

The impact of co-payment increases on dispensings of government-subsidised medicines in Australia[†]

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SUMMARY

Purpose Patient co-payments for medicines subsidised under the Australian Pharmaceutical Benefits Scheme (PBS) increased by 24% in January 2005. We investigated whether this increase and two related co-payment changes were associated with changes in dispensings of selected subsidised medicines in Australia.

Method We analysed national aggregate monthly prescription dispensings for 17 medicine categories, selected to represent a range of treatments (e.g. for diabetes, cardiovascular diseases, gout). Trends in medication dispensings from January 2000 to December 2004 were compared with those from January 2005 to September 2007 using segmented regression analysis.

Results Following the January 2005 increase in PBS co-payments, significant decrease in dispensing volumes were observed in 12 of the 17 medicine categories (range: 3.2–10.9%), namely anti-epileptics, anti-Parkinson's treatments, combination asthma medicines, eye-drops, glaucoma treatments, HmgCoA reductase inhibitors, insulin, muscle relaxants, non-aspirin antiplatelets, osteoporosis treatments, proton-pump inhibitors (PPIs) and thyroxine. The largest decrease was observed for medicines used in treating asymptomatic conditions or those with over-the-counter (OTC) substitutes. Decrease in dispensings to social security beneficiaries was consistently greater than for general beneficiaries following the co-payment changes (range: 1.8–9.4% greater, $p = 0.028$).

Conclusions The study findings suggest that recent increase in Australian PBS co-payments have had a significant effect on dispensings of prescription medicines. The results suggest large increase in co-payments impact on patients' ability to afford essential medicines. Of major concern is that, despite special subsidies for social security beneficiaries in the Australian system, the recent co-payment increase has particularly impacted on utilisation for this group. Copyright © 2008 John Wiley & Sons, Ltd.

KEY WORDS — co-payment; patient contribution; utilisation; essential medicines; time series analysis

Received 19 August 2008; Accepted 6 September 2008

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INTRODUCTION

As in other industrialised countries, public pharmaceutical expenditure in Australia has increased rapidly over recent decades.^{1,2} There has been concern about

the sustainability of Australia's Pharmaceutical Benefits Scheme (PBS),^{3,4} a universal pharmaceutical insurance plan which accounts for more than 90% of prescriptions dispensed nationally.⁵ To ensure pharmaceutical costs remain affordable for the community, the Australian Federal government has implemented numerous measures including cost-effectiveness assessments, generic substitution and patient co-payments; where patients contribute towards the cost of each prescription.⁴ 'Social security beneficiaries', aged and disability pensioners, the unemployed and other low income earners, pay a substantially lower co-payment than the remainder of the community ('general beneficiaries').⁶ Once an annual threshold has been spent on PBS medicines, a 'safety net' comes into effect, whereby subsequent prescriptions for the calendar year are dispensed for a reduced co-payment to general beneficiaries and free to social security beneficiaries.⁴

Patient co-payments in Australia have increased incrementally with inflation since 1990, but in January 2005 co-payments increased by 24%.⁶ Co-payments increased from AUD* \$3.70 to \$4.60 for social security beneficiaries and from \$23.10 to \$28.60 for general beneficiaries and the safety net thresholds increased from \$197.60 to \$239.20 and \$726.80 to \$874.90, respectively.⁶ Following this increase, two other PBS policy changes have also increased the portion of pharmaceutical costs shared by patients. The safety net thresholds were increased by the equivalent cost of two prescriptions in January 2006 and January 2007,⁶ and in January 2006 a policy was introduced to exclude the early re-supply of repeat prescriptions from the safety net. The normal supply of repeat PBS medicines is for 30 days of treatment,⁷ and under the new 'safety net 20 day rule', prescriptions re-supplied within 20 days no longer contributed towards a patient's safety net threshold, and were not supplied at the reduced co-payment once the threshold had been reached.⁸

Previous research suggests that increase in patient pharmaceutical costs adversely affect prescription medicine utilisation.^{2,9-17} Rises in costs have an impact on the use of 'essential medicines', prescribed chiefly to manage chronic disease, and medicines used primarily for acute condition symptom relief ('discretionary medicines').^{9,17,18} A previous substantial rise (36%) in co-payments in Australia occurred in 1990, which resulted in a significant reduction in dispensings of prescription medicines.¹⁸ The greatest

decrease in dispensings was observed for discretionary medicines, although use of essential medicines also decreased.¹⁸ In the United States (US), after co-payments were doubled by some insurers, dispensings of essential medicines with over-the-counter (OTC) substitutes, such as anti-ulcerants, generally decreased more than for medicines without substitutes such as antidepressants.¹⁰ Another US study demonstrated that for every 1% increase in co-payments, a negative impact on the percentage change in the number of monthly prescriptions dispensed was observed ranging from -0.1% per month for HmgCoA reductase inhibitors (statins) to -0.6% per month for non-steroidal anti-inflammatory agents.¹⁷ Essential medicines were reported by these researchers to be less sensitive to co-payment increase than discretionary medicines, although significant decrease was observed in both categories.¹⁷ The average co-payments reported by this US study were similar to those in Australia, indicating that the January 2005 PBS co-payment increase may have significantly impacted on medication use in the Australian setting.

The aim of this study was to examine whether the January 2005 rise in co-payments and the subsequent changes to safety net policies were associated with changes in dispensings of PBS-subsidised medicines in Australia.

METHODS

Data source and extraction

Data were sourced from the Australian Drug Utilisation Sub-Committee of the Pharmaceutical Benefits Advisory Committee. National aggregate dispensing data were extracted for 17 medicine categories from January 2000 to September 2007. The prescription medicine categories examined were: anti-epileptics, anti-gout treatments, anti-Parkinson's treatments, anxiolytics, atypical antipsychotics, beta blockers (indicated for heart failure rather than hypertension), combination asthma medicines, eye-drops, glaucoma treatments, hypnotics, insulin, muscle relaxants, non-aspirin antiplatelets, osteoporosis treatment, proton-pump inhibitors (PPIs), statins and thyroxine.

The categories comprised medicines subsidised under the PBS and represented examples of 'essential' and 'discretionary' medicines used to treat symptomatic and asymptomatic conditions (Table 1). Medicine categories were derived *via* consultation with a clinical panel comprising two clinical pharmacists, two consulting physicians, a gastroenterologist and a

*Australian dollar (AUD) = \$US 0.87 and £UK 0.46 at 15 August, 2008.

Table 1. Characteristics of the 17-medicine classes examined*

Medicine category	Essential or discretionary	Symptomatic or asymptomatic	Chronic or intermittent
Anti-epileptics	Essential	Symptomatic	Chronic
Anti-gout treatments	Discretionary/Essential	Symptomatic	Intermittent
Anti-Parkinson's treatments	Essential	Symptomatic	Chronic
Anxiolytics	Essential	Symptomatic	Chronic
Atypical antipsychotics	Essential	Symptomatic	Chronic
Beta blockers (for heart failure)	Essential	Asymptomatic	Chronic
Combination asthma medicines	Essential	Symptomatic	Chronic
Eye-drops [†]	Discretionary	Symptomatic	Intermittent
Glaucoma treatments	Essential	Asymptomatic	Chronic
Hypnotics	Discretionary	Symptomatic	Intermittent
Insulin	Essential	Symptomatic	Chronic
Muscle relaxants	Essential	Symptomatic	Chronic
Non-aspirin antiplatelets	Essential	Asymptomatic	Chronic
Osteoporosis treatments	Essential	Asymptomatic	Chronic
PPIs [‡]	Discretionary/Essential	Symptomatic	Intermittent
Statins	Essential	Asymptomatic	Chronic
Thyroxine	Essential	Symptomatic	Chronic

*Medicine categories were derived *via* extensive consultation with a clinical consensus panel comprising two clinical pharmacists, two consulting physicians, a gastroenterologist and a psychiatrist.

[†]Includes treatment for dry and itchy eyes. Eye-drops and topical medicines for ophthalmic conditions are excluded from this group.

[‡]Proton-pump inhibitors.

psychiatrist. For those prescriptions priced below the co-payment amount, patients pay only the medicine cost. Such prescriptions are not PBS-subsidised and these dispensings are not captured in the data set. Thus, selection of the medicines was also governed by whether they remained above the co-payment amounts during the entire observation period. Where all medicines in a class remained above co-payment amounts for the entire observation period (7 of 17 categories), analyses of social security and general beneficiaries were undertaken. Some anti-Parkinson's medicines and only the lowest dose PPIs and statin products fell below general co-payment amount during the study period. Records for these dispensings to general beneficiaries, representing 2% of anti-Parkinson's, 1% of PPIs and 5% of statins, were excluded and the analysis of both general and social security beneficiaries undertaken. For the remaining seven categories, analysis was limited to social security beneficiaries only, as prices fell below the general co-payments for the entire period.

Statistical analysis

Interrupted time series analysis was used to examine prescription volumes before and after the January 2005 rise in co-payments. Interrupted time series analysis has been used to determine the impact of policy change on pharmaceutical utilisation,^{14,18–20}

and provides estimates of an outcome (i.e. prescription counts) before and after a defined change point (i.e. the 2005 rise in co-payments).¹⁹ A minimum of 20 data points are recommended after a change point to model a series,²¹ preventing the use of additional change points for the safety net changes implemented in January 2006 and January 2007. Terms were included to provide estimates for: (1) the month-to-month change in dispensings prior to the 2005 co-payment increase (the 'baseline trend'), (2) the initial change in dispensings following the 2005 co-payment increase (the 'change in level') and (3) the month-to-month change in dispensings following the 2005 co-payment increase (the 'new monthly trend').

For 13 of the 17 medicines categories, we compared data from the period before the co-payment increase, January 2000–December 2004, with the period January 2005–September 2007. Atypical antipsychotics, non-aspirin antiplatelets and combination asthma medicines were more recently introduced to the market than the other selected medicines, and so had more rapid dispensing trends apparent in 2000 and 2001. Including these data may have over-estimated the impact of the co-payment increase, and therefore analyses of these medicine categories were undertaken from 2002 onwards.

Medicine categories were assessed for other major changes in subsidy, such as the removal of restrictions or new indications, and these were taken into account

by using additional change points in the analysis. For the PPIs, the prior authorisation requirement was removed in April 2001. While for the osteoporosis medicines, the introduction of a subsidised once-weekly product in May 2001²² was also associated with a large increase in use. For each of these series we included a 'washout' period of 6 months after these changes to allow for these effects.¹⁹ Australian clinical trials for insulin glargine were conducted throughout 2006, prior to being listed on the PBS. During this period it is thought many diabetic patients obtained insulin through their participation in these trials, as PBS-subsidised dispensings of insulin decreased throughout 2006 until glargine was listed in October 2006, and dispensings increased.²³ To allow for this decrease in PBS-recorded insulin use throughout 2006, we excluded this portion of the series from the analyses.

Linear regression using the SAS AUTOREG procedure²⁴ was used to examine the number of prescriptions dispensed to social security and general beneficiaries. There is strong seasonality in PBS dispensings as some patients reach the safety net threshold and become eligible for reduced co-payments towards the end of the calendar year. To control for the 12-month seasonal variation in the series, an autoregressive term was fitted using Yule-Walker estimates. Estimated changes in prescription volume and the corresponding standard errors (SE) were calculated.

The baseline trend was extrapolated beyond the change point (January 2005) to September 2007 to calculate the number of prescriptions that would have been expected had the co-payment increase not occurred. For each series, we calculated the mean percentage change, and the corresponding SE, from the extrapolated baseline trend to the observed trend for the period after the co-payment increase with a Wilcoxon signed rank test using the SAS UNIVARIATE procedure.²⁴ Previous research has used similar approaches to model the impact of health service interventions.^{18,25}

RESULTS

Changes in series level and trend

Changes in the number of prescriptions dispensed after the January 2005 rise in co-payments are shown in Table 2. Overall, there were reductions in either the level and/or trend for 12 of the 17 medicines used by social security beneficiaries. Following the co-payment increase there was significant decrease in the level of dispensings for five of the medicine

categories dispensed to social security beneficiaries. For two of these medicines, insulin and thyroxine, the level decrease was not followed by changes in the monthly prescription trend, indicating that the decreases were limited to the period immediately following the rise in co-payments. For the other three medicine categories, non-aspirin antiplatelets, PPIs and statins, decrease in the monthly trend was also observed, indicating initial and ongoing decrease in dispensings following the rise in co-payments.

In contrast, there were seven medicine categories used by social security beneficiaries where the dispensing trend decreased but the level did not change. Dispensings of anti-epileptics, anti-Parkinson's treatments, combination asthma medicines, eye-drops, glaucoma treatments, muscle relaxants and osteoporosis treatments did not immediately decrease after the 2005 rise in co-payments, however there were ongoing decrease in monthly dispensings for the period following 2005.

For only five of the seventeen medicines dispensed to social security beneficiaries there were no reductions in the level or trend of dispensings after the 2005 co-payment increase. Dispensings of anti-gout treatments, anxiolytics and beta blockers did not change significantly, and there was increase in the dispensing trend for atypical antipsychotics and hypnotics following the rise in co-payments.

Overall, there were reductions in either the level and/or trend for four of the ten medicines for general beneficiaries. There were two medicine categories, insulin and statins, where only the level of dispensings decreased, approaching significance, following the 2005 rise in co-payments. For one medicine category used by general beneficiaries, PPIs, there was decrease in the level and trend following the rise in co-payments. Dispensings of combination asthma medicines and osteoporosis treatments to general beneficiaries did not immediately change following the rise in co-payments, but the ongoing monthly trend decreased significantly.

There were no changes in the level or trend of dispensings for anti-Parkinson's treatments, muscle relaxants or non-aspirin antiplatelets following the rise in co-payments. After the co-payment increase, there was increase in the dispensings trend for antipsychotics, beta blockers and insulin.

Percentage changes from the baseline trend

The percentage changes in prescriptions dispensed after the January 2005 rise in co-payments were compared for each medicine category and beneficiary

Table 2. Linear regression modelling with auto-correlated errors (estimated generalised least squares) of prescription volumes dispensed in Australia before and after the January 2005 co-payment increase

Period	Social security beneficiaries			General beneficiaries		
	Prescriptions	SE	<i>p</i> -value	Prescriptions	SE	<i>p</i> -value
<i>Anti-epileptics</i>						
Baseline monthly trend*	385	30	<0.001	—	—	—
Change in level [†]	-1341	1285	0.300	—	—	—
New monthly trend [‡]	212	70	0.016	—	—	—
<i>Anti-gout treatments</i>						
Baseline monthly trend	103	33	0.003	—	—	—
Change in level	-805	1341	0.560	—	—	—
New monthly trend	39	76	0.399	—	—	—
<i>Anti-Parkinson's treatments</i>						
Baseline monthly trend	124	15	<0.001	20	3	<0.001
Change in level	74	640	0.901	-52	115	0.654
New monthly trend	29	36	0.009	23	6	0.641
<i>Anxiolytics</i>						
Baseline monthly trend	-79	62	0.206	—	—	—
Change in level	-1654	2952	0.577	—	—	—
New monthly trend	-15	152	0.672	—	—	—
<i>Atypical antipsychotics</i>						
Baseline monthly trend	666	47	<0.001	71	6	<0.001
Change in level	-3000	1618	0.068	97	222	0.664
New monthly trend	988	93	0.001	200	12	<0.001
<i>Beta blockers (for heart failure)</i>						
Baseline monthly trend	525	22	<0.001	100	5	<0.001
Change in level	851	754	0.262	217	158	0.172
New monthly trend	584	47	0.212	138	10	<0.001
<i>Combination asthma medicines</i>						
Baseline monthly trend	1604	170	<0.001	1085	137	<0.001
Change in level	-1036	4396	0.815	-1017	3563	0.776
New monthly trend	518	269	<0.001	366	218	0.002
<i>Eye-drops</i>						
Baseline monthly trend	731	73	<0.001	—	—	—
Change in level	-2790	3022	0.359	—	—	—
New monthly trend	294	170	0.012	—	—	—
<i>Glaucoma treatments</i>						
Baseline monthly trend	996	84	<0.001	—	—	—
Change in level	4539	3319	0.175	—	—	—
New monthly trend	-146	192	<0.001	—	—	—
<i>Hypnotics</i>						
Baseline monthly trend	-1004	119	<0.001	—	—	—
Change in level	-1252	4685	0.790	—	—	—
New monthly trend	-399	274	0.030	—	—	—
<i>Insulin</i>						
Baseline monthly trend	123	13	<0.001	55	6	<0.001
Change in level	-1023	580	0.008	-516	268	0.059
New monthly trend	137	29	0.625	130	14	<0.001
<i>Muscle relaxants</i>						
Baseline monthly trend	40	3	<0.001	6	1	<0.001
Change in level	104	114	0.368	-44	41	0.284
New monthly trend	17	6	<0.001	7	2	0.715
<i>Non-aspirin antiplatelets</i>						
Baseline monthly trend	2102	52	<0.001	424	19	<0.001
Change in level	-6113	1952	0.003	-764	614	0.218

(Continues)

Table 2. (Continued)

Period	Social security beneficiaries			General beneficiaries		
	Prescriptions	SE	<i>p</i> -value	Prescriptions	SE	<i>p</i> -value
New monthly trend	1228	104	<0.001	444	37	0.598
<i>Osteoporosis treatments</i>						
Baseline monthly trend	3480	774	0.005	537	113	0.003
Change in level	-1069	6210	0.864	68	889	0.939
New monthly trend	-279	399	<0.001	15	57	<0.001
<i>PPIs</i> [§]						
Baseline monthly trend	9952	2131	<0.001	3393	730	0.007
Change in level	-1220	16 064	0.012	-19 614	5470	<0.001
New monthly trend	4264	956	<0.001	2054	317	<0.001
<i>Statins</i>						
Baseline monthly trend	6401	271	<0.001	2639	173	<0.001
Change in level	-24 565	11 312	0.033	-12 075	6265	0.058
New monthly trend	4828	630	0.015	2939	381	0.434
<i>Thyroxine</i>						
Baseline monthly trend	238	23	<0.001	—	—	—
Change in level	-2193	990	0.030	—	—	—
New monthly trend	166	54	0.190	—	—	—

*Estimated monthly increase in the number of prescriptions dispensed prior to the January 2005 ~24% rise in patient co-payments.

†Estimated change in the absolute number of prescriptions dispensed immediately following the rise in co-payments.

‡Estimated monthly increase in the number of prescriptions dispensed following the January 2005 rise in co-payments.

§Proton-pump inhibitors.

group (Figure 1). Following the co-payment increase, dispensings to social security beneficiaries decreased significantly in 12 of the 17 categories examined. Of the 10 medicines categories where data were available for general beneficiaries, dispensings decreased significantly for five categories after the co-payment increase. For both the social security and general beneficiaries, there were large reductions in dispensings of combination asthma medicines (9.9 and 10.7%, respectively), osteoporosis treatments (10.4 and 7.3%) and PPIs (10.9 and 8.3%). Large decrease was also observed for dispensings of non-aspirin antiplatelets (10.7%) to social security beneficiaries.

For six of the seven medicine categories where dispensings decreased for both social security and general beneficiaries, we observed larger decrease in dispensings to social security beneficiaries (difference range: 1.8–9.4%, $p = 0.028$). Only dispensings of combination asthma medicines differed from this pattern, with similar decrease observed for social security and general beneficiaries (Figure 1).

DISCUSSION

Following the January 2005 rise in PBS co-payments there were significant reductions in prescription volumes for 12 of the 17 medicine categories

examined; anti-epileptics, anti-Parkinson's treatments, combination asthma medicines, eye-drops, glaucoma treatments, insulin, muscle relaxants, non-aspirin antiplatelets, osteoporosis treatments, PPIs, statins and thyroxine. Compared with the dispensings prior to the rise in co-payments, we observed significant decrease ranging from 3% for anti-Parkinson's treatments and 11% for PPIs.

The significant decrease in dispensings observed here for many medicine categories, used to treat a range of conditions, suggests that the recent co-payment and safety net policy changes have affected utilisation of many medicines in Australia. For the medicines categories where only the level of dispensings decreased, including thyroxine and insulin, the 2005 co-payment increase appears to have temporarily disrupted utilisation. These utilisation changes are perhaps less concerning than the observed trend decrease, which suggest long-term changes in utilisation. Where trend decrease was observed without level decrease, including for combination asthma medicines and osteoporosis treatments, the results indicate that the safety net policies are likely to have had an ongoing impact on utilisation. For the medicine categories where both level and trend decreases were found, such as PPIs, the ongoing decrease in utilisation may be related to both the co-payment increase and safety net changes.

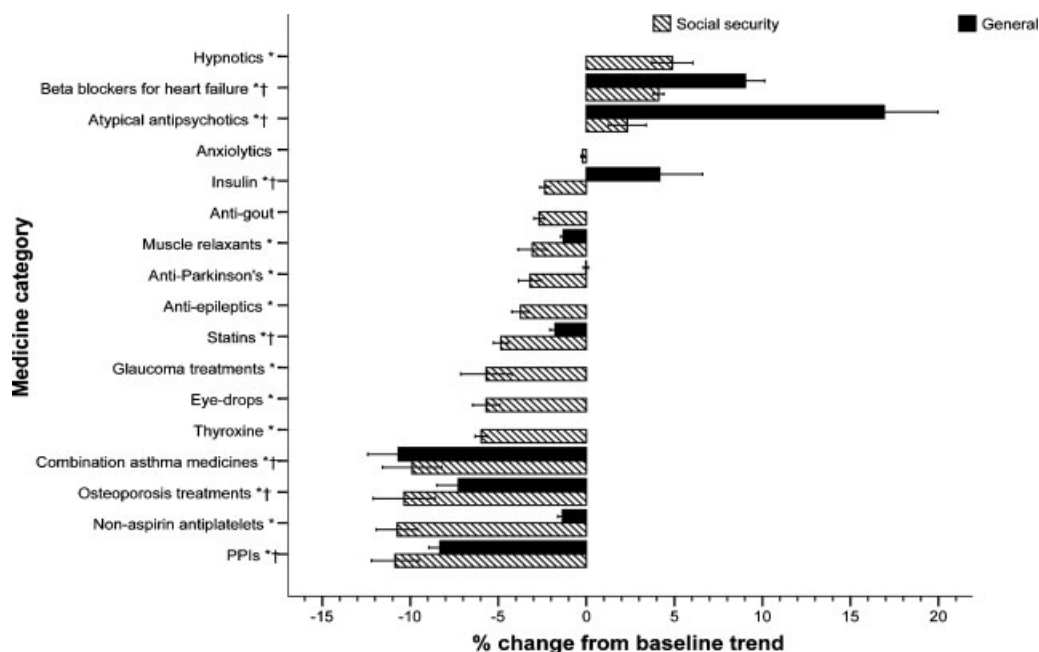


Figure 1. Percentage change (95% CIs) in dispensings after the January 2005 increase in patient co-payments to social security and general beneficiaries compared with the baseline trend. *Indicates significant percentage change in dispensings to social security beneficiaries, $p < 0.001$. †Indicates significant percentage change in dispensings to general beneficiaries, $p < 0.001$

The reduction in dispensings we observed across a range of medicine categories following the co-payment changes is consistent with previous international research. Research from North America has reported significant decrease in utilisation of many commonly prescribed medicines after co-payments were doubled,¹⁰ and after tiered co-payments were implemented.¹⁷ Consistent with reports from previous research, we found that the co-payment increase impacted on the use of essential medicines including statins^{10,16,17} and anti-asthmatics¹⁰ as well as discretionary medicines.

The largest decrease in dispensings were observed for non-aspirin antiplatelets, osteoporosis treatments, combination asthma medicines and PPIs. These are medicines used to treat asymptomatic conditions or for which OTC substitutes or patient self-management strategies are possible. Patients may opt to reduce their use of medicines with these characteristics when faced with increasing pharmaceutical costs. For example, some patients may substitute aspirin for non-aspirin antiplatelets or replace PPIs with antacids.²⁶

We observed smaller decrease in prescription volumes for medicines without substitutes and where symptom occurrence on cessation is noticeable (i.e. anti-epileptics, anti-gout treatments, insulin and

thyroxine). The smallest decrease, and in some cases increase in dispensings was observed for anxiolytics, atypical antipsychotics, beta blockers and hypnotics, indicating that these medicines were most likely unaffected by the co-payment and safety net policy changes. Beta blockers for heart failure had been recently introduced to the market and were heavily promoted during the study period,²⁷ as was low dose risperidone (an antipsychotic) for behavioural and psychological symptoms of dementia,²⁸ which is likely to account for the increasing dispensing of these medicines. The use of anxiolytics and hypnotics did not decrease following the co-payment and safety net policy changes, which may be related to the habit-forming potential of these medicines.²⁹

Impact on beneficiary groups

Several international studies have reported that low income earners and the elderly are most impacted by increase in pharmaceutical costs.^{2,11,13,30} As a group, social security beneficiaries are older than general beneficiaries, and are more likely to be low income earners and high prescription medicine users.³¹ Thus, this group is particularly vulnerable to increase in

pharmaceutical costs.² We found that social security beneficiary dispensings fell by 2–9% more than general beneficiary dispensings after the co-payment increase, indicating that the PBS policy changes are likely to have had a greater impact on this group. The ongoing decrease in use of many essential medicines by social security beneficiaries, including anti-Parkinson's and osteoporosis treatments, are of concern.

PBS expenditure increased at a rate of 11% per annum in the 1990s and early 2000s, and it was predicted that the cost of the PBS would continue to rise by 9% across 2005–2006 to 2008–2009.³² As estimated, PBS expenditure did increase by 9.3% in 2003–2004,³³ but only rose by 6% in the year 2004–2005,³⁴ when the 24% co-payment increase was implemented. Some of this decreased expenditure will be due to a number of items falling below the general beneficiary co-payment after the 2005 increase. However, because all the medicines in this study remained above co-payment thresholds for the relevant groups studied, our findings indicate that the decrease in PBS expenditure may also reflect decrease in the use of many medicines. We observed immediate and ongoing decrease in dispensings for some items representing the highest costs to government of any PBS medicines; PPIs, statins and non-aspirin antiplatelets.³⁵

Some caution is advocated with interpreting the results of this study. We examined aggregate, rather than individual patient records and, consequently, it is unknown how factors such as patient age, sex, socioeconomic status and co-morbidity relate to changes in utilisation. Individual-level records linking pharmaceutical use and health service utilisation data are required to fully understand the impact of the dispensing decrease. Despite the limitations of this study, the decrease in prescription volumes we observed across a wide range of medicine categories give reason for concern. International studies have shown increased emergency department attendances and hospitalisations after decrease in medication utilisation associated with co-payment increase.^{9,16}

Due to the strict cost-effectiveness requirements and listing processes of Australia's PBS, only essential medicines are now added to the schedule. The results of this work suggest that large increase in co-payments do affect consumer's ability to afford medicines and can lead to reductions in use. As there are only a small number of discretionary medical treatments remaining on the PBS, it is increasingly likely utilisation decrease will occur for essential medicines, potentially leading to adverse health outcomes.

CONCLUSION

The study findings suggest that the recent rise in Australian PBS co-payments and subsequent changes to the safety net have had a significant effect on dispensings of a range of discretionary and essential medicines. The impact of the co-payment increase varied by beneficiary group, with social security beneficiaries most impacted by increased pharmaceutical costs. Several questions of policy relevance warrant attention to better understand the specific factors behind these changes in medication utilisation and the implications for patient safety. We urge a cautious approach to future policy changes which increase cost sharing by patients.

ACKNOWLEDGEMENTS

The data for this study were provided by the Drug Utilisation Sub Committee, Pharmaceutical Evaluation Branch, Pharmaceutical Benefits Division, of the Australian Commonwealth Department of Health and Ageing. This research was funded by an Australian National Health and Medical Research Council project grant number 456408.

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