Supplementary file 5: List of studies by guideline types

Author, Year	Title
1) Implicit Criteria	
Barnett et al, 2015	Patient-centred management of polypharmacy:a process for practice
Boyd et al, 2019	Decision Making for Older Adults With Multiple Chronic Conditions: Executive Summary for the American Geriatrics Society Guiding Principles on the Care of Older Adults With Multimorbidity
Burt et al, 2018	Developing a measure of polypharmacy appropriateness in primary care: systematic review and expert consensus study
Drenth-van Maanen et al, 2009	Prescribing Optimization Method for Improving Prescribing in Elderly Patients Receiving Polypharmacy: Results of Application to Case Histories by General Practitioners
Durso, 2007	Prioritizing care for older adults with multiple comorbidities: Working in the 'zone of complexity'
Garfinkel et al, 2015	Routine deprescribing of chronic medications to combat polypharmacy
Hilmer et al, 2012	Thinking through the medication list - appropriate prescribing and deprescribing in robust and frail older patients
American Geriatrics Society, 2012[1]	Patient-Centered Care for Older Adults with Multiple Chronic Conditions: A Stepwise Approach from the American Geriatrics Society
American Geriatrics Society, 2012[1]	Guiding Principles for the Care of Older Adults with Multimorbidity: An Approach for Clinicians
Muth et al, 2014	The Ariadne principles: how to handle multimorbidity in primary care consultation
Palmer et al, 2018	Multimorbidity care model: Recommendations from the consensus meeting of the Joint Action on Chronic Diseases and Promoting Healthy Ageing across the Life Cycle (JA-CHRODIS)
Scott et al, 2015	Reducing Inappropriate Polypharmacy: The Process of Deprescribing
Sinott et al, 2015	What to give the patient who has everything? A qualitative study of prescribing for multimorbidity in primary care
Todd et al, 2018	The deprescribing rainbow: a conceptual framework highlighting the importance of patient context when stopping medication in older people
Wilson et al, 2015	Prescribing to fit the needs of older people - the NHS Scotland Polypharmacy Guidance, 2nd edition
Best Practice Advocacy Centre	Polypharmacy in primary care: Managing a clinical conundrum

NZ, 2014	
Tully et al, 2005	Development and Face Validity of Explicit indicators of Appropriateness of Long Term Prescribing
Lewis, 2004	Using the NO TEARS tool for medication review
Hanlon and Schmader, 2013	The Medication Appropriateness Index at 20: Where It Started, Where It Has Been, and Where It May Be Going
2) Explicit Criteria	
Winit-Watjana et al, 2008	Criteria for high-risk medication use in Thai older patients
Van der Linden et al, 2014	Development and validation of the RASP list (Rationalization of Home Medication by an Adjusted STOPP list in Older Patients): A novel tool in the management of geriatric polypharmacy
Tommeiein et al, 2015	Older patients' prescriptions screening in the community pharmacy: development of the Ghent Older People's Prescriptions community Pharmacy Screening (GheOP3S) tool
Rognstad et al, 2009	The Norwegian General Practice (NORGEP) criteria for assessing potentially inappropriate prescriptions to elderly patients
Rodriguez-Pérez et al, 2017	Novel tool for deprescribing in chronic patients withmultimorbidity: List of Evidence-Based Deprescribing for Chronic Patients criteria
Renom-Guiteras et al, 2015	The EU(7)-PIM list: A list of potentially inappropriate medications for older people consented by experts from seven European countries
Mann et al, 2012	Potentially inappropriate medication in geriatric patients: the Austrian consensus panel list
Maio et al, 2010	Using explicit criteria to evaluate the quality of prescribing in elderly Italian outpatients: a cohort study: Prescribing in elderly outpatients
Laroche et al, 2007	Potentially inappropriate medications in the elderly: a French consensus panel list
Kojima et al, 2016	Screening Tool for Older Persons' Appropriate Prescriptions for Japanese: Report of the Japan Geriatrics Society Working Group on "Guidelines for medical treatment and its safety in the elderly"
Kim et al, 2015	Consensus Validated List of Potentially Inappropriate Medication for the Elderly and Their Prevalence in South Korea
Kim et al, 2010	Development of a List of Potentially Inappropriate Drugs for the Korean Elderly Using the Delphi Method
Holt et al, 2010	Potentially Inappropriate Medications in the Elderly
Chang et al, 2012	Using published criteria to develop a list of potentially inappropriate medications for elderly patients in Taiwan
Bachyrycz et al, 2012	Development and Dissemination of a Statewide System to Minimize Use of Potentially Inappropriate

Supplemental material

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	Medications (PIMs)
The American Geriatrics Society Beers Criteria Update Expert Panel, 2019[2]	American Geriatrics Society 2019 Updated AGS Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults
The American Geriatrics Society Beers Criteria Update Expert Panel, 2015[2]	American Geriatrics Society 2015 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults
The American Geriatrics Society Beers Criteria Update Expert Panel, 2012[2]	American Geriatrics Society Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults
Fick et al, 2003[2]	Updating the Beers Criteria for Potentially Inappropriate Medication Use in Older Adults: Results of a US Consensus Panel of Experts
Wehling, 2015[3]	How to Use the FORTA ("Fit fOR The Aged") List to Improve Pharmacotherapy in the Elderly
Wehling et al, 2016[3]	VALFORTA: a randomised trial to validate the FORTA (Fit fOR The Aged) classification
Kuhn-Thiel et al, 2014[3]	Consensus validation of the FORTA (Fit for the Aged) List: A clinical tool for increasing the appropriateness of pharmacotherapy in the elderly
Pazan et al, 2018	The EURO-FORTA (Fit fOR The Aged) List: International Consensus Validation of a Clinical Tool for Improved Drug Treatment in Older People
O'Mahony et al, 2010[4]	STOPP & START criteria: A new approach to detecting potentially inappropriate prescribing in old age
O'Mahony et al, 2015[4]	STOPP/START criteria for potentially inappropriate prescribing in older people: version 2
Hill Taylor et al, 2013[4]	Application of the STOPP/START criteria: a systematic review of the prevalence of potentially inappropriate prescribing in older adults, and evidence of clinical, humanistic and economic impact
Herefordshire Clinical Commissioning Group, 2016	STOPP START Toolkit Supporting Medication Review
3) Mixed criteria	
Bergman-Evans & Adams, 2006	Evidence-based Guideline Improving medication management for older adults clients
Lavan et al, 2016	Methods to reduce prescribing errors in elderly patients with multimorbidity
Mangin et al, 2018	International Group for Reducing Inappropriate Medication Use & Polypharmacy (IGRIMUP): Position

	Statement and 10 Recommendations for Action
Marengoni, 2015	Best Practices for Drug Prescribing in Older Adults: A Call for Action
NICE, 2016	Multimorbidity: clinical assessment and management
All Wales Medicines Strategy Group, 2014	Polypharmacy: Guidance for Prescribing
Sarkar, 2017	Geriatric Poly-Pharmacy: A Growing Epidemic. How to Prevent It?
Scottish Government Polypharmacy Model of Care Group, 2018	Polypharmacy Guidance: Realistic prescribing 3rd edition, 2018.
Sergi et al, 2011	Polypharmacy in the elderly: Can comprehensive geriatric assessment reduce inappropriate medication use?
Sivagnanam, 2016	Deprescription: The prescription metabolism
The Guidelines group of Hesse, 2014	Recommendations for treating adult and geriatric patients on multimedication
Vrdoljak & Borovac, 2015	Medication in the elderly - considerations and therapy prescription guidelines
Department of Health UK, 2001	Medicines and older people-implementing medications-related aspects of the NSF for older people
Lenaerts et al, 2013	Appropriate prescribing for Older people: A new tool for General Practitioner
Drenth-van Maanen, 2017	The Systematic Tool to Reduce Inappropriate Prescribing (STRIP): Combining implicit and explicit prescribing tools to improve appropriate prescribin
Basger et al, 2012[5]	Validation of prescribing appropriateness criteria for older Australians using the RAND/UCLA appropriateness method
Basger et al, 2008[5]	Inappropriate Medication Use and Prescribing Indicators in Elderly Australians: Development of a Prescribing Indicators Tool
4) Others	
Muche-Borowski et al, 2017	Development of a meta-algorithm for guiding primary care encounters for patients with multimorbidity using evidence-based and case-based guideline development methodology
Schippinger et al, 2018	Optimizing medical care for geriatric patients in Austria: defining a top five list of "Choosing Wisely" recommendations using the Delphi technique
Roughead et al, 2011	Multimorbidity, care complexity and prescribing for the elderly

Rieckert et al, 2018	Reduction of inappropriate medication in older populations by electronic decision support (the PRIMA-eDS study): a qualitative study of practical implementation in primary care
Niehoff et al, 2016	Development of the Tool to Reduce Inappropriate Medications (TRIM): A Clinical Decision Support System to Improve Medication Prescribing for Older Adults
Van Summeren et al, 2017	Outcome prioritisation tool for medication review in older patients with multimorbidity: a pilot study in general practice
Vetrano et al, 2017	An International Perspective on Chronic Multimorbidity: Approaching the Elephant in the Room

[1-5] *only counting once for each unique tool for summary under information on guidelines*