

Effect of interventions to reduce potentially inappropriate use of medicines in nursing homes: a systematic review of randomised controlled trials

This is an excerpt from the full technical report, which is written in Norwegian.

The excerpt provides the report's main messages in English.

No. 14-2010

Systematic review

Title Effect of interventions to reduce potentially inappropriate use of medicines in nursing homes: a systematic review of randomised controlled trials

Norwegian title Effekt av tiltak for å redusere potensielt uhensiktsmessig bruk av legemidler i sykehjem: en systematisk oversikt over randomiserte kontrollerte forsøk

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ISBN 978-82-8121-349-4

ISSN 1890-1298

Report No. 14 – 2010

Project number 551

Type of report Systematic reviews

No. of pages 59 (96 incl. attachments)

Client The Norwegian Directorate of Health

Subject heading (MeSH) Nursing Homes; Medication Errors; Drug Utilization; Drug Therapy

Citation Forsetlund L, Eike MC, Gjerberg E, Vist G. Effect of interventions to reduce potentially inappropriate use of medicines in nursing homes: a systematic review of randomised controlled trials. Report from Kunnskapssenteret no. 14–2010. Oslo: Norwegian Knowledge Centre for the Health Services, 2010.

Norwegian Knowledge Centre for the Health Services summarizes and disseminates evidence concerning the effect of treatments, methods, and interventions in health services, in addition to monitoring health service quality. Our goal is to support good decision making in order to provide patients in Norway with the best possible care. The Centre is organized under The Norwegian Directorate for Health, but is scientifically and professionally independent. The Centre has no authority to develop health policy or responsibility to implement policies.

We would like to thank all contributors for their expertise in this project. Norwegian Knowledge Centre for the Health Services assumes final responsibility for the content of this report.

Norwegian Knowledge Centre for the Health Services
Oslo, May 2010

Key Messages (in English)

Background

Studies have shown that residents in nursing homes may be exposed to inappropriate medication, especially with psychoactive drugs. This increases the risk of adverse effects.

Mission

We identified, evaluated and compiled research on the effect of interventions to reduce inappropriate use of medicines in nursing homes. The report was commissioned by the Norwegian Directorate of Health in connection with the work of Care Plan 2015.

Main findings

- Educational outreach or educational interventions given alone or as part of a complex package aimed at health professionals may in some contexts reduce inappropriate drug use. The quality of evidence for these results in a nursing home setting varies from very low to low.
- Medical review by pharmacists in an interdisciplinary collaboration with the nursing home physician and other relevant health professionals may in some contexts reduce inappropriate drug use. The quality of evidence for these results varies from very low to low.
- A geriatric assessment team responsible for all medical treatment of the elderly demonstrated a statistical significant effect on prescribing of drugs in one study. The study had few participants and a high risk of bias in the results. The evidence is therefore of too low quality to be able to judge whether the intervention affects inappropriate use of medicines.
- Early psychiatric intervening had no statistically significant effect on the use of psychoactive drugs. Since the quality of the evidence for this result is very low, we cannot determine whether the intervention affects inappropriate use of drugs or not.
- Activating residents combined with educational meetings for health personnel had no statistically significant effect on the use of antipsychotics or the number of drugs used in total. Since the quality of the evidence for this result is very low, we cannot determine whether the intervention affects the use of drugs or not.
- The quality of the evidence is too low to assess whether interventions to reduce inappropriate medication affects health outcomes.

Effect of interventions to reduce potentially inappropriate use of medicines in nursing homes: a systematic review of randomised controlled trials

What kind of report is this?

Systematic review

A systematic review is the result of collecting, critically review and summarize relevant research results using pre-defined and explicit methods

This report includes:

- 18 randomised controlled trials

Not included:

- Studies that tested the effects of discontinued medications
- Studies that did not meet the inclusion criteria

Who produced it?

- The Norwegian Knowledge Centre for the Health Services on behalf of the Norwegian Directorate of Health

When was it written?

Latest search for studies: August/september 2009.

Executive summary (in English)

Effect of interventions to reduce the use of drugs in nursing homes: a systematic review of randomised controlled trials

BACKGROUND

Residents in nursing homes have a high consumption of drugs. This increases the risk of interactions between drugs, adverse effects and risk of medication errors. Use of multiple drugs is in itself a risk factor for adverse effects and inappropriate prescription of medicines. In particular one has been concerned about the consumption of psychoactive drugs. A large majority of elderly people living in nursing homes suffer from dementia and most of those are also prescribed psychotropic drugs. Studies in Norwegian nursing homes have shown that about 15 - 44% of residents were subjected to inappropriate medication. The average number of drug-related problems varied from 2.4 to 4 per resident.

The purpose of this report was to identify and summarise the effect of interventions aimed to reduce inappropriate use or prescribing of medicines in nursing homes.

METHOD

We searched for systematic reviews and randomised controlled studies in medical databases. The search was done in August and September 2009 and had no time or language restrictions. Two people screened the reference list of titles and abstracts independently to select the references that seemed to satisfy the inclusion criteria. Potentially relevant publications were ordered in full text and considered for inclusion or exclusion. All results of the included studies were assessed for possible risk of bias by means of the Cochrane Risk of Bias Table. The quality of the evidence for each outcome was assessed using GRADE. The following outcomes were graded: The use or prescription of medications, falls, physical limitation, hospitalization and mortality.

RESULTS

Of the 1426 references that the search generated, we included 18 randomized controlled trials. Nine studies tested different types of educational interventions while six studies tested medical reviews by pharmacists. For interventions using geriatric care teams, early psychiatric intervening or activities for the residents which also provided some education of health care personnel, there was only one study for each category. We found several overviews, but these either summarised the effect of interventions to reduce drugs among elderly in general or did not satisfy all the requirements for systematic reviews.

Educational outreach interventions, educational interventions given alone or as part of a complex package and medical review led or aided by a pharmacist, may in some contexts have a small effect on the reduction of inappropriate drug use. The evidence for the results of these investigations in a nursing home setting is of low or very low quality. Use of a geriatric assessment team responsible for all medical care for the elderly from the arrival at the nursing home, compared with usual practice, showed a clear effect on prescribing of drugs in one study with few participants. From the intervention early psychiatric intervening no statistically significant effect on the use of drugs was detected, nor from the activity intervention for residents. However, we assessed the quality of the evidence for these results to be very low. This means that we cannot determine whether these interventions affect the use of drugs or not.

Only one of the nine studies that showed a statistical significant effect on the use of drugs, also demonstrated a statistical significant reduction of one of the health related outcomes that was selected - the number of falls per resident.

DISCUSSION

We identified and summarised the effect of interventions that aimed to reduce the prescription or use of drugs in nursing homes. We identified 18 randomised controlled trials that tested the effect of seven different intervention categories. We evaluated the results in 13 of the studies to have uncertain risk of bias, results from four studies to have high risk and results from one study to have low risk of bias. The most common reasons for risk of systematic bias were unclear concealment of allocation and low follow-up of participants.

The studies that found no clear impact of medical reviewing for prescription of drugs were characterised by a passive approach from the pharmacist towards the nursing home physician. However, it is not possible to say for certain what explains the variation between the effects of the individual studies within each category. In general, a more detailed information regarding the extent to which the intervention had been implemented according to plan, would have been helpful for investigating

variations in effect between studies in the same category. Only one study gave some information about the extent to which the intervention was implemented as planned.

It is worth noting that several of the interventions, such as educational interventions and medical review have been used in many other settings. Several of the educational studies that we selected because they were conducted in a nursing home are only a small part of a larger body of evidence that one should know in the case of scheduling an intervention.

CONCLUSION

- Educational outreach or educational interventions given alone or as part of a complex package aimed at health professionals may in some contexts reduce inappropriate drug use. The quality of evidence for these results in a nursing home setting varies from very low to low.
- Medical review by pharmacists in an interdisciplinary collaboration with the nursing home physician and other relevant health professionals seems in some contexts to reduce inappropriate drug use. The quality of evidence for these results varies from very low to low.
- A geriatric assessment team responsible for all medical treatment of the elderly demonstrated a statistically significant effect on prescribing of drugs in one study. The study had few participants and a high risk of bias in the results. The evidence is therefore of too low quality for judging whether the intervention affects inappropriate use of medicines.
- Early psychiatric intervening had no statistically significant effect on the use of psychoactive drugs. Since the quality of the evidence for this result is very low, we cannot determine whether the intervention affects the use of drugs or not.
- Activating residents combined with educational meetings for health personnel had no statistically significant effect on the use of antipsychotics or the number of drugs used in total. Since the quality of the evidence for this result is very low, we cannot determine whether the intervention affects the use of drugs or not.
- The quality of the evidence is too low to assess whether interventions to reduce inappropriate medication affects health outcomes.

To increase the confidence in the results from the interventions that we included, it is necessary to conduct additional large enough studies with rigorous design to reduce the risk of bias. With the large universal body of evidence of the effect of educational interventions in mind, there is no need for more research on general educational interventions alone. More research on medical review by a pharmacist with a passive response to the doctor is probably not very fruitful. Apart from the interventions that we identified, additional interventions that could be of interest to test for their effect on use or prescription of drugs are for example environmental and acti-

vation interventions, including interventions that test the effect of increased staffing of physicians and/or other health care professionals.

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