



Deprescribing in a Frail Older Adult Taking Fourteen Medicines: A Narrative Review of Shared Decision-Making in Polypharmacy

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Received: 2 May 2024; **Accepted:** 24 September 2024; **Published:** 8 December 2024

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Abstract

Every drug on a frail patient's list was started for a reason, usually a good one, usually by someone treating a single condition correctly. The list is the sum of those decisions, and nobody owns the sum. Deprescribing is the attempt to give it an owner.

Objectives: To review the published evidence on deprescribing in frail older adults with polypharmacy: what structured medication review achieves in prescribing, what it achieves in outcomes, why those two answers differ, and what shared decision-making contributes.

Material and Methods: Narrative review of randomised and cluster-randomised trials, Cochrane reviews, meta-analyses, criteria sets and qualitative studies indexed in PubMed and the major geriatric medicine, clinical pharmacology and general medical journals. No new patient data were generated; every estimate quoted is one published by the original investigators.

Results: In the largest trial, 2008 hospitalised adults aged 70 or over with multimorbidity and polypharmacy, taking a median of nine drugs, were cluster-randomised to structured medication review or usual care. At least one recommendation was implemented in 62.2 per cent of the intervention group. A first drug-related hospital admission occurred in 211 participants (21.9 per cent) against 234 (22.4 per cent), hazard ratio 0.95 (95% CI 0.77 to 1.17). Hazard ratios were 0.96 (0.79 to 1.15) for first fall and 0.90 (0.71 to 1.13) for death. The intervention reduced inappropriate prescribing without changing any clinical outcome measured.

Conclusion: The best-powered trial of the intervention is negative, and that should be stated first rather than buried. Deprescribing remains defensible on other grounds, including patient preference, treatment burden and the incoherence of applying single-disease guidelines to people with ten conditions, but the claim that it prevents admissions is not currently supported.

Abbreviations: ADR – Adverse Drug Reaction, DRA – Drug-Related Hospital Admission, HR – Hazard Ratio, ITT – Intention to Treat, PIP – Potentially Inappropriate Prescribing, STOPP/START – Screening Tool of Older Persons' Prescriptions / Screening Tool to Alert to Right Treatment.

Keywords: Deprescribing; Polypharmacy; Frailty; Shared Decision-Making; Medication Review

Introduction

Polypharmacy has no single agreed definition, though five or more regular medicines is the commonest threshold and the one with the clearest association with adverse outcomes [1,2,3]. Its prevalence has risen steadily in every health system that has measured it, driven not by poor prescribing but by good prescribing repeated: each condition treated to guideline, each guideline written for that condition alone [2,4].

The consequences are well documented. Adverse drug reactions account for a substantial share of acute admissions in older people [5,6], the risk of interaction rises steeply with the number of agents [7], and polypharmacy is independently associated with falls, cognitive impairment and functional decline [8,9]. Criteria sets exist to identify the drugs most likely to cause trouble [10,11,12].

Deprescribing is the structured, supervised withdrawal of medicines whose harms now outweigh their benefits for a particular person [13,14]. The concept is intuitive, the criteria are established, and the trials are more interesting than the concept suggests. This review sets out what has actually been demonstrated.

Material and Methods

Search strategy: PubMed and the archives of the major geriatric medicine, clinical pharmacology and general medical journals were searched for studies of deprescribing and medication optimisation in older adults. Search terms combined polypharmacy, deprescribing, potentially inappropriate prescribing and medication review with frailty, older adults, randomised, hospital admission and shared decision-making. Reference lists of Cochrane reviews [15,16] were screened by hand for primary sources.

Eligibility: Studies were included if they evaluated an intervention intended to reduce or optimise medication in older adults, quantified the harms of polypharmacy, or documented patient and prescriber attitudes to stopping medicines. Criteria sets are cited as tools rather than as evidence of effect and are identified as such.

Data extraction and handling: Design, sample size, setting, comparator, the outcome measured and the reported estimate were extracted as published. Whether the outcome was a prescribing measure or a clinical one is reported alongside every figure, because the two diverge sharply in this literature and conflating them is the commonest error in its summary. No pooling or re-analysis was performed. Figures 1 to 4 and Tables 1 and 2 reproduce published values only. This is a narrative synthesis and was not registered as a systematic review.

Results

The largest trial: OPERAM cluster-randomised 2008 hospitalised adults aged 70 or over with at least three chronic

conditions and at least five chronic medicines, across four centres in Bern, Brussels, Cork and Utrecht, with 963 participants in 54 intervention clusters and the remainder in 56 control clusters. Participants took a median of nine drugs. The intervention was a structured medication review using STOPP/START criteria supported by a computerised decision system, delivered by a physician and pharmacist team [17,18,19].

What it changed in prescribing: The intervention worked as designed at the level of the prescription. At two months, 62.2 per cent of intervention participants (n = 491) had at least one recommendation successfully implemented, predominantly discontinuation of a potentially inappropriate drug (Figure 3) [17]. Inappropriate prescribing was common at baseline and was reduced by the intervention.

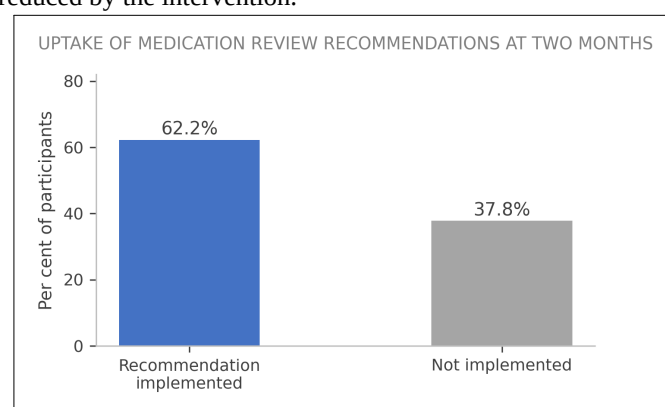


Figure 3: Proportion of intervention participants with at least one medication review recommendation implemented at two months [17]

What it changed in outcomes: Nothing that was measured. A first confirmed drug-related hospital admission occurred in 211 intervention participants (21.9 per cent) and 234 control participants (22.4 per cent) (Figure 1). In the intention-to-treat analysis censored for death as a competing event, the hazard ratio was 0.95 (95% CI 0.77 to 1.17); in the per-protocol analysis it was 0.91 (0.69 to 1.19) [17].

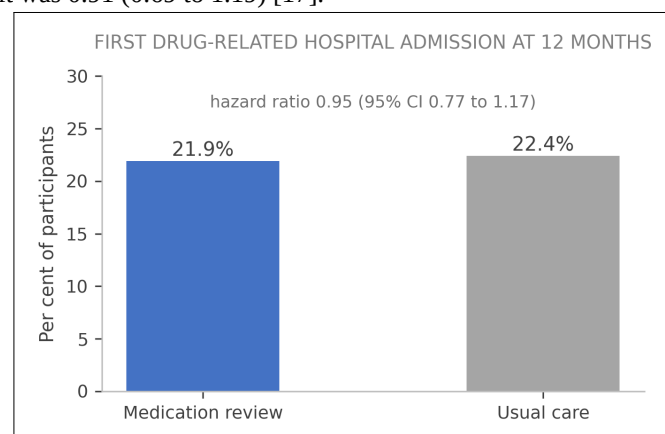


Figure 1: First drug-related hospital admission within 12 months, structured medication review against usual care [17]

Nor anything else: The secondary outcomes point the same way. The hazard ratio for a first fall was 0.96 (0.79 to 1.15), with 237 falls against 263, and for death 0.90 (0.71 to 1.13), with 172 deaths against 203 (Figures 2 and 4) [17]. Every confidence interval crosses one. The point estimates all favour the intervention slightly, which is worth noting and is not the same as an effect; that pattern is what an underpowered true null looks like as often as it is a real but small benefit.

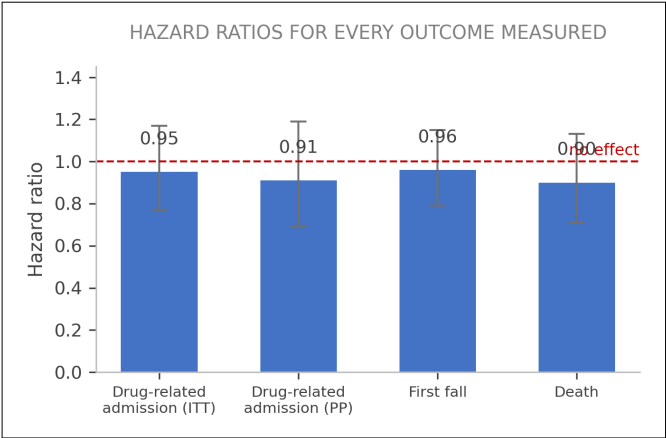


Figure 2: Hazard ratios for every outcome reported in the trial, with 95% confidence intervals [17]

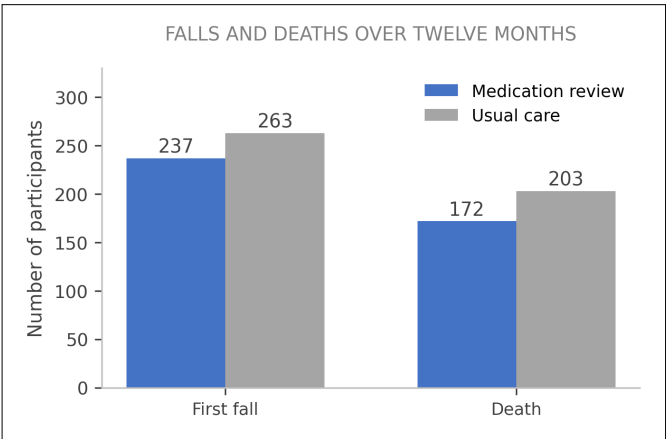


Figure 4: Falls and deaths over twelve months by allocation [17]

Study	Design and cohort	Principal reported finding
Blum et al. 2021 [17]	Cluster RCT, 2008 inpatients aged 70+	DRA 21.9% vs 22.4%; HR 0.95; no effect on falls or death
McDonald et al. 2022 [20]	Cluster RCT, electronic deprescribing support	Increased deprescribing; adverse drug event outcome not improved
Kempen et al. 2021 [21]	Cluster RCT, comprehensive medication review	No reduction in unplanned health care use
Page et al. 2016 [22]	Systematic review and meta-analysis	Deprescribing feasible; mortality benefit only in non-randomised data
Bulow et al. 2023 [15]	Cochrane review, medication review in hospital	Little or no effect on mortality or readmission
Kua et al. 2021 [23]	Stepped-wedge cluster RCT, nursing homes	Reported reduced mortality and hospitalisation in that setting
Rankin et al. 2018 [16]	Cochrane review of appropriateness interventions	Improves appropriateness; clinical benefit unclear

Table 1: Principal studies reviewed, with the finding as reported by the original investigators

The wider trial evidence: OPERAM is not an outlier. A cluster-randomised trial of electronic decision support increased deprescribing without improving the adverse drug event outcome [20], and a trial of comprehensive medication review with post-discharge follow-up found no reduction in unplanned health care use [21]. A Cochrane review of medication review in hospitalised patients concluded there was little or no effect on mortality or readmission [15], and a Cochrane review of interventions to improve appropriateness found the appropriateness measures improved while clinical benefit remained unclear [16]. An earlier meta-analysis found a mortality benefit in non-randomised studies that did not survive in the randomised ones [22]. The exception is the nursing home setting, where a stepped-wedge trial reported reduced mortality and hospitalisation [23,24,25].

Why the outcomes do not move: Several explanations are compatible with the data. Follow-up of twelve months may be too short for a change in prescribing to express itself as fewer events. Drug-related admission is difficult to adjudicate and misclassification biases towards the null. The control arm received usual care in academic centres, which included pharmacist input, so the contrast was narrower than the design implies. And an intervention delivered once, at an index admission, may not survive contact with the primary care that follows, since medicines restarted after discharge are a documented phenomenon [26,27].

What patients think: The assumption that patients resist stopping medicines is not supported. Surveys report that a large majority of older adults would be willing to stop one or more of their medicines if their doctor said it was possible [28,29,30]. The barriers documented are different: fear of symptom return, absence of a clear plan for what to monitor, and uncertainty

about who is authorised to stop a drug another clinician started [28,31]. Prescriber-side barriers mirror these, centring on ownership of the decision and fear of being blamed for a bad outcome [32].

Claim	Evidence status	Basis
Reduces inappropriate prescribing	Demonstrated	62.2% had a recommendation implemented [17]
Reduces drug-related admissions	Not supported	HR 0.95 (0.77-1.17) in the largest trial [17]
Reduces falls	Not supported	HR 0.96 (0.79-1.15) [17]
Reduces mortality	Not supported in hospital settings	HR 0.90 (0.71-1.13); Cochrane concurs [15,17]
Reduces mortality in nursing homes	Single stepped-wedge trial	Different setting and population [23]
Patients are willing	Well supported	Majority would stop a medicine if advised [28,29]
Guidelines suit multimorbidity	Contested	Single-disease guidance applied to ten conditions [33,34]

Table 2: Claims made for deprescribing and the current evidential status of each

Discussion

The honest summary of this literature is that the intervention does what it says and not what is hoped. Structured medication review reduces inappropriate prescribing reliably. In the best-powered trial it did not reduce drug-related admissions, falls or death, and every confidence interval included no effect [17]. Reviews and guidance that cite deprescribing as a way to prevent admissions are citing a hypothesis rather than a finding.

There is a temptation to explain the null result away, and some of the explanations are reasonable. Twelve months is short. Adjudicating an admission as drug-related is unreliable. Usual care in four academic European hospitals is not usual care everywhere. But it is worth noticing that these arguments are being made after the result, and that the same arguments would have gone unmade had the trial been positive. The appropriate response to a well-conducted negative trial is to update, not to reinterpret.

Updating does not mean abandoning deprescribing, because the case for it never rested solely on event prevention. A frail person taking fourteen medicines carries a treatment burden measured in swallowing, timing, cost, monitoring appointments and the cognitive work of managing it all. Reducing that burden is a legitimate goal in itself. Applying six single-disease guidelines to one person with six conditions produces a regimen no trial ever tested, and noticing that is good medicine regardless of whether it changes admission rates [33,34]. And where a patient's priorities have shifted towards comfort and function, stopping a preventive drug whose benefit accrues over ten years is straightforwardly correct [35].

That reframing has a practical consequence. If deprescribing is justified by treatment burden and goal concordance rather than

by event reduction, then the outcomes worth measuring are the ones nobody has measured: symptom burden, function, the number of daily administrations, and whether the regimen matches what the patient says they want. The field has spent a decade testing deprescribing against hospital admissions and getting null results. It may have been asking the wrong question of a reasonable intervention.

Study limitations

The limitations belong to the underlying literature. Definitions of polypharmacy and of deprescribing vary between studies, which limits comparison [1,36]. Drug-related admission is an adjudicated composite with imperfect reliability, and misclassification biases towards the null [17]. Follow-up in the major trials is twelve months or less, shorter than the horizon over which prescribing changes might plausibly act [17,20,21]. Control arms in academic centres receive more pharmacy input than routine practice, narrowing the contrast. Nursing home and hospital populations differ substantially, so the positive stepped-wedge result should not be generalised [23]. Cluster randomisation at ward or site level introduces contamination and recruitment bias. Patient-reported outcomes, treatment burden and goal concordance are almost entirely absent from the trial literature [28,35]. And frailty is inconsistently measured across studies, despite being the characteristic that most plausibly modifies the benefit [37].

Conclusion

Structured medication review in an older adult taking fourteen medicines will reduce the number of inappropriate prescriptions. On the evidence of the largest trial conducted, it will not reduce drug-related hospital admissions, falls or death, and that result should be reported plainly by anyone recommending the practice. The case for deprescribing survives, but it has to be made on the grounds that actually support it: that treatment burden is itself a harm, that guidelines written for single diseases do not sum coherently in people who have several, and that a patient whose priorities have changed should not be taking drugs chosen for priorities they no longer hold. Those are good reasons. They are not the reason the trials tested, which may be why the trials keep coming back negative.

Acknowledgements

The authors thank the investigators whose trials and Cochrane reviews are drawn together in this article, and the pharmacists who conducted several thousand medication reviews in studies that reported no effect.

Funding

No dedicated funding from public, commercial or charitable sources supported the preparation of this review.

Conflict of Interest

The authors declare no competing interests.

Ethics Statement

This article reviews previously published studies only. No new patient data were collected and no participants were recruited, so ethical approval was not required.

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Citation: Fitzgerald S, Janssens P, Halasz M. "Deprescribing in a Frail Older Adult Taking Fourteen Medicines: A Narrative Review of Shared Decision-Making in Polypharmacy." *J Clin Case Stud* (2024): 001-006 doi: 10.5281/zenodo.22236461