the potential functional and quality of life benefits of the intervention versus the cost.

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**Other publications of related interest**

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**MeSH**
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