Le intossicazioni: inquadramento generale e casi specifici: polypharmacy

Alfredo Barillari

13 dicembre 2025


Dotòr no sai.
Che domandi a
la fèmine!
Che farmaci
prende?

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Polypharmacy among Medicaid-Insured Children with and without Documented Obesity

Kathryn E. Kyler, MD, MS[1,2], Matt Hall, PhD[1,3], James W. Antoon, MD, PhD[4], Jennifer Goldman, MD, MS[5], Carlos G. Grijalva, MD, MPH[6], Samir S. Shah, MD, MSCE, MHM[7], Sonya Tang Girdwood, MD, PhD[8], Derek J. Williams, MD, MPH[4], James A. Feinstein, MD, MPH[9]

Open Access Research
BMJ Open

Examining patterns of multimorbidity, polypharmacy and risk of adverse drug reactions in chronic obstructive pulmonary disease: a cross-sectional UK Biobank study

Peter Hanlon,[1] Barbara I Nicholl,[1] Bhautesh Dinesh Jani,[1] Ross McQueenie,[1] Duncan Lee,[2] Katie I Gallacher,[1] Frances S Mair[1]

Association of polypharmacy with all-cause mortality and adverse events among elderly colorectal cancer survivors

Dong-Woo Choi PhD[1] | Hyejung Kang MPH[2] | Hyun-Soo Zhang MPH[2,3] | Hoyol Jhang MPH[2] | Wonjeong Jeong PhD[4] | Sohee Park PhD[2]

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JKMS

Original Article
Humanities & Basic Medical Science

Polypharmacy and Elevated Risk of Severe Adverse Events in Older Adults Based on the Korea Institute of Drug Safety and Risk Management-Korea Adverse Event Reporting System Database

Research

Amaia Calderón-Larrañaga, Beatriz Poblador-Plou, Francisca González-Rubio, Luis Andrés Gimeno-Feliu, José María Abad-Díez and Alexandra Prados-Torres

Multimorbidity, polypharmacy, referrals, and adverse drug events:

are we doing things well?

Open access Original research
BMJ Open

Defining, identifying and addressing problematic polypharmacy within multimorbidity in primary care: a scoping review

Jung Yin Tsang,[1,2] Matthew Sperrin,[2,3] Thomas Blakeman,[1,2] Rupert A Payne,[4] Darren Ashcroft[2,5]

Polypharmacy: Evaluating Risks and Deprescribing

Anne D. Halli-Tierney, MD, University of Alabama Family Medicine Residency, Tuscaloosa, Alabama
Catherine Scarbrough, MD, MSc, St. Vincent's East Family Medicine Residency, Birmingham, Alabama
Dana Carroll, PharmD, Auburn University Harrison School of Pharmacy, Auburn, Alabama

International Journal of Neuropsychopharmacology (2014), **17**, 1063–1082. © CINP 2012
doi:10.1017/S1461145712001265

Polypharmacy with antidepressants in children and adolescents

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Child and Adolescent Psychiatry Department, Hospital General Universitario Gregorio Marañón, Centro de Investigación Biomédica en Red de Salud Mental (CIBERSAM), Instituto de Investigación Sanitaria Gregorio Marañón (IiSGM), Madrid, Spain

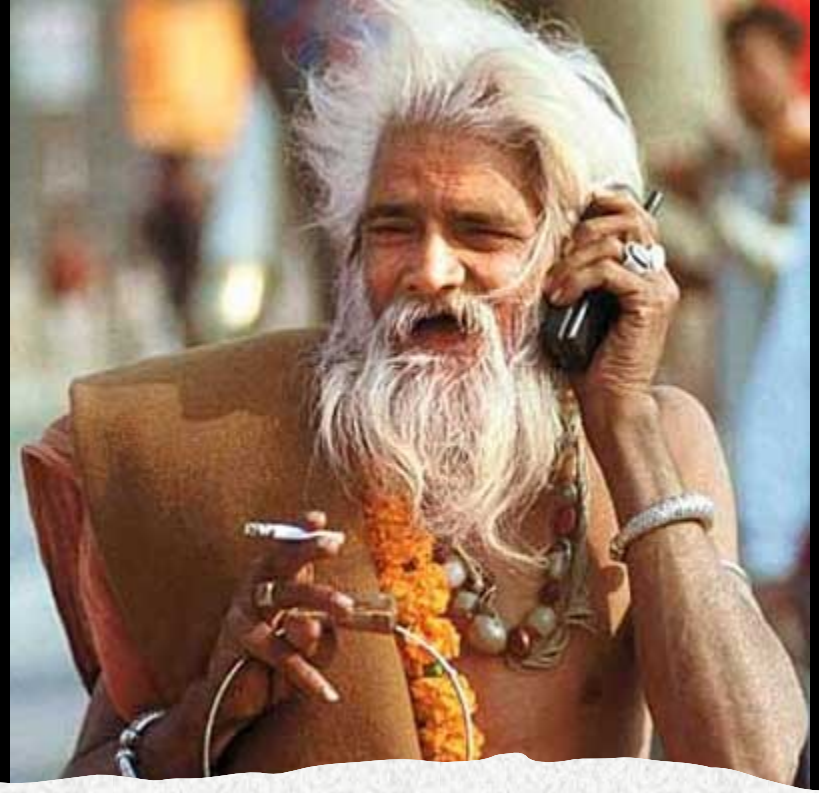
RESEARCH ARTICLE

Prevalence of and risk factors for adverse events in Alzheimer's patients receiving anti-dementia drugs in at-home care

Hirohisa Imai[1]*, Takuya Hirai[2], Ryosuke Kumazawa[3], Shunsaku Nakagawa[4], Atsushi Yonezawa[4], Kazuo Matsubara[4], Hiroyuki Nakao[5]

Polypharmacy and Elevated Risk of Severe Adverse Events in Older Adults Based on the Korea Institute of Drug Safety and Risk Management-Korea Adverse Event Reporting System Database

Grace Juyun Kim,[1] Ji Sung Lee,[2] Sujung Jang,[3] Seonghui Lee,[4] Seongwoo Jeon,[5] Suehyun Lee,[6] Ju Han Kim,[7] and Kye Hwa Lee[8,9]



It has been evidenced that polypharmacy significantly increases the risk of inappropriate prescription and adverse drug events (ADEs).

In addition, care of the same patient by different specialists has been shown to carry a risk of fragmented care.

Polypharmacy: Evaluating Risks and Deprescribing

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Physicians should view deprescribing as a therapeutic intervention similar to initiating clinically appropriate therapy.

Monitoring patients' active medication lists and deprescribing any unnecessary medications are recommended to reduce pill burden, the risks of adverse drug events, and financial hardship.

RESEARCH ARTICLE

Prevalence of and risk factors for adverse events in Alzheimer's patients receiving anti-dementia drugs in at-home care

Hirohisa Imai[1]*, Takuya Hirai[2], Ryosuke Kumazawa[3], Shunsaku Nakagawa[4], Atsushi Yonezawa[4], Kazuo Matsubara[4], Hiroyuki Nakao[5]

Data were collected on 3712 patients from 1673 pharmacies in a nationwide survey.

Antidementia drugs had been prescribed to 863 of these patients; and 801 (92.8%) of these 863 patients were 75 years of age or older.

Confirmed adverse events occurred in 170 (21%) of these 863 patients.

The disposition of adverse events was as follows:
excitement/insomnia, in 74 (45%) of patients; **nausea/vomiting/diarrhea,** in 55 (34%) of patients; **hallucinations/delusions/visual hallucinations**, in 35 (21%) of patients; and **poriomania/violent behavior**, n 26 (16%).

acetylcholinesterase inhibitors and NMDA receptor antagonists

Association of polypharmacy with all-cause mortality and adverse events among elderly colorectal cancer survivors

Dong-Woo Choi PhD[1] | Hyejung Kang MPH[2] | Hyun-Soo Zhang MPH[2,3] | Hoyol Jhang MPH[2] | Wonjeong Jeong PhD[4] | Sohee Park PhD[2]

Of the **55,228** participants, 44.5% died, 83.1% were hospitalized, and 46.1% visited the ER.

The PP and excess PP* groups showed increased risk of all-cause mortality, hospitalization, and ER visit compared with the low PP group, and was highly associated among groups including patients aged 65 to 74 years and those in low-level frailty groups.

*non-PP (zero to four prescribed drugs); PP (five to nine drugs), and excessive PP (≥10 drugs).

Published in final edited form as:

Clin Geriatr Med. 2015 February ; 31(1): 17–vii. doi:10.1016/j.cger.2014.08.017.

Diabetic Medications and Polypharmacy

- In a hypothetical 79-year-old female with hypertension, diabetes, osteoporosis, osteoarthritis, and chronic obstructive pulmonary disease (COPD), applying clinical practice guidelines would yield 12 separate medications.

ORIGINAL ARTICLE

Association of polypharmacy with all-cause mortality and adverse events among elderly colorectal cancer survivors

Dong-Woo Choi PhD[1] | Hyejung Kang MPH[2] | Hyun-Soo Zhang MPH[2,3] | Hoyol Jhang MPH[2] | Wonjeong Jeong PhD[4] | Sohee Park PhD[2]

Polypharmacy was associated with adverse outcomes, including all-cause mortality, hospitalization, and emergency room visits among older CRC survivors and it was particularly associated with those who were 65 to 75 years and those with low risk of frailty.

When prescribing drugs, physicians should be mindful of finding a balance between adequate treatment of diseases and avoiding adverse drug effects in survivors of CRC.

Polipharmacy (PP) was categorized as follows:

- non-PP (zero to four prescribed drugs);
- PP (five to nine drugs),
- excessive PP (≥10 drugs).

CURRENT OPINION

Frailty and Potentially Inappropriate Prescribing in Older People with Polypharmacy: A Bi-Directional Relationship?

Mary A. Randles[1,2] · Denis O'Mahony[1,2] · Paul F. Gallagher[2,3]

Accepted: 16 May 2022 / Published online: 29 June 2022

The literature illustrates that measured frailty in older adults predisposes to inappropriate polypharmacy and associated adverse drug reactions and events.

In essence, there is a bi-directional relationship between frailty and potentially inappropriate prescribing, the underlying substrates being multimorbidity and inappropriate polypharmacy.

International Journal of
Environmental Research and Public Health

MDPI

Article

Drug-Related Problems and Polypharmacy in Nursing Home Residents: A Cross-Sectional Study

Raquel Díez [1], Raquel Cadenas [1], Julen Susperregui [2], Ana M. Sahagún [1,*], Nélida Fernández [1], Juan J. García [1], Matilde Sierra [1] and Cristina López [1]

At present, 19.2% of the Spanish population is aged 65 or older. Polypharmacy is a frequent condition among the elderly, especially in those living in nursing homes, which is associated with adverse outcomes, such as adverse drug events or drug-drug interactions.

Polypharmacy and inappropriate medications were present in 78.8% and 96.8% of residents, respectively.

Drug-related problems were present in almost all the populations evaluated. Drug-drug interactions were very common in participants (81.1%), being severe/moderate in 24.7%.

European Geriatric Medicine
https://doi.org/10.1007/s41999-023-00784-z

EDITORIAL

STOPP/START version 3: even better with age

Paula A. Rochon[1,2,3] · Nathan M. Stall[1,3] · Christina Reppas-Rindlisbacher[1,3] · Jerry H. Gurwitz[4]

STOPP/START provides a balanced perspective on prescribing for older adults, including what should and should not be done.

STOPP/START Version 3 was created by a panel of 11 academic geriatricians with expertise in geriatric pharmacotherapy who are actively providing clinical care from eight European countries.

Two-thirds of the STOPP/START list identify drugs that should be stopped.

Version 3 provides an explicit list of the 133 medications that should be stopped in older adults

New evidence includes: sodium glucose cotransporter (SGLT2) inhibitors for those with symptomatic hypotension, aspirin for primary prevention in cardiovascular disease, and levothyroxine in subclinical hypothyroidism.

The STOPP criteria begin by asking an obvious but important and often missed question: Is there a clinical indication for a given medication?

Statins for primary cardiovascular prevention in persons aged ≥ 85 and established frailty with expected life expectancy likely less than 3 years (lack of evidence of efficacy).

Long-term systemic i.e., non-topical NSAIDs with known history of coronary, cerebral or peripheral vascular disease (increased risk of thrombosis).

Aspirin for primary prevention in cardiovascular disease (no evidence of benefit).

Benzodiazepines for ≥ 4 weeks (no indication for longer treatment; risk of prolonged sedation, confusion, impaired balance, falls, road traffic accidents; all benzodiazepines should be withdrawn gradually if taken for more than 4 weeks as there is a risk of causing a benzodiazepine withdrawal syndrome if stopped abruptly).

Long-term use of NSAID (>3 months) for symptom relief of osteoarthritis pain where paracetamol has not been tried (simple analgesics preferable and usually as effective for pain relief and safer).

Antibiotic use in asymptomatic bacteriuria (no indication for treatment).

Section K: Drug classes that predictably increase falls risk in susceptible older people.

Version 3 also provides an explicit list of the 57 medications that should be started.

Lightning Learning: STOPP/START in the ED

em3.org.uk @EM3FOAMed University Hospitals of Leicester NHS NHS Trust #EM3

STOP!

Polypharmacy can increase the risk of drug interactions and adverse reactions, together with reducing the quality of life for patients.

Medication review in the Emergency Department (ED) can:

- ➔ Reduce iatrogenic adverse effects.
- ➔ Avoid the 'prescribing cascade' (prescription of further medications inappropriately when the patient may be experiencing side effects).
- ➔ Decrease hospital admissions.

Adverse Drug Events account for approx. 6.5% of all admissions, but more in older people. This leads to increased hospital stay with significant morbidity and mortality.

LOOK

The **STOPP/START** criteria is validated to help reduce potentially inappropriate prescriptions amongst older people.

- ★ **S**creening **T**ool of **O**lder **P**ersons (potentially inappropriate) **P**rescriptions (STOPP)
- ★ **S**creening **T**ool to **A**lert doctors to the **R**ight **T**reatment (START)

This decision aid has a series of rules/suggestions related to high-yield problems in prescribing. Always consider reviewing medications when such patients present to the ED.

LEARN

Polypharmacy Guidance apps:
https://apple.co/34547lB (iPhone)
https://bit.ly/3jaNbQF (Android)

ACB calculator:
http://www.acbcalc.com
For calculating your patient's anticholinergic burden. These medications can significantly increase your patient's morbidity & mortality.

NICE Database of Treatment Effects: https://bit.ly/3iuK8mp
Accurate guide + data related to medication treatment effects inclusive of number needed to treat.

STOPP/START Toolkit:
https://bit.ly/3k0DLYf

Authors: Jalaj Tamber & Sunny Jutla **Date:** 30.09.2020 **Version:** 1.0

Table 1 Drugs implicated in patient episodes with adverse drug reactions (ADRs)*

Drug class	No of ADRs (%)	Offending drug	ADR
Diuretics	31 (14.2)	Furosemide (13), spironolactone (8), bumetanide (6), bendroflumethiazide (2), co-amilofruse (1), indapamide (1)	Renal impairment (18), electrolyte derangement (12), postural hypotension (1)
Steroid inhaler	27 (12.4)	Steroid inhaler (27)	Pneumonia (26), oral thrush (1)
Anticoagulants	21 (9.6)	Warfarin (7), apixaban (5), edoxaban (4), rivaroxaban (4), enoxaparin (1)	Minor bleeding (10), anaemia (4), intracranial haemorrhage (4), gastrointestinal bleed (3)
Proton pump inhibitor	18 (8.3)	Lansoprazole (9), omeprazole (6), pantoprazole (3)	Hypomagnesaemia (11), hyponatraemia (6), *Clostridium difficile* (1)
Antiplatelet	16 (7.4)	Aspirin (13), clopidogrel (3)	Intracranial haemorrhage (5), gastrointestinal bleed (4), minor bleeding (4), anaemia
Chemotherapy	16 (7.3)	Chemotherapy (16)	Neutropenic sepsis (8), sepsis (4), constipation (1), deranged electrolytes (1), rash (1), thrombocytopenia (1)
ACE inhibitor/ angiotensin receptor blocker	14 (6.4)	Losartan (4), ramipril (4), irbesartan (3), candesartan (1), lisinopril (1), perindopril (1)	Renal impairment (9), postural hypotension (3), hyperkalaemia (1), renal failure (1)
Antidepressants & antipsychotics	13 (6.0)	Mirtazapine (2), sertraline (2), sulpiride (2), carbemazapine (1), dosulepin (1), nortriptyline (1), olanzapine (1), risperidone (1)	Confusion (3), hyponatraemia (3), parkinsonism (3), constipation (1), gastrointestinal bleed (1), prolonged QTc (1)
Opiates	13 (6.0)	Codeine (5), morphine sulfate (3), oxycodone (2), tramadol (2), buprenorphine (1)	Constipation (6), confusion (4), respiratory depression (2), hallucinations (1)
Other	49 (22.4)	Other (49)	Other (49)

*In those with multiple ADRs, only the most severe ADR was included in this table, as defined by the Adapted Hartwig Severity Scale[16] (see online supplemental material 1 for full list).
QTc, corrected QT interval.

Approximately 40% of ADRs were classified as avoidable or possibly avoidable.

16. Statins for primary cardiovascular prevention in persons aged ≥ 85 and established frailty with expected life expectancy likely less than 3 years (lack of evidence of efficacy).

17. Long-term systemic i.e., non-topical NSAIDs with known history of coronary, cerebral or peripheral vascular disease (increased risk of thrombosis).

CGA Toolkit Plus www.cgakit.com

Resources for the Comprehensive Geriatric Assessment based Proactive and Personalised Primary Care of the Elderly

STOPP-START v.3

Screening Tool Of Older People's Prescriptions (STOPP)
Screening Tool to Alert to Right Treatment (START)

Purpose : STOPP/START is a physiological systems-based explicit set of criteria that attempts to define the clinically important prescribing problems relating to potentially inappropriate medications (PIMs–STOPP criteria) and potential prescribing omissions (PPOs–START criteria). The previous two versions of STOPP/START criteria were published in 2008 and 2015. The 2023 version is the revised and updated third version of the criteria.

Admin time : Highly operator dependent - 5 mins for an expert, up to 20-30 mins

Beers Criteria

The Beers Criteria for Potentially Inappropriate Medication Use in Older Adults is a list of medications that healthcare providers reference to safely prescribe medications for people above age 65. Healthcare providers use the Beers Criteria as a guide to do no harm. The American Geriatrics Society revises this list every three years.

What is the Beers Criteria?
The American Geriatrics Society Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults is a list of medication guidelines that help healthcare providers safely prescribe medications for adults over age 65.

Studies show that over 90% of adults over age 65 take at least one prescription medication, while more than 66% of the same group take more than three prescriptions a month.

The Beers Criteria is a list of potentially harmful medications or medications with side effects that outweigh the benefit of taking the medication.

Meperidine	**Avoid.** Not an effective oral analgesic in dosages commonly used; may cause neurotoxicity; safer alternatives available. *QE = High; SR = Strong*
Non-COX-selective NSAIDs, oral ■ Aspirin >325 mg/day ■ Diclofenac ■ Diflunisal ■ Etodolac ■ Fenoprofen ■ Ibuprofen ■ Ketoprofen ■ Meclofenamate ■ Mefenamic acid ■ Meloxicam ■ Nabumetone ■ Naproxen ■ Oxaprozin ■ Piroxicam ■ Sulindac ■ Tolmetin	**Avoid chronic use unless other alternatives are not effective and patient can take gastroprotective agent (proton-pump inhibitor or misoprostol).** Increases risk of GI bleeding/peptic ulcer disease in high-risk groups, including those ≥75 years old or taking oral or parenteral corticosteroids, anticoagulants, or antiplatelet agents. Use of proton pump inhibitor or misoprostol reduces but does not eliminate risk. Upper GI ulcers, gross bleeding, or perforation caused by NSAIDs occur in approximately 1% of patients treated for 3–6 months, and in about 2%–4% of patients treated for 1 year. These trends continue with longer duration of use. *QE = Moderate; SR = Strong*
Indomethacin Ketorolac, includes parenteral	**Avoid.** Increases risk of GI bleeding/peptic ulcer disease in high-risk groups *(See Non-COX selective NSAIDs)* Of all the NSAIDs, indomethacin has most adverse effects. *QE = Moderate (Indomethacin), High (Ketorolac); SR = Strong*
Pentazocine*	**Avoid.** Opioid analgesic that causes CNS adverse effects, including confusion and hallucinations, more commonly than other narcotic drugs; is also a mixed agonist and antagonist; safer alternatives available. *QE = Low; SR = Strong*
Skeletal muscle relaxants ■ Carisoprodol ■ Chlorzoxazone ■ Cyclobenzaprine ■ Metaxalone ■ Methocarbamol ■ Orphenadrine	**Avoid.** Most muscle relaxants poorly tolerated by older adults, because of anticholinergic adverse effects, sedation, increased risk of fractures; effectiveness at dosages tolerated by older adults is questionable. *QE = Moderate; SR = Strong*

*Infrequently used drugs. Table 1 Abbreviations: ACEI, angiotensin converting-enzyme inhibitors; ARB, angiotensin receptor blockers; CNS, central nervous system; COX, cyclooxygenase; CrCl, creatinine clearance; GI, gastrointestinal; NSAIDs, nonsteroidal anti-inflammatory drugs; SIADH, syndrome of inappropriate antidiuretic hormone secretion; SR, Strength of Recommendation; TCAs, tricyclic antidepressants; QE, Quality of Evidence

TABLE 2: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults Due to Drug-Disease or Drug-Syndrome Interactions That May Exacerbate the Disease or Syndrome

Disease or Syndrome	Drug(s)	Recommendation, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Syncope	Acetylcholinesterase inhibitors (AChEIs) Peripheral alpha blockers ■ Doxazosin ■ Prazosin ■ Terazosin Tertiary TCAs Chlorpromazine, thioridazine, and olanzapine	**Avoid.** Increases risk of orthostatic hypotension or bradycardia. *QE = High (Alpha blockers), Moderate (AChEIs, TCAs and antipsychotics); SR = Strong (AChEIs and TCAs), Weak (Alpha blockers and antipsychotics)*
Central Nervous System		
Chronic seizures or epilepsy	Bupropion Chlorpromazine Clozapine Maprotiline Olanzapine Thioridazine Thiothixene Tramadol	**Avoid.** Lowers seizure threshold; may be acceptable in patients with well-controlled seizures in whom alternative agents have not been effective. *QE = Moderate; SR = Strong*
Delirium	All TCAs Anticholinergics *(see online for full list)* Benzodiazepines Chlorpromazine Corticosteroids H_2-receptor antagonist Meperidine Sedative hypnotics Thioridazine	**Avoid.** Avoid in older adults with or at high risk of delirium because of inducing or worsening delirium in older adults; if discontinuing drugs used chronically, taper to avoid withdrawal symptoms. *QE = Moderate; SR = Strong*
Dementia & cognitive impairment	Anticholinergics *(see online for full list)* Benzodiazepines H_2-receptor antagonists Zolpidem Antipsychotics, chronic and as-needed use	**Avoid.** Avoid due to adverse CNS effects. Avoid antipsychotics for behavioral problems of dementia unless non-pharmacologic options have failed and patient is a threat to themselves or others. Antipsychotics are associated with an increased risk of cerebrovascular accident (stroke) and mortality in persons with dementia. *QE = High; SR = Strong*
History of falls or fractures	Anticonvulsants Antipsychotics Benzodiazepines Nonbenzodiazepine hypnotics ■ Eszopiclone ■ Zaleplon ■ Zolpidem TCAs/SSRIs	**Avoid unless safer alternatives are not available; avoid anticonvulsants except for seizure.** Ability to produce ataxia, impaired psychomotor function, syncope, and additional falls; shorter-acting benzodiazepines are not safer than long-acting ones. *QE = High; SR = Strong*
Insomnia	Oral decongestants ■ Pseudoephedrine ■ Phenylephrine Stimulants ■ Amphetamine	**Avoid.** CNS stimulant effects.

- **Analgesics** (**meperidine**): Neurotoxicity, delirium.
- **Antibiotics** (**ciprofloxacin** with **warfarin**): Increased bleeding.
- **Antiseizure medications** (**carbamazepine**): Syndrome of inappropriate antidiuretic hormone secretion (SIADH).
- **Antihistamines** (**brompheniramine**): Confusion, cognitive impairment, delirium.
- **Antihypertensives** (**alpha-blockers**): Hypotension.
- **Antiplatelets** or **anticoagulants** (**edoxaban**): Renal impairment.
- **Antipsychotics** (**any**): Stroke, cognitive decline, delirium.
- **Anxiolytics** (**benzodiazepines**): Impaired metabolism, cognitive impairment, unsteady gait.
- **Cardiac** medications (**disopyramide**): Heart failure.
- **Central nervous system agents** (**dimenhydrinate**): Confusion, cognitive impairment, delirium.
- **Diabetes** medications (**chlorpropamide**): Hypoglycemia.
- **Gastrointestinal medications** (**H2-blocker for delirium**): Worsening delirium.
- **Hormones** (**estrogen**): Breast cancer, endometrial cancer.
- **Hypnotics** (**barbiturates**): Dependence, overdose.
- **Musculoskeletal** agents (**muscle relaxers**): Confusion, dry mouth, constipation.
- **NSAIDs** [**aspirin** (**more than 325 mg/day**)]: Ulcer, gastrointestinal bleeding or perforation.
- **Respiratory** medications (**atropine**): Confusion, cognitive impairment, delirium.
- **Urinary** medications (**desmopressin**): Low sodium in blood (hyponatremia).
- **Vasodilators** (**ergoloid mesylates**): Lack of intended results.

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Original Investigation | Pharmacy and Clinical Pharmacology

Medication Optimization Protocol Efficacy for Geriatric Inpatients
A Randomized Clinical Trial

Kenya Ie, MD, MPH, PhD; Masanori Hirose, MD, PhD; Tsubasa Sakai, MD; Iori Motohashi, MD, MPH; Mari Aihara, MD; Takuya Otsuki, MD, PhD; Ayako Tsuboya, PharmD, PhD; Hiroshi Matsumoto, PharmD; Hikari Hashi, PharmD; Eisuke Inoue, PhD; Masaki Takahashi, MSc; Eiko Komiya, PharmD; Yuka Itoh, PharmD; Reiko Machino, PharmD; Tomoya Tsuchida, MD, PhD; Steven M. Albert, PhD; Yoshiyuki Ohira, MD, PhD; Chiaki Okuse, MD, PhD

In this randomized clinical trial of older inpatients with polypharmacy, the multidisciplinary deprescribing intervention did not reduce death, unscheduled hospital visits, or rehospitalization within 12 months.

The intervention was effective in reducing the number of medications with no significant adverse effects on clinical outcomes, even among older inpatients with polypharmacy.

Drug Saf (2016) 39:109–116
DOI 10.1007/s40264-015-0378-5

CrossMark

CURRENT OPINION

Appropriate Polypharmacy and Medicine Safety: When Many is not Too Many

Cathal A. Cadogan[1,2] · Cristín Ryan[1,2] · Carmel M. Hughes[1]

Historically, **polypharmacy** has been viewed negatively because of the associated medication safety risks, such as drug interactions and adverse drug events.

More recently, polypharmacy has been identified as a risk factor for **under-prescribing**, such that patients do not receive necessary medications and this can also pose risks to patients' safety and well-being.

It is now recognised that the prescribing of **'many' medicines** can be entirely appropriate in patients with several chronic conditions and that the risks of adverse drug events that have been associated with polypharmacy may be greatly reduced when patients' clinical context is taken into consideration.

Google Play Games Apps Books Kids

MALPIP, STOPP/Start, Beers

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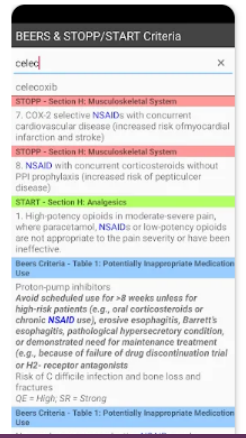

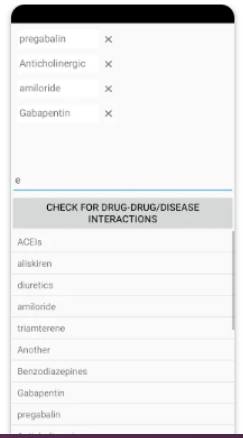

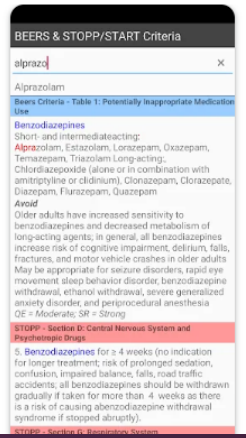

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