

## Supplementary files

**Table S1.** Counts of PPI dispensings, discontinuations and switches to any lower strength PPI stratified by medicine and strength, in the year before (April 2014 – April 2015) and the year after (May 2016 – May 2017) the NPS MedicineWise program and Choosing Wisely recommendations.

PPI dispensings, n (%)	Year before initiatives April 2014 – April 2015		Year after initiatives May 2016 – May 2017	
	Any PPI	1,972,328	(100)	2,050,768
<b>omeprazole</b>	244,730	(12.4)	216,101	(10.5)
standard strength	241,000	(12.2)	211,667	(10.3)
low strength	3730	(0.2)	4434	(0.2)
<b>pantoprazole</b>	569,309	(28.9)	636,847	(31.1)
standard strength	495,503	(25.1)	542,022	(26.4)
low strength	73,806	(3.7)	94,825	(4.6)
<b>lansoprazole</b>	52,831	(2.7)	48,199	(2.4)
standard strength	50,603	(2.6)	45,769	(2.2)
low strength	2228	(0.1)	2430	(0.1)
<b>rabeprazole</b>	272,347	(13.8)	263,896	(12.9)
standard strength	262,340	(13.3)	252,381	(12.3)
low strength	10,007	(0.5)	11,515	(0.6)
<b>esomeprazole</b>	833,111	(42.2)	885,725	(43.2)
high strength	344,739	(17.5)	357,393	(17.4)
standard strength	488,372	(24.8)	528,332	(25.8)
PPI discontinuation, n (%) *	Year before initiatives April 2014 – April 2015		Year after initiatives May 2016 – May 2017	
Any PPI	180,012	(100)	194,447	(100)
<b>omeprazole</b>	16,463	(9.2)	15,949	(8.2)
standard strength	16,085	(8.9)	15,457	(8.0)
low strength	378	(0.2)	492	(0.3)
<b>pantoprazole</b>	51,622	(28.7)	60,646	(31.2)
standard strength	44,431	(24.7)	51,473	(26.5)
low strength	7191	(4.0)	9173	(4.7)

<b>lansoprazole</b>	3349	(1.9)	3209	(1.7)
standard strength	3166	(1.8)	3002	(1.5)
low strength	183	(0.1)	207	(0.1)
<b>rabeprazole</b>	22,471	(12.5)	21,084	(10.8)
standard strength	21,540	(12.0)	20,054	(10.3)
low strength	931	(0.5)	1030	(0.5)
<b>esomeprazole</b>	86,107	(47.8)	93,559	(48.1)
high strength	50,654	(28.1)	53,144	(27.3)
standard strength	35,453	(19.7)	40,415	(20.8)
<b>rabeprazole</b>	22,471	(12.5)	21,084	(10.8)
standard strength	21,540	(12.0)	20,054	(10.3)
low strength	931	(0.5)	1030	(0.5)
<b>esomeprazole</b>	86,107	(47.8)	93,559	(48.1)
high strength	50,654	(28.1)	53,144	(27.3)
standard strength	35,453	(19.7)	40,415	(20.8)
<b>Switches to any lower strength PPI, n (%)<sup>†</sup></b>	<b>Year before initiatives April 2014 – April 2015</b>		<b>Year after initiatives May 2016 – May 2017</b>	
from any PPI	35,538	(100)	40,201	(100)
from <b>omeprazole</b> standard to any low strength	572	(1.6)	642	(1.6)
from <b>pantoprazole</b> standard to any low strength	4200	(11.8)	5860	(14.6)
from <b>lansoprazole</b> standard to any low strength	154	(0.4)	228	(0.6)
from <b>rabeprazole</b> standard to any low strength	911	(2.6)	1195	(3.0)
from <b>esomeprazole</b> <sup>‡</sup> high to any standard strength	28,272	(79.6)	30,341	(75.5)
from <b>esomeprazole</b> high to any low strength	655	(1.8)	899	(2.2)
from <b>esomeprazole</b> standard to any low strength	774	(2.2)	1036	(2.6)

\*Stratified by first medicine dispensed within the course of treatment.

<sup>†</sup> Stratified by higher strength medicine person switched from

<sup>‡</sup> Esomeprazole was further stratified as it was the only medicine to have both a high and standard strength formulations on market. No low strength esomeprazole was publicly subsidised in Australia

**Table S2.** Change in the monthly dispensing counts and rates of discontinuation among **concessional beneficiaries** at each intervention point, estimated using autoregressive integrated moving average (ARIMA) models adjusted for seasonality.

	Seasonal ARIMA model specification*	Mean monthly dispensings <sup>†</sup>	Level shift <sup>‡</sup> from April 2015 % (95% CI)	Level shift <sup>‡</sup> from May 2016 % (95% CI)
<b>Dispensing counts</b>				
PPIs	(2,1,0) (0,1,0) <sub>12</sub>	101,790	0.8 (-0.5 to 2.0)	-1.8 (-2.9 to -0.7)
high strength	(0,1,1) (0,1,0) <sub>12</sub>	18,585	1.0 (-1.6 to 3.6)	-0.6 (-2.8 to 2.2)
standard strength	(2,1,0) (0,1,0) <sub>12</sub>	78,705	0.8 (-0.5 to 2.1)	-2.2 (-3.2 to -1.1)
low strength	(0,1,1) (0,1,0) <sub>12</sub>	4,500	1.2 (-1.3 to 3.8)	-0.2 (-2.7 to 2.4)
statins (control)	(2,1,0) (0,1,0) <sub>12</sub>	117,869	0.6 (-1.1 to 2.3)	-2.2 (-3.6 to -0.7)
<b>Treatment discontinuation</b>				
			<b>(95% CI)</b>	<b>(95% CI)</b>
PPIs	(0,0,1) (0,1,1) <sub>12</sub>		-0.1 (-0.1 to 0.3)	-0.01 (-0.2 to 0.2)
statins (control)	(0,0,1) (0,1,0) <sub>12</sub>		-0.03 (-0.2 to 0.2)	0.1 (-0.1 to 0.3)

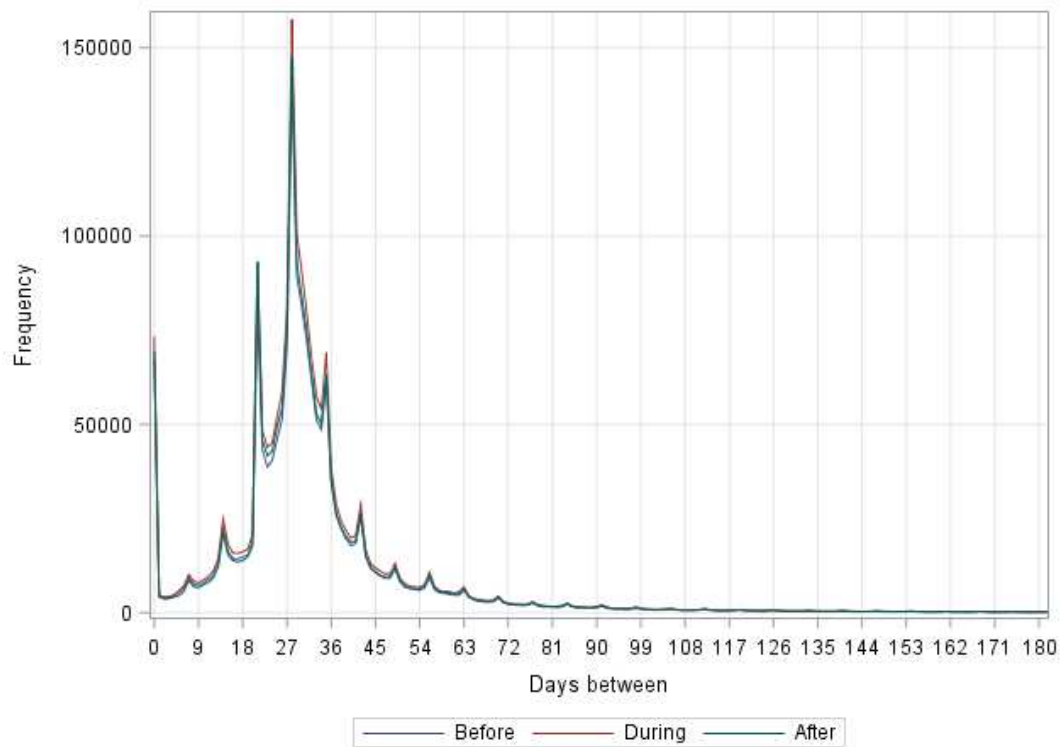
ARIMA, autoregressive integrated moving average; PPI, proton pump inhibitor; CI, confidence interval

\*ARIMA (p,d,q) x (P,D,Q)<sub>12</sub> model where 12 indicates seasonal differencing at 12-month lag

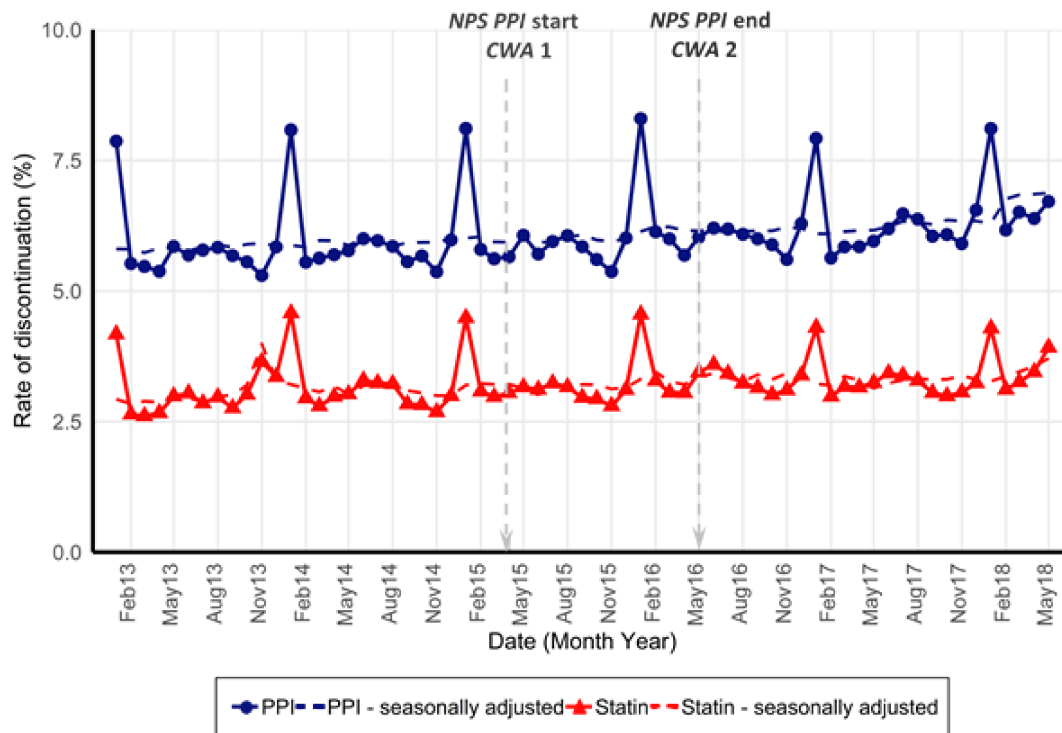
<sup>†</sup>Mean monthly dispensings in the year leading up to NPS program in April 2015

<sup>‡</sup>A sudden, sustained change for the remainder of the study period

## Supplementary figures:



**Figure S1.** Time between dispensings (days) in the year before (April 2014 – April 2015), during (April 2015 – April 2016) and year after (May 2016 – May 2017) the NPS MedicineWise PPI program and Choosing Wisely recommendations.



**Figure S2.** Monthly unadjusted and seasonally adjusted (dashed line) rate (%) of proton pump inhibitors (PPI) and statin discontinuation among those covered by treatment for *concessional beneficiaries*, from January 2013 to May 2018. NPS MedicineWise’s PPI program (NPS PPI) start and end and Choosing Wisely (CWA) recommendations 1 and 2 marked at April 2015 and May 2016.