'Medication reviews in older patients: available tools and practical tips'

ESCP Congress Prague 21/10/2022

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Irene

- 85 years old
- Lives alone in her own house
- Physically very fit, never complains
- Ventricular extrasystoles >30 years (cardiologist every 2y)
- BP: 110/70 mmHg
- eGFR: 52 ml/min
- Weight: 52 kg
- TC 216 mg/dL, TG 169 mg/dL
- Cognitive decline, screening 1y ago: MMSE 19/30 → support (meals, day-center)
- 'Toilet accidents'

Medication list

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Irene

- Hospitalization for severe diverticulitis, temporary stoma for 8 weeks
- Second hospitalization for restore of continuity, 14 days in hospital:
 - Prolonged nausea
 - UTI infection
 - Confusion

Medication list at discharge:

- Calcium / Vitamin D 1g/880IU
- Domperidone 10 mg IN max 3/d
- Paracetamol 325 / tramadol 37,5 mg max 3/d
- Simvastatin 20 mg
- Solifenacine 5 mg
- Zolpidem 10 mg





Factors contributing to drug related problems in older persons



	Prescribing	 'overprescribing' 'misprescribing' 'underprescribing' 'not taking patients' preferences into account'
2	Dispensing	 Erroneous prescription validation Erroneous dispensing Insufficient information
	Administration	 Wrong medication, dose, pharmaceutical form, Wrong administration route or technique Over- or underadministration of medication
1	Patient behaviour	 Taking more/less medication (non adherence) Erroneous use of medication Insufficient communication with HCP
+	Communication, documentation, follow-up	 Wrong / incomplete medication list Insufficient documentation / communication of problems with patient / HCP

Types of DRPs – level of drug process

Medication review Assessment of appropriate drug use

A **structured** evaluation of a patient's medicines with the aim of **optimizing** medicines use and improving health **outcomes**. This entails detecting **drug related problems** and recommending **interventions**

Pharmaceutical Care Network Europe (<u>www.pcne.org</u>)

What is the goal?

NOT just: Reducing polypharmacy

BUT: Increasing appropriateness of therapy

Prevention of inappropriate prescribing Prevention of inappropriate use of drugs by the patient Prevention of ADE due to unsafe drug process

	Type of MR			Inform	nation availab	le			
				Medication Patient history interview		Clinical data			
	Simple		Type 1	+			8		
			Type 2A	+	+		& B.		
	Intermediate Advanced		Type 2B	+		+	8.4D		
			Type 3	+	+	+	-150		
	Greese-Man	nen et a	I. PCNE definition	of medication review: react	hing agreement. Int J	Clin Pharm 2018	西南		
Т	pe of MR			Desc	ription				
Le	vel 1	Preso medi	Prescription review: addresses issues relating to the prescription or medicines; the patient does not need to be present, nor access to full notes						
Le	vel 2	Concordance and compliance review: addresses issues relating to the patient's medicine taking behaviour							
Le	vel 3	Clinio medi	cal medicatio icines in the o	n review: addresses context of their clini	issues relating cal condition.	to the patient's	s use of		
	NHS Medication Review Guidance June 2021								

Types of medication review

Clinical Medication review: 4 steps



Clinical Medication review: 4 steps

1. Medication reconciliation Drug history + patient interview

2. Pharmacotherapeutic analysis

Screening for drug related problems (DRPs

3. Pharmacotherapeutic discussion

Evaluation of DRPs & recommendations

4. Pharmacotherapeutic plan

Counseling, implementation & follow-up

1. Medication Reconciliation

The process of comparing the medications a patient is taking (and should be taking) with newly ordered medications in order to resolve discrepancies or potential problems

Problems with transfer of information about medicines at transition moments:

Unintended medication discrepancies (UMD):

- drug omitted
- stopped drug added
- wrong drug
- unknown drug
- wrong dose
- unknown dose
- wrong frequency
- unknown frequency



Part 1 = BPMH: Best Possible Medication History

Use at least 2 sources of information

- Structured approach, 4 steps:
 - 1. Patient interview, relatives, GP, community pharmacist
 - 2. Extra questions about drugs that are easily 'forgotten' + high risk medication
 - 3. Medications stopped because of ADRs / stopped recently
 - 4. Drug allergies

Drugs that are easily 'forgotten' + high risk medication

		J	
\checkmark	Antitrombotic drugs	 Image: A second s	Ointments
\checkmark	Analgesics (chronic / if needed)	\checkmark	Vitamines
\checkmark	Sleeping pills	\checkmark	Inhalations
\checkmark	Injectable drugs (e.g. insulin)	\checkmark	Plasters
~	Drugs not taken every day	1	Eve ear and no

- Drugs not taken every day ✓ Eye, ear and nose drops
- > For each drug: 5 fields required
 - 1. Drug name
 - 2. Dose
 - 3. Day frequency
 - 4. Week frequency
 - 5. Quantity per administration + unit
- If possible: compare with prescriptions
- Active reporting of relevant discrepancies



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Record for each drug: ✓ Starting date (specific date if recently started) ✓ Drug name (written out)

- * * * * Dose Quantity per administration time Stopping date if just before admission (a.o. important for anticoagulants) Route of administration Time(s) of administration (hours)
- √ √

Caution with drugs that are not taken every day (1x/week, 1x/month...): e.g. methotrexate, biphosphonates, ertyhropoetin...

Antitrombotic agents: • Vitamine K antagonists, DOACs • LMWH

•

Aspirin, clopidogrel, prasugrel,...

Ask specifically for: ✓ Antitrombotic drugs ✓ Injectable drugs ✓ Inhalations ✓ Plasters ✓ Eye, ear and nose di ✓ Ointments ✓ Vitamines ✓ Analgesics (chronic) ✓ Sleeping pills

- Eye, ear and nose drops Ointments Vitamines Analgesics (chronic / if needed) Sleeping pills

- Drug information sources:
 National drug database
 Drug information provided by the local health community / institution
 International drug information sources (e.g. UpToDate)

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Flowchart: when are we satisfied with the list?



Part 2 = Patient interview

- Who cares for your medicines?
- > Do you know for what reason you take these medicines?
- Do you have other complaints, is the medication effective for you?
- Do you experience certain adverse reactions?
- Do you have certain difficulties to take the medicines?
- > Do you sometimes deviate from the scheme, if yes, how often and why?
- Do you have questions about your medicines?

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Medication Reconciliation: Recommendations

- Structured approach (BPMH)
- Different sources
- Electronic
- History
- 'Shared' medication scheme
- Medication list + patient interview
- MedRec should be a formal, essential step
 at every transition
 at every consultation
- Use tools e.g. structured form, adherence score,...
- Pharmacists' notes: document
- Record who takes care of the medicines
- Add reasons for changes



Clinical Medication review: 4 steps



2. Screening for potential DRPs (pDRPs)

Falls!

PIMs Potentially Inappropriate Medicines

PAMs Potentially Appropriate Medicines

ADRs Adverse Drug Reactions

HARMS Hospital Admissions Related to Medication

PIP Potentially Inappropriate Prescribing

 Indication not present (anymore) Combination where monotherapy is sufficient Duplication Inappropriate choice Inappropriate dosing Inappropriate duration of therapy Contra-indication Drug-drug interaction Undertreatment No preventative therapy 		overuse	misuse		underuse	
	•	Indication not present (anymore) Combination where monotherapy is sufficient Duplication	 Inappropriate choice Inappropriate dosing Inappropriate duration of therapy Contra-indication Drug-drug interaction 	•	Undertreatment No preventative therapy	

Screening Tools

1) Explicit (criteria): drugs to avoid / drugs to start

- Beers (1991, updates 1997, 2003, 2012, 2015, 2019)
- McLeod (1997)
- IPET: Improved Prescribing in the Elderly Tool (2000)
- ACOVE: Assessing Care of Vulnerable Elders (2001)
- STOPP/START: screening Tool of Older Person's Prescriptions & Screening Tool to Alert Doctors to Right Prescriptions) (2008, 2014)
- PRISCUS list (2010)
- Australian Prescribing Indicators Tool (2012)
- RASP: Rationalization of Home Medication by an Adjusted STOPP list in Older Patients (2014)
- FORTA criteria: Fit fOR the Aged (2014)
- EU(7)-PIM list (2015)
- GHEOP³S: Ghent Older People's Prescriptions community Pharmacy Screening (2016, 2021)

2) Implicit (judgment): appropriateness

- MAI: Medication Appropriateness Index (1992)
- Lipton's criteria (1993)
- GMA: Geriatric Medication Algorithm (1994)
- AOU: Assessment Of Underuse (2001)
- STRIP: Systematic Tool to Reduce Inappropriate Prescribing (2012)
- A-MAI: Adapted MAI (2012)

Beers List (1991, 1997, 2003, 2012, 2015, 2019)

American Geriatrics Society 2019 Updated Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults



Mark H Beers

- 1. Potentially Inappropriate Medication Use (PIMs)
- 2. PIMs due to drug-disease or drug-syndrome interactions that may exacerbate the disease or syndrome
- 3. PIMs to be used with caution
- 4. Drug–Drug Interactions that should be avoided in older adults
- 5. Dosage Reduced with varying levels of kidney function
- 6. Drugs with strong anticholinergic properties

EU(7)-PIM list (2015)



- An expert-consensus list of PIMs covering the drug markets of seven European countries
- First used for people with dementia participating in the RightTimePlaceCare Seventh Framework European project
- Based on German PRISCUS list, PIM lists from Canada, USA and France
- List of 275 drugs + 7 drug classes
- Dose adjustments / special considerations + alternatives



PIM	Main reason	Dose adjustment/special comiderations of use	Alternative drugs and/or therapies
Antidepte-auto			
Antropylae Natropylae	Peripheral anticholororgia side efforts in ge- contribution, day neurali, terthiottais, baycetausian, caudiaa arthythionay, cannot article dollarity is olia afflicts (deronisticae, interestantiae, confusion, other types of dollaritary), cognitive definit, memoral risk of fulling	Start at half the total duily dose, increase directly, reduce dose, each whi 10 mg 3 mans per day and 20 mg at hedraus. Als, P 4 na set for muning mempathe pair may be considered appropriate, with benefits over-explain glue rails. It Use 10–30 mg/d in directed doses. If, M to use for traiting recompating unintrasket doses. Als, M to use for traiting recompating unintrasket doses. Als, M to use for traiting recompating unintrasket doses. Als, M to use the traiting recompating unintrasket doses. Als, M to use	Non-pharmacological anament, SSRI (excep PM, facoratioe, parametine, flavoranner) meteopine ² , macolone, E
Recetine	CNS ride efforts (rannos, inserrira, dizeinos, rendlasior), hiposaternia	Reduce dose; start with 20 mg/d; maximum dose idasi 20 mg/d; avoid administration at boltime: F; M.	
Paroveine	Higher risk of all-cause mortality, ligher risk of solaases, falls and Bactures. Aestabalaseepic adverse officers	For older people or for gardents with renal failure, not immediate-ordener tables with 10 mg/d (12.5 mg/d) for controller release tables), nervoxed by 10 mg/d (12.5 mg/d) if controlled-indexec tables), up to 40 mg/d (10.5 mg/d) if controlled-release tables), E. M.	
Verlafycine	Higher risk of all-cause mostality, attempted succide, stroke, sciourn, upper gamoritoxiaal bloodiag, fulls and fractant	Start with 25–50 mg, two times per day and increase by 25 mg/dosi: for extended-release formulation mart with 1755 mg once dully and increase by 3755 mg error 4–7 days as soletamid. E. Rokaei the total durly dose by 25–50 % in reases of mild	

- Can be considered as a 'European Beers list' (list 1)
- (in)appropriate indications are mostly not mentioned
- Can be used for the analysis of PIP patterns in and across European countries



STOPP/START criteria (2008, update 2014)

Initiative from 'the Irish STOPP/START criteria group' (Cork) 19 experts from 13 European countries: Delphi panel

- Screening Tool of Older Persons' potentially inappropriate Prescriptions (STOPP)
 - 80 STOPP criteria
- Screening Tool to Alert doctors to the Right Treatment (START)
 34 START criteria

Requires clinical data: indications, lab values

A. General criteria

- B. Cardiovascular system
- c. Antitrombotic drugs
- D. Central nervous system
- E. Decreased renal function
- F. Gastro-intestinal system
- G. Respiratory system
- н. Musculoskeletal system
- Urogenital system
- J. Endocrine ssystem
- к. Increased fall risk
- L. Pain
- M. Anticholinergic agents

O'Mahony et al. Age and Ageing, 2014

	Section B: Cardiovascular System
	 Digoxin for heart failure with normal systolic ventricular function (no clear evidence of benefit).
STOP	2. Verapamil or diltiazem with NYHA Class III or IV heart failure (may worsen heart failure).
	Beta-blocker in combination with verapamil or diltiazem (risk of heart block).
	 Beta blocker with bradycardia (< 50/min), type II heart block or complete heart block (risk of complete heart block, asystole).
	 Amiodarone as first-line antiarrhythmic therapy in supraventricular tachyarrhythmias (higher risk of side-effects than beta-blockers, digoxin, verapamil or diltiazem).
	Section D: Gastrointestinal System
START	 Proton Pump Inhibitor with severe gastro-oesophageal reflux disease or peptic stricture requiring dilatation.
	2. Fibre supplements (e.g. bran, ispaghula, methylcellulose, sterculia) for diverticulosis with a
	history of constipation.
	Section A: Indication of medication
	1. Any drug prescribed without an evidence-based clinical indication.
GENERAL	Any drug prescribed beyond the recommended duration, where treatment duration is well defined.
	3. Any duplicate drug class prescription e.g. two concurrent NSAIDs, SSRIs, loop diuretics, ACE
	inhibitors, anticoagulants (optimisation of monotherapy within a single drug class should
	be observed prior to considering a new agent).

STOPPFrail (2017, 2020)

Deprescribing in older people approaching end-of-life: development and validation of STOPPFrail version 2

DENES CURTEN^{1,3}, PAUL GALLAGHER^{1,2}, DENES O'MAHORN^{1,2} Age and Ageng 2020; 50: 465-471

Version 2 (2020) includes a method for identifying older people who are likely approaching end-of-life and 25 deprescribing criteria.

Section G: Muscalododetal system	 Calcium supplements: Unlikely to be of any benefit is short-turm unless proven, symptomatic hypocalcamia. Vitamin D (especial:fieed and coleoalofferol) Lack of clear evidence to support the use of vitamin D to prevent falls and fractures, candinvascular events or cancers. Anti-resoprive/base mubble drugs for antiparatic thisphunghmuzes, struminum, seriparatide, demonandh Long-term onal controloted anti-influenzatory drugs: Increased task of side effects (e.g. peptic ulcer disease, bleeding, worsening heart failure) when taken regularly for ≥2 moreha. Long-term oral controloteside linearand tak of major side effects (e.g. fragility fractures, proximal anyopuby, peptic ulcer disease) when taken regularly for ≥2 moreha.
Section H: Ungenital apatem	 Drugs for beings prototic hyperplanic (5-alpha reductate inhibition and alpha-blockers) in cacheterised male patients. No benefit with long even bladder cacheteritation. Drugs for overactive bladder (numeritatic antiganists and mirabegron): No benefit in patients with penaterat, inevensible urinary incontinence unless ilsue biotopy of painful detraware hyperactivity.
Section I: Endocrine system	 Anti-diabetic drugs: De-intensify therapy: Avoid HbA1c targets (HbA1C <7.5% [58 mmol/mol] associated with net harm in this population). The pool of care is to minimize symptoms related to hyperglycaemia (e.g. excessive thirst, polyuria).

Drugs Aging (2014) 31:131-140

Consensus Validation of the FORTA (Fit fOR The Aged) List: A Clinical Tool for Increasing the Appropriateness of Pharmacotherapy in the Elderly

Alexandra M. Kuhn-Thiel - Christel Weiß - Martin Wehling -The FORTA authors/expert panel members

- Two-round Delphi procedure with 20 experts (17 geriatric internists + 3 geriatric psychiatrists from Germany and Austria), evaluating the labels assigned to 190 substances or substance groups
- Classification per pharmacological (sub)class, according to indication
- Both over and undertreatment
- Class A (A-bsolutely) = indispensable drug, clear-cut benefit in terms of efficacy/safety ratio proven in elderly patients for a given indication
- Class B (B-eneficial) = drugs with proven or obvious efficacy in the elderly, but limited extent of effect or safety concerns
- Class C (C-areful) = drugs with questionable efficacy/ safety profiles in the elderly, to be avoided or omitted in the presence of too many drugs, lack of benefits or emerging side effects; review/find alternatives
- Class D (D-on't) = avoid in the elderly, omit first, review/find alternatives

Re-evaluated substance/group (original FORTA rating)	FORTA indication area	No. of raters (n = 29) Round 1 Round 2	Convensus coefficient Round 1 (catoff (1.800)	Expert rating on a numerical scale ⁴ Round 1 Round 2 mean; mode	Proposed FORTA rating, based on mean value from Round 2	
6-4-10-4-70	Demois	20	0.775	15.2		
Guigeo bioba (C)	Lierocotta	20	46775	3.6: 4		
Haloperidol (D)	BPSD paranoia,	19	0,632	3.3; 4	с	
	hallocinations	20		3.0; 3		
Risperidone (D)	BPSD paranoia,	20	0.500	3.0; 2	C	
	hallocinations	20		2.7; 2		
Quetiapine (D)	BPSD paranoia,	20	0.575	3.2; 4	C	
	hallocinations	20		2.9; 3		
Aripiprazole (D) [2-15 mg/day]	BPSD paranoia,	19	0.789	3.6; 4	C	
	hallucinations	17		3.4; 4		
Clozapine (D) [10-50 mg/day]	BPSD paranoia,	20	0.800	3.6; 4	D	
	hallucinations	19		3.7; 4		
Risperidone (D)	BPSD restlessness	20	0.625	3.3; 4	С	
		20		2.7; 2		
Melperone (D)	BPSD restlessness	20	0.675	3.4: 4	с	
		20		3.4; 4		
Quetiapine (D) [25-200 mg/day]	BPSD restlessness	19	0.763	3.5; 4	с	
		19		3.3; 3	0.62	

		France (N#5)	Italy (N=7)	Nordic countries (No46)	Spain (N+6)	Poland (Ret\$)	UK/Irstand (N=9)	Germany /Austria (N=21)	Main	EURO- FORTA Class
TYPE II DIABETES MELLITUS	Suggestud FORTA class	rickits class / Conservus zoofficient	forfa.cau/ Conternus coeffusient	FORTA class / Conserval coefficient	roxix chen/ Convenie coefficient	PDRTA class./ Conversuor Joseffusien	PORTA class 7 Consensus coefficient	PORTActions/ Conversion coefficient	coefficient	jangnal PORTA slava in parentheses if aliferent have concentro results)
Substance/group										
DPPS (Dipoptidy/peptidace) Inhibitors	5 A (8 0.625 (R2)	а 0.929	8 0.667 (R2)	A 0.857	0.643 (R2)	0.357 (82)	A 0.900	0,711	(A) 8
Insulin and Insulin analogs (If shoolutely menessary)	•	A 0.625 (#2)	B 0.887	A 0.667 (#2)	80.857	0.929	8 0.813	8 0.825	0.796	
Metformin		8 9.875	A 0.583 (R2)	8 0.900	A 0.571 (R2)	B 0.810	8 0.515	8 0.900	0.779	
OLP1 (Olucagon-Like Peptide-1) analogs	•	8 0.075 (R2)	8 658.0	8 1.000	8 0.929	5 1.000	8 0.929	8 0.915	0.926	
Brd generation suffery/ureas (for example, elimenicida)	¢	C 0.875	C 0.881	C 1.000	C 1.000	8 0.643 (R2)	C 0.813	C 0.875	0.870	c
Glinides (for example, nateglinide)	c	C 0.885	C 0.917	C 1.000	C 1.000	C 1.000	¢ 1.000	C 0.950	0.957	c
PPAR-y Liganda (Perusisamal										c
Proliferator- Artivated Receptor gamma)	¢	D 0.625 (RZ)	ç 0.029	C 1.000	C 1.000	с 1.990	с 0.929	C 0.915	0.915	
		D			2		D		100224-0	0
Gliffogina	0	1.000 D	000	D	D	1.000	1.000 C	1.000	1,000	100
		1.000	9-04X	0.888	0.929	1,000	0.648 (MZ)	0,978	0,891	
Lat generation sulfonyluress (for example, glibonclamide)	Ð	B 1.000	8.929	D 1.000	D 1.000	0 6.835	0.613	0 6.900	6.925	٥

RASP: Rationalization of Home Medication by an Adjusted STOPP list in Older Patients

- Schedule construction of the intervention of the second seco

- - Acute geriatric care (hospital)

 - Focus on cardiovascular drugs •
 - Clinical data required

Van der Linden L, et al. Development and validation of the RASP list (Rationalization of Home Medication by an Adjusted STOPP is in Older Patients): A novel tool in the management of geriatric polypharmacy. Eur Geriatr Med (2014)

GHEOP³S-tool (2016, 2021)

Ghent Older People's Prescriptions community Pharmacy Screening tool 64 items, 5 lists

- Based on existing explicit tools; only drugs on European market •
- Use by community pharmacist, without clinical information (indication, lab values)
- Assessment of clinical relevance + feasibility by expert panel
- Manual with rationale + alternative treatment suggestion •

List	Indust	Vanderid
1	Potentially inappropriate medication for older people	Digosin >125µg
2	Potentially inappropriate medication for older people, dependent on comorbidities	Metoclopramide with Parkinson disease
3	Potentially amitted medication in older people	No folic acid with methotresate
4	Drug-drug interactions especially relevant in older people	NSAID + VKA
5	Pharmacoutical care-related oriteria for older people to be addressed in the community pharmacy	No medication scheme available
Addend	Num: Medications that should be avoided or used with caution (need for reduction in dose or dosing cy) in sider people with a reduced renal function.	

Tommelein E. J Public Health (Oxf) 2016;38(2):158-70 Foubert K. Drugs & Aging 2021;38(6):523-33

https://www.ugent.be/fw/nl/onderzoek/bioanalyse/farmzorg/tools/gheop3s-tool-versie-2/gheop3s-tool-update_eng/view_

ADRs Adverse Drug Reactions **Risk factors**

HARMS Hospital Admission Related to Medication

Frequency of and Risk Factors for Preventable Medication-Related Hospital **Admissions in the Netherlands**

Anne J. Leendertse, PharmD; Antoine C. G. Egberts, PhD; Lennart J. Stoker, PharmD; Patricia M. L. A. van den Bemt, PhD; HARM Study Group Arch Intern Med. 2008;168(17):1890-1896.

Risk factors:

Patient related:

impaired cognition (odds ratio [OR], 13.0; 95% CI, 4.6-36.5) 4 or more diseases in the patient's medical history (11.3; 4.4-29.0) dependent living situation (4.5; 2.4-8.1) impaired renal function before hospital admission (2.6; 1.6-4.2) nonadherence to the medication regimen

Medication related: polypharmacy (5 or more drugs)

ADRs Adverse Drug Reactions

Risk score

Development and validation of a score to assess risk of adverse drug reactions among in-hospital patients 65 years or older: the GerontoNet ADR risk score

Grapiano Onder ¹⁷, Mirko Petrovic, Bafamurugan Tangisuran, Mareke C Meinardi, Winih P Markito-Notenboom, Annemie Somers, Chakravarthi Rajkumar, Roberto Bernabei, Tricha J M van der Caminon

Arch Intern Med. 2010;170(13):1142-1148

Variable	OR (95% CI)	Points
≈4 Comorbid conditions	1.31 (1.04-1.64)	1
Heart failure	1.79 (1.39-2.30)	1
Liver disease	1.36 (1.06-1.74)	1
No. of drugs		
≤5	1 [Reference]	0
5-7	1.90 (1.35-2.68)	1
≥8	4.07 (2.93-5.65)	4
Previous ADR	2.41 (1.79-3.23)	2
Renal failure ^b	1.21 (0.96-1.51)	1



Anticholinergic burden

3

Drigs & Aging Go210 34:977-994 https://doi.org/16.1001/140246-011-00101-4 SYSTEMATIC REVIEW

Quantifying Anticholinergic Burden and Sedative Load in Older Adults with Polypharmacy: A Systematic Review of Risk Scales and Models

Swellem B. Al filhani¹ - Malavika Deodhar¹ - Lucy I, Darakjian¹ - Pamela Dow¹ - Matt K. Smith¹ - flavit Bikmetov¹ - Jacouse Taropon^{1,2} - Veronjene Michauet^{1,2}

ACB calculator	0.00310				A	Antich	alinergic D rgic Burde	Drug Scale n Classific	(ADS) ation (AB	IC)			
Basi (feed	Ð				1	Anticholine Antich	ergic Effect alinergic F	t on Cogn Risk Scale	(ARS)	C)			
Soore: Medicine: Brande:					Anticholinergic Cognitive Burden Scale (ACB) Modified ACB scale (mACB) Anticholinergic Activity Scale (AAS)								
Bart (perg.	Û				Ko	Anticho	linergic Lo cholinerciz	ading Sca Burden S	ile (ACL) Scale /KAI	(28			
Score: Medicine: Brands:					Ger	man Antio Braziliar	cholinergic AC	Burden S (B)	icore (Gei vity scale	C))) CB) 3S) man 1 2 3 1 3 1 2 3 1 2 2 3 1 2 2 3			
Skring-	Û	ACB	ADS	AEC	ALS	APS	Brazilian	German	KARS	mACB			
Betre:		Drugs clas	sified in 7 o	or more an	ticholinergi	ic scales		Con the th					
Biadicine: Brands:		1	1	0	1		1	1	1	1			
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+ Sollies mattern Official		3	3	3	3	3	3	3	3	3			
		1	0	0	0		1	1	0	1			
Total ACB Score		3	3	3	3	3	3	3	3	3			
Intercommuting the Interland, Park and Exclosures I	internet i	1	0	0			1	1	1	1			
Barrumantos anto holmargic husbos asingtinal no diferent		1	1		0		1	1	0	1			
Sugar burden access in from relation.		2	2	1	0		2	2	1	2			

ADR Adverse Drug Reactions

Falls: FRIDs

Approved Appropriate Control of the Control of Control

B. The second (2000) Published to Colden Linker by Prog. or and of the linker Colden Linker by Prog. And State an

RESEARCH PAPER

STOPPFall (Screening Tool of Older Persons Prescriptions in older adults with high fall risk): a Delphi study by the EuGMS Task and Finish Group on Fall-Risk-Increasing Drugs

Lorins J. Samuel, "Please Processor," Januar Hurd, "Guarrain Barrer," Erin Tomacow", Konochna Szczawskiwi, "Tackie J.M. venician Connects, Sam Horizonali," Barcer Lawer, Reactoro Lawer, "Yohone Monosony," Annue Marie, "Please, Schlarer, Natrock, 1 Manuar I. Emerich V. Tomis, Mexical Consultion Mono," Michael, Demonster, Manuar L. Strenger, "Mexica Mexical Consultion Mono," Michael, Demonster, Manuar Connect, "Times Monoson," Assess Consult, "Michael Man, Mono, Nat. "Assessment Consultation," Capacity Schlarer, "Manason, "Marie Monoson, "Capacity Schlarer," Assessment Connect, "Michael Mariane Consultation, "Michael Manason," Capacity Schlarer, "Assessment, "Assessment, "Assessment," Assessment, "Assessment, "Assessment, "Assessment, "Assessment," Assessment, "Assessment, "Assessment, "Assessment, "Assessment, "Assessment," Assessment, "Assessment, "Assessment," Assessment, "Assessment, "As



Table 2. Deprescribing guidance for STOPPFall items

	Fall-risk assessment: In which cases to consider withdrawal? ²⁴	Is stepwise withdrawal needed? ^b	Monitoring after deprescribing ^e
Benzodiazepines (BZD) and BZD-related drugs	-If daytime sedation, cognitive impairment, or psychomotor impairments -In case of both indications: sleep and	In general needed	-Monitor: anxiety, insomnia, agitation -Consider monitoring: delirium, seizures, confusion
Antipsychotics	anxiety disorder -If extrapyramidal or cardiac side effects, sedation, signs of sedation, dizziness, or blurred vision If sime for BBCP as does disorder	In general needed	-Monitor: recurrence of symptoms (psychosis, aggression, agitation, delusion, hallucination)
Opiosids	 If given for first of a test of a test of possibly if given for bipolar disorder If slow reactions, impaired balance, or sedative symptoms If given for chronic pain, and possibly if given for acute pain 	In general needed	-Monitor: recurrence of pain -Consider monitoring: muscubskeletal symptoms, restlessness, gastrointestinal
Antidepressants	-If hyponatremia, OH, dizziness, sedative symptoms, or tachycardia' arthydmia -If given for depression but depended on symptom-free time and history of	In general needed	symptoms, araciey, insomnia, diaphoresis, anger, chills -Monitor: recurrence of depression, anxiety, irritability and insomnia -Consider monitoring: headache, malaise, gastrointestinal symptoms
Antiepileptics	symptoms or given for skep disorder, and possibly if given for neuropathic pain or anxiety disorder -If ataxia, somolence, impaired balance, or possibly in case of dizziness -If given for anxiety disorder or	Consider	-Monitor: recurrence of seizures -Consider monitoring: arxiety, restlessness, insomnia, headache
Diuretics	neuropathic pain -If OH, hypotension, or electrolyte disturbance and possibly if urinary incontinence -possibly if given for hypertension	Consider	-Monitor: heart failure, hypertension, signs of fluid retention

ADR Adverse Drug Reactions

Prescribing cascades

Drugs & Aging

ThinkCascades: A Tool for Identifying Clinically Important Prescribing Cascades Affecting Older People

Lisa M. McCarthy^{1,2,1}O - Rachel Savage^{4,0}O - Kieran Dalton⁴O - Robin Mason^{4,0}O - Joyce Li⁴ - Andrea Lawson⁴ -Wei Wu⁴O - Shelley A. Stenberg¹O - Stephen Byrne⁵ - Mirko Petrovic¹O - Graziano Onder¹⁴O -Antonio Cherubin¹¹O - Denis O'Mahony¹¹O - Jerry H. Gurwitz¹²O - Francesco Pegreffi¹⁴O -Paula A. Rochos^{4,2,115}O Austoh 21 June 2022





PIP Potentially Inappropriate Prescribing

Critera of assessment for each drug Clinical information available Patient centered approach

Indication			7
Contra-ind	lication (drug-disease interaction)		-
Drug choic	e		- 7
Dose			- ר
Modalities	(frequency, times / mode of administ	tration)	- -
Interaction	ı s (drug-drug, drug-food)		-
Duration o	f therapy		-
Adverse re	actions		- -
In addition:	underuse?		

Adapted MAI (aMAI) (2012)

Nr	Question	Weight
1	Indication	3
2	Drug-disease interactions (contra-indications)	2
3	Right choice	3
4	Dose	2
5	Directions (route / time of administration, frequency, adm. technique)	1
6	Adverse drug reactions	2
7	Drug-drug interactions	2
8	Duration of therapy	1

Calculation of scores:

appropriate = weight x 0 marginally appropriate = weight x 0.5 inappropriate = weight x 1 total score per drug [0 - 16]

+ additional question: undertreatment?



			Indication	Contra- indication	Right choice	Dose	Correct modalities	Inter- actions	Duration	Adverse reactions	
	Drug list		3	2	3	2	1	2	4	2	Tot
1	Perindopril 5mg q24h	HF, AHT	0	0	0	2	0	0	0	1	3
2	Fenofibrate 145 mg q24h	7	0	0	3	2	0	0	0	0	5
3	Clonazepam 0,6mg q 24h	Menière	1,5	0	3	0	0	0	1	1	6,5
4	Sotalol 80 mg q12h	AF	0	0	1,5	1	0	0	0	0	2,5
5	Paracetamol 375 mg q24h	OA	0	0	0	2	1	0	0	0	3
6	Tramadol 37,5mg q24h	OA	0	0	1,5	1	0	0	0,5	0	3
								To	tale	score	23

Implicit approach: Appropriateness of therapy

Case 1 – explicit approach

Patient 1	Woman, 82 years
Reason of admission	Falls day -4 & day -1
Medical history	Bilateral total hip prosthesis, osteoporosis, reflux oesophagitis grade C, arterial hypertension 2014: fall, humerus fracture, spinal stenosis with paresthesia 2016: fall, acetabulum fracture - diagnosis osteoporosis
Medical problem(s)	Pain, balance problems
Social / cognitive status	Lives alone, walks with walking aid (rollator)
Relevant lab values	K+ 5.25 mmol/l, Na+ 137 mmol/l, eGFR 42 ml/min/1,73m², 250H vit D < 3.0 ng/ml, BP 155/110, weight 59 kg
Drugs	Problems - recommendations
1 Alendronate 70 mg 7h 1x/week 2 Cinnarizine 75 ng 8h-12h-18h 3 Duloxetine 60 ng 8h 4 Lormetazepan 2 mg 20h 5 Cimeprazole 40 mg 7h	Caldium / vit D?
6 Cxycodone¥00 mg IN 7 Pravastatine 20 mg 8h 8 Ramipril 5 mg 8h	Laxative?

Case 1 – implicit approach

Patient 1	Woman	i, 82 yı	ears									
Reason of admission	Falls da	iy -4 &	. day -	1								
Medical history	Bilatera 2014: fal 2016: fal	l total I, hun I, acel	hip pr herus :abulu	osthe: fractu m frac	sis, re re, sp cture -	flux o inal s - dia <u>c</u>	esoph tenosi: Inosis	agitis s with osteoj	grade pares porosi	: C, art thesia s	erial hypertensio	n
Medical problem(s)	Pain, ba	alance	probl	ems								
Social / cognitive status	Lives al	one, v	valks v	vith ro	llator							
Relevant lab values	K+ 5.25	mmol	łI, Na+	· 137 n	nmoli/l	, eGF	R 42 m	nlimin	/1,73m	², 250ł	H vit D < 3.0 ng/ml	, BP 155/110, weight 59 kg
(Indication	Contra- indication	Right choice	Dose	Modalities	Inter- actions	Duration	Adverse effects	\smile		
Drugs	Indic	3	2	3	2	1	2	1	2	Tot	Problem(s)	Recommendation(s)
1 Alendronate 70 mg 7h 1x/w												
2 Cinnarizine 79 mg 8h-12h-18h												
3 Duloxetine 60 mg 8h												
4 Lormetazepan 2 mg 20h												
5 Omepraz (le 40 mg 7h												
6 Oxycodone 10 mg IN												
7 Pravastatine 20 mg 8h												
8 Ramipril 5 mg 8h												
appropriate: weight x 0 marginally appropriate: weight x 0.5 inappropriate: weight x 1			-				Linden	use?	3		Caldiu	m / vit D?
							To	tal si	core		La La	xative?

		Overuse	Contra- indication	Incorect choice	Incorrect dose	Incorrect modalities	Interactions	Duration of therapy	Adverse Reactions
	Medicatie								
1	Apixaban 5 mg 2/d				Х?		Х		
2	Bisoprolol 2,5 mg 1/d								
3	Flupentixol 10 mg 1/d	Х		Х			Х	Х	Х
4	Macrogol 1/d			х					
5	Naproxen 550 mg 2/d		х	Х			Х	х	Х
6	Melitracen 0,5 mg 1/d	Х		Х			Х	Х	Х
7	Omeprazole 40 mg 1/d				Х				
8	Perindopril 5 mg 1/d				Х				Х
9	Simvastatine 20 mg 1/d	Х?						Х?	
10	Tramadol 100 mg 1/d			х	х	х	х	X?	х
11	Trazolan 100 mg 1/d	х		Х	х		Х	х	Х
12	Zolpidem 10 mg 1/d	Х					Х	Х	Х
	Undertreatment?	1. Par 2. Cal	acetamol cium/vit E)					

Clinical Medication review: 4 steps



3. Pharmacotherapeutic discussion

Part 1 = Preparation: evaluation of DRPs

- Clinical relevance: patient specific
- Benefit / risk ratio of PIMs
 - Risk of falls?
 - Frailty?
 - Cognitive function?
 - Life expectancy?
- Formulate recommendation for every DRP
- Deprescribing strategies
- Prioritisation of DRPs
 - Drugs with high risk of adverse events
 - Drugs with several DRPs (several criteria)
 - Types of DRPs e.g. 'no indication', 'contra-indication', 'underuse' (?)



Patient 1		Woma	in, 82	years	\$							
Reason of admi	ssion	Falls c	iay -4	& da	y -1							
Medical history		Bilater	al tot	al hip	pros	thes	is, os	teopo	prosis	s, refli	ux oesophagitis grade C, arl	erial hypertension
Medical probler	nísì	Pain, t	balan	ice pro	bler	ns						
Social/cognitive	status	Lives	alone	, walk	s wit	h rol	lator					
Relevant lab va	lues	K+ 5.2	5 mn	nol/I, N	la+ 1	37 m	mol/l,	.eGF	R 42	ml/m	in/1,73m², 250H vit D < 3.0 ng	g/ml, BP 155/110, weight 59 kg
		Indicatio	Contrat-	Right choice	Dote	Modalifie	Inter- actions	Dumbon	Adverse effects			
Drugs	Indicatio	n 3	2	3	2	1	2	1	2	Tot	Underlying problem(s)	Recommendation(s)
Nendronale 70 mg	aracporosi					1		1		3	Still reflux problems? Should be taken before breakfast.	min before breakfast, correct modalities, withold when active
Dinnarizine 75 mg 2 8h-12h-19h	,	1.5		3	5		2	0,5	2	9	PAD Risk of ADRs sedation, drawsiness, obstipation, dry mouth	Slop, in case of PAD aspirin
Duloxetine 60 mg 3 8h	neutopatie paix?			15	1	0,5	2	0.5	2	7,5	falls, take in the evening, Still needed?	neuropathic pain? Alternative drug? Lower dose?
Lormetazepam 2 4 mg 20h	cleeping problems?				2		74	0.5	14	6.5	High dose, still needed? Risk of fails, Interactions.	Lover dose, try to stap with tapering scheme
Orregrazole 40 mg 5 7h	reflar oesophaptic				4			0.5		15	High dose, still needed?	Lower doce, check vilB12, Mg
Discodore 10 mg	pain	1,5		15			2		1	5	strange choice (no step 1 of pain ladder)	Evaluation of pain treatment
Pravastøline 20 mg 7 8h		15		1,5		1					Cholesterol levels? Wrong time of administr.	Stop: in case of PAD increase dose to 40 mg, at 20h
8 Ramipril 5 mg 8h	atterial hypertenzion				1				2	3	adverse reaction (K+); dose too high	Lower dose to 2.5mg; possibly combine with thiazide
appropriate weight marginally appropri inappropriate weigh	×0 iate:weight ht×1	×				á	Léoden	ute?	3	9	underuse for fall prevention underuse of step 1 pain ladder underuse of lauative	atart saloium + vitamin D (1g1000E) etart paracetamol (3 or 4 gi/dag) start lauative (n.g. maerogol)
							To	tal se	core	45,5		

3. Pharmacotherapeutic discussion

Part 2 = Discussion of DRPs and solutions

- Communication with the physician
 - Ask for treatment goals
 - Discuss DRPs + recommendations, prioritized

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3. Pharmacotherapeutic discussion

Part 2 = Discussion of DRPs and solutions

- Communication with the patient
 - Ask for treatment goals
 - ightarrow Outcome Prioritization Tool
 - → Goal Attainment Scale



- Explain which changes are proposed and why
- Apply "Motivational conversation" technique
- Taking into account patient preferences
- Deprescribing psychotropic drugs might be the most challenging



Clinical Medication review: 4 steps

1. Medication reconciliation

Drug history + patient interview

2. Pharmacotherapeutic analysis

Screening for drug related problems (DRPs

3. Pharmacotherapeutic discussion

Evaluation of DRPs & solutions (physician, patient)

4. Pharmacotherapeutic plan Counseling, implementation & follow-up

4. Pharmacotherapeutic plan

<u>Plan:</u>

- Documents:
 - New medicines list
 - Overview of all changes + reasons
 - Medication management plan (follow-up)
 - What?
 - Who?
 - How?
 - When and how often?
- Patient counseling
- Communication to HCPs



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www.deprescribing.org



Catagory in annan anti-anna annan anna \odot \odot

For elderly adults (>65 y) who use BZRAs, we recommend

the following: • Taper the BZRA dose slowly (strong recommendation, low-quality evidence)



Reduction of Inappropriate Benzodiazepine Prescriptions Among Older Adults Through Direct Patient Education The EMPOWER Cluster Randomized Trial

Cas Terrentianen, MD, MD, Mill, Philippe Martin, Ric; Bolyn Territyn, MD, Antere Revedent, MD San Alexent, MD



Afbouwschema Lormetazepam 2mg

Stap 1	VanTot	Lormetazepam 1,5mg gedurende 3 weiken	= 1 + ½ comp Lormetazepam 1mg
Stap 2	VanTot	Lormetazepam 1mg gedurende 3 weken	= 1 comp Lormetazepam 1mg
Stap 3	VanTot	Lormetazepam 0,5mg gedurende 3 weken	= % comp Lormetazepant 1mg
Stap 4	Van	Lormetazepam 0,5mg om de andere dag gedurende 3 weken	# % comp Lormetazepam 1mg
Stopdatur	• · · · · · · · · · · · · · · · · · · ·		

Drugs & Aging (2020) 37:635–655 https://doi.org/10.1007/s40266-020-00780-z

SYSTEMATIC REVIEW

Medication Counselling in Older A Systematic Review

Andreas Caplau^{1,2}⁽¹⁾ · Katrien Foubert² · Lorenz V Anne Spinewine^{5,6} · Anne-Laure Sennesael⁶ · Min for Gerontology and Geriatrics (BSGG)

Published online: 8 July 2020 © Springer Nature Switzerland AG 2020

Key Points

Medication counselling in older patients was conducted by <u>various methods</u> resulting in the identification of <u>15</u> <u>different components</u> addressed during counselling sessions.

1

The impact of medication counselling on clinical outcomes remains unclear as studies had variable methodological quality and heterogeneous study design.

Statistically significant results were more frequently observed when counselling was provided as part of a comprehensive intervention before discharge. This may suggest that medication counselling should preferably be integrated into a holistic approach to ensure appropriate medication use in older patients after hospital discharge.

High-quality trials with a proper description of the counselling intervention and long-term follow-up are needed to provide definitive evidence for the effect of medication counselling in this population.

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Drugs Aging (2018) 35:43-60

Tools for Assessment of the Appropriateness of Prescribing and Association with Patient-Related Outcomes: A Systematic Review

Nashwa Masnoon ^{1,2} 0- So Table I. Sommary of characteristics printmess assessment tools and criteri	epehr Sl of variou	nakih ^{3,4} • Lisa Kuli 1 presering appro-	sch-Ellett ¹ • G	Jillian P	L Ca	ughey ^{1,3,4}	While the app the res need for	there is propriat ults of or exide	e range esess of p this syste more-base	of tools for the assessor prescribing in the liter- matic services highlight d tools that combine th	urk of Arre, Be W
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Research

JAMA Internal Medicine | Original Investigation

Effect of an In-Hospital Multifaceted Clinical Pharmacist Intervention on the Risk of Readmission A Randomized Clinical Trial

Lene Vestergaard Ravn-Nielsen, MScOPharmi, Marie-Louise Duckert, MScOPharmi, Mia Lolk Lund, MScOPharmi, Joinne Pilegaard Henriksen, MSciPharmi, Michelle Lyndgaard Nielsen, MSc(Pharm), Christma Skovsende Eriksen, MSc(Pharm), Thomas Croft Buck, MSc(Pharm), Anton Pottegård, MSc(Pharm), PhD: Morten Rix Hansen, MD; Jesper Hallas, MD, DMSc.

JAMA Intern Med. 2018;178(3):375-382. doi:10.1001/jamainternmed.2017.8274 Published online. January 29, 2018.

OPTIMIST trial: Odense Pharmacist Trial Investigating Medication Interventions at Sector Transfer

RCT:

1) Structured patient centered medication review

2) 1 + MedRec at discharge + motivational interview + contact with GP/CP + telephone calls (2x)

CONCLUSIONS AND RELEVANCE A multifaceted clinical pharmacist intervention may reduce the number of ED visits and hospital readmissions.

Conclusions

- Use a structured approach
- Use tools in the different steps of medication review (not only for screening DRPs)
- Select the tools that are feasible in your setting
- Combine tools e.g. explicit + implicit
- Work patient centered
- Document pDRPs, recommendations, changes, treatment goals, patient preferences,...
- Communicate plans and medication lists
- Don't forget to follow-up

Irene



Medication list at discharge:

- Calcium / Vitamin D 1g/880IU
- Domperidone 10 mg IN max 3/d
- Paracetamol 325 / tramadol 37,5 mg max 3/d
- Simvastatin 20 mg
- Solifenacine 5 mg
- Zolpidem 10 mg





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Thank you for your attention!

Questions?

