

## **Supplementary File S1: List of journals manually searched**

We performed a manual search for relevant articles from high impact journals under the categories of:

(1) General and Internal Medicine:

- New England Journal of Medicine
- Journal of the American Medical Association (JAMA, JAMA Intern Med)
- Annals of Internal Medicine
- British Medical Journal

(2) Geriatrics and Gerontology:

- Drugs and Aging
- Journal of the American Medical Director Association
- Journal of Gerontology: Medical Sciences
- Age and Ageing
- Journal of the American Geriatrics Society

(3) Pharmacology and Pharmacy:

- British Journal of Clinical Pharmacology
- Clinical Pharmacology and Therapeutics
- European Journal of Pharmacology
- Pharmacoepidemiology and Drug Safety

## **Supplementary File S2: List of 2022 articles that addressed medication use quality and safety**

Articles in *italics* were selected for detailed review in the special article.

### **Medication Safety/Adverse Drug Events (ADEs)**

#### **A. Cardiovascular**

Harrison SL, Buckley BJR, Ritchie LA, et al. Oral anticoagulants and outcomes in adults  $\geq 80$  years with atrial fibrillation: A global federated health network analysis. *J Am Geriatr Soc* 2022;70:2386-2392.

Ozenberger K, Alexander GC, Shin JI, Whitsel EA, Qato DM. Use of prescription medications with cardiovascular adverse effects among older adults in the United States. *Pharmacoepidemiol Drug Saf* 2022;31(10):1027-1038.

#### **B. Cognitive decline/Dementia/stroke**

Bénard-Laribi  re A, Hucteau E, Debette S, et al. Risk of first ischaemic stroke and use of antidopaminergic antiemetics: nationwide case-time-control study. *BMJ* 2022;376:e066192.

Gerlach LB, Myra Kim H, Ignacio RV, et al. Use of benzodiazepines and risk of incident dementia: a retrospective cohort study. *J Gerontol A Biol Sci Med Sci* 2022;77:1035-1041.

Lisibach A, Gallucci G, Benelli V, et al. Evaluation of the association of anticholinergic burden and delirium in older hospitalised patients - A cohort study comparing 19 anticholinergic burden scales. *Br J Clin Pharmacol* 2022;88:4915-4927.

Nishtala PS, Chyou TY. Risk of delirium associated with antimuscarinics in older adults: A case-time-control study. *Pharmacoepidemiol Drug Saf* 2022;31:883-891.

#### **C. Falls/fractures**

Barker AL, Morello R, Thao LTP, et al. Daily low-dose aspirin and risk of serious falls and fractures in healthy older people: A substudy of the ASPREE randomized clinical trial. *JAMA Intern Med* 2022;182:1289-1297.

#### **D. Mortality**

Huang YT, Steptoe A, Wei L, et al. Dose-response relationships between polypharmacy and all-cause and cause-specific mortality among older people. *J Gerontol A Biol Sci Med Sci* 2022;77:1002-1008.

#### **E. Other**

*Park CM, Inouye SK, Marcantonio ER, et al. Perioperative gabapentin use and in-hospital adverse clinical events among older adults after major surgery. JAMA Intern Med* 2022;182:1117-1127.

Sharon R, Lange T, Aakj  r M, et al. Incidence of hospital contacts with acute kidney injury after initiation of second-generation antipsychotics in older adults: a Danish population-based cohort study. *Eur J Clin Pharmacol* 2022;78:1341-1349.

### **Deprescribing/Discontinuation**

McDonald EG, Wu PE, Rashidi B, et al. The MedSafer study-electronic decision support for deprescribing in hospitalized older adults: A cluster randomized clinical trial. *JAMA Intern Med* 2022;182:265-273.

Bayliss EA, Shetterly SM, Drace ML, et al. Deprescribing education vs usual care for patients with cognitive impairment and primary care clinicians: The OPTIMIZE pragmatic cluster randomized trial. *JAMA Intern Med* 2022;182:534-542.

McCarthy C, Clyne B, Boland F, et al. GP-delivered medication review of polypharmacy, deprescribing, and patient priorities in older people with multimorbidity in Irish primary care (SPPiRE Study): A cluster randomised controlled trial. *PLoS Med*. 2022;19(1):e1003862. doi: 10.1371/journal.pmed.1003862.

McConeghy KW, Cinque M, White EM, et al. Lessons for deprescribing from a nonessential medication hold policy in US nursing homes. *J Am Geriatr Soc* 2022; 70: 429- 438.

### **Drug-related problems**

Lau ECY, Wojt I, Jeon YH, Hilmer SN, et al. Prevalence and risk factors for drug-related problems in people with dementia living in the community: A systematic review and meta-analysis. *J Am Med Dir Assoc* 2022;23:980-991.e10.

Mertens B, Hias J, Hellemans L, et al. Drug-related hospital admissions in older adults: comparison of the Naranjo algorithm and an adjusted version of the Kramer algorithm. *Eur Geriatr Med* 2022;13:567-577.

### **Adherence**

Daliri S, Kooij MJ, Scholte Op Reimer WJM, et al. Effects of a transitional care programme on medication adherence in an older cardiac population: A randomized clinical trial. *Br J Clin Pharmacol* 2022;88:965-982.

### **Medication Use Trends**

Hart LA, Walker R, Phelan EA, et al. Change in central nervous system-active medication use following fall-related injury in older adults. *J Am Geriatr Soc* 2022;70:168-177.

Kennedy, M, Koehl, J, Gao, J, Ciampa, KA, Hayes, BD, Camargo, CA. Use of antipsychotic and sedative medications in older patients in the emergency department. *J Am Geriatr Soc* 2022;70:731-742.

Malagaris I, Mehta HB, Goodwin JS. Trends and variation in benzodiazepine use in nursing homes in the USA. *Eur J Clin Pharmacol*.2022;78:489-496. doi: 10.1007/s00228-021-03244-4. Epub 2021. Erratum in: *Eur J Clin Pharmacol* 2022;78:1709.

Mur J, Cox SR, Marioni RE, et al. Increase in anticholinergic burden from 1990 to 2015: Age-period-cohort analysis in UK biobank. *Br J Clin Pharmacol* 2022;88:983-993.

Tukukino C, Parodi López N, et al. SM. Drug interaction alerts in older primary care patients, and related medically justified actions. *Eur J Clin Pharmacol* 2022;78:1115-1126.

Vallius S, Taipale H, Koponen M, et al. Automated multi-dose dispensing in persons with and without Alzheimer's disease-impacts on pharmacotherapy. *Eur J Clin Pharmacol* 2022;78:513-521

## **Suboptimal Prescribing**

### **A. PIMs/low-value medications**

Assi R, Schwab C, El Abd A, Fernandez C, Hindlet P. Which potentially inappropriate medications list can detect patients at risk of readmissions in the older adult population admitted for falls? An observational multicentre study using a clinical data warehouse. *Drugs Aging* 2022;39:175-182.

Farhat A, Al-Hajje A, Lang PO, Csajka C. Impact of Pharmaceutical Interventions with STOPP/START and PIM-Check in Older Hospitalized Patients: A Randomized Controlled Trial. *Drugs Aging* 2022;39:899-910.

Matthews S, Moriarty F, Ward M, et al. Overprescribing among older people near end of life in Ireland: Evidence of prevalence and determinants from The Irish Longitudinal Study on Ageing (TILDA). *PLoS One* 2022;17:e0278127.

Robinson EG, Hedna K, Hakkarainen KM, et al. Healthcare costs of adverse drug reactions and potentially inappropriate prescribing in older adults: a population-based study. *BMJ Open* 2022;12:e062589.

Page A, Costa N, Mounié M, et al. Healthcare costs associated with potentially inappropriate medication prescribing detected by computer algorithm among older patients. *Drugs Aging* 2022;39:367-375.

Pardo-Cabello AJ, Manzano-Gamero V, Luna JD. The impact of PIPs on mortality and readmissions in older adults: a retrospective cohort study. *Eur J Clin Pharmacol* 2022;78:139-145.

Renoncourt T, Saint F, Bennis Y, et al. Potentially inappropriate prescribing for prostatic hyperplasia in older persons. *J Am Med Dir Assoc* 2022;23:992-997.

Salleveldt BTGM, Egberts TCG, Huibers CJA, et al. Detectability of medication errors with a STOPP/START-based medication review in older people prior to a potentially preventable drug-related hospital admission. *Drug Saf* 2022;45:1501-1516.

Schiavo G, Forgerini M, Lucchetta RC, et al. Cost of adverse drug events related to potentially inappropriate medication use: A systematic review. *J Am Pharm Assoc* (2003). 2022;62(5):1463-1476.e14.

### **B. Optimizing Medication Use**

Alruthea S, Bowman P, Tariq A, et al. Interventions to enhance medication safety in residential aged-care settings: An umbrella review. *Br J Clin Pharmacol* 2022;88:1630-1643.

Goldberg EM, Lin TR, Cunha CB, et al. Enhancing the quality of prescribing practices for older adults discharged from the emergency department in Rhode Island. *J Am Geriatr Soc* 2022;70:2905-2914.

Kornholt J, Feizi ST, Hansen AS, et al. Effects of a comprehensive medication review intervention on health-related quality of life and other clinical outcomes in geriatric outpatients with polypharmacy: A pragmatic randomized clinical trial. *Br J Clin Pharmacol* 2022;88:3360-3369.

McCarthy LM, Savage R, Dalton K, et al. ThinkCascades: A tool for identifying clinically important prescribing cascades affecting older people. *Drugs Aging* 2022;39:829-840.

Pazan F, Breunig H, Weiss C, et al. FORTA (Fit for The Aged) scores are associated with poor functional outcomes, dementia, and mortality in older people. *Eur J Clin Pharmacol* 2022;78:1851-1859.

Reumerman MO, Richir MC, Sultan R, et al. An inter-professional student-run medication review programme. Reducing adverse drug reactions in a memory outpatient clinic: a controlled clinical trial. *Expert Opin Drug Saf* 2022;21:1511-1520.

*Roughead EE, Pratt NL, Parfitt G, et al. Effect of an ongoing pharmacist service to reduce medicine-induced deterioration and adverse reactions in aged-care facilities (nursing homes): a multicentre, randomised controlled trial (the ReMInDAR trial). Age Ageing* 2022;51:afac092.

Sadeq A, Strugaru M, Almutairi M, Stewart D, Ryan C, Grimes T. Interprofessional interventions involving pharmacists and targeting the medicines management process provided to older people residing in nursing homes: A systematic review and meta-analysis of randomised controlled trials. *Drugs Aging* 2022;39:773-794.

## Other

Cossette, B, Ricard, G, Poirier, R, et al. Pharmacist-led transitions of care between hospitals, primary care clinics, and community pharmacies. *J Am Geriatr Soc* 2022;70:766- 776.

Dalton K, Fleming A, O'Mahony D, et al. Factors affecting physician implementation of hospital pharmacists' medication appropriateness recommendations in older adults. *Br J Clin Pharmacol* 2022;88(2):628-654.

Davies LE, Todd A, Robinson L, et al. Does polypharmacy shape dependency transitions in the very old? Findings from the Newcastle 85+ Study. *Age Ageing* 2022 6;51:afac227.

Sallevelt BTGM, Huibers CJA, Heij JMJO, et al. Frequency and acceptance of clinical decision support system-generated STOPP/START signals for hospitalised older patients with polypharmacy and multimorbidity. *Drugs Aging* 2022;39:59-73.