



Supporting Information

Supplementary methods and results

This appendix was part of the submitted manuscript and has been peer reviewed.
It is posted as supplied by the authors.

Appendix to: Webster R, Usherwood T, Joshi R, et al. The prevalence and impact of unprofessional behaviour among hospital workers: a survey in seven Australian hospitals. *Med J Aust* 2021; doi: 10.5694/mja2.51030.

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1. Pilot testing of the intervention

Prior to the main trial, the proposed intervention was tested in a pilot phase (about 6 months) to determine any improvements required.

Four general practices were recruited from sites previously involved in the Torpedo study.¹ One practice subsequently withdrew because of factors unrelated to the intervention. Three practices were paired with three partner pharmacies for the pilot trial in July and August 2016.

All general practitioners were trained in use of the required software, including Topbar, HealthTracker and the Argus secure messaging software, as well as in how to refer a patient for the Pharmacy Adherence Support Service. Pharmacists were trained in the use of the PASS tool. Polypills were not provided during the pilot phase because of the limited time available for starting and ceasing medications.

After 6 months of trialling the system, we undertook qualitative interviews with GPs and pharmacists about their experience of the system.

Several problems were identified, most technology-related:

1. General practice:
 - a. Technology components not fully set up prior to training, which affected training;
 - b. Older version of HealthTracker installed (without polypill tab);
 - c. Study technology use affected by practice technology problems unrelated to study components;
 - d. HealthTracker did not always appear for eligible patients;
 - e. Fidelity data not initially captured in data extracts;
 - f. Practice forgetting to start Topbar at beginning of the day (not set up for automatic start-up).
2. Pharmacy:
 - a. Initial tablet set-up difficulties with security key and Windows updates problems;
 - b. Some doctors not listed on Argus, so that linking the PASS program to the doctor for sending letters was not possible;
 - c. Bugs in the PASS program prevented progress to end of the program;
 - d. Fidelity data could not initially be viewed.

Positive feedback was received from GPs in relation to the clinical usefulness of HealthTracker, mainly with respect to using it for patient communication. GPs recommended additional information that could be provided to patients, including posters for the waiting room and pamphlets about the PASS program. GPs also said that novel interventions required time for sustained uptake.

For pharmacists, in-person training with case studies was valued, but workflow was not clear in the app. Overall, pharmacists said that it could be a useful tool, but did not fully encompass all aspects of a full medication review (an alternative program subsidised by Medicare). Pharmacists predicted challenges that would affect delivery of the intervention, including time pressures in busy pharmacies, lack of private areas for consultations, and lack of patient follow-up because scheduling follow-up appointments is difficult (outside the usual workflow of community pharmacists).

Actions following the pilot phase:

Following the pilot phase, the technology aspects were amended as follows:

- PASS program upgraded to improve the workflow and interface;
- Pen Computing systems consulted regarding solutions for Topbar (and therefore HealthTracker) that facilitate automatic start-up when a practice opened their electronic medical record system;
- Improved checklists for technology set-up to ensure systems were installed and working prior to study staff training;
- Argus consulted to overcome problem of unregistered GPs, including pro-actively ensuring they were registered prior to technology set-up.

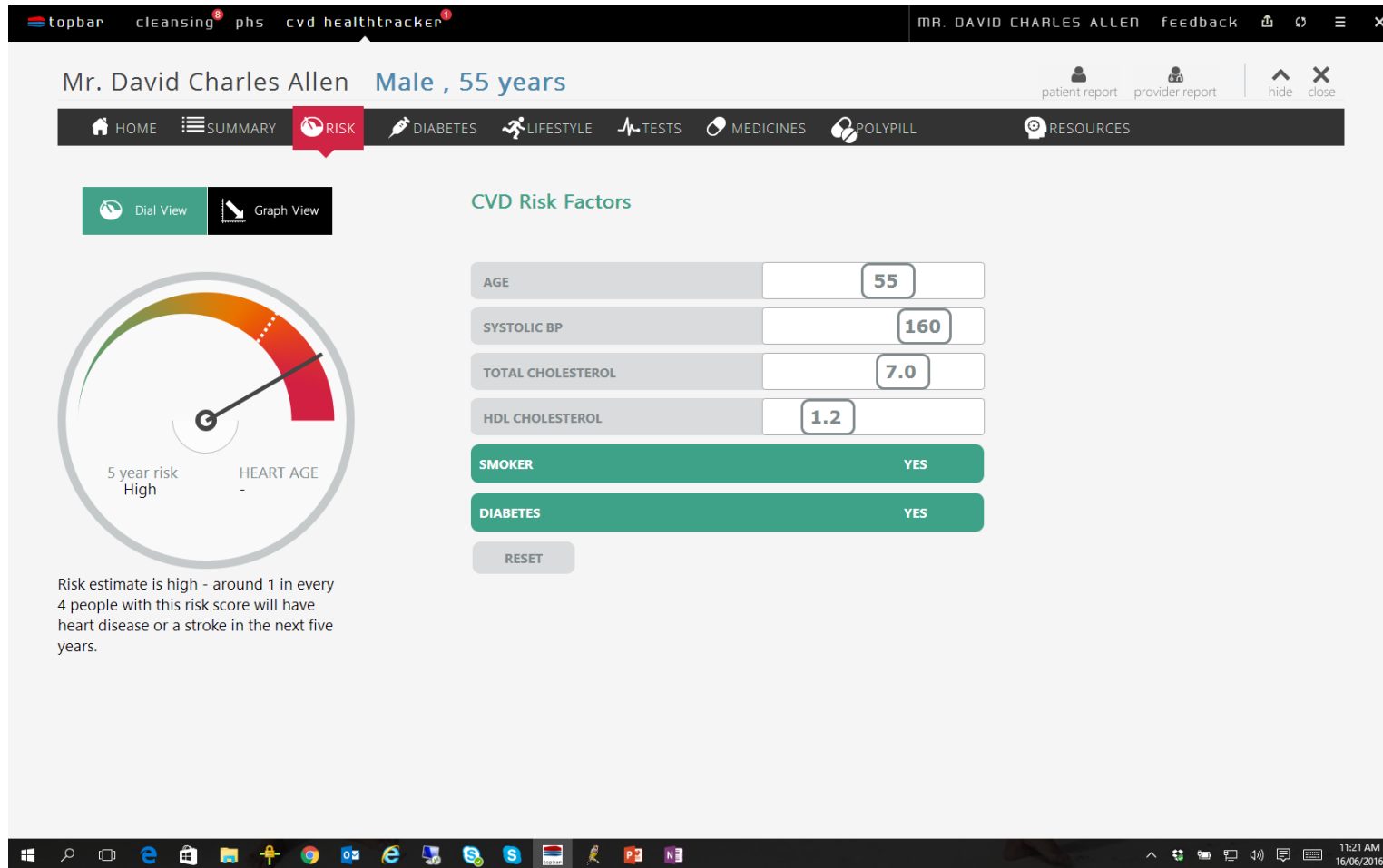
Training materials were also modified, and additional informational materials for patients developed.

Figure 1. Screenshots of the HealthTracker electronic decision support tool (fictitious patients)

A. Risk factor summary and absolute risk calculation



B. Risk communication tool



C. Tailored medication recommendations

topbar cvd healthtracker MR. TERRANCE COSTELLO Feedback

Mr. Terrance Costello Male, 57 years

patient report provider report hide close

HOME SUMMARY RISK DIABETES LIFESTYLE TESTS **MEDICINES** RESOURCES

BP Lowering BP lowering therapy is recommended. If clinically indicated then start treatment with any of the following agents: • ACE inhibitor • Angiotensin receptor blocker • Calcium channel blocker • Low-dose thiazide or thiazide-like diuretic

Statin Statin therapy is recommended, but patient is not eligible for PBS subsidy under the current scheme.

Fibrate There are no indications for fibrate therapy based on the available information.

Anti-platelet There are no current indications for Antiplatelet therapy based on the available information.

Oral anti-coagulant Oral anticoagulant therapy is not indicated based on the available information

Windows taskbar: 8:21 AM 08-Jan-16

D. Tailored recommendations about eligibility for polypills

topbar cleansing phs cvd healthtracker MR. DAVID CHARLES ALLEN feedback

Mr. David Charles Allen Male, 55 years

patient report provider report hide close

HOME SUMMARY RISK DIABETES LIFESTYLE TESTS MEDICINES **POLYPILL** RESOURCES

Polypill Transition

Unless there are contraindications, this patient is recommended to take a combination of BP lowering, statin and antiplatelet therapy and therefore prescription of one of the following polypills (with adjustment of other therapy as needed [link to text below](#)) should be considered:

- **Hydroirb Asp:** Hydrochlorothiazide (12.5mg) + Irbesartan (150mg) + atorvastatin (40mg) + 100mg aspirin
- **Amloirb Asp:** Amlodipine (5mg) + Irbesartan (150mg) + atorvastatin (40mg) + aspirin (100mg)
- **Perindap Asp:** Perindopril (4mg) + indapamide (1.25mg) + atorvastatin (40mg) + aspirin (100mg)
- **Peramlo Asp:** Perindopril (4mg) + amlodipine (5mg) + atorvastatin (40mg) + aspirin (100mg)

Please print consent form and ensure patient signs prior to prescribing initial polypill therapy

☒ Consent [PRINT](#)

[Add to Clinical System](#)

Transitioning patients onto a Polypill

The INTEGRATE study is using over-encapsulated pills. Commercially manufactured component medications are placed into capsules without crushing or division. No additional side effects are expected beyond those usually seen with the individual component medications. Patients may be on treatment regimens that do not convert straight into the polypill (different dosages, different drugs of the same class, different classes). Several options exist for transitioning patients onto the polypill.

- You may consider a 1 or 2 week period of using lower doses of the blood pressure lowering medicine(s) among those who you think may not immediately tolerate the blood pressure combination in the polypill, but this is not mandatory. The patient can also be considered for initial treatment with 20 mg atorvastatin, but the risk of adverse effects with statins are largely not related to dose.
- If the pre-existing doses are equivalent to those of the component in the polypill, no titration is needed.
- If the pre-existing doses of blood pressure lowering medicines or statin are greater than the polypill equivalent, start the polypill and consider adding extra dose(s) of individual components at subsequent clinic visits.

Transitioning patients off the Polypill

Figure 2. Population health audit tool with re-identification facility for reminder systems

Note: Patient is fictitious.

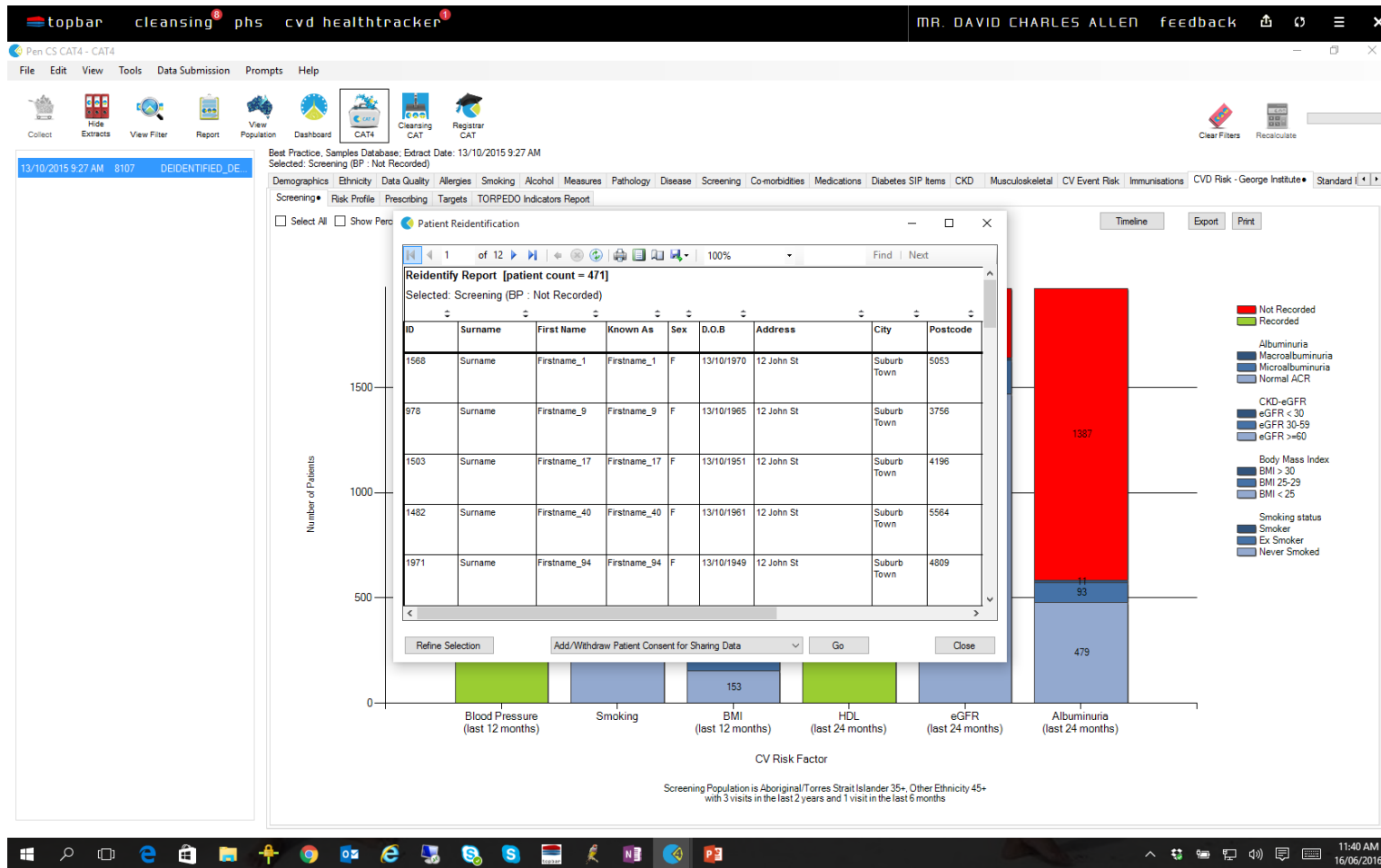


Figure 3. Sample benchmarking report, provided at 3-monthly intervals to participating practices

Note: Multiple graphs were provided including Proportion of undertreated high risk patients with up to date screening of systolic blood pressure and lipids (including total, low-density lipoprotein [LDL] and high density lipoprotein cholesterol), proportion of high risk undertreated patients on guidelines recommended treatments including blood pressure-lowering medications, lipid-lowering medication $\pm$ aspirin), and proportion of undertreated patients at high CVD risk reaching their blood pressure and LDL cholesterol targets.

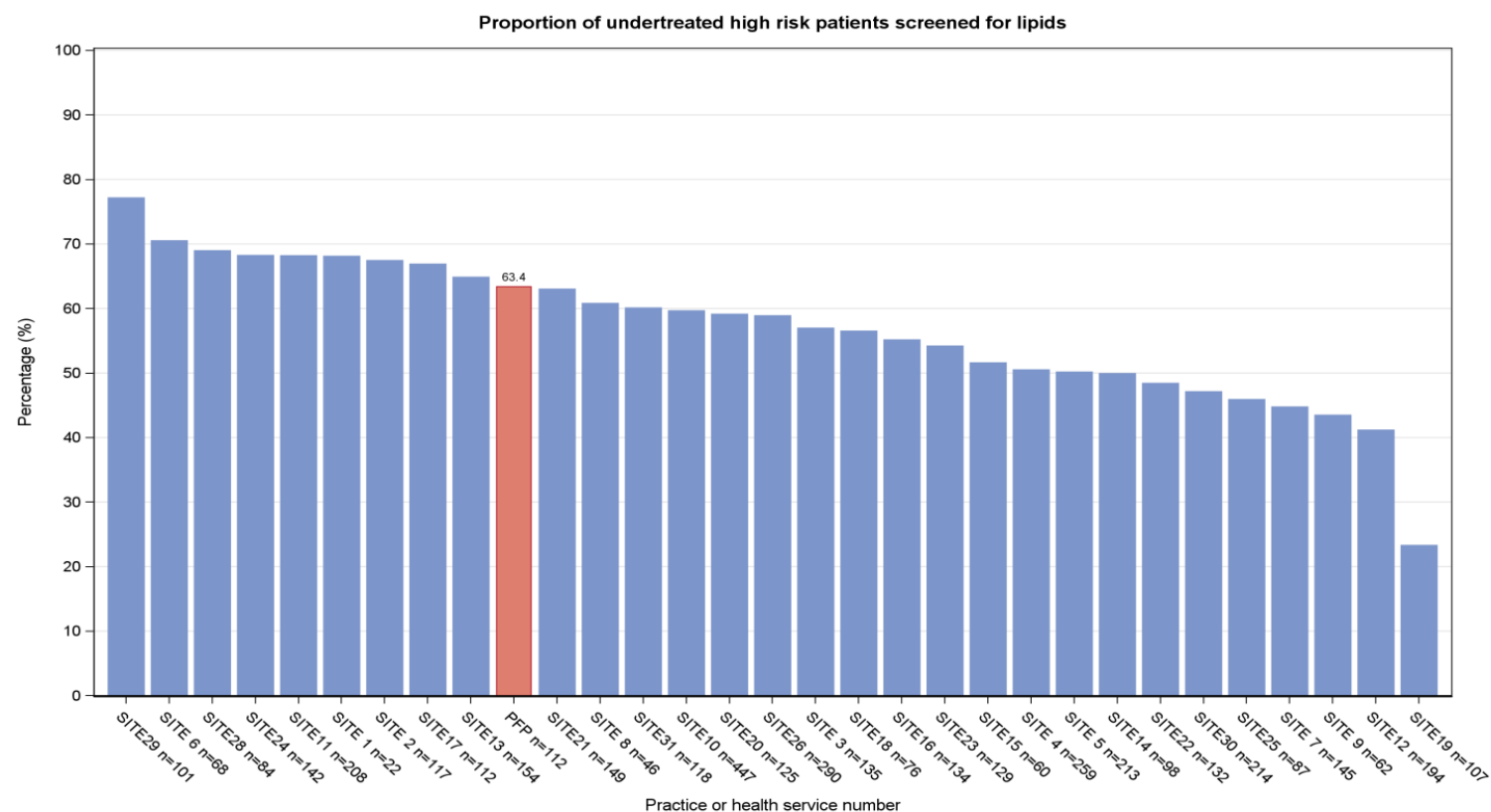


Table 1. Polypills available during the study

Polypills were manufactured specifically for the study at a local Therapeutic Goods Administration (TGA)-approved, Good Manufacturing Practice (GMP)-certified over-encapsulation company (PharmPackPro).

At the time of the study, the Pharmaceutical Benefits Scheme co-payment equivalent was between \$6.10 and \$6.30 for a patient with a concession card, and between \$37.70 and \$38.80 for other patients. Four pharmacies provided a discount to their general patients, as the cost of generic equivalent medications was lower than the co-payment amount of \$37.70 – \$38.80.

Polypill	Statin	First blood-pressure-lowering	Second blood-pressure-lowering	Anti-platelet	Number prescribed
All					107
1	10 mg rosuvastatin	4 mg perindopril erbumine	5 mg amlodipine	100 mg aspirin	17 (16%)
2	10 mg rosuvastatin	4 mg perindopril erbumine	5 mg amlodipine	-	15 (14%)
3	10 mg rosuvastatin	4 mg perindopril erbumine	1.25 mg indapamide	100 mg aspirin	11 (10%)
4	10 mg rosuvastatin	4 mg perindopril erbumine	1.25 mg indapamide	-	10 (9%)
5	10 mg rosuvastatin	12.5 mg hydrochlorothiazide	40 mg telmisartan	100 mg aspirin	9 (8%)
6	10 mg rosuvastatin	12.5 mg hydrochlorothiazide	40 mg telmisartan	-	11 (10%)
7	10 mg rosuvastatin	5 mg amlodipine	40 mg telmisartan	100 mg aspirin	14 (13%)
8	10 mg rosuvastatin	5 mg amlodipine	40 mg telmisartan	-	20 (19%)

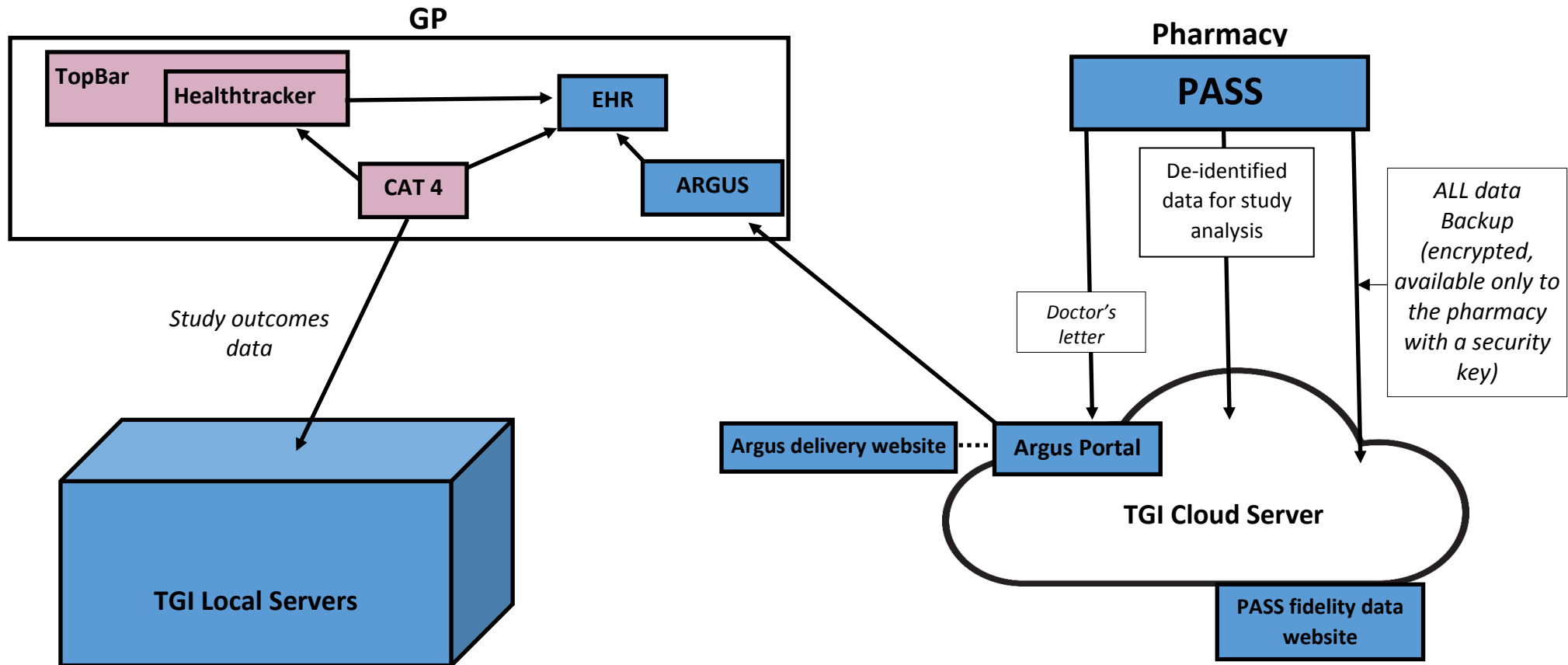
2. Pharmacy Adherence Support Service

Patients could be referred by trial doctors, or pharmacists could independently initiate the program among identified patients from the partner practice. Potential medication-related problems were communicated directly to the prescribing doctor's EMR via an integrated secure messaging system.

The screenshot shows the 'ADHERENCE SCREENING' interface. At the top, it says 'using the Adherence to Refills and Medications Scale (ARMS-7 Scale)'. Below this, a welcome message for 'Bal Kaur' asks her to complete questions to help determine if she needs assistance with heart-related medications. It specifies that there are no wrong or right answers. A note defines 'Heart Related Medications' as including tablets for blood pressure, cholesterol, diabetes, blood thinning, and any tablets that alter heart rate. Two questions are visible: '2. How often do you decide not to take your' (with a dropdown set to 'Some of the time') and '3. How often do you forget to get your heart' (with a dropdown set to 'None of the time'). Below the questions, the 'ARMS-7 Results' section states that the patient has a score of 12 and that the PASS intervention is recommended. An 'Important points to mention to patient' section contains five checked items: thanking the patient, indicating potential lack of maximum benefit, offering a service if interested, explaining PASS, and reading the Project Information Sheet. At the bottom, there is a 'Pharmacist Only' section and a 'Next' button.

The screenshot shows the 'PASS Visit' interface for 'Patient: Bal Kaur'. It displays 'Visit Number: Initial visit' and a toggle for 'Has the patient consented to participate in PASS?' which is turned 'On'. Below this is a section titled 'PATIENT'S CONDITIONS AND MEDICATIONS' with instructions to ask for a referral letter and enter ONLY CVD conditions and ALL medications. It also instructs to check for additional CVD conditions and other medications not listed. Two columns of 'Example Question (to patient):' are shown. The left column asks for heart-related conditions, with a 'Total: 1 (new) Angina (CHD)' and an input field. The right column asks for medications, with a 'Total: 3' listing '(new) Atorvastatin', '(new) Bumetanide', and '(new) Vitamin c', followed by an input field with a plus sign. Below these is a section for 'Other CVD condition not listed:' with an input field and a 'Save' button. At the bottom, there is a 'Pharmacist Only' section and a 'Next' button.

Figure 4. Architecture of trial intervention



GP = general practice, HER = electronic health record, CAT 4 = Clinical Audit Tool 4, ARGUS = proprietary secure messaging system, TGI = The George Institute, PASS = Pharmacy Adherence Support Service.

General practice:

EHR is the general practices' electronic health record system.

TopBar is a third party software owned by PenCS that provides access to data in the electronic health record to populate HealthTracker.

HealthTracker is the George Institute bespoke electronic decision support tool used in this study, and sat within Topbar.

CAT4 is a third party data extraction tool owned by PenCS, and provided data extracts from the electronic health record (outcomes data).

Pharmacy:

PASS is the pharmacy adherence support service, a digital tool incorporating the Adherence to Refills and Medications Scale (ARMS7) and the Brief Medication Questionnaire 1 (BMQ1).

Upon completion of a PASS visit, a doctor's letter was generated and transmitted by the Argus Secure Messaging System to the doctor's inbox in their electronic health record software.

3. Hierarchic matching strategy

Firstly, duplicate patient records with matching site ID, date of birth, and sex were removed.

Then patients were matched by patient ID at 49 of 70 sites. Patients without matching patient IDs at study end were removed.

Technical problems with patient IDs at 21 of 70 sites meant that patients were hierarchically matched by date of birth, sex, and at least one matching variable from a list of 20 unique variables with associated dates:

- a. If CHD = Y and CHDdate = the same from baseline to EOS
- b. If stroke = Y and strokedate = the same from baseline to EOS
- c. If CHF = Y and CHFdate = the same from baseline to EOS
- d. If CKD = Y and CKDdate = the same from baseline to EOS
- e. If DM = Y and DMdate = the same from baseline to EOS
- f. If GDM = Y and GDMdate = the same from baseline to EOS
- g. If PVD = Y and PVDdate = the same from baseline to EOS
- h. If AF = Y and AFdate = the same from baseline to EOS
- i. If smokerquitdate is the same from baseline to EOS
- j. If waist number and waist date are the same from baseline to EOS
- k. If weight and weight date are the same from baseline to EOS
- l. If ACR and ACRdate are the same from baseline to EOS
- m. If height and heightdate are the same from baseline to EOS
- n. If LDL and LDLdate are the same from baseline to EOS
- o. AlbEx = Y and AlbExDate are the same from baseline to EOS
- p. Creatinine number and Creatinine date are the same from baseline to EOS
- q. FBG number and FBG date are the same from baseline to EOS
- r. GTT number and GTT date are the same from baseline to EOS
- s. HbA1c number and HbA1c date are the same from baseline to EOS
- t. LVH = Y and LVHdate are the same from baseline to EOS

CHD = coronary heart disease, EOS = end of study, CHF = chronic heart failure, CKD = chronic kidney disease, DM = diabetes mellitus, GDM = gestational diabetes mellitus, PVD = peripheral vascular disease, AF = atrial fibrillation, ACR = albumin creatinine ratio, LDL = low density lipoprotein cholesterol, AlbEx = albumin excretion, FBG = fasting blood glucose, GTT = glucose tolerance test, HbA1c = glycated haemoglobin, LVH = left ventricular hypertrophy

The suffix 'date' indicates the date the variable was documented in the medical record.

4. Statistical analysis

We estimated that 70 practices (35 per arm) would provide 80% power ($2\alpha = 0.05$) with a mean cluster size of 60 to detect a relative risk of ≥ 1.35 in the proportion achieving blood pressure and low-density lipoprotein cholesterol targets (intervention v control). We assumed an intra-class correlation of 0.01 and that 10% of control group patients would achieve the blood pressure and low-density lipoprotein cholesterol targets by study end. Three groups of patients were available for analysis: all eligible patients; eligible patients who had high cardiovascular disease risk at baseline; and eligible patients who had high cardiovascular disease risk at baseline and were undertreated at baseline.

The association between the primary outcome and the use of HealthTracker (intervention arm only) has been assessed by the hierarchical log-binomial model described in the main text, adjusted for potential confounders.

The primary approach was complete case analysis, including only non-missing target outcome data. We performed two sensitivity analyses based on how missing outcomes were imputed. One was based on imputation of missing outcomes as “target not achieved”. The second used multiple imputation by chained equations with full conditional specification (employing linear regression models for continuous variables and logistic models for binary variables) and pooling the results of 20 imputed datasets.

For each subgroup, the primary analysis was repeated with the addition of the subgroup variable and its interaction with intervention. Assessment of heterogeneity was based on the statistical significance of the interaction term.

We made no formal adjustments for multiple testing, but findings have been interpreted in the light of the number of comparisons made.

All statistical analyses were performed in SAS Enterprise Guide 7.15.

A detailed statistical analysis plan has been published elsewhere.²

Table 2. Characteristics of participating practices and pharmacies

Characteristic	Intervention	Control
Practices	35	35
State		
New South Wales	19 (54%)	21 (60%)
Queensland	3 (9%)	3 (9%)
Victoria	8 (23%)	8 (23%)
Western Australia	5 (14%)	3 (9%)
Practice size (under 500 patients)	2 (6%)	2 (6%)
GPs, median number (IQR)	7 (4–10)	6 (3–9)
GP, sex (women)	127/238 (53%)	112/216 (52%)
Practice nurse available	33 (94%)	30 (86%)
Registered training practice	23 (66%)	24 (69%)
Proportion of patients bulk-billed, median (IQR)	95% (80–100%)	95% (80–100%)
Sessions per week worked by GPs, median number (IQR)	6.9 (4.7–7.8)	6.6 (5.0–8.0)
Other allied health services	15 (43%)	22 (63%)
Ownership (MyHealth)	13 (37%)	16 (46%)
Pharmacies	36*	—
Type of ownership		—
Franchise	7 (19%)	—
Large chains	14 (39%)	
Independent	15 (42%)	
Pharmacists, median number (IQR)	3 (2–4)	—
Sex (women)	63/126 (50.0%)	—
Pharmacy assistants, median number (IQR)	4 (2–8)	—

IQR = interquartile range.

* One GP site had two practices with a joint database (counted as one GP site), but each practice partnered with a separate pharmacy for geographic reasons (counted as two pharmacy sites).

Practice information is taken from final practice survey data.

Table 3. Baseline characteristics of all participants

Characteristic	Intervention	Control
Number of patients	72 880	70 374
Age (years), mean (SD)	45.8 (18.5)	46.8 (18.4)
Women	42 693 (58.6%)	41 516(59.0%)
Current smoker	9085/63 722 (14.3%)	9189/61 336 (15.0%)
Diabetes	6037 (8.3%)	5887 (8.4%)
Body mass index (kg/m ²), mean (SD)	28.3 (6.6) <i>N=35836</i>	28.2 (6.4) <i>N=34 871</i>
Systolic BP (mmHg), mean (SD)	124.0 (16.7) <i>N=58 307</i>	124.7 (16.4) <i>N=57 122</i>
Diastolic BP (mmHg), mean (SD)	77.2 (10.7) <i>N=58 263</i>	77.8 (10.4) <i>N=57 058</i>
Total cholesterol (mmol/L), mean (SD)	5.0 (1.1) <i>N=42 101</i>	5.0 (1.1) <i>N=42 150</i>
HDL cholesterol (mmol/L), mean (SD)	1.4 (0.4) <i>N=37 120</i>	1.4 (0.4) <i>N=37 681</i>
LDL cholesterol (mmol/L), mean (SD)	2.9 (0.9) <i>N=36 398</i>	3.0 (1.0) <i>N=37 173</i>
Triglycerides (mmol/L), mean (SD)	1.5 (1.0) <i>N=41 128</i>	1.5 (1.0) <i>N=41 015</i>
Creatinine (μmol/L), mean (SD)	74.6 (29.9) <i>N=49 492</i>	73.9 (26.3) <i>N=48 068</i>
HbA1c (%), mean (SD)	6.1 (1.3) <i>N=15 258</i>	6.1 (1.3) <i>N=14 877</i>
Risk unable to be calculated	39 035 (53.6%)	36 021 (51.2%)
High CVD risk	9253 (12.7%)	9240 (13.1%)
History of CVD	3695 (5.1%)	3673 (5.2%)
High-risk condition	4619 (6.3%)	4692 (6.7%)
High calculated risk	939 (1.3%)	875 (1.2%)

SD = standard deviation; BP = blood pressure; CVD = cardiovascular disease; HDL = high- density lipoprotein; LDL = low-density lipoprotein.

Table 4. Baseline characteristics for undertreated patients with high baseline risk of cardiovascular disease, by availability of follow-up data for the primary outcome

	Intervention		Control	
Characteristic	With follow-up data	Without follow-up data	With follow-up data	Without follow-up data
Total number of patients	2156	1432	2321	1256
Age (years), mean (SD)	67.9 (12.3)	67.9 (16.4)	68.1 (12.4)	67.2 (16.4)
Sex (women)	931 (43.2%)	657 (45.9%)	983 (42.4%)	575 (45.8%)
Diabetes	970 (45.0%)	443 (30.9%)	1049 (45.2%)	387 (30.8%)
Current smoker/quit within past 12 months	337/2015 (16.7%)	245/1263 (19.4%)	326/2160 (15.1%)	227/1144 (19.8%)
Body mass index (kg/m ²), mean (SD)	29.9 (6.5) N=1733	29.0 (6.6) N=963	29.4 (6.2) N=1741	28.3 (5.9) N=820
Systolic blood pressure (mmHg), mean (SD)	133.9 (18.4) N=2102	134.8 (19.8) N=1341	134.1 (17.8) N=2221	135.4 (19.3) N=1151
Diastolic blood pressure (mmHg), mean (SD)	78.0 (12.3) N=2105	79.0 (12.9) N=1337	78.4 (11.2) N=2217	79.6 (12.9) N=1150
Total cholesterol (mmol/L), mean (SD)	5.1 (1.4) N=2076	5.4 (1.6) N=1240	5.1 (1.4) N=2211	5.4 (1.6) N=1069
HDL cholesterol (mmol/L), mean (SD)	1.3 (0.4) N=2030	1.3 (0.4) N=1136	1.3 (0.4) N=2166	1.4 (0.5) N=984
LDL cholesterol (mmol/L), mean (SD)	2.9 (1.2) N=2006	3.1 (1.2) N=1091	3.0 (1.2) N=2130	3.2 (1.3) N=960
Triglycerides (mmol/L), mean (SD)	1.8 (1.2) N=2069	1.9 (1.7) N=1221	1.7 (1.0) N=2204	1.8 (1.3) N=1049

	Intervention		Control	
Characteristic	With follow-up data	Without follow-up data	With follow-up data	Without follow-up data
Creatinine (μmol/L), mean (SD)	86.6 (51.7) N=2100	93.6 (72.9) N=1296	84.6 (33.8) N=2240	93.3 (84.6) N=1142
HbA _{1c} (%), mean (SD)	6.6 (1.4) N=1349	6.6 (1.6) N=626	6.6 (1.4) N=1436	6.4 (1.5) N=577
High CVD risk				
History of CVD	788 (36.5%)	518 (36.2%)	838 (36.1%)	487 (38.8%)
High risk condition	1044 (48.4%)	701 (49.0%)	1163 (50.1%)	586 (46.7%)
High calculated risk	324 (15.0%)	213 (14.9%)	320 (13.8%)	183 (14.6%)

CVD = cardiovascular disease; HbA_{1c} = glycated haemoglobin; HDL = high-density lipoprotein; LDL low-density lipoprotein; SD = standard deviation.

Table 5. Additional secondary outcomes

Outcome	Intervention	Control	Outcome: intervention v control (95% CI)	Intra-class correlation coefficient
Patients at high CVD risk and undertreated at baseline				
Systolic blood pressure: change from baseline (mmHg), mean (SD)	−1.9 (18.9) N=3064	−1.4 (18.8) N=3080	MD, −0.33 (−1.44 to 0.78)	0.01
Diastolic blood pressure: change from baseline (mmHg), mean (SD)	−1.3 (12.2) N=3065	−1.1 (11.6) N=3069	MD, −0.08 (−0.84 to 0.69)	0.01
LDL cholesterol: change from baseline (mmol/L), mean (SD)	−0.3 (0.91) N=2102	−0.3 (0.93) N=2250	MD, 0.00 (−0.07 to 0.08)	0.02
All patients with high baseline CVD risk	4526	4598		
Achieved blood pressure and LDL cholesterol targets and taking antiplatelet (if CVD diagnosis)	1227 (27.1%)	1151 (25.0%)	1.09 (0.95–1.25)	0.02
Low and medium CVD risk at both baseline and end of study	15 029	15 275		
Received new prescription or escalation of blood pressure-lowering, statin, or antiplatelet therapy	1330 (8.8%)	1249 (8.2%)	1.05 (0.80–1.39)	0.02

CVD = cardiovascular disease; CI = confidence interval; LDL = low-density lipoprotein cholesterol.

Table 6. Outcomes: sensitivity analyses

	Imputing missing/non updated data as “target not achieved”			Multiple imputation of missing data		
Outcome	Intervention	Control	Outcome: intervention v control (95% CI)	Intervention	Control	Outcome: intervention v control (95% CI)
Undertreated patients with high baseline CVD risk						
Proportion achieving blood pressure <i>and</i> LDL cholesterol targets (primary outcome)	423/3588 (11.8%)	466/3577 (13.0%)	1.00 (0.76–1.31)	668/3588 (18.6%)	676/3577 (18.9%)	1.06 (0.87–1.28)
Achieved blood pressure target	2185/3588 (60.9%)	2153/3577 (60.2%)	1.02 (0.93–1.12)			
Achieved LDL cholesterol target	599/3588 (16.7%)	650/3577 (18.2%)	0.98 (0.78–1.24)			
Achieved blood pressure <i>or</i> LDL cholesterol targets	2361/3588 (65.8%)	2337/3577 (65.3%)	1.01 (0.93–1.10)			
All patients with high baseline CVD risk						
Achieved blood pressure and LDL cholesterol targets	1420/6757 (21.0%)	1368/6507 (21.0%)	1.02 (0.84–1.24)			
Achieved blood pressure and LDL cholesterol targets (for all patients) and taking antiplatelet (if patient had established CVD)	1227/6757 (18.2%)	1151/6507 (17.7%)	1.05 (0.86–1.28)			

CVD = cardiovascular disease; LDL = low density lipoprotein cholesterol.

Table 7. Associations between undertreated patients with high baseline CVD risk achieving the primary outcome and HealthTracker use, by approach to handling missing data*

Adjustment for missing data	HealthTracker used		Relative risk (95% CI)	
	Yes	No	Unadjusted	Adjusted for baseline covariates [†]
Patients excluded from analysis	59/266 (22%)	318/1660 (19%)	1.14 (0.88–1.49)	1.06 (0.79–1.42)
Patients deemed to have not met targets (imputed as negative)	59/347 (17%)	318/2889 (11%)	1.44 (1.09–1.90)	1.29 (0.94–1.76)
Multiple imputation	77/347 (22%)	529/2889 (18%)	1.20 (0.94–1.54)	1.18 (0.94–1.49)

CI = confidence interval; LDL = low density lipoprotein.

* Follow-up data for blood pressure or LDL-cholesterol not available.

† Baseline age, sex, body mass index, estimated glomerular filtration rate (pre-specified).

The INTEGRATE participants

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Site GP004: Macarthur General Practice

McCroary, Kenneth

Site GP005: Bluestone Family Medical Centre

Al Kamil, Mohammed

Taliana, Lisa

Abdul Karim, Inas

Site GP006: Select Medical Group

Chia, Irmgard

Pakthagurunathan, Manchula

Wallace, Desi

Maxwell, Loretto

Site GP007: Picton Family Medical Centre

Pham, Anna

Buckingham, Daniel

Site GP008: Villawood Medical Centre

Samarasekera, Chandani

Oei, Priscilla

Site GP011: Kogarah Railway Medical Centre

Bazergy, Carl

Mahadev, Anand

Mahadev, Visawanathan

Site GP012: The Hastings Clinic

Keillar, Peter

Frew, Bradley

Giannakakis, John

Site GP014: Old Princess Highway Surgery

Xin Shi, Yong

Site GP015A/B: The Oaks Medical Practice/The Clinic

Campbell, Ron

Site GP017: Daintree Medical Centre

Varghese, Alfeen

Datta, Chinmoy

Gill, Ramanpreet

Munamati, Rosemary

Site GP023A/B: Liverpool Medical Centre/Greenvally

Singh, Pradyumn (Paddy)

Site GP025: MyHealth Central Park

Au, Richard

Ru Zhou, Angela

Huang, Yao Chun

Thiangtham, Achiraya

Jeon, Glory

Yee, Joo Faa

Site GP026: MyHealth Eastland / GP035 MyHealth Chadstone

Liu, Shaojun

Liu, Xiao Dan

Site GP028 / GP029 Mortlake Family Medical Practice / Hughes Street Medical Centre

Keh, Frank

Site GP030: MyHealth Castle Towers

Fang, Elliot

Aitken, James

Kabir, Fariya

Pan, Eva

Site GP031: MyHealth Fountaingate

Saluja, Sanjay

Cheung, Melissa

Zaidi, Huma

Site GP032: Belvidere Health Centre

Xu, Daniel

Ruan, Jian

Ullah, Mohammed

Kirupananther, Devaki

Saeed, Shamaila

Site GP033: Curtin University Health Service

Coombes, Fiona

Palmer, Roger

Site GP034: Burslem Medical Centre

Singh, Kanwal

Smith, Nick

Dennis, May Zin

De Almeida, Sherina

Brar, Satveer

Doyle, Bianca

Site GP038: Granada Medical Practice Vidyabhushana, Arosha	Site GP052: Mount Hawthorn Family Practice Kelly, Andrea
Site GP039: Captain Stirling Medical Centre Benson, Michael	Site GP056: MyHealth Chatswood Chase Hong, Henry
Site GP040: MyHealth Macquarie Centre Mackun, Kenneth	Site GP057: MyHealth Enfield Lau, Mary-Ann
Site GP041: MyHealth Oran Park Samaranayake, Dimuthu Muzammel, Saila Khoury, Patrick Simi, Arju Ndhlovu, Austin Tuxford, Joshua Alvarez-Runio, Alma	Site GP059: MyHealth Burleigh Waters Lim, Phin Site GP060: MyHealth Helensvale Moshtagh, Hamid Site GP061: MyHealth Corio Odeleye, Olugbenga Site GP062: Myhealth Box Hill Ng, Frank Tan, Irene Louey, Janice Teng, Tina Wang, Lynn Mok, Chee Ken
Site GP042: MyHealth Point Cook Solanki, Parul Islam, Abu Khan, Shamim Gurung, Parbati McAllister, Caroline Ericson, Taylah	Site GP064: Aveley Medical Centre Afilaka, Olugbenga Weerasekera, Kanchana Akter, Murshida Sithole, Nqobile Shaw, Daytinee Poni, Lynda Pindoria, Alpa Kamran, Anam Lee, Mei
Site GP045: MyHealth Southland Kaur, Raman	Site GP066: Haynes Medical Practice Jayatilake, Mithila
Site GP046: MyHealth The Glen Harewood, Andrew	Site GP067: Richmond Road Family Practice Bittar, Hani
Site GP047: MyHealth Doncaster Wong, Cora Isaac, Shriti Leong, Ee Wong, Leighton Ibrahim, Hanaa Emmerson, Stuart Ling, Grace Ewert, Cameron Cardwell, Lewis Cervelli, Melanie	Site GP068: Metella Road Family Practice Nasr, Taleb Saba, Therese
Site GP049: MyHealth Pacific Fair Dickinson, Ian Powers, James Hayward, Kulbir	Site GP069: Mt Druitt Medical Centre Lim, Kean Seng Cochrane, Natalie Kek, Teng-Kiong Cabrera, Samantha Sharma, Vivienne
Site GP050: Myhealth Benowa Chiu, Kevin	Site GP071: Holroyd Medical Practice Edwards, Peter
Site GP051: MyHealth Ashmore Plaza Azadzamany, Farhad O'Brien, Russell	Site GP072: Camden Surgery Venkatesan, Ramana

Site GP073: Faulconbridge Health Centre
Krzyszton, Andrew

Site GP074: Malvern Road Medical Centre
Poh, William

Site P001: Yagoona Medical Pharmacy
Chu, Linh
Pham, Tuyet

Site P006: Chemist Warehouse Princes Highway
Dandenong (previously Pharmasave Moore's the Chemist)
Tahsin, Naveed

Site P008: Rochesters Pharmacy Villawood
Nguyen, Jenny
Do, Jennifer
Wu, John

Site P021: Lethbridge Park Pharmacy
Ghaly, Joshua

Site P030: MyChemist Castle Towers
Pham, James
Sok, Jennifer

Site P032: Belmont Family Pharmacy
Branchi, Christopher
Ayad, Michael

Site P033B: Acacia Pharmacy Bentley
Nguyen, Phuong
Weber, Rainer
Ho, Agnes
Wong, Nicole
Weber, Elisabeth

Site P039: Captain Stirling Pharmacy
Andrew, Tom
Benn, Sol
Webb, Christina
Barve, Priyanka
Chong, Michelle
Benn, Jack

Site P042: Sneydes Rd Pharmacy
Nguyen, Lee
Armellin, Lara

Site P043: Demarte's Amcal
Demarte, Joe
Wong, Lawrence

Site P050: Benowa Gardens Chempro
Fretten, Ben
Elliott, Amica
Fretten, Alicia Helen

Site P062: MyChemist Box Hill
Xiao, Harris
Wong, Mae
Lam, Grace
Yeung, Wan

Site P064: Friendlies Pharmacy Aveley
Pindoria, Alpa
Dodhia, Shilan

Site P067: Medicines Rx Chemist
Hanna, Bishoy
Saleeb, Ibram

Site P074: TerryWhite Chemmart Stanhope
Gardens

References

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2. Webster R, Di Tanna GL, Li Q. INTEGRATE: statistical analysis plan v8 Final version [pre-print]. *OSF*; 5 Dec 2019. https://osf.io/7ym2e/?view_only=1cced6d5a735406eb9862a2af13455b6.