

Safe disposal of prescribed medicines

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SUMMARY

The National Return and Disposal of Unwanted Medicines Program provides a free and safe method for the disposal of unwanted and expired medicines. This stops drugs being dumped in landfill and waterways.

An audit showed that over 600 tonnes of medicines are returned through the program. A substantial proportion of these medicines were still within their expiry dates.

Salbutamol, insulin and frusemide are the most commonly discarded medicines. More than \$2 million of public money is wasted each year.

Hoarding and non-adherence to treatment contribute to waste. Health professionals may be able to help minimise waste by informing patients about the importance of completing prescribed courses of treatment, and discouraging them from hoarding medicines after reaching the safety net threshold on the Pharmaceutical Benefits Scheme.

Prescribe no more than the required quantity of medicines. When starting a new therapy, prescribe a minimal quantity in case the drug is unsuitable for the patient.

Advise patients to return all unwanted medicines to a pharmacy for disposal.

Introduction

Many unwanted and expired medicines in the community are disposed of via general waste or sewerage.¹ Medicines discarded in household rubbish bins end up in landfill and may damage the environment. They may also be found by unintended recipients including children and animals, increasing the risk of poisonings, misuse and abuse. Medicines discarded down sinks and toilets not only enter waterways affecting marine life, but also enter the water table via the sludge component of the sewage treatment process thereby potentially affecting human and animal life. It is therefore critical that unwanted drugs are disposed of safely.

To facilitate the safe disposal of medicines in the community, the Australian Government established the National Return and Disposal of Unwanted Medicines (NatRUM) program in 1998.¹ Through this program, anyone can dispose of medicines free of charge by returning them to community pharmacies who subscribe to the program. The NatRUM program is available to every pharmacy in Australia and is one of only a handful of such programs worldwide.

The vast majority of community pharmacies, of which there are approximately 6000 in total, participate in the NatRUM program. Medicines returned to pharmacies are placed in yellow Return of Unwanted Medicines (RUM) bins which, when full, are collected

by pharmaceutical wholesalers for incineration in accordance with regulations and the Environment Protection Authority's requirements.

Each year over 600 tonnes of medicines are collected through the program.¹ By providing a safe and easily accessible method of disposal, the NatRUM program makes a valuable contribution to the quality use of medicines (QUM) in Australia.

What is being returned?

It is helpful for health professionals to know the type of medicines being discarded as this can guide practice and minimise waste. An audit of the NatRUM program was undertaken by Monash University in 2013.² The contents of 686 RUM bins, representative of bins returned for incineration across Australia, were systematically audited. Over 24 000 individual items containing over 700 different active ingredients were examined. The Table lists the 20 most commonly discarded medicines.

The majority (85.4%) of discarded medicines were scheduled drugs. Prescription medicines (Schedule 4) subsidised by the Pharmaceutical Benefits Scheme (PBS) made up approximately 70% of all the medicines discarded. Approximately 44% of the drugs were still within their expiry dates.

Estimation of the quantity of medicines discarded over a 12-month period revealed that the disposal of medicines is roughly proportional to the quantities dispensed on the PBS.³

Medicines with the highest costs associated with wastage included tiotropium, fluticasone-salmeterol combinations and, due to the large quantities dispensed under the PBS and subsequently discarded, paracetamol. The annual total cost to taxpayers for the 31 most frequently discarded medicines dispensed under the PBS was approximately \$2.05 million. These are conservative estimates as they are only for medicines that were in-date and disposed of via the NatRUM program. The true cost of discarded drugs is likely to be considerably higher.

Key messages

The amounts and types of medicines prescribed under the PBS and subsequently discarded in large quantities are a significant waste of resources, both directly through the cost of the medicines discarded and indirectly via non-adherence. Poor adherence contributes to suboptimal clinical benefit leading to medical and psychosocial complications of disease, reduced quality of life, and waste of healthcare resources. These consequences impair the ability of healthcare systems to achieve population health goals.⁴

A 2005 study (with a small sample size) found that people disposed of medicines via RUM bins for a variety of reasons including:

- concerns about safety and efficacy
- death of a family member
- change in therapy
- perceptions about the need for the medicines and unwanted effects.⁵

The reasons for returning medicines also differed depending on the therapeutic class of the medicine. For example, cardiovascular medicines were most commonly returned due to a change in treatment, whereas anti-infective drugs were mostly returned because of a perception that they were no longer needed.⁵

The high return rate of antimicrobials observed in the audit is very concerning given the widespread emergence of antimicrobial resistance combined with the dwindling development of new antimicrobial drugs.^{6,7} Initiatives to improve the appropriate use of antimicrobials such as Australian National Antimicrobial Awareness Week, and the development of guidelines for antimicrobial use, are timely and critical. Health professionals must remind patients of the importance of completing prescribed courses of antibiotics.

In clinical practice it is necessary to adjust treatment according to the patient’s response. This approach may require switching from one drug to another, which may lead to a quantity of the first drug being wasted. In these circumstances, the prescribing

of smaller initial quantities of medicines can help minimise wastage. Some patients hoard medicines once they reach the safety net threshold on the PBS to save money on future prescriptions. However, some of this stockpile will expire, so education and awareness are critical to optimise medicine use.

It is important for health professionals to discuss the potential dangers of non-adherence, emphasise the importance of finishing prescribed courses of medicines and, if possible, prescribe smaller quantities (perhaps choosing the smallest pack size) of medicines at the start of therapy. Prescribers should avoid the automatic ordering of maximum quantities by electronic prescribing programs, as this may contribute to wastage.

Table The 20 most commonly discarded drugs in Australia²

Rank	Drug
1 (most common)	salbutamol*
2	insulin†
3	frusemide
4	prednisolone
5	glyceryl trinitrate
6	telmisartan/amlodipine
7	fluticasone/salmeterol
8	paracetamol
9	metoclopramide
10	warfarin
11	influenza vaccine‡
12	perindopril
13	metoprolol
14	paracetamol/codeine
15	atorvastatin
16	amoxicillin
17	betamethasone
18	oxycodone
19	cephalexin
20	ipratropium

* It was not possible to determine what proportion of the contents of metered dose inhalers remained unused at the time of disposal.

† Approximately 75% of all discarded insulin was in-date. The vast majority of insulin containers were full (i.e. unused).

‡ Approximately 99% of discarded influenza vaccine was past the expiry date.

Advise patients to return unwanted medicines to pharmacies participating in the program. Campaigns to create greater awareness among consumers about the NatRUM program and its potential benefits to the environment and society are also needed.

Conclusion

In Australia, the NatRUM program offers the only safe method for disposal of unwanted and expired medicines and is a fundamental component of the QUM strategy. Periodic audits of the RUM bins to collect data on medicine wastage will assist with decision making about medicines supply and use at a national level, and in the design of campaigns

to facilitate quality use. Ongoing research on the reasons why consumers return or otherwise dispose of medicines is also needed to promote medicine adherence and rational prescribing of medicines, and to minimise wastage. ◀

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