Medication out of control?

The evidence base of inappropriate prescribing in older people

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Inappropriate prescribing

Potentially inappropriate medications (PIMs) = medicines, which do not have sufficiently proven therapeutic effects and/or have an unfavourable ratio of risk of harm to intended benefit, and/or could be substituted by a safer drug

(Beers Arch Intern Med 1997)

Eur J Clin Pharmacol (2014) 70:1–11
DOI 10.1007/s00228-013-1575-8

REVIEW ARTICLE

Inappropriate prescribing: a systematic overview of published assessment tools

Carole P. Kaufmann · Regina Tremp ·
Kurt E. Hersberger · Markus L. Lampert

46 instruments

- 78% for older people populations; 22% without specific target group
- 41% consensus; 28% expert panels; 24% literature-based

European Geriatric Medicine 5 (2014) 399–405

Available online at
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Research paper

Potentially inappropriate medication in older persons in Austria: A nationwide prevalence study

E. Mann [a,*], B. Haastert [b], T. Frühwald [c], R. Sauermann [d], M. Hinteregger [d], D. Hölzl [d], S. Keuerleber [d], M. Scheuringer [d], G. Meyer [e]

Analysis of claims data of all 19 Austrian statutory health insurances including all prescriptions of beneficiaries aged ≥70 years which were reimbursed by the insurances in 2012 (n=1.123 832)

Austrian PIM list containing 73 drugs to be avoided in older patients

≥ PIM 52.4%, with higher rates in women (56.9%)

Most often identified PIM groups: non-steroidal anti-inflammatory drugs, vasodilators, psychotropic drugs

Eur J Clin Pharmacol
DOI 10.1007/s00228-015-1860-9

PHARMACOEPIDEMIOLOGY AND PRESCRIPTION

The EU(7)-PIM list: a list of potentially inappropriate medications for older people consented by experts from seven European countries

Anna Renom-Guiteras[1,2,4] · Gabriele Meyer[3,4] · Petra A. Thürmann[5,6]

- Numerous PIM lists/assessment instruments which have gained a lot of interest
- Numerous epidemiological studies/secondary data analyses
- PIM prevalence 20% to 80% depending of the population, setting, instrument
- Usefulness of clinical practice, effectiveness and safety of these lists are poorly investigated

→ Academic exercise?

Interventions to optimise prescribing for older people in care homes (Review)

Alldred DP, Raynor DK, Hughes C, Barber N, Chen TF, Spoor P

THE COCHRANE COLLABORATION®

Main results

The eight included studies involved 7653 residents in 262 (range 1 to 85) care homes in six countries. Six studies were cluster-randomised controlled trials and two studies were patient-randomised controlled trials. The interventions evaluated were diverse and often multifaceted. Medication review was a component of seven studies, three studies involved multidisciplinary case-conferencing, two studies involved an educational element for care home staff and one study evaluated the use of clinical decision support technology. Due to heterogeneity, results were not combined in a meta-analysis. There was no evidence of an effect of the interventions on any of the primary outcomes of the review (adverse drug events, hospital admissions and mortality). No studies measured quality of life. There was evidence that the interventions led to the identification and resolution of medication-related problems. There was evidence from two studies that medication appropriateness was improved. The evidence for an effect on medicine costs was equivocal.

Clinical Interventions in Aging 2008:3(2)

ORIGINAL RESEARCH

Polypharmacy: Misleading, but manageable

Reamer L Bushardt[1]
Emily B Massey[1]
Temple W Simpson[1]
Jane C Ariail[2]
Kit N Simpson[3]

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Abstract: The percentage of the population described as elderly is growing, and a higher prevalence of multiple, chronic disease states must be managed concurrently. Healthcare practitioners must appropriately use medication for multiple diseases and avoid risks often associated with multiple medication use such as adverse effects, drug/drug interactions, drug/disease interactions, and inappropriate dosing. The purpose of this study is to identify a consensus definition for polypharmacy and evaluate its prevalence among elderly outpatients. The authors also sought to identify or develop a clinical tool which would assist healthcare practitioners guard against inappropriate drug therapy in elderly patients. The most commonly cited definition was a medication not matching a diagnosis. Inappropriate was part of definitions used frequently. Some definitions placed a numeric value on concurrent medications. Two common definitions (ie, 6 or more medications or a potentially inappropriate medication) were used to evaluate polypharmacy in elderly South Carolinians (n = 1027). Data analysis demonstrates that a significant percentage of this population is prescribed six or more concomitant drugs and/or uses a potentially inappropriate medication. The findings are 29.4% are prescribed 6 or more concurrent drugs, 15.7% are prescribed one or more potentially inappropriate drugs, and 9.3% meet both definitions of polypharmacy used in this study. The authors recommend use of less ambiguous terminology such as hyperpharmacotherapy or multiple medication use. A structured approach to identify and manage inappropriate polypharmacy is suggested and a clinical tool is provided.

Keywords: hyperpharmacotherapy, polypharmacy, geriatrics, inappropriate medication, inappropriate pharmacy, multiple medication use

Polypharmacy is …	(Bushardt et al. 2008)
Medication does not match the diagnosis	Greater than 5 medications
Many medications	Excessive use of medication
Duplication of medication	Unnecessary use of medication
Drug/drug interactions	Medications prescribed > twice per day
Inappropriate dosing frequency (excessive, too low, too long)	Complicated drug regimen effecting compliance
Medication prescribed to treat the side effect of another medication (except no other option)	Taking an OTC medication, an herbal product or another person's medication
Two or more drugs of the same chemical class	Contraindicated in the elderly
Two or more meds to treat the same condition	Availability of an equally effective, lower-cost alternative
Two or more agents with the same or similar pharmacologic actions to treat different conditions	Patient misunderstanding of the use of the medication (purpose, how to take it, side effects possible, toxicity signs, etc.)
Minor polypharmacy = 2–4 meds. Major polypharmacy $\geq$ 5 meds	Dosage does not reflect age/renal/liver status
3,5, or 6 different medications	Improvement after discontinuation of medications
Two or more medications	Diagnosis no longer present

Mr. M 75 years old

1. Delix 5 (Ramipril 5mg) {C09AA05} 1-0-0
2. Amlodipin 5mg {C08CA01} 1-0-0
3. Xipamid 20mg {C03BA10} 1-0-0-0
4. Spironolacton 50 {C03DA01} 1-0-0-0
5. Calcitriol 0.5µg {A11CC04} 1-0-0-0
6. Actraphane 30 (Kombinationsinsulin) Innolet {A10AD01} 10-0-10-0 IE
7. Calcium 1000 HEXAL Brausetabletten (Calciumcarbonat 1000 mg) {A12AA04} 1-0-1
8. Simvahexal 40mg (Simvastatin 40mg) {C10AA01} 0-0-1-0
9. Lyrica 150 Hartkapseln (Pregabalin) {N03A…
10. Saroten 50 (Amitr…
11. …ogrel 75 (Clopidogrel-HCl 75 mg) {B01AC04} 1-0-
12. A … säure 100 mg) {A01AD05} 1-0-0-0
13. Valoron N ret. 100/8 (Tilidin 100mg/Naloxon 8mg) {N02AX} 1-0-1-0
14. Ranitic 150 {A02BA02} 0-0-1-0
15. Berodual® Respimat® (Ipratropiumbromid, Fenoterolhydrobromid) {R03CC54} 2-3x/d b. Bedarf
16. Spiriva (18µg Tiotropiumbromid , Kapsel mit Pulver) {R03BB04} b. Bed.
17. Oxis Turbohaler (Formoterolfumarat) {R03AC13} b. Bed.

Excessive polypharmacy

Kindly provided by UA Müller, Jena 2014

Polypharmacy …

- increases impairment in quality of life and in drug-related morbidity and mortality (e.g. Hajjar et al. Am J Geriatr Pharmacother 2007)
- and age-related pharmacokinetic and pharmacodynamic changes are associated with increased risk of adverse drug reaction and adverse drug events (e.g. Viktil et al. Br J Clin Pharmacol 2007)
- increases the risk of
  - prescription cascades
  - medication errors

Interventions to improve the appropriate use of polypharmacy for older people (Review)

Patterson SM, Cadogan CA, Kerse N, Cardwell CR, Bradley MC, Ryan C, Hughes C

THE COCHRANE COLLABORATION®

Main results

Two studies were added to this review to bring the total number of included studies to 12. One intervention consisted of computerised decision support; 11 complex, multi-faceted pharmaceutical approaches to interventions were provided in a variety of settings. Interventions were delivered by healthcare professionals, such as prescribers and pharmacists. Appropriateness of prescribing was measured using validated tools, including the MAI score post intervention (eight studies), Beers criteria (four studies), STOPP criteria (two studies) and START criteria (one study). Interventions included in this review resulted in a reduction in inappropriate medication usage. Based on the GRADE approach, the overall quality of evidence for all pooled outcomes ranged from very low to low. A greater reduction in MAI scores between baseline and follow-up was seen in the intervention group when compared with the control group (four studies; mean difference -6.78, 95% CI -12.34 to -1.22). Postintervention pooled data showed a lower summated MAI score (five studies; mean difference -3.88, 95% CI -5.40 to -2.35) and fewer Beers drugs per participant (two studies; mean difference -0.1, 95% CI -0.28 to 0.09) in the intervention group compared with the control group. Evidence of the effects of interventions on hospital admissions (five studies) and of medication-related problems (six studies) was conflicting.

The role of nurses in inappropriate prescribing?

Administration/application
Monitoring
Reporting of (side) effects
Request

 doi 10.1136/bmj.38268.579097.55 2005

Concealment of drugs in food and beverages in nursing homes: cross sectional study

Øyvind Kirkevold, Knut Engedal

Nursing Ethics
2014, Vol. 21(7) 844–849

10.1177/0969733014543886
nej.sagepub.com

Therapeutic lying to assist people with dementia in maintaining medication adherence

Gary Mitchell
Queen's University Belfast, Northern Ireland

J Am Med Dir Assoc 2012; 13 (2): 187.e7-187.e13

Prevalence of Psychotropic Medication Use among German and Austrian Nursing Home Residents: A Comparison of 3 Cohorts

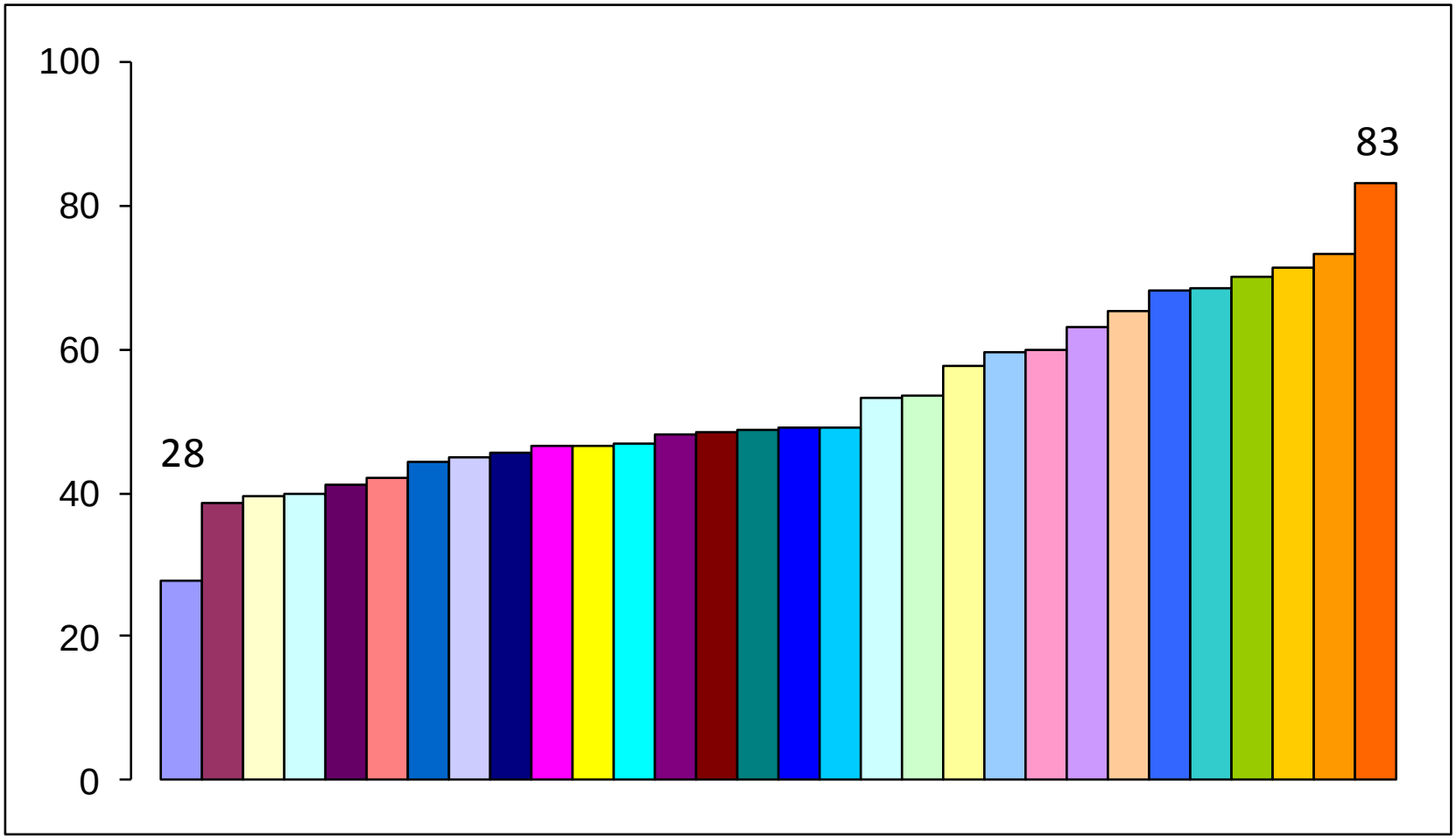
Tanja Richter, MD, Eva Mann, MD, Gabriele Meyer, PhD, Burkhard Haastert, PhD, and Sascha Köpke, PhD

5336 residents of 136 nursing homes included in three studies (Hamburg, DE, n=2; Vorarlberg, AT, n=1)

Prevalence of prescribed psychotropic medication, %

Residents with ≥ 1 …	VAB (n=1844)	HH 1 (n=1125)	HH 2 (n=2367)
Any psychotropic medication	**74.6**	**51.8**	**52.4**
Antipsychotic	**45.9**	**28.4**	**28.4**
Anxiolytic	**22.2**	**10.9**	**12.9**
Hypnotic	**13.3**	**9.9**	**10.7**
Antidepressant	**36.8**	**20.4**	**20.1**

Prevalence of psychotropic medication per nursing home, % (HH 2, Meyer et al. J Clin Nurs 2009)




Melperon-
ratiopharm®
25 mg/5 ml Lösung
PZN -8916750
Zul.-Nr. 39784.00.00
ratiopharm GmbH
Graf-Arco-Str. 3
89079 Ulm
200 ml Lösung
N2
Haloperidol-
ratiopharm® 5 mg
Injektionslösung
Wirkstoff: Haloperidol
parenteral/Neuroleptikum
ratiopharm
5 Ampullen zu 1 ml Injektionslösung
N1
Haldol®-
Janssen,
Tropfen zum Einnehmen,
2 mg/ml Lösung
Wirkstoff: Haloperidol
Zur Anwendung bei Kindern ab 3 Jahren und bei Erwachsenen.
1 ml Tropfen zum Einnehmen, Lösung entspr. 20 Tropfen enthält 2 mg Haloperidol
30 ml Tropfen
zum Einnehmen,
2 mg/ml Lösung
janssen
30 ml Tropfen zum Einnehmen, Lösung
N1
Promethazin-
neuraxpharm®
Tropfen zum Einnehmen, Lösung 20 mg/ml
Wirkstoff: Promethazinhydrochlorid
Risperidon HEXAL® 1 mg
Filmtabletten
Wirkstoff: Risperidon
1 mg
20 Filmtabletten
HEXAL

BMJ 2014;349:g6420 doi: 10.1136/bmj.g6420 (Published 3 November 2014)

PRACTICE

CHANGE PAGE

Don't use antipsychotics routinely to treat agitation and aggression in people with dementia

Barriers

Absence of direct (medical) alternatives
Prescribing physicians under pressure
Insufficient implementation of best evidence knowledge
Causes of agitation and aggression insufficiently assessed and treated

Conclusion A systematic approach to the management of pain **significantly reduced agitation in residents of nursing homes** with moderate to severe dementia. Effective management of pain can play an important part in the treatment of agitation and **could reduce the number of unnecessary prescriptions for psychotropic drugs** in this population.

Efficacy of treating pain to reduce behavioural disturbances in residents of nursing homes with dementia: cluster randomised clinical trial

Bettina S Husebo *postdoctoral fellow*[1], Clive Ballard *professor*[2], Reidun Sandvik *registered nurse*[1], Odd Bjarte Nilsen *statistician*[3], Dag Aarsland *professor*[4]

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Authors' conclusions

Our findings suggest that many older people with Alzheimer's dementia and NPS can be withdrawn from chronic antipsychotic medication without detrimental effects on their behaviour. It remains uncertain whether withdrawal is beneficial for cognition or psychomotor status, but the results of this review suggest that discontinuation programmes could be incorporated into routine practice.

However, two studies of people whose agitation or psychosis had previously responded well to antipsychotic treatment found an increased risk of relapse or shorter time to relapse after discontinuation. Two other studies suggest that people with more severe NPS at baseline could benefit from continuing their antipsychotic medication. In these people, withdrawal might not be recommended.

Withdrawal versus continuation of chronic antipsychotic drugs for behavioural and psychological symptoms in older people with dementia (Review)

Declercq T, Petrovic M, Azermai M, Vander Stichele R, De Sutter AIM, van Driel ML, Christiaens T

Cochrane Library

Cochrane Database of Systematic Reviews

Psychosocial interventions for redu
medication in care home residents (

Richter T, Meyer G, Möhler R, Köpke S

There is evidence to support the effectiveness of psychosocial interventions for reducing antipsychotic medication in care home residents.

The review was based on a small number of heterogeneous studies with important methodological shortcomings. The most recent and methodologically most rigorous study showed the most pronounced effect.

BMJ 2006

Effect of enhanced psychosocial care on antipsychotic use in nursing home residents with severe dementia: cluster randomised trial

Jane Fossey, Clive Ballard, Edmund Juszczak, Ian James, Nicola Alder, Robin Jacoby, Robert Howard

Abstract

Objective To evaluate the effectiveness of a training and support intervention for nursing home staff in reducing the proportion of residents with dementia who are prescribed neuroleptics.

Design Cluster randomised controlled trial with blinded assessment of outcome.

Setting 12 specialist nursing homes for people with dementia in London, Newcastle, and Oxford.

Participants Residents of the 12 nursing homes; numbers varied during the study period.

Intervention Training and support intervention delivered to nursing home staff over 10 months, focusing on alternatives to drugs for the management of agitated behaviour in dementia.

Main outcome measures Proportion of residents in each home who were prescribed neuroleptics and mean levels of agitated and disruptive behaviour (Cohen-Mansfield agitation inventory) in each home at 12 months.

Results At 12 months the proportion of residents taking neuroleptics in the intervention homes (23.0%) was significantly (focused intervention training and support) to reduce the proportion being treated with neuroleptics.

Methods

We used a cluster trial design primarily to avoid contamination (because care staff receiving extra training and support could not be expected to treat individual residents differently) but also for practical purposes. The intervention was aimed at changing clinical practice in the nursing home, and hence the home was the unit of randomisation and analysis.

Sample size

We estimated that about 55% of residents would be taking neuroleptics at the start of the trial and that we could reduce this to 30% in the intervention arm by 12 months. For a conventional trial with randomisation of individual patients to be able to detect such a reduction, a minimum of 69 patients would need to be recruited to each arm of the trial (138 patients in total), for a significance level of 5% (two sided), a power of 85%, and equal

Richter *et al. Implementation Science* (2015) 10:82
DOI 10.1186/s13012-015-0268-3

IMPLEMENTATION SCIENCE

STUDY PROTOCOL Open Access

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

Christin Richter[1*], Almuth Berg[1], Steffen Fleischer[1], Sascha Köpke[2], Katrin Balzer[2], Eva-Maria Fick[2], Andreas Sönnichsen[3], Susanne Löscher[3], Horst Christian Vollmar[3,4], Burkhard Haastert[5], Andrea Icks[6], Charalabos-Markos Dintsios[6], Eva Mann[7], Ursula Wolf[1,8] and Gabriele Meyer[1]

INTERNAL MEDICINE JOURNAL

Internal Medicine Journal **45** (2015)

PERSONAL VIEWPOINT

Physicians need to take the lead in deprescribing

I. A. Scott[1,2] and D. G. Le Couteur[3,4]

Of course, but …

Nurses / nurse researcher must …

realise their responsibility

seek for proper alternatives and optimization

initiate programmes to reduce potential harmful medication (in cooperation with prescribing physicians)

set the topic on the research agenda and go beyond desciptive analyses


Thank you very much for listening!