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Università degli
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COUNCIL FOR CARDIOLOGY PRACTICE AND
WORKING GROUP ON CARDIOVASCULAR
PHARMACOTHERAPY

Drug overprescription and adherence
Alessandro Mugelli (Firenze)

Aging Clinical and Experimental Research (2020) 32:2057–2064
<https://doi.org/10.1007/s40520-020-01534-y>

ORIGINAL ARTICLE

Blood pressure and long-term mortality in older patients: results of the Fiesole Misurata Follow-up Study

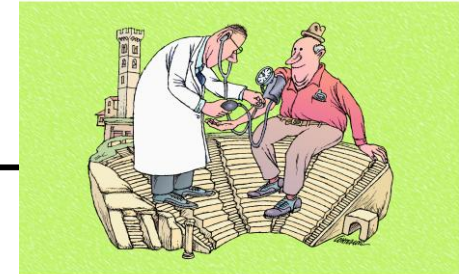
Giulia Rivasi¹ · Ersilia Lucenteforte^{2,3} · Giada Turrin¹ · Daniela Balzi⁴ · Matteo Bulgaresi¹ · Nicola Nesti¹ · Antonella Giordano¹ · Martina Rafanelli¹ · Niccolò Lombardi² · Roberto Bonaiuti² · Alfredo Vannacci² · Alessandro Mugelli² · Mauro Di Bari¹ · Tahir Masud⁵ · Andrea Ungar¹

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Observational study: 2228 citizens of Fiesole over 65 years



FIESOLE MISURATA

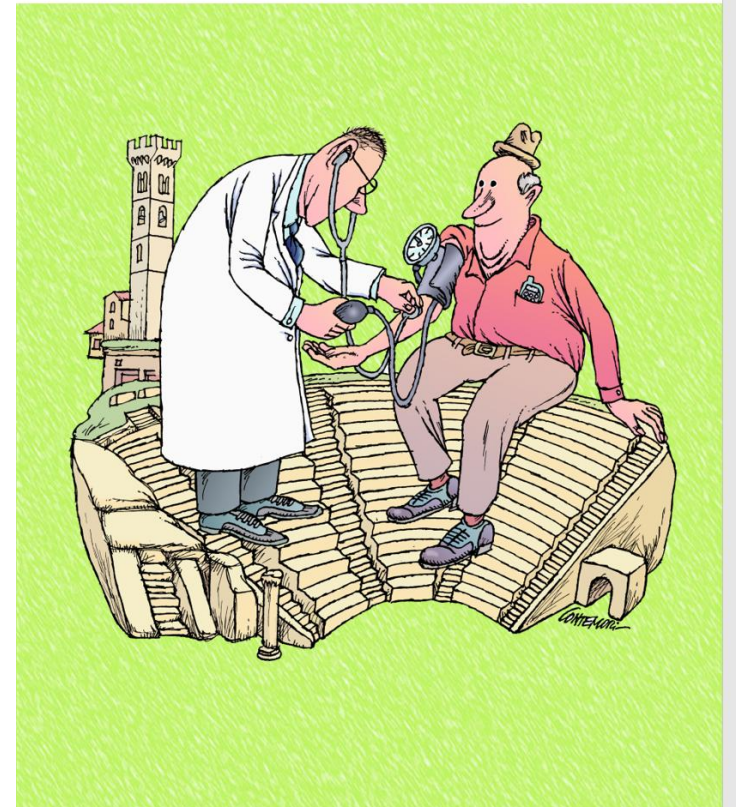


**Progetto regionale di educazione e ricerca
sull'ipertensione arteriosa**



Per maggiori informazioni www.comune.fiesole.it

FIESOLE MISURATA



**Progetto regionale di educazione e ricerca
sull'ipertensione arteriosa**

The Aim of the follow-up study was to evaluate mortality according to BP values in a cohort of older adults enrolled in the Fiesole Misurata Study, after a 6-year follow-up.

Surprisingly, the main result of the study was

....mortality was significantly lower for SBP 140–159 mmHg as compared with 120–139 mmHg (HR 0.54, 95% CI 0.33–0.89)

Was overprescription or polypharmacy responsible for this unexpected result?

British Journal of General Practice, July 2025

Medication Safety in Polypharmacy

Overprescription refers to the practice of prescribing medications more often, in greater quantities, or for longer durations than are clinically necessary. Synonyms : potentially inappropriate prescribing and low-value prescribing

Polypharmacy is the concurrent use of multiple medications. Although there is no standard definition, polypharmacy is often defined as the routine use of five or more medications. This includes over-the-counter, prescription and/or traditional and complementary medicines used by a patient (see Annex 1).

Overprescription and polypharmacy are closely related but distinct concepts, with overprescription often being a key driver of polypharmacy.

Appropriate polypharmacy is present, when (a) all medicines are prescribed for the purpose of achieving specific therapeutic objectives that have been agreed with the patient; (b) therapeutic objectives are actually being achieved or there is a reasonable chance they will be achieved in the future; (c) medication therapy has been optimized to minimize the risk of adverse drug reactions (ADRs); and (d) the patient is motivated and able to take all medicines as intended (12).

Inappropriate polypharmacy is present, when one or more medicines are prescribed that are not or no longer needed, either because: (a) there is no evidence based indication, the indication has expired or the dose is unnecessarily high; (b) one or more medicines fail to achieve the therapeutic objectives they are intended to achieve; (c) one, or the combination of several medicines cause ADRs, or put the patient at a high risk of ADRs or because (d) the patient is not willing or able to take one or more medicines as intended (12).

the 'prescriber's dilemma'.....

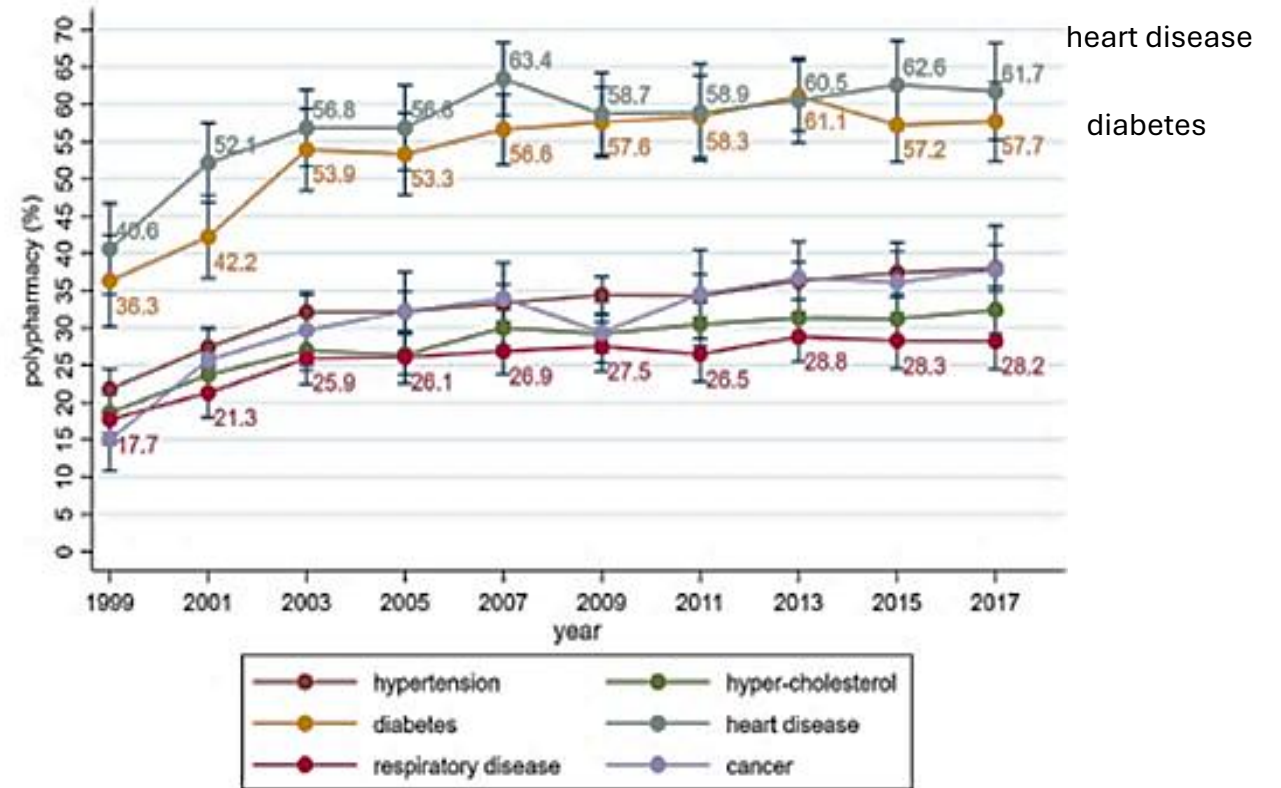
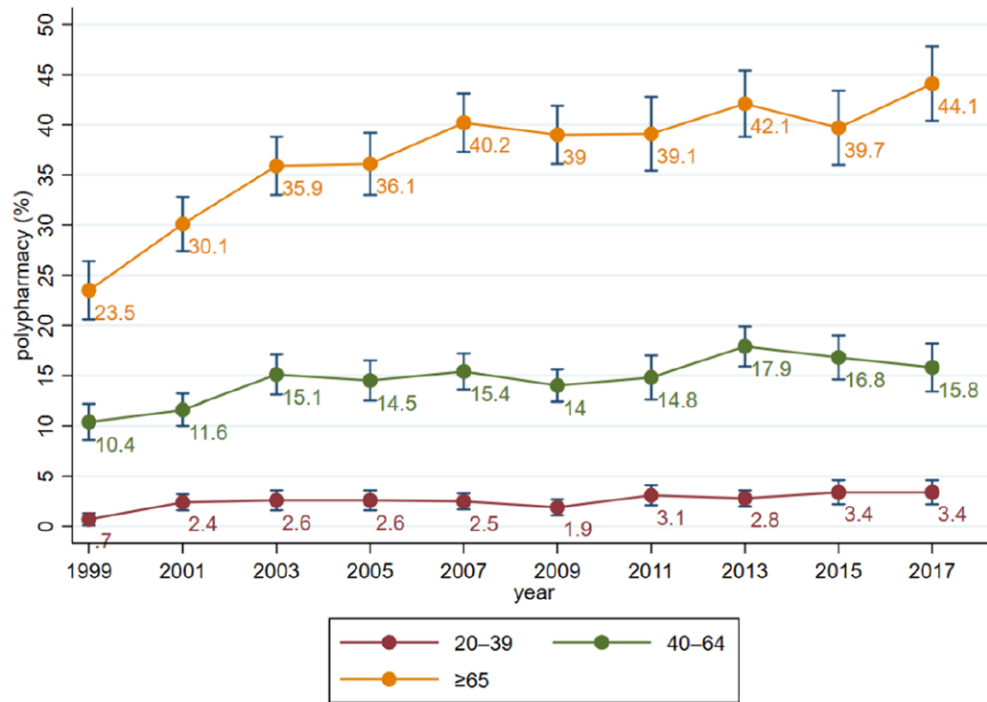
Rankin et al. (2018) the 'prescriber's dilemma' is
“differentiating between ‘*many medications*’ (appropriate polypharmacy)
and ‘*too many medications*’ (inappropriate polypharmacy)”.

inappropriate polypharmacy : potential risk outweigh benefit

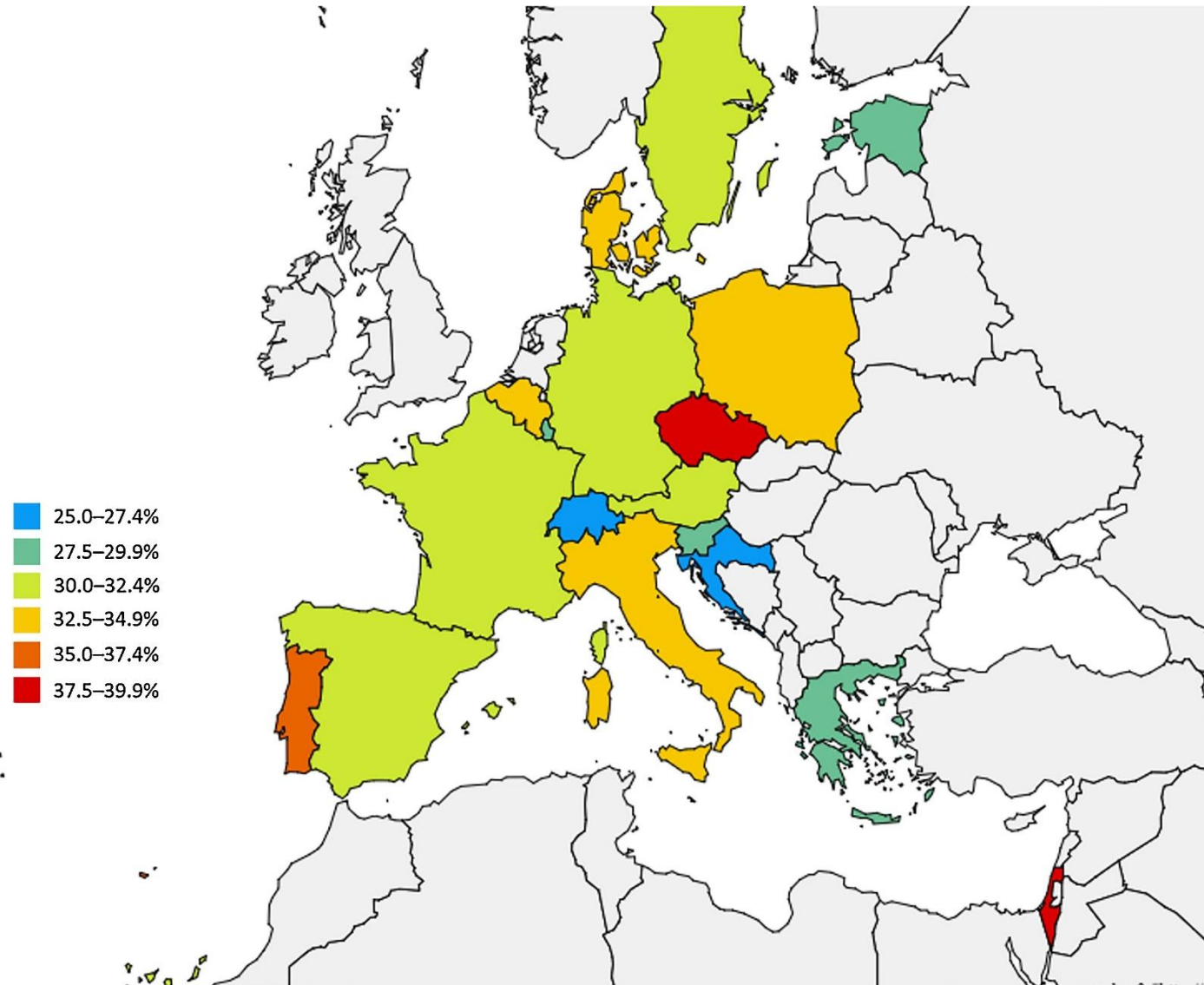


**people with polypharmacy may have a higher
risk of potentially inappropriate medication use**

Prevalence and trend of polypharmacy among U.S. adults, by age and diagnosed disease (1999–2018)



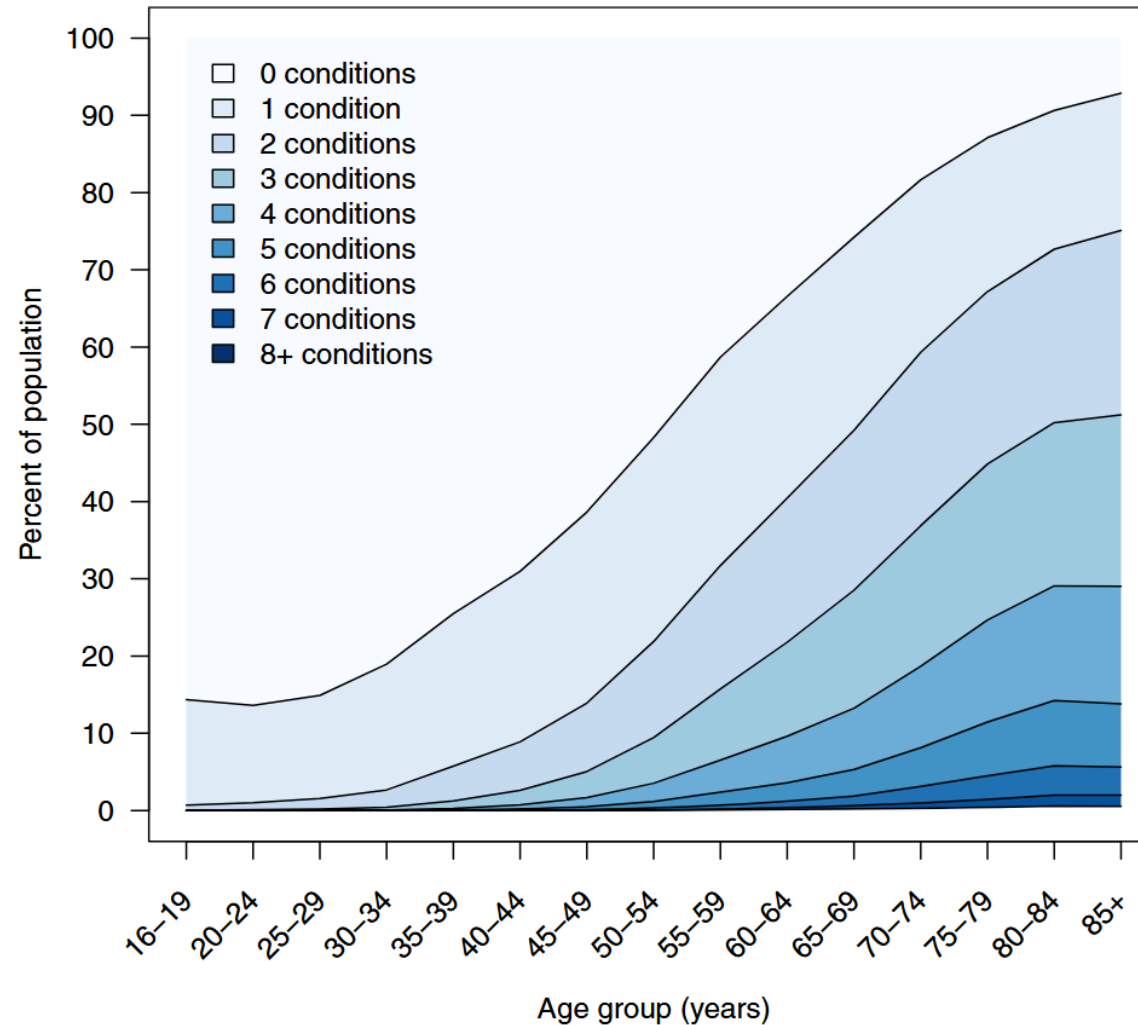
Prevalence of polypharmacy in elderly (65 years or older) among 17 European countries and Israel



CAUSES

Multimorbidity is defined as the presence of two or more long-term health conditions, which can include (a) defined physical and mental health conditions such as diabetes or schizophrenia; (b) ongoing conditions such as learning disability; (c) symptom complexes such as frailty or chronic pain; (d) sensory impairment such as sight or hearing loss; and (e) alcohol and substance misuse

WHO 2019



Number of chronic conditions by age group

The number of chronic conditions per person and the proportion of people with multimorbidity increased with age.

- **Half of the population aged 65 and above had multimorbidity**

Inappropriate Polypharmacy: Clinically Relevant Consequences

- **Clinically significant drug–drug interactions (DDIs):**

Adverse outcomes commonly associated with DDIs include **neurocognitive disturbances** (e.g. delirium), **acute kidney injury**, and **symptomatic hypotension**.

- **Prescribing cascade:**

Adverse drug reactions are **misinterpreted as new clinical conditions**, resulting in the initiation of additional medications and further **potentially inappropriate prescribing**.

- **Use of over-the-counter (OTC) medicines and complementary therapies:**

Includes **NSAIDs**, **herbal preparations**, and **dietary supplements**, with an increased risk of **drug–drug and herb–drug interactions**, particularly in older adults.

Dietary supplements for human health. What do we really know? A systematic review of umbrella reviews

Eugenia Piragine^{1,*}, Marco Andrea Malanima^{2,*}, Vincenzo Calderone¹, Salvatore De Masi³,
Carla Ghelardini⁴, Alessandro Mugelli⁴ and Ersilia Lucenteforte⁵

Conclusions. The demonstration of the beneficial properties of dietary supplements is far from conclusive and high-quality studies are needed.

Falls can cause serious injuries and are associated with considerable morbidity and mortality, especially in the elderly

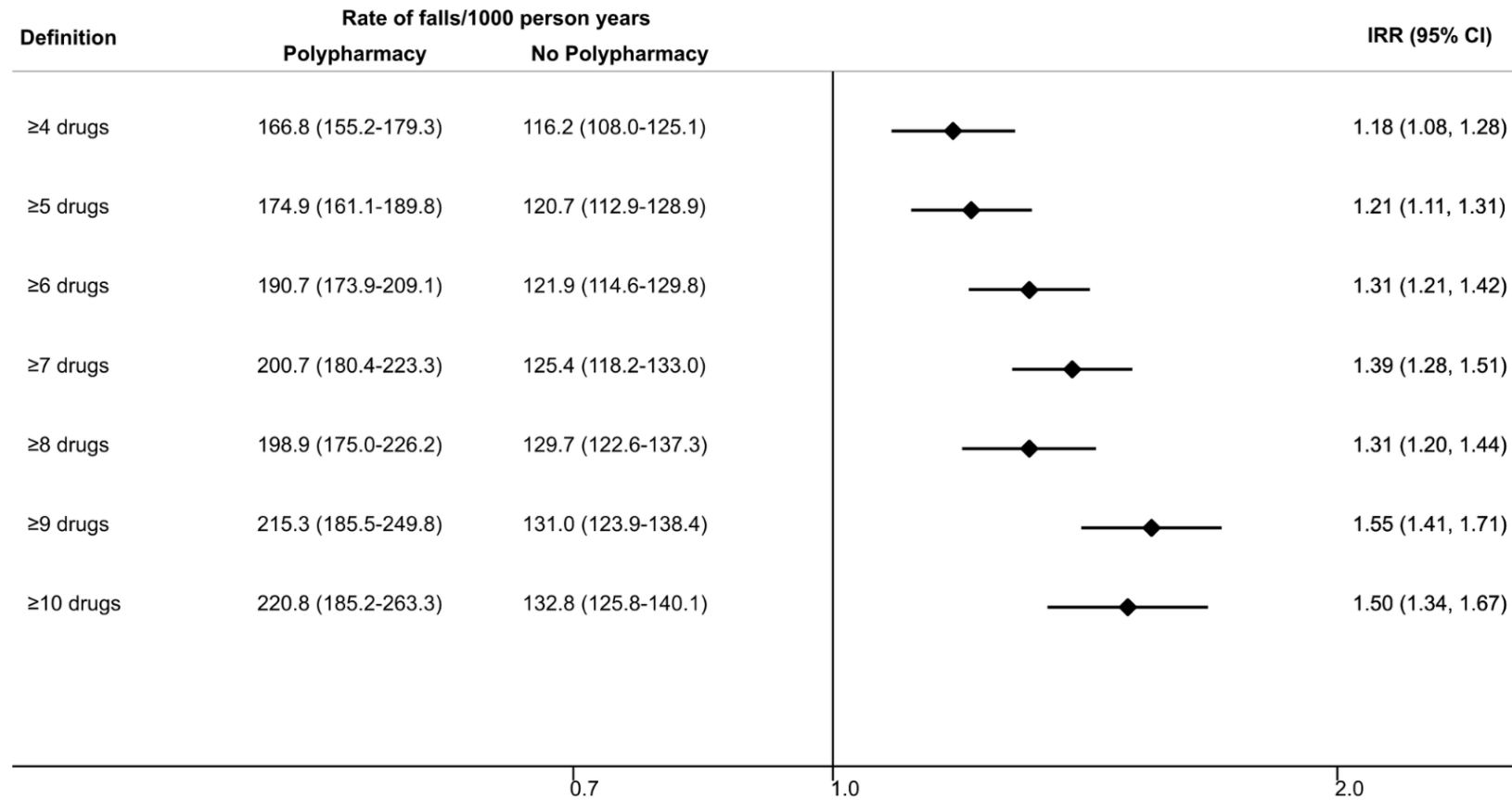
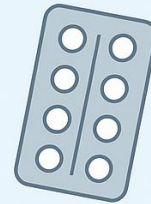


Figure 2 Rates and rate ratios for falls comparing people with and without polypharmacy, using different definitions of polypharmacy. IRR, incidence rate ratio.

Polypharmacy and Medication Adherence

Polypharmacy (≥ 5 medicines) increases the risk of non-adherence



Why adherence declines



Complex regimens



Side effects & interactions



High pill burden



Cognitive, physical & financial strain

How to reduce the impact

- ✓ Regular medication review
- ✓ Simplify dosing
- ✓ Patient education

Polypharmacy undermines adherence unless actively managed through simplified, patient-centred care

Fixed-dose combination therapy for the prevention of atherosclerotic cardiovascular disease

Received: 22 September 2023

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Published online: 26 March 2024

Anubha Agarwal¹✉, Priya M. Mehta², Tyler Jacobson², Nilay S. Shah², Jiancheng Ye³, JingJing Zhu¹, Q. Eileen Wafford⁴, Ehet Bahiru⁵, Angharad N. de Cates⁶, Shah Ebrahim⁷, Dorairaj Prabhakaran^{8,9}, Anthony Rodgers¹⁰ & Mark D. Huffman^{1,10}

This systematic review update synthesizes the effect of fixed-dose combination therapy for ASCVD prevention. These findings support adoption and implementation of polypills to lower all-cause mortality and ASCVD events. Additional research is needed to understand the optimal implementation strategies to increase availability, accessibility, adaptation, fidelity and sustainment of ASCVD polypills to reduce the large and growing burden of CVD.

Polypharmacy management involves multifaceted decision-making

The goal should be to reduce inappropriate polypharmacy (irrational prescribing of too many medicines) and to ensure appropriate polypharmacy (rational prescribing of multiple medicines based on best available evidence and considering individual patient factors and context)

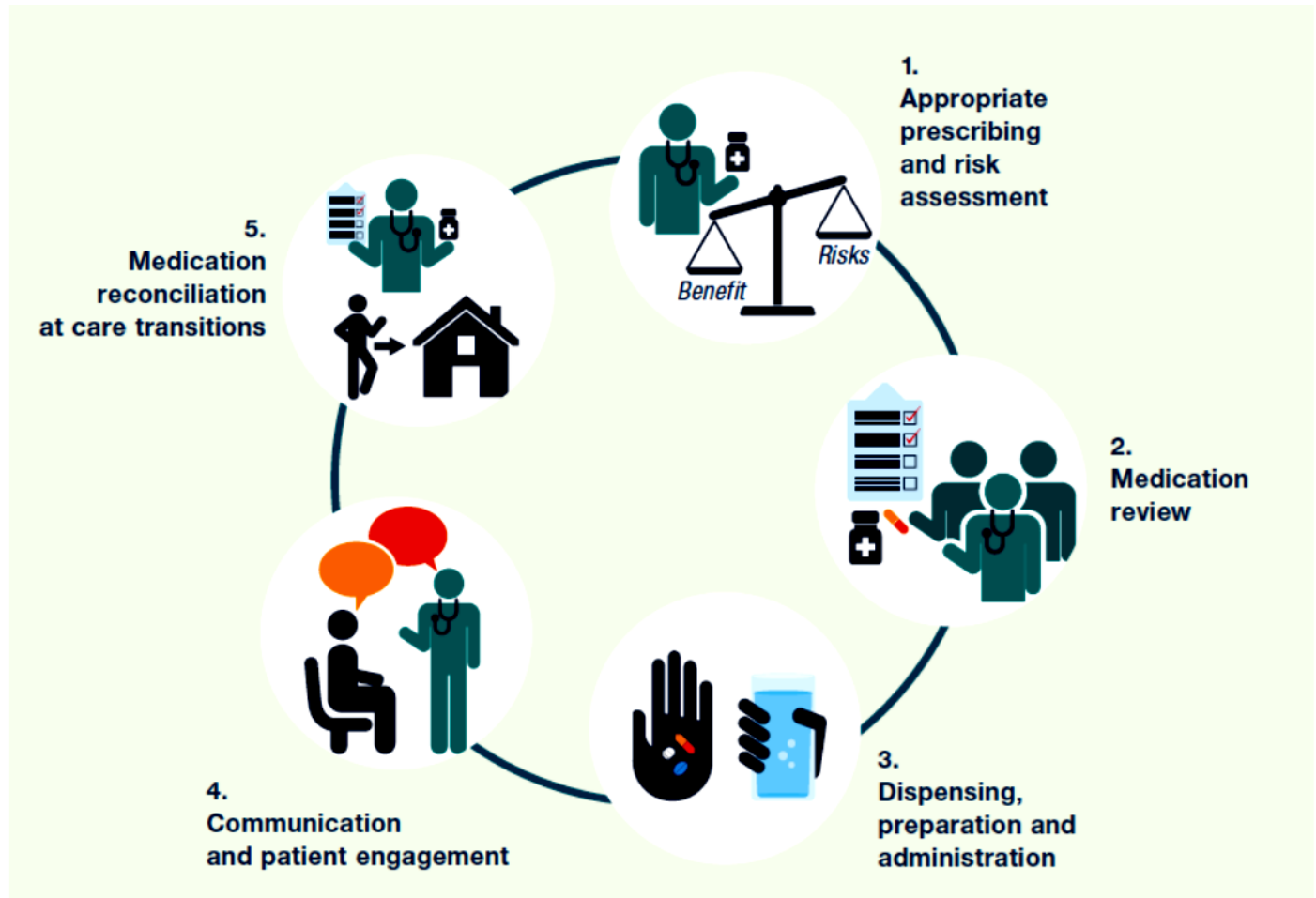


Figure 1. Key steps for ensuring medication safety

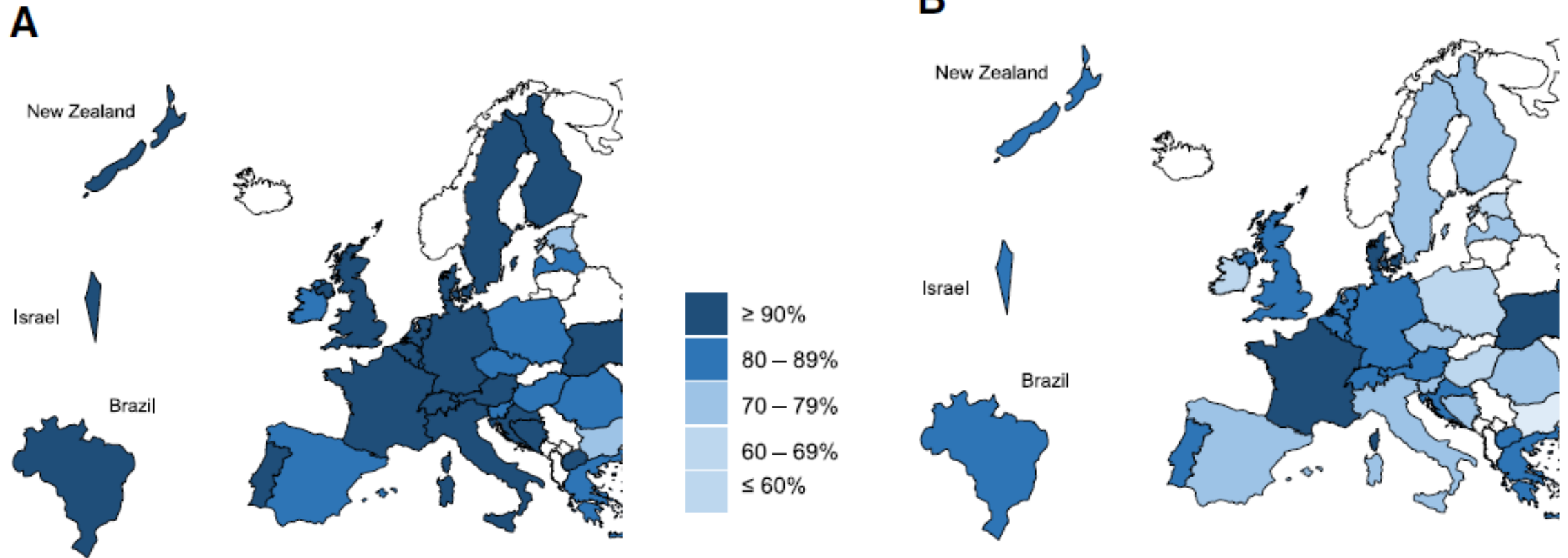
Deprescribing is the process of tapering, stopping, discontinuing, or withdrawing drugs, with the goal of managing polypharmacy and improving outcomes

Deprescribing is not just stopping drugs — it is a structured, patient-centered process supported by **criteria, algorithms, decision aids, and follow-up tools**

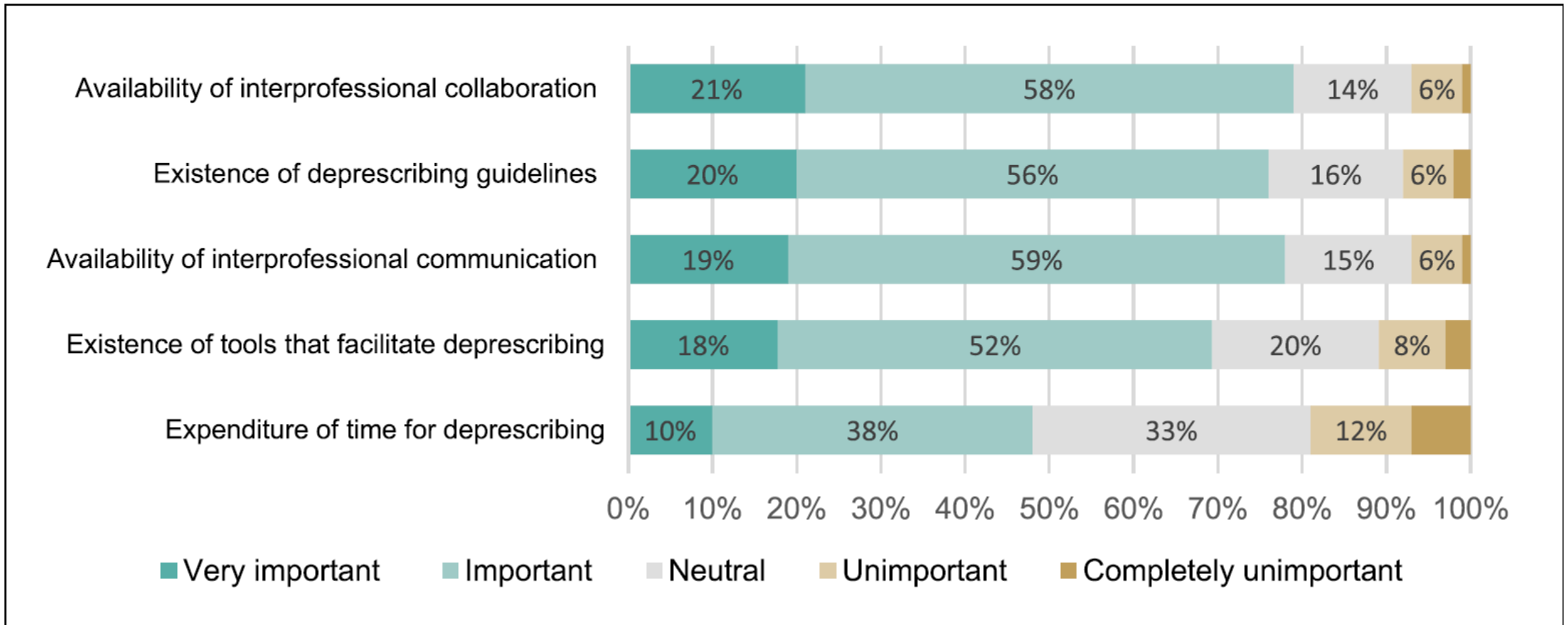
Supporting tools

- **Beers Criteria** – Lists potentially inappropriate medications in older adults
- **STOPP/START criteria** –
 - STOPP: meds that should often be stopped
 - START: meds that may be missing but indicated
- **Medication Appropriateness Index (MAI)** – Structured scoring of each drug's indication, dose, interactions, etc.
- **FORTA list** – Ranks drugs by benefit–risk in older patients (A = essential, D = avoid)

Deprescribing decisions of GPs in oldest-old patients (80 years and over) with polypharmacy

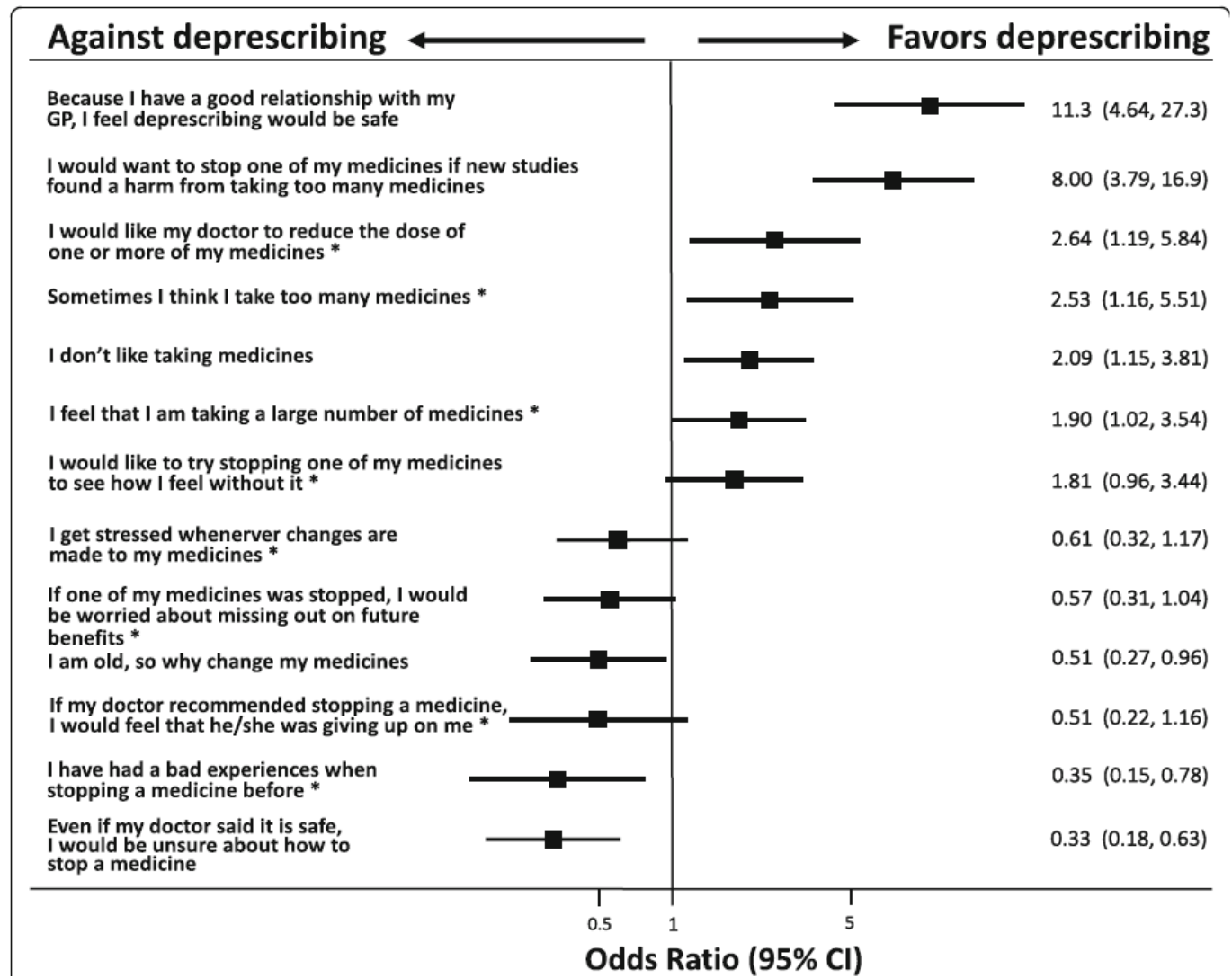


Per country average of the percentage of case vignettes in which GPs (N = 1,706) reported they would deprescribe at least one (map A) vs. at least two (map B) medications



Factors important to general practitioners (GPs) when making deprescribing decisions, ordered by importance (N = 1,706)

Willingness to deprescribe by older adults

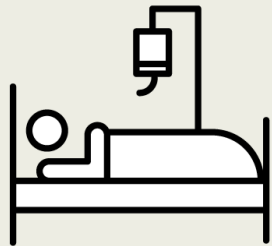


Conclusions: Most older adults with polypharmacy are willing to deprescribe. GPs may be able to increase deprescribing by building trust with their patients and communicating evidence about the risks of medication use.

RCT: Deprescribing Medications Among Older Adults From End of Hospitalization Through Postacute Care

POPULATION

143 Men, 229 Women



Hospitalized adults ≥ 50 y who take ≥ 5 medications and require ongoing postacute care

Median age, 76.8 y

SETTINGS / LOCATIONS



**1 Acute and
22 postacute
care facilities**

INTERVENTION

284 Participants randomized and analyzed



142 Intervention

Multicomponent deprescribing intervention, including medication review with patient and prescribers

142 Usual care

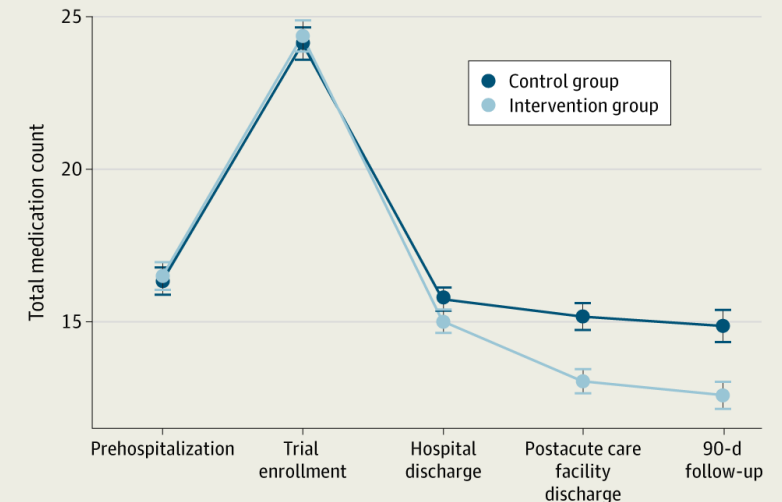
Usual care, including a best possible medication history at the time of admission

PRIMARY OUTCOME

Total medication count at postacute care discharge adjusted for total medication count at enrollment

FINDINGS

Median total medication count was significantly lower for the intervention compared with the usual care group at postacute care discharge



Mean ratio for total medications at postacute discharge, intervention vs usual care: 0.86 (95% CI, 0.80-0.93)

Lack of knowledge and training
Lack of time
Breakdown in communication
'Abandonment of care'
Fear of adverse consequences
Resistance from patients

Recognising opportunities
Regular medication reviews
Open communication
Education of patients and clinicians
Multidisciplinary approach

Barriers

Enablers

Balance of Barriers and Enablers to Deprescribing.