A cluster randomized controlled trial of an adapted U.S. model of pharmaceutical care for nursing home residents in Northern Ireland (Fleetwood Northern Ireland Study): a cost-effectiveness analysis

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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.

CRD summary
This study examined the cost-effectiveness of a model of pharmaceutical care designed to improve the prescription of psychoactive drugs for nursing home residents. The authors concluded that this model to improve medication prescription was more cost-effective than usual care. The economic evaluation was carried out alongside a pragmatic randomised controlled trial and its clear and robust methods should have ensured the validity of the authors’ conclusions.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
This study examined the cost-effectiveness of a model of pharmaceutical care designed to improve the prescription of psychoactive drugs for nursing home residents.

Interventions
The intervention was a pharmaceutical care model created to improve the prescribing of psychoactive medications (hypnotics, anxiolytics, and antipsychotics) for nursing home residents in Northern Ireland (NI). The Fleetwood NI model included a pharmacist’s assessment of the resident’s clinical and prescription information, a medication review, and liaison with the prescriber (general practitioner; GP) and other relevant health care professionals, to improve the prescribing of psychoactive medications. The comparator was usual care, which involved no pharmacist intervention.

Location/setting
NI, UK/nursing homes.

Methods
Analytical approach:
The analysis was an economic evaluation that was carried out alongside a one-year study. The authors stated that the analysis was carried out from the perspective of the UK NHS.

Effectiveness data:
The clinical data came from a pragmatic randomised controlled trial (RCT) of 22 nursing home clusters in Northern Ireland. These clusters were matched into 11 pairs, with each of the pair randomly allocated to the intervention or the control. There were 173 patients in the intervention group, with a mean age of 82 years (68% female) and 161 patients in the control group, with a mean age of 82.7 years (75.2% female). The time horizon was one year and a per-protocol analysis was performed, including only those residents for whom complete data were available (128 for the intervention and 125 for usual care). The primary endpoint was the proportion of residents receiving inappropriate psychoactive medication.

Monetary benefit and utility valuations:
Not considered.

Measure of benefit:
The proportion of patients receiving inappropriate psychoactive medication was the summary benefit measure and the data were directly from the effectiveness analysis.

Cost data:
The economic analysis included the costs of prescribed medications, GP services, health care professional visits, hospital visits, and laboratory tests. Pharmaceutical care visits were included for the intervention group. The resource use was collected prospectively in the RCT. The unit costs were national official prices from the Unit Costs of Health and Social Care, the National Schedule of Reference Costs, and the Drug Tariff. All costs were in US dollars ($) and the price year was 2005.

Analysis of uncertainty:
Nonparametric bootstrapping was used to investigate uncertainty in the point estimate of the incremental cost-effectiveness ratio. Cost-effectiveness acceptability curves were generated for different cost-effectiveness thresholds. A multiway scenario analysis considered ranges of values for the costs and outcomes.

Results
The percentage of residents receiving inappropriate psychoactive medication at 12 months was 19.5% with the intervention and 50.4% with usual care (OR 0.26, 95% CI 0.14 to 0.49). The mean cost of health care resources per resident was $4,923 (95% CI 4,206 to 5,640) for the intervention and $5,053 (95% CI 4,328 to 5,779) for usual care. The difference of $130.39 was not statistically significant.

The intervention was dominant, as it was less expensive and more effective than usual care.

The intervention was cost-effective in 60% of simulations at a willingness to pay nothing to avoid an older resident receiving one or more inappropriate psychoactive medication, and in 93% of simulations at a willingness to pay of $2,000. The intervention remained cost-effective in the scenario analysis.

Authors' conclusions
The authors concluded that the model of pharmaceutical care to reduce inappropriate psychoactive medication prescription was more cost-effective than usual care.

CRD commentary
Interventions:
The selection of the comparators was appropriate as the proposed intervention was compared against the normal care in nursing homes, which did not include a pharmacist intervention.

Effectiveness/benefits:
The clinical evidence was appropriately derived from a RCT and its robust design should have ensured the validity of these data. The RCT was pragmatic, which ensured a detailed collection of data for the economic evaluation. It was published in a companion paper (Patterson, et al. 2010, see ‘Other Publications of Related Interest’ below for bibliographic details); limited information on its methods and results was presented in this article. The trial groups were comparable at baseline, except for their settings, with significantly more intervention homes in rural settings and more control homes in urban settings. The authors noted that the assessment of health-related quality of life was not possible in the older population with co-morbidities and a cost-utility analysis was not carried out. The benefit measure was specific to the intervention and might not be comparable with the benefits of other health care interventions.

Costs:
The economic analysis was satisfactorily carried out and presented. The authors reported the details of the unit costs, resource quantities, price year, currency conversion, and data sources, which were commonly used databases in the UK. The use of a pragmatic trial ensured appropriate collection of resource use data representative of the authors’ setting. The costs were varied in the sensitivity analysis.

Analysis and results:
The results were clearly presented, especially the costs. An incremental approach was used to synthesise the costs and
benefits of the two interventions. An appropriate multivariate approach was used to investigate uncertainty. The authors acknowledged some potential limitations of their analysis, such as the use of a per-protocol instead of an intention-to-treat approach in the RCT, and the impossibility of estimating the cost per fall avoided, which would have been a more relevant outcome for these patients. The analysis appears to have been specific to the authors' setting and might not be transferable to other locations.

Concluding remarks:
The economic evaluation was carried out alongside a pragmatic RCT and its clear and robust methods should have ensured the validity of the authors' conclusions.

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