

## A SUPPLEMENTARY TABLES

Table S1: Domains and themes in the action plan of the Belgian Government (2015-2020)

<p><b>Domains:</b></p> <ol style="list-style-type: none"> <li>1. Optimizing medication use, using front- and back office strategies</li> <li>2. Continuity of pharmacotherapy in light of transmural care</li> <li>3. Scientific skills of the hospital pharmacist</li> <li>4. Transfer of information to and communication with the patient</li> </ol> <p><b>Themes:</b></p> <p>2015: anchoring the minimal conditions for the application of clinical pharmacy</p> <p>2016: development of a structured method for the anamnesis, registration and communication of the medication on admission and discharge</p> <p>2017: application of clinical pharmacy for specific therapies</p> <p>2018: application of risk screening for patient groups</p> <p>2019: application of risk screening for medication groups or pathologies</p> <p>2020: evaluation of the development of clinical pharmacy in the Belgian hospitals and evaluation of the action plan 2015-2020</p>
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Table S2: Anatomical and therapeutic classes of the drugs involved in the discrepancies detected after medication reconciliation

	n (%)	Example(s) of discrepancy
<b><i>Gastro-intestinal system</i></b>	<b>43</b>	
	<b>(35.2%)</b>	
antacids	6	O: antacid PRN
antihistaminics	1	O: ranitidine 150 mg 1 pd
proton pump inhibitors	5	O: pantoprazole 20 mg 1 pd
propulsives	3	O: domperidone PRN; N: alizapride
laxatives	9	O: macrogol PRN or 1 pd, bisacodyl PRN or 1 pd
antipropulsives	2	O: loperamide 1 pd
probiotics	1	O: frequent need for probiotics
antidiabetics	1	D: dose repaglinide unknown
multivitamins	5	O: multivitamins 1 pd
vitamin D	5	O: vitamin D 1 per week
vitamin B	2	N: vitamin B complex
Calcium/Vitamin D	3	O: Calcium/vitamin D, F: chew tablet (not effervescent tablet)
<b><i>Nervous system</i></b>	<b>26</b>	
	<b>(21.3%)</b>	
analgesics	18	O: paracetamol 1 g PRN or 3 pd
benzodiazepines	2	N: lorazepam 1 mg 1 pd
antidepressants	6	O: duloxetine 60 mg 1 pd, M: mirtazapine 15 mg at 20:00 (not 08:00)
<b><i>Blood and cardiovascular system</i></b>	<b>17</b>	
	<b>(13.9%)</b>	

antithrombotics	3	O: fenprocoumon; D: rivaroxaban 15 mg (not 20 mg)
folic acid	1	D: folic acid 1 mg (not 4 mg)
vasodilators	1	O: molsidomine 16 mg 1 pd
diuretics	5	O: indapamide 2,5 mg 1 pd; N: bumetanide 1 mg 1 pd
beta blockers	2	O: bisoprolol 5 mg 1 pd; D: bisoprolol 5 mg (not 10 mg)
calcium channel blockers	1	O: amlodipine 5 mg 1 pd
combinations	1	D: irbesartan/hydrochlorthiazide 300/50 mg (not 300/12,5 mg)
statins	3	O: simvastatin 20 mg 1 pd
<b>Sensory organs</b>	<b>9 (7.4%)</b>	
artificial tears	6	O: daily drops dry eyes
antiglaucoma preparations	2	O: latanoprost eyes drops
nasal decongestants	1	O: nasal spray (framycetine, prednisolone, nafazoline)
<b>Dermatologicals</b>	<b>8 (6.6%)</b>	
antifungals	3	O: miconazol 2% spray PRN
antibiotics	1	N: fusidic acid 20 mg/g cream
corticosteroids	1	O: bethamethason valerate 0,1% cream very frequently
anti-inflammatory	3	O: diclofenac 2% cream PRN
<b>Musculo-skeletal system</b>	<b>4 (3.3%)</b>	
anti-gout preparations	2	D: allopurinol 300 mg 1 pd (not 100 mg)
bone structure mineralization	and 2	O: denosumab 60 mg 1 per 6 months
<b>Respiratory system</b>	<b>4 (3.3%)</b>	
corticosteroids	1	O: budesonide 200 µg inhalation 2 pd
mucolytics	1	D: acetylcysteine 600 mg 1 pd (not 200 mg)
antihistaminics	2	D: cetirizine 10 mf 1 pd (not PRN)
<b>Hormonal system</b>	<b>2 (1.6%)</b>	
corticosteroids	1	O: prednisone
antithyroids	1	N: thiamazole
<b>Genito-urinary system and sex hormones</b>	<b>2 (1.6%)</b>	
alpha antagonists	1	N: tamsulosine 0,4 mg
other	1	O: fenazopyridine 100 mg 1 pd
<b>Anti-infectives for systemic use</b>	<b>2 (1.6%)</b>	
antifungals	1	DU: fluconazole 200 mg 1 per week already for 3 months
other	1	N: nifurtoinol
<b>Allergy previously not in file</b>	<b>2 (1.6%)</b>	phenobarbital allergy (documented by general physician)
<b>Homeopathic preparations</b>	<b>2 (1.6%)</b>	
<b>Antineoplastic immunomodulating agents</b>	<b>and 1 (0.8%)</b>	
antimetabolites	1	M: methotrexate 5 mg subcutaneous weekly (not oral)

D: wrong dose; DU: duration of therapy; F: formulation; M: modality of administration (route, time);  
N: not on current medication list; O: omission; pd: per day; PRN: pro re nata (if needed)

Table S3: detected PIMs with the GheoP<sup>3</sup>S tool (a) and the STOPP/START tool

<b>S3(a): detected PIMs with the GheoP<sup>3</sup>S tool</b>			
<b>Positive items</b>		<b>prevalence n = 87</b>	<b>number of patients n (%), n=22</b>
<i>Part 1: potentially inappropriate drugs, independent of diagnosis</i>			
<i>Item number</i>			
1	Any antidepressant ≥ 1 year	8	7 (32%)
26	Rivaroxaban	5	5 (23%)
5	Any short- or long-acting benzodiazepine	3	3 (14%)
9	Any PPI at full dose ≥ 8 weeks	3	3 (14%)
8	Any oral NSAID	2	2 (9%)
16	Dabigatran	2	2 (9%)
4	Any intermediate acting benzodiazepine or Z-product at full dose or any dose ≥30 subsequent days OR	1	1 (5%)
Add	Sotalol for rate control	1	1 (5%)
<i>Part 2: potentially inappropriate drugs, dependent of diagnosis</i>			
Add	Drugs in renal impairment or congestive heart failure <sup>a</sup>	13	6 (27%)
40	Thiazide and loop diuretics with gout	4	4 (18%)
33	Anticholinergics with known dementia or cognitive impairment	2	2 (9%)
36	Calcium channel blockers with constipation	1	1 (5%)
<i>Part 3: PPOs</i>			
45	The patient has an elevated risk for osteoporosis (determined via FRAX tool) and is not prescribed calcium/vitamin D supplementation	14	14 (64%)
47	The patient did not receive yearly influenza vaccination	8	8 (36%)
Add	Start statin in secondary prevention when a patient has elevated total cholesterol and a good life expectancy	1	1 (5%)
<i>Part 4: DDIs of specific relevance</i>			
65	Oral diabetic/insulin + cardio selective beta blocker	7	5 (23%)
77	Any combination of anticholinergic drugs	4	4 (18%)
50	RAAS inhibitor + potassium sparing diuretic/potassium containing drugs	2	2 (9%)
49	VKA + oral NSAID	1	1 (5%)
54	Oral NSAID + diuretic	1	1 (5%)
61	RAAS inhibitor + oral NSAID	1	1 (5%)
64	Oral diabetic/insulin + non-selective beta blocker	1	1 (5%)
74	Calcium + levothyroxine	1	1 (5%)
75	Bisphosphonate + Ca <sup>2+</sup> , Mg <sup>2+</sup> , Zn <sup>2+</sup> , Fe <sup>2+</sup> or Al <sup>3+</sup>	1	1 (5%)
Add: additional screening items not included in initial GheOP <sup>3</sup> S tool; DDI: drug-drug interaction; NSAID: nonsteroidal anti-inflammatory drugs; PPI: proton pump inhibitor; PPO: potential prescribing omission; RAAS: renin-angiotensin-aldosterone system; VKA: vitamin K antagonist			

<sup>a</sup> Drugs in renal impairment (GFR < 50 ml/min): RAAS inhibitors, any potassium sparing diuretic, chlortalidon and thiazides, allopurinol, amoxicillin with full dose clavulanic acid, ciprofloxacin, dabigatran, metformin, nitrofurantoin, norfloxacin, sotalol; drugs in congestive heart failure: verapamil

<b>S3 (b): detected PIMs with the STOPP/START tool</b>		
<b>Positive items</b>	<b>prevalence n</b>	<b>number of patients (%), n = 19</b>
<b>STOPP criteria</b>	<b>135</b>	
<i>Indication of medication</i>		
Any drug prescribed without an evidence-based clinical indication	51	18 (95%)
Any duplicate drug-class prescription	9	8 (42%)
Any drug prescribed beyond the recommended duration, where treatment duration is well defined	1	1 (5%)
<i>Cardiovascular system</i>		
Beta blocker in combination with verapamil or diltiazem	2	2 (11%)
Loop diuretic as first-line treatment for hypertension	2	2 (11%)
Thiazide diuretic with history of gout or hypo-K, hypo-Na or hyper-Ca	2	2 (11%)
Loop diuretic for the treatment of hypertension with concurrent urinary incontinence	2	2 (11%)
Verapamil or diltiazem with NYHA class III or IV heart failure	1	1 (5%)
<i>Antiplatelet/Anticoagulant drugs</i>		
VKA, direct thrombin inhibitor or factor Xa inhibitor for first pulmonary embolus without continuing provoking risk factors for > 12 months	2	2 (11%)
VKA, direct thrombin inhibitor or factor Xa inhibitor for first deep venous thrombosis without continuing provoking risk factors for > 6 months	1	1 (5%)
<i>Central Nervous system and psychotropic drugs</i>		
Benzodiazepines for ≥ 4 weeks	19	13 (68%)
TCA with dementia, narrow angle glaucoma, cardiac conduction abnormalities, prostatism, or prior history of urinary retention	1	1 (5%)
Acetylcholinesterase inhibitors with known history of persistent bradycardia, heart block or recurrent unexplained syncope or concurrent treatment with drugs that reduce heart rate	1	1 (5%)
First-generation antihistamines	1	1 (5%)
TCA as first line antidepressant treatment	1	1 (5%)
<i>Renal system</i>		
NSAID with eGFR < 50 ml/min	1	1 (5%)
<i>Gastrointestinal system</i>		
PPI for uncomplicated peptic ulcer disease or erosive peptic oesophagitis at full therapeutic dosage for > 8 weeks	2	2 (11%)

Drugs likely to cause constipation where non-constipating alternatives are available	1	1 (5%)
<i>Musculoskeletal System</i>		
Oral bisphosphonate with current or recent history of upper gastrointestinal disease, peptic ulcer disease or upper gastrointestinal bleeding	1	1 (5%)
<i>Urogenital system</i>		
Anticholinergic drugs with dementia, chronic cognitive impairment, narrow-angle glaucoma or chronic prostatism	1	1 (5%)
<i>Drugs that adversely affect those prone to falls</i>		
Benzodiazepines	19	13 (68%)
Neuroleptic drugs	2	2 (11%)
Vasodilator drugs known to cause hypotension in those with persistent postural hypotension	1	1 (5%)
hypnotic Z-drugs	1	1 (5%)
<i>Analgesic drugs</i>		
Oral or transdermal strong opioids as first line therapy for mild pain	2	2 (11%)
Long-acting opioids without short-acting opioids for break-through pain	1	1 (5%)
<i>Anticholinergic drugs</i>		
Concomitant use of 2 or more drugs with anticholinergic properties	7	7 (37%)
<b>START criteria</b>	<b>19</b>	
<i>Cardiovascular system</i>		
Statin therapy with history of coronary, cerebral, or peripheral vascular disease without contraindication	2	2 (11%)
ACE inhibitor with systolic heart failure and/or documented coronary artery disease	1	1 (5%)
<i>Respiratory system</i>		
Regular inhaled $\beta_2$ agonist or anticholinergic agent for mild to moderate asthma or COPD	1	1 (5%)
<i>Central Nervous system and Eyes</i>		
SSRI (or SNRI or pregabalin if SSRI contraindicated) in persistent severe anxiety that interferes with independent functioning	1	1 (5%)
<i>Musculoskeletal System</i>		
Calcium/vitamin D supplement in patients with known osteoporosis and/or previous fragility fracture(s)	4	4 (21%)
Vitamin D supplement in housebound patients, patients experiencing falls or patients with osteopenia	6	6 (32%)
<i>Vaccines</i>		
Seasonal trivalent influenza vaccine	4	4 (21%)

ACE: angiotensin converting enzyme; PPI: proton-pump inhibitor; SNRI: serotonin and noradrenalin reuptake inhibitor; SSRI: selective serotonin reuptake inhibitor; TCA: tricyclic antidepressant; VKA: vitamin K antagonist