Integration of an electronic Drug Burden Index risk assessment tool into Home Medicines Reviews: Deprescribing anticholinergic and sedative medications
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Supplementary document

Table 1: Eligibility criteria for pharmacists to participate in the feasibility study of the Drug Burden Index with Home Medicine Review.

Accredited Pharmacists
- Current registered Australian pharmacist*
- Current accreditation to conduct HMRs*
- Have conducted at least 10 HMRs in the last 1-2 years
- Will be able to complete 10 HMRs in 3 months
- Able to participate in a webinar
- Accept and abide by 5CPA general terms and conditions and HMR program specific guidelines^

**Evident by providing current registration certificates; ^available at http://6cpa.com.au/files/6cpa-home-medicines-review-programme-specific-guidelines/; HMR = Home Medicine Review, 5CPA = Fifth Community Pharmacy Agreement*

Table 2: Eligibility criteria for patients to participate in the feasibility study of the Drug Burden Index with Home Medicine Review (Stage 3).

Patients: Stage 3 - Intervention
- Aged ≥65 years
- Can speak English and is able to conduct a telephone interview
- Eligible for a HMR (A patient is eligible to receive the HMR service if they are a current Medicare/DVA cardholder, live in a community setting, are at risk of medication misadventure and the GP must confirm that there is an identifiable clinical need and the patient will benefit from a HMR)[2]
- Able to provide informed written consent (patient or carer)

HMR = Home Medicine Review; DVA = Department of Veterans Affairs, Australia; GP = General Practitioner.

Table 3: Baseline characteristics of accredited pharmacist study population (n=20), compared with national statistics

Characteristic	**Accredited Pharmacists**	**Australian National Statistics***
Age (mean±SD) Female (n, %)	45.3±11.3 15 (75%)	39.7 59%
Experience as pharmacist (n, %)		

0-5 years	1 (5%)	
5-15 years	5 (25%)	
> 15 years	14 (70%)	
Experience as accredited pharmacist (n, %)		
0-5 years	4 (20%)	
5-10 years	5 (25%)	
> 10 years	11 (55%)	
No. of HMRs completed in 1 year (n, %)		
0-100	5 (25%)	
> 100	15 (75%)	
PhARIA^ (n, %)		
Highly Accessible	17 (85%)	76.0%
Accessible (A & B)	3 (15%)	15.5%
Area of pharmacy practice (n, %)		
Community	11 (55%)	65.8%
Consultancy	6 (30%)	
Hospital	1 (5%)	17.6%
Other (e.g. general practice, academia)	2 (10%)	

^PhARIA = Pharmacy Access/Remoteness Index of Australia; HMR = Home Medicines Review; *obtained from Australian Health Practitioner Regulation Agency Pharmacy Board Pharmacy Registrant Data accessible from http://www.pharmacyboard.gov.au/documents/default.aspx?record=WD15%2f16935&dbid=AP&chksum=bLY0lK9odtaeMo6vdAHZ9g%3d%3d
and the Allied Health Workforce Report 2012, Australian Institute of Health and Welfare http://www.aihw.gov.au/workforce/pharmacy/

Table 4: Baseline demographic characteristics of historical control and intervention study patient populations

Characteristic	**Historical (n=210)**	**Intervention (n=100)**	**p-value**
Age (mean±SD)	78.0±7.34	76.6±7.84	
Gender (n, %)			
Female	117 (55.7)	65 (65.0)	
Male	93 (44.3)	35 (35.0)	
PhARIA^ (n, %)			
Highly Accessible	166 (79.0)	75 (75.0)	p=0.037
Accessible (A & B)	32 (15.2)	24 (24.0)	
Other	12 (5.7)	1 (1.0)	
Ethnicity (n, %)			
European	159 (75.7)	91 (91.0)	p=0.007
Other	13 (6.2)		

Missing data	38 (18.1)	9 (9.0)	
Marital Status (n, %)			
Married	104 (49.5)	46 (46.0)	
Widowed	62 (29.5)	32 (32.0)	
Other	16 (7.6)	17 (17.0)	
Missing data	28 (13.3)	5 (5.0)	
Educational Status (n, %)			
Below Year 12	19 (9.0)	61 (61.0)	P=0.001
Completed Year 12	3 (1.4)	16 (16.0)	
Other	11 (5.2)	16 (16.0)	
Missing data	177 (84.3)	7 (7.0)	
BMI (n, %)			
Normal	26 (12.4)	14 (14.0)	
Overweight	56 (26.7)	25 (25.0)	
Obese	56 (26.7)	29 (29.0)	
Other		2 (2.0)	
Missing data	72 (34.3)	30 (30.0)	

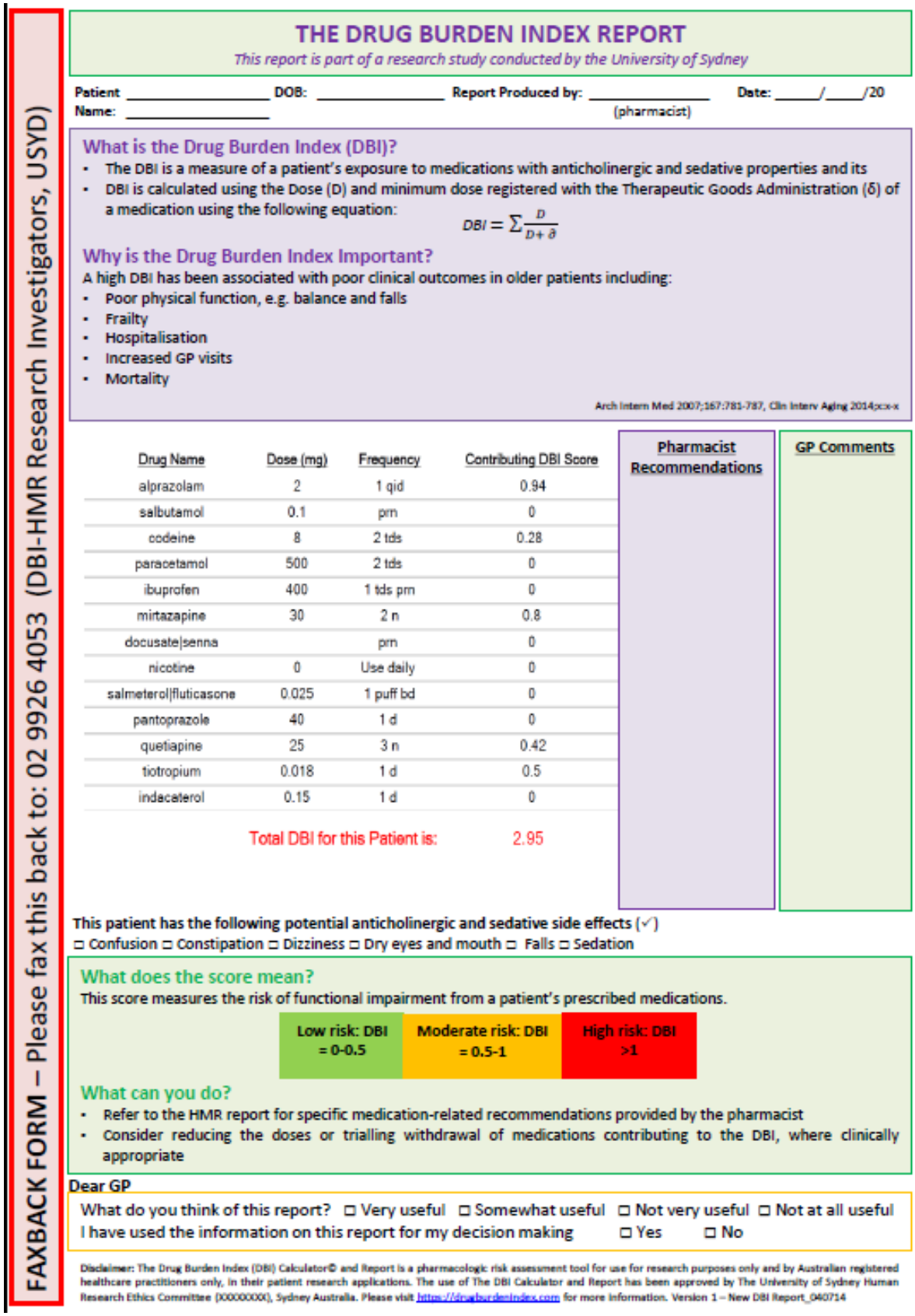
Only significant p values are shown; ^*PhARIA = Pharmacy Accessibility/Remoteness Index of Australia; BMI = Body Mass Index.*

Table 5: List of most common therapeutic classes with examples of medications contributing to the Drug Burden Index prescribed for patients in the historical and intervention groups^

Therapeutic Class	**Prevalence (%)* - Historical Control**	**Prevalence (%)* - Intervention**	
		Baseline	**3-months**
Analgesics - *Oxycodone* - *Tramadol* - *Buprenorphine*	8.3% - *1.2%* - *0.5%* - *0.2%*	9.5% - *1.7%* - *0.6%* - *0.2%*	9.1% - *1.2%* - *0.6%* - *0.1%*
Lipid Modifying Agents	7.6%	6.4%	6.5%
Antithrombotic agents	7.2%	5.9%	5.8%
Drugs for acid related disorders	6.7%	7.7%	8.1%
Agents acting on the RAS	6.4%	6.2%	6.4%
Drugs used in diabetes	6.0%	3.9%	4.0%
Vitamins	5.3%	4.0%	4.1%
Drugs for OAD - *Tiotropium* - *Ipratropium*	4.7% - *0.8%* - *0.2%*	6.0% - *1.1%* - *0.1%*	6.1% - *1.1%* - *0.2%*
Beta-blocking agents	4.2%	3.2%	3.3%
Cardiac therapy	3.3%	3.8%	3.6%
Drugs for constipation	3.3%	2.2%	2.3%

Diuretics	2.9%	3.3%	3.3%
Psychoanaleptics – *Amitriptyline* – *Mirtazapine*	2.8% – *0.5%* – *0.5%*	3.3% – *0.9%* – *0.4%*	3.1% – *0.7%* – *0.4%*
Anti-anaemic preparations	2.7%	2.7%	2.5%
Calcium channel blockers	2.6%	3.3%	3.4%
Psycholeptics – *Temazepam* – *Diazepam*	2.5% – *0.7%* – *0.5%*	3.4% – *0.7%* – *0.7%*	3.2% – *0.7%* – *0.7%*
Mineral supplements	2.3%	2.4%	2.5%
Ophthalmologicals	2.0%	2.0%	2.1%
Anti-epileptics – *Pregabalin* – *Valproate*	1.4% – *0.8%* – *0.2%*	2.2% – *1.2%* – *0.3%*	1.8% – *0.9%* – *0.2%*
Urologicals – *Oxybutynin*	0.9% – *0.3%*	1.3% – *0.2%*	1.2% – *0.2%*
Antihypertensives – *Prazosin* – *Moxonidine*	0.7% – *0.3%* – *0.1%*	0.6% – *0.2%* – *0.4%*	0.7% – *0.2%* – *0.4%*

^ATC data presented at therapeutic subgroup level. * Percentage of total number of prescribed and over-the-counter medications; RAS = Renin-Angiotensin System; OAD = Obstructive Airways Disease.



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THE DRUG BURDEN INDEX REPORT

This report is part of a research study conducted by the University of Sydney

Patient Name: _____ **DOB:** _____ **Report Produced by:** _____ (pharmacist) **Date:** ____/____/20

What is the Drug Burden Index (DBI)?

- The DBI is a measure of a patient's exposure to medications with anticholinergic and sedative properties and its
- DBI is calculated using the Dose (D) and minimum dose registered with the Therapeutic Goods Administration (δ) of a medication using the following equation:

$$DBI = \sum \frac{D}{D+\partial}$$

Why is the Drug Burden Index Important?

A high DBI has been associated with poor clinical outcomes in older patients including:

- Poor physical function, e.g. balance and falls
- Frailty
- Hospitalisation
- Increased GP visits
- Mortality

Arch Intern Med 2007;167:781-787, Clin Interv Aging 2014;xx-x

Drug Name	Dose (mg)	Frequency	Contributing DBI Score
alprazolam	2	1 qid	0.94
salbutamol	0.1	prn	0
codeine	8	2 tds	0.28
paracetamol	500	2 tds	0
ibuprofen	400	1 tds prn	0
mirtazapine	30	2 n	0.8
docusate|senna		prn	0
nicotine	0	Use daily	0
salmeterol|fluticasone	0.025	1 puff bd	0
pantoprazole	40	1 d	0
quetiapine	25	3 n	0.42
tiotropium	0.018	1 d	0.5
indacaterol	0.15	1 d	0

Total DBI for this Patient is: 2.95

Pharmacist Recommendations

GP Comments

This patient has the following potential anticholinergic and sedative side effects (✓)

☐ Confusion ☐ Constipation ☐ Dizziness ☐ Dry eyes and mouth ☐ Falls ☐ Sedation

What does the score mean?

This score measures the risk of functional impairment from a patient's prescribed medications.

Low risk: DBI = 0-0.5	Moderate risk: DBI = 0.5-1	High risk: DBI >1

What can you do?

- Refer to the HMR report for specific medication-related recommendations provided by the pharmacist
- Consider reducing the doses or trialling withdrawal of medications contributing to the DBI, where clinically appropriate

Dear GP

What do you think of this report? ☐ Very useful ☐ Somewhat useful ☐ Not very useful ☐ Not at all useful

I have used the information on this report for my decision making ☐ Yes ☐ No

Disclaimer: The Drug Burden Index (DBI) Calculator© and Report is a pharmacologic risk assessment tool for use for research purposes only and by Australian registered healthcare practitioners only, in their patient research applications. The use of The DBI Calculator and Report has been approved by The University of Sydney Human Research Ethics Committee (XXXXXXXX), Sydney Australia. Please visit https://drugburdenindex.com for more information. Version 1 – New DBI Report_040714

Figure 1: An example of a DBI report generated by The Drug Burden Index Calculator©.