# Optimising Medication Use in Nursing Homes: Interprofessional Approaches and the Role of Pharmacists

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I have no conflicts of interest.


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REVIEW

**Interventions to optimize medication use in nursing homes: a narrative review**

Anne Spinewine[1,2] · Perrine Evrard[1] · Carmel Hughes[3]

Together with recent literature, and research projects from our team.

# Medication use in nursing homes

Morin et al. (2016)

**49,0%** of nursing home residents in European countries are exposed to potentially inappropriate prescribing

Perri III et al. 2005, Passarelli et al. 2005, Hamilton et al. 2011, Fick et al. 2008, Cahir et al. 2014, Lau et al. 2005, Klarin et al. 2005, Jano et al. 2007, Albert et al. 2010

Potentially inappropriate medications are associated with increased **adverse drug events**, **healthcare utilization**, **hospitalisation** and **death**

**How better?** What role can pharmacists play?


- Huge variations in context and medication use processes in the NH setting across Europe; limited view of current models throughout Europe, and of key barriers and enablers.
- Collaboration with pharmacists remains relatively limited in most EU countries
  (Favez et al., Int J Clin Pharm 2023)
- Barriers to interprofessional practice: « Out of sight, out of mind»; access to patient's health record,…
- Dispensing pharmacist vs other pharmacist dedicated to pharmaceutical care?

## A long list of systematic reviews – mainly focused on medication reviews and the role of pharmacists.

Loganathan et al. Interventions to optimise **prescribing** in care homes: systematic review. Age and Ageing 2011.

Forsetlund et al. Effect of interventions to reduce **potentially inappropriate use** of drugs in nursing homes: a systematic review of randomised controlled trials. BMC Geriatrics 2011.

Alldred et al. Interventions to optimise **prescribing** for older people in care homes. **Cochrane** Database of Systematic reviews 2016.

Thiruchelvam et al. Residential aged care **medication review** to improve the quality of medication use: a systematic review. JAMDA 2017.

Lee et al. **Pharmacist services** in nursing homes: a systematic review and **meta-analysis**. Br J Clin Pharmacol 2019.

Sadowski et al. The role and impact of the **pharmacist** in long-term care settings: a systematic review. J Amer Pharm Assoc 2020.

Wright et al. Systematic review and narrative synthesis of **pharmacist provided medicines optimisation services** in care homes for older people to inform the development of a generic training or accreditation process. Int J Pharm Pract 2020.

Kua et al. Health outcomes of **deprescribing interventions** among older residents in nursing homes: a systematic review and **meta-analysis**. JAMDA 2019.

Gonçalves et al. **Pharmacist-mediated deprescribing** in long-term care facilities: a systematic review. Pharmacy 2025.

## A long list of systematic reviews – mainly focused on medication reviews and the role of pharmacists.

### Services/interventions

- Staff education
- **Medication review**
- Multidisciplinary case conferencing
- CDSS

### Outcomes

- Identification and resolution of DRPs, ↑ appropriateness, ↓ nb of medications
- ? Falls, hospital admission, death, QoL
- Better if: multi-faceted, interprofessional and face-to-face, educational component included

# Examples from informative studies

Conducted in Europe
Various models of collaborative practices
RCT + process evaluation

## THE COME-ON STUDY

P Anrys

**Objective**

To assess the impact of a complex intervention on the appropriateness of prescribing in NHs

**Design**

National multicenter, cluster-controlled trial

**54 nursing homes**

Control : 30 NHs
Intervention : 24 NHs

From March 2015 to June 2016

**Nursing home Residents (N=1804)**

Median 87 years, 9 medications

**Health care professionals**

- Coordinating physician
- General practitioners
- Nurses
- Delivering pharmacist

**Complex intervention**

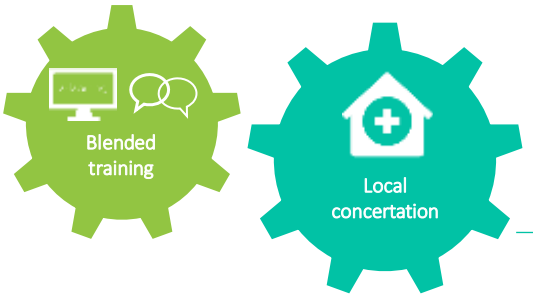
Anrys et al. Collaborative approach to Optimise MEdication use for Older people in Nursing homes (COME-ON): study protocol of a cluster controlled trial. Impl Sci 2016;11:35.

## THE COME-ON STUDY: A COMPLEX INTERVENTION

- **E-learning platform**
  - 4 modules
  - 1-2h / module
- Face-to-face interdisciplinary workshops


Anrys et al. "Collaborative approach to Optimise MEdication use for Older people in Nursing homes (COME-ON): study protocol of a cluster controlled trial" Implementation Science, 2016

## THE COME-ON STUDY: A COMPLEX INTERVENTION




- 2 local concertations during the study period
- 2h / local concertation
- 1 specific medication class [antidepressants or lipid-lowering drugs]

Anrys et al. "Collaborative approach to Optimise MEdication use for Older people in Nursing homes (COME-ON): study protocol of a cluster controlled trial" Implementation Science, 2016

# THE COME-ON STUDY: A COMPLEX INTERVENTION

- 3 Interdisciplinary Case Conferences (ICCs) during the study period
- ± 20 min / NHR / ICC
- Medication review of the complete medication regimen


Anrys et al. "Collaborative approach to Optimise MEdication use for Older people in Nursing homes (COME-ON): study protocol of a cluster controlled trial" Implementation Science, 2016

COME · ON

- Baseline measures
  - STOPP: 88% of NHRs, median 2 [1-4] START: 85% of NHRs, median 2 [1-3]
- Impact
  - 1° Improvement in appropriateness of prescribing: OR 1.479 (95%CI 1.062 – 2.059)
  - 2° No significant difference for most clinical outcomes; median number of medications
- Process evaluation
  - Implementation and satisfaction: good
  - Perceived positive impact for most HCPs
  - Key factors for success: interdisciplinary and face-to-face approach
  - Importance of: GP's attitude; pharmacist's competency; leader/champion

Anrys et al. Potentially Inappropriate Prescribing in Belgian Nursing Homes: Prevalence and Associated Factors. JAMDA 2018;19:884-90.
Strauven et al. Cluster-Controlled Trial of an Intervention to Improve Prescribing in Nursing Homes Study. JAMDA 2019;20:1404-11.
Anrys et al. Process evaluation of a complex intervention to optimize quality of prescribing in nursing homes (COME-ON study). Impl Sci 2019;14:104.

RESEARCH Open Access

# Process evaluation of a complex intervention to optimize quality of prescribing in nursing homes (COME-ON study)

Pauline Anrys[1], Goedele Strauven[2], Sandrine Roussel[1], Marie Vande Ginste[2], Jan De Lepeleire[3], Veerle Foulon[2*] and Anne Spinewine[1,4*]

**Table 5** Factors that influenced the implementation and/or the perceived impact of the interdisciplinary case conferences (ICCs)

| | Factors* | Implementation | Perceived impact | Quotes |
|---|---|---|---|---|
| Intervention | Face-to-face approach [Nature and characteristics + implementability] | Barrier | | PH-W1: "On the other hand, in relation to timing and planning, it wasn't easy…/…/ we met several general practitioners, one after another, we didn't know how long that would take. So sometimes we had to wait half an hour or an hour and sometimes we hadn't finished and the GP had to wait a quarter of an hour. So, timing wasn't easy… /…/ because we all have our own very busy schedules." |
| | | | Facilitator | PH-W2: "The fact that we took the time, we were all around the table, it was much more convivial too and there was real sharing… Just sending e-mails is less effective." |
| | Interdisciplinary approach with three different HCPs [Nature and characteristics + implementability] | Barrier | | HN-W1: "[About the organization] It is necessary to be quite conscious that to gather everyone around the table, it's a complex balancing act. And that it's not always easy." |
| | | | Facilitator | CP-F1: "I found it worked well with those three [GP, pharmacist, and nurse]. You shouldn't do it with fewer – then you're lacking one of the keys." |

Annals of Internal Medicine ORIGINAL RESEARCH

# Discontinuing Inappropriate Medication Use in Nursing Home Residents

## A Cluster Randomized Controlled Trial

Hans Wouters, PhD; Jessica Scheper, MD; Hedi Koning, MSc; Chris Brouwer, MSc; Jos W. Twisk, PhD; Helene van der Meer, MSc; Froukje Boersma, MD, PhD; Sytse U. Zuidema, MD, PhD; and Katja Taxis, PhD

*Table 1.* Overview of 3MR Steps

| Step (Average Time Required per Resident) |
|---|
| 1. Assessing patient perspective and medical information (20 min) |
| 2. Drug reviewing (10 min) |
| 3. Multidisciplinary meeting and pharmacotherapeutic actions (5 min) |
| 4. Execution and evaluation of pharmacotherapeutic actions (10 min) |

| Variable | Control Group ($n$ = 193) | Intervention Group ($n$ = 233) |
|---|---|---|
| **Primary analysis†** | | |
| Residents who successfully discontinued use of ≥1 inappropriate medication, *n (%)* | 57 (29.5) | 91 (39.1) |

## Barriers and Facilitators of Conducting Medication Reviews in Nursing Home Residents: A Qualitative Study

Hans Wouters[1,2*], Juliet M. Foster[3], Anne Ensink[1], Lisa Kouladjian O'Donnell[4,5], Sytse U. Zuidema[2], Froukje Boersma[2] and Katja Taxis[1]

*Step 1: Assessing patient perspective and medical information*

| Facilitator | Barrier |
|---|---|
| • As a leverage to decide on which medications to focus if the medication list is extensive<br>• Enables pharmacists to tailor advice to individual patients and to structure information on indication of medication<br>• As a psychological preparation of nursing home residents about upcoming medication changes<br>• Potentially inappropriate medications actually being designated as appropriate by patients themselves<br>• Observation of nursing home resident's non-verbal behavior by nursing staff | • Impairment medical decision-making ability owing to cognitive impairment and grief which requires 'consistent gauging'.<br>• Patients/relatives' submissive behavior because of perceived insufficient knowledge/no expectation to express preferences;<br>• Fragmented care;<br>• Physicians' inclinations thus making the relative distance of pharmacist favorable for an independent impartial assessment of the situation |

## Evaluation of effectiveness and safety of pharmacist independent prescribers in care homes: cluster randomised controlled trial

*BMJ* 2023;380:e071883

Richard Holland,[1] Christine Bond,[2] David P Alldred,[3] Antony Arthur,[4] Garry Barton,[5] Linda Birt,[4] Jeanette Blacklock,[6] Annie Blyth,[5] Stamatina Cheilari,[5] Amrit Daffu-O'Reilly,[7] Lindsay Dalgarno,[7] James Desborough,[6] Joanna Ford,[7] Kelly Grant,[8] Bronwen Harry,[8] Helen Hill,[9] Carmel Hughes,[10] Jacqueline Inch,[2] Vivienne Maskrey,[5] Phyo Myint,[2] Nigel Norris,[11] Fiona Poland,[4] Lee Shepstone,[5] Maureen Spargo,[10] David Turner,[5] Laura Watts,[5] Arnold Zermansky,[3] David Wright[12]

- P 49 triads (phist independent prescriber + GP + care home); 882 residents
- I Weekly visits over 6 months: pharmaceutical care plan, MedRev and MedRec, staff training, deprescribing,…
- C Usual care
- O Fall rate, 6 months: 0.91 (IC95 0.66-1.26)
  No differences in 2° outcome measures except for Drug Burden Index
  Safe and well received, positive outcomes reported
  Optimising implementation: building relationship with the GP; regular visits needed; clear role for community phist and technician, improved (IT) communication

Birt et al. Process evaluation for the Care Homes Independent Pharmacist Prescriber Study (CHIPPS). BMC HSR 2021.

# Designing or increasing the uptake of new approaches using implementation science

## The case of deprescribing

52,4% of NHRs are BZRA users

Identifying barriers → Intervention development → Evaluation → Dissemination

Perrine EVRARD

General practitioners

Other Healthcare professionals

- Knowledge and skills gaps
- BZRA refilling happens automatically
- Competing priorities
- Social pressure to prescribe
- Environmental issues

9 Behaviour Change Techniques (BCTs) operationalised in a 6-component intervention

Evrard et al. Benzodiazepine Use and Deprescribing in Belgian Nursing Homes: Results from the COME-ON Study. J Am Geriatr Soc 2020
Evrard et al. Barriers and enablers towards benzodiazepine-receptor agonists deprescribing in nursing homes: A qualitative study of stakeholder groups. Exploratory Research in Clinical and Social Pharmacy 2023.
Evrard et al. Development of a behavior-change intervention toward benzodiazepine deprescribing in older adults living in nursing homes. JAMDA 2024
Evrard et al. Feasibility of a theory-based intervention towards benzodiazepine deprescribing in Belgian nursing homes: protocol of the END-IT NH cluster-randomised controlled trial. BMJ Open 2024.

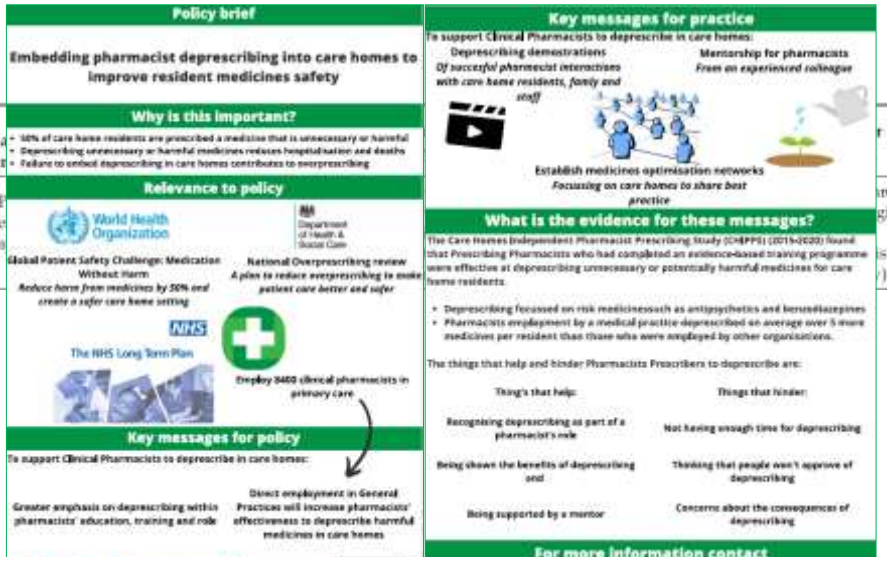
Article

**Developing a Theoretically Informed Strategy to Enhance Pharmacist-Led Deprescribing in Care Homes for Older People**

Linda Birt [1], David Wright [1], David P. Alldred [2], Christine M. Bond [3], Richard Holland [4], Carmel Hughes [5] and Sion Scott [1,6]

Learning from CHIPPS – Moving to policy

Pharmacy **2025**, 13, 133.



**Policy brief**

**Embedding pharmacist deprescribing into care homes to improve resident medicines safety**

**Why is this important?**

- 50% of care home residents are prescribed a medicine that is unnecessary or harmful
- Deprescribing unnecessary or harmful medicines reduces hospitalisation and deaths
- Failure to embed deprescribing in care homes contributes to overprescribing

**Relevance to policy**

World Health Organization

Global Patient Safety Challenge: Medication Without Harm

*Reduce harm from medicines by 50% and create a safer care home setting*

National Overprescribing review

*A plan to reduce overprescribing to make patient care better and safer*

NHS

The NHS Long Term Plan

Employ 8400 clinical pharmacists in primary care

**Key messages for policy**

To support Clinical Pharmacists to deprescribe in care homes:

Greater emphasis on deprescribing within pharmacists' education, training and role

Direct employment in General Practices will increase pharmacists' effectiveness to deprescribe harmful medicines in care homes

**Key messages for practice**

To support Clinical Pharmacists to deprescribe in care homes:

Deprescribing demonstrations

*Of succesful pharmacist interactions with care home residents, family and staff*

Mentorship for pharmacists

*From an experienced colleague*

Establish medicines optimisation networks

*Focussing on care homes to share best practice*

**What is the evidence for these messages?**

The Care Homes Independent Pharmacist Prescribing Study (CHIPPS) (2019-2020) found that Prescribing Pharmacists who had completed an evidence-based training programme were effective at deprescribing unnecessary or potentially harmful medicines for care home residents.

- Deprescribing focussed on risk medicinessuch as antipsychotics and benzodiazepines
- Pharmacists employment by a medical practice deprescribed on average over 5 more medicines per resident than those who were employed by other organisations.

The things that help and hinder Pharmacists Prescribers to deprescribe are:

| Things that help: | Things that hinder: |
|---|---|
| Recognising deprescribing as part of a pharmacist's role | Not having enough time for deprescribing |
| Being shown the benefits of deprescribing and | Thinking that people won't approve of deprescribing |
| Being supported by a mentor | Concerns about the consequences of deprescribing |

**For more information contact**

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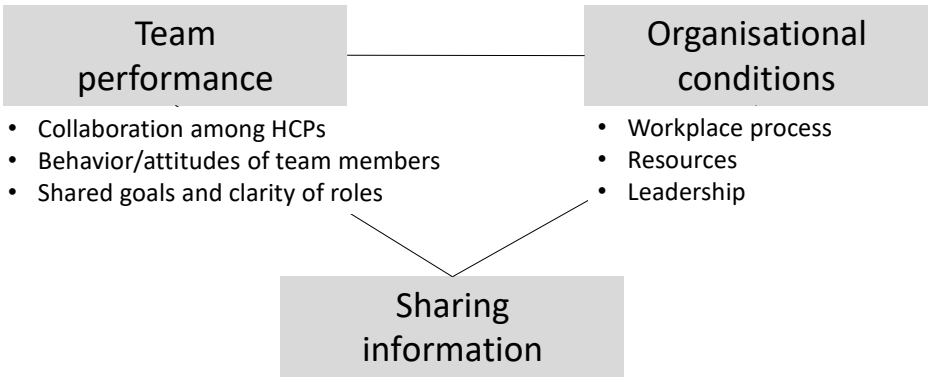
# Take-home messages and perspectives

Review Article

## Interprofessional Collaboration in Long-Term Care and Rehabilitation: A Systematic Review

Arno J. Doornebosch MSc*, Hanneke J.A. Smaling PhD, Wilco P. Achterberg MD, PhD
Department of Public Health and Primary Care, Leiden University Medical Center, Leiden, the Netherlands

JAMDA 23 (2022) 764-777




Suen et al. Features of successful medication review and deprescribing interventions for fall prevention in residential aged care facilities: an intervention component analysis of an updated SR. Age & ageing 2025.

# Transferability across countries: be cautious

## Effect of person-centred care on antipsychotic drug use in nursing homes (EPCentCare): a cluster-randomised controlled trial

Christin Richter[1], Almuth Berg[1], Henriette Langner[1], Gabriele Meyer[1], Sascha Köpke[2], Katrin Balzer[2], Eva-Maria Wolschon[2], Katharina Sies[2], Andreas Sönnichsen[3,4], Susanne Löscher[3], Burkhard Haastert[5], Andrea Icks[6,7], Ursula Wolf[1,8], Steffen Fleischer[1]

Age and Ageing 2019

# Optimising medication use beyond prescribing

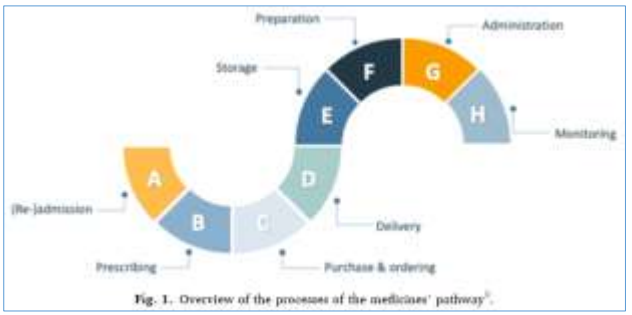



Fig. 1. Overview of the processes of the medicines' pathway[1].

STUDY PROTOCOL Open Access

Process Optimization Of the Medicines' pAthway in nursing Homes (POOMAH): study protocol of a cluster randomized controlled trial

Astrid Frisson[1*], Amber Darnaens[1*], Steffen Fieuws[2] and Veerle Foulon[1]


Fig. 1 Overview of the different tracks of the poomah intervention

# And many other approaches to be considered

- Macro-level approaches

  Langford et al., Measuring the impact os system-level strategies on psychotropic medicine use in aged care facilities: a scoping review. Res Soc Admin Pharm 2020.

- Role of nurses

  Dilles et al. Nurses and Pharmaceutical Care: Interprofessional, Evidence-Based Working to Improve Patient Care and Outcomes. Int J Environ ResPublic Health 2021.

  - Nurse practitioners

- Technology: online (remote) collaboration; AI

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# Thank you

Contact or interest for (post)doctoral research experience:

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