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**ORIGINAL RESEARCH**

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**Exploration of attitudes and barriers to bringing patient's own medications to the  
Emergency Department: A survey of paramedics**

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**ABSTRACT**

**Background**

Previous research has demonstrated that when ambulance paramedics facilitate patient's own medications (POM) being brought in to the Emergency Department (ED), the number of prescribing errors on the hospital admission medication chart was significantly decreased, thereby increasing admission prescribing accuracy.

**Aim**

We aimed to examine paramedics' attitudes to bringing POM to the ED and explore the associated barriers.

**Methods**

This was a cross-sectional survey of a convenience sample of ambulance paramedics bringing patients to the ED of a tertiary-referral metropolitan teaching hospital. The questionnaire consisted of 5 questions and took approximately 2 minutes to complete.

**Results**

The response rate for the survey was 81.9% (50/61). The study demonstrated a general agreement that bringing POM to the ED was important. Most highly rated barriers noted by respondents to bringing POM included time limitations (60%), location of patient pick up (44%), fear of losing patient's medications (24%) and patient's refusal (18%).

**Conclusions**

Overall, paramedics perceived bringing POM to ED as being important. There are identifiable barriers to paramedics bringing POM to the Emergency Department on admission. Resolution of such barriers may increase the frequency with which POM is brought to hospital, leading to a positive impact on prescribing accuracy.

**Keywords:** *allied health personnel; ambulances; emergency medical services; EMS; emergency medical technician; hospital emergency department; paramedic; survey*

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## **Introduction**

Approximately one third of patients presenting to the Austin Health Emergency Department (ED) do so via ambulance.<sup>1,2</sup> Paramedics attend to, assess and manage patients' pre-hospital treatment and prepare patients for hospital admission. As part of their routine procedures, they assess patient's medications and routinely record certain details of the medication regimen and/or bring patients' medications in to hospital.<sup>1,3</sup> This information forms part of their verbal or documented handover to the ED health-care professionals.<sup>1</sup> Anecdotally, whether or not patient's own medications (POM) are physically brought in to hospital may depend on the paramedics' view of the importance of the information captured on the containers, the urgency of the medical condition and the site of patient pick up.

Having a thorough medication history is a cornerstone of optimal therapeutic decision-making. It is widely recognised that most medication errors occur as patients move between the various interfaces of care, such as the community to the acute hospital.<sup>4-9</sup> For this reason, high priority has been placed on the importance of activities such as medication reconciliation.<sup>10-13</sup> Whilst it is not the paramedic's role to obtain a complete and accurate medication history, they can potentially facilitate this process normally carried out by pharmacists and medical staff upon patients' admission to hospital. In practice, patients' own medications may be an aid to obtaining a complete and accurate medical history.

Previous work has demonstrated that the presence of POM in ED reduces the incidence of prescribing errors on the admission medication chart from 25.5% of prescription orders when POM are not available to 13.1% when they are available.<sup>14,15</sup>

This survey was conducted to explore paramedics' attitudes of the importance of bringing POM to ED and the potential barriers to achieving this. This survey was conducted to inform the development of an intervention to encourage paramedics to bring POM to ED. The intervention was more likely to be successful if prevailing barriers to bringing POM to ED were addressed.<sup>16,17</sup>

## **Methods**

This study was a cross-sectional survey undertaken in the ED of a tertiary referral teaching hospital in metropolitan Melbourne, Australia. The ED has a mixed adult/paediatric annual patient census of approximately 60,000. The study was approved by the Austin Health Human Research Ethics Committee (HREC) and the Monash University Standing Committee on Ethics in Research (SCERH). Further approval was obtained from the Metropolitan Ambulance Service (MAS) Board of Directors and MAS Research Committee.<sup>i</sup>

The study participants were paramedics, including Mobile Intensive Care Ambulance (MICA) paramedics, paramedics in training, paramedic team managers and 'reserve' paramedics, who are allocated to vacancies in existing team rosters and do not belong to any particular team. Convenience sampling enrolled consecutive participants transporting patients to the study site during one week in October 2006 at times that the investigator (EC) was available.

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<sup>i</sup> *As of 1 July 2008, Victoria's three ambulance services (Metropolitan Ambulance Service, Rural Ambulance Victoria and Alexandra and District Ambulance Service) have been unified to form Ambulance Victoria.*

Paramedics were not asked to provide identified patient data. The questionnaires were personally distributed by one site investigator (EC). Completion of the questionnaire was voluntary. A participant information sheet was attached to the front of the anonymous questionnaire and paramedics' consent was implied by the completion of the questionnaire.

The study questionnaire consisted of five questions constructed in consultation with several MAS paramedics. The brief nature of the questions was intended to minimise the potential for time restraints as a reason for refusal to participate.<sup>18,19</sup>

The questionnaire is described in Figure 1 below. Questions assessed the time spent on organising POM at the event of a non-critical case, the perceived barriers to bringing POM to hospital with the patient in the ambulance, what sources were used to compile a medication history and the perceived importance of bringing POM to ED. Responses were recorded using tick box categories, number ranking based on perceived significance, rating scales, visual analogue and open ended item format in the form of additional comments.<sup>20</sup> Three paramedics were consulted about the length of the questionnaire, readability and interpretation as part of content validation. The questionnaire was piloted on five paramedics and minor editorial changes were made to the questions to enhance clarity. Data analysis was performed using Microsoft Excel®

**Figure 1. Questions used in the questionnaire to survey paramedics.**

Q1. Which ambulance station do you belong to?		
Q2. Approximately how much time do you spend on attending to patient's medications at the event of a non-critical case? (Includes writing down a medication list, searching for medications)		
<input type="checkbox"/> 0-5 minutes	<input type="checkbox"/> 5-10 minutes	<input type="checkbox"/> More than 10 minutes
Q3. What is the biggest barrier to bringing in patient's own medications to the ED? Number boxes in order of significance of barrier (1 = biggest barrier, 5 = least important barrier)		
<input type="checkbox"/> Time limitations	<input type="checkbox"/> Place of patient pick up	<input type="checkbox"/> Patient's refusal
<input type="checkbox"/> Fear of losing medications	<input type="checkbox"/> Other (Please specify)	
Q4. How frequently do you use each of the sources of information to ascertain the medication history? (1 = always, 2= often (>60%), 3= sometimes (30-59%), 4= occasionally (5-29%), 5= rarely (<5%), 6= never)		
<input type="checkbox"/> The patient (if appropriate)	<input type="checkbox"/> Patient's family / friends/ carer at the scene (if present)	
<input type="checkbox"/> Medication lists of any sort	<input type="checkbox"/> Patient's actual medications, dosing containers	
<input type="checkbox"/> Others (please specify)		
Q5. On a scale of 0-10, how important do you perceive bringing patient's own medications to hospital to be?		
<hr/>		
0	10	
(Minimal importance)	(Highly important)	
Comments:		

## Results

Sixty-one questionnaires were distributed and fifty questionnaires were completed and returned (response rate 81.9%). Paramedics who did not complete the questionnaire were either called to another case, or did not complete the questionnaire after patient handover or

completion of paperwork as intended. Ten (20%) respondents were members of a MICA team and the remaining 40 (80%) respondents were members of paramedic teams.

The majority of paramedics (34, 68%) spent 0-5 minutes attending to POM at the event of a non-critical case with the remaining sixteen (32%) paramedics spending 5-10 minutes.

#### *Barriers to bringing in POM*

Thirty paramedics (60%) considered time limitations to be the most (20%) or second most (40%) significant barrier to bringing in POM. Twenty-two paramedics (44%) considered the location of patient pick up to be the most (32%) and second most (12%) significant barrier. Fear of losing patient's medications was ranked by twelve paramedics (24%) as the most (16%) and second most (8%) significant barrier. Lastly, patient refusal was considered to be the most or second most significant barrier by 2 (4%) and 7 (14%) paramedics, respectively.

An additional barrier identified by 13 (26%) respondents was difficulties in locating medications. This included situations where medications were located in several unrelated parts of the residence or when the patient was unable to assist in locating the medications. Three (6%) paramedics considered a large quantity of medications to be a barrier, while 2 (4%) mentioned language barrier as a problem.

Some respondents noted reasons for not thoroughly *documenting* the medication list in the case notes. These included difficulty identifying tablets in cases where tablets were removed from their original containers and difficulty transcribing medication names in moving vehicles.

Two paramedics commented that they do not see any barriers to bringing in POM. Of these, one commented that it was a rare occurrence that medications did not accompany the patient when patients called the Emergency Call Service Triple Zero '000' from home. This was because the operator would advise them to have medications ready. Three paramedics commented that they preferred bringing in medication lists rather than medications while two noted a preference to bring everything that was medication related (i.e. packets of medications, strips, dose administration containers, prescriptions and medication lists) that they could find at the location.

#### *Sources used to compile the medication history*

Forty-two (84%) paramedics always (58%) or often (26%) referred to the patient about their medications, 41 paramedics (82%) always (28%) or often (54%) considered medication lists and 29 paramedics (58%) always (24%) or often (34%) considered family, friends or carers as sources of information. Other sources of information used to compile medication histories, when available, included SOS or medical alert jewellery (e.g. MedicAlert® bracelets)<sup>21</sup> and district/community nursing notes.

#### *Paramedics' attitudes on the importance of bringing POM to ED*

The mean score of paramedics in this study, on the importance of bringing POM to ED was 6.9 ( $\pm$  2.25) on a visual analogue scale of 0 – 10 (10 being highly important). This score suggests that overall, paramedics consider bringing POM to ED as important. The general consensus amongst the paramedics was that compiling a medication history was important, although they were mainly interested in whether a medication was part of the regimen and not the specific details of dose or administration frequency. Four paramedics stated that they were given conflicting instructions about whether or not to bring POM to hospital. One paramedic

commented that if the patient was unlikely to be admitted, they were less likely to bring in POM.

## **Discussion**

This study explored the attitudes of ambulance paramedics towards bringing POM to ED. It has raised a number of important issues.

Paramedics' reasons for not bringing POM to ED include time limitations (60% of respondents), location of pick up (44%), fear of losing medications (24%) and patient refusal (18%). Other reasons for not bringing POM to ED include (i) difficulties in locating medications, for example situations where medications were located in several parts of the house or when the patient was unable to assist in locating medications (26% of respondents); (ii) Large quantities of medications (6%) and (iii) language barrier problems (4%). Many paramedics noted that they often would not bring medications to the ED if they had noted the names on their patient case record. Paramedics also noted that they received conflicting information about whether medications should be brought to the ED. These points highlight the need for education of paramedics about the benefits of bringing POM to the ED. Research has shown such benefits to include a significant reduction in the number of prescribing errors that occur on the hospital medication chart.<sup>14</sup> Further, there is a potential for POM to minimize delays in administering regular medications to patients in the ED particularly after hours when the hospital pharmacy dispensary may be closed. If paramedics are made aware of the important implications of bringing medications to the ED, they may be more likely to give this activity greater priority where possible.

A number of respondents noted that they would leave the POM in the patient's home if they had a medication list available. The shortcomings of this practice need to be communicated to the paramedics, namely that lists are often incomplete and inaccurate.<sup>22-25</sup> Numerous authors have highlighted the importance of cross-referencing a number of information sources in order to compile a comprehensive medication history.<sup>24-28</sup> Therefore, if a medication list and POM are available, both sources of information should be brought to the ED.

Some paramedics noted that if a patient was likely to be admitted to hospital, they would be more likely to bring the POM to ED. This approach is not encouraged as it is difficult to accurately assess how unwell a patient is from the limited objective clinical data available at the scene of pick-up, hence the ability to predict admission is low.<sup>29,30</sup> In addition, to maintain the continuum of care between the community and the hospital, it is often important to continue a patient's own medications during the ED stay, often for medical conditions unrelated to the reason for ED presentation.

One concern noted by 24% of paramedics was that medications brought in to the ED might be lost during the patient's stay, therefore it was preferable to leave the medications safely at home. Once again, making paramedics aware of the importance of the presence of the POM to minimising medication prescribing errors and medication administration delays may alter their "risk versus benefit" assessment as to whether the medications are brought in. Another aspect of this issue is that hospitals must have mechanisms in place to minimise the potential for medications to be lost during a patient's ED and indeed, entire hospital stay.

Currently in Victoria, specific green storage bags are used in some institutions to store POM that are brought in to hospital, ideally as soon as possible after they present. Paramedics having access to these storage bags in the ambulance would be an added benefit, avoiding the need to search for a bag at the patient's home. Ryde Hospital ED (New South Wales,

Australia) has a similar intervention in place, involving Ryde ambulance station, where blood pressure sphygmomanometers are placed inside a large zip-locked medication bag, which are both placed within the Oxy-Viva (portable resuscitator). As paramedics always carry both pieces of equipment to assess each patient, it serves both as a prompt to bring patients' medications to hospital and a receptacle in which to store POM for transport to hospital.<sup>31,32</sup> The use of the distinctive green medication storage bags may minimise the risk of medications being lost during patient transport in hospital or on discharge.

The location of pick up was perceived as an important barrier for 44% of paramedics. In cases where patients were not transported from home (i.e. street, public place, friend/relatives home, doctor's clinic), it was less likely that POM were available. This, unfortunately, is a factor that cannot be controlled. However, as suggested by one paramedic, patients should be encouraged to wear medical alert jewellery as a source of medication history where appropriate. This may be particularly important when the patient pick-up location was not home and for patients with communication difficulties either for medical reasons or due to a language barrier. Medical alert jewellery is immediately recognised by paramedics and allows prompt access to critical information including medication history or the contact of someone who may know this information.<sup>21</sup>

Another significant perceived barrier for paramedics to bringing in POM was the difficulty in locating medications especially in cases where large quantities of both current and old medications were located at various different sites of the home. Several commented that they experienced difficulties in identifying medications that were unlabeled or mixed up in incorrectly labeled containers. Paramedics could spend less time identifying POM if old or outdated medications were removed and if tablets were not mixed in unlabeled or incorrectly labeled containers. The problem of excessive quantities of new and old medications stored at patients' homes and poorly identifiable medications was also noted in a study assessing the storage of unnecessary medicines stored in homes of patients at risk of medication misadventure.<sup>33</sup> These findings suggest a need for further projects involving patient education to optimise the use, management and storage of medications as well as disposal of unnecessary medications. Many Australian community pharmacies participate in the "Return Unwanted Medicines (RUM)" project.<sup>34</sup> This, in turn, may assist paramedics with bringing POM to ED. There is potential for paramedics to be involved in educating patients regarding the benefits of returning unwanted medicines to pharmacies.

Paramedics tended to use all sources of information available to ascertain patients' medication histories, including the patient, patient's family/friends/carers at the scene, medication lists and POM. This finding was encouraging. Although patients were considered a frequently used source of medication information by 84% of paramedics, patients were described by paramedics to be often descriptive rather than specific about what medications they were taking. In such cases, POM or written material was referred to for specific information where necessary.

Overall, paramedics rated bringing POM to ED as being important (6.9 mean score on scale from 0-10 with 10 being highly important). With increased education, paramedics' scores may increase, leading to more positive outcomes for patients.

This study has a number of potential limitations. This survey was conducted using convenience sampling and the sample size was not specifically determined. For the purposes of this survey, a timeframe of one week was considered to be appropriate for data collection. Distribution of approximately ten questionnaires a day was considered achievable based on

local hospital statistics on patient presentations by ambulance of approximately forty patients a day. The intent for this survey however, was to establish the existence of potential barriers to paramedics bringing POM to ED, hence this means of sampling was a practical and expedient method for this purpose.

Completion of the questionnaire was voluntary. If paramedics were called to another case and unable to complete the questionnaire, they were able to decline. Hence, there may be a potential for selection bias. Further, the survey was conducted at a single site, therefore is not representative of the entire paramedic workforce.

Three paramedics were consulted for content validity. This was an informal process where several paramedics (selected by convenience) were asked to comment on the questionnaire prior to piloting. Content validity may be more robust if conducted using focus groups of a selection of paramedics representative of the paramedic workforce. Similar comments can be made for the piloting stage of the survey.

As time restraint was perceived to be a potential reason for refusal of participation, the questions asked were brief in nature. Implementing future surveys through Ambulance Victoria at a time outside of paramedics' working hours may allow for further considerations of questions.

Lastly, there is potential scope for misinterpretation of questions presented in the questionnaire. However, paramedics' comments often described their intended responses, therefore the impact of variations in interpretation on internal validity is likely low.

## **Conclusion**

This study examined paramedics' attitudes and describes the perceived barriers to bringing POM to ED and has informed the planning of a multifaceted intervention program aimed at increasing the frequency with which paramedics bring POM to hospital. Overall, paramedics perceived bringing POM to ED as being important. Major barriers described include time limitations, location of patient pick up, difficulties in locating patients' medications and fear of losing patients' medications. These barriers need to be addressed to improve the frequency with which POM are brought in to ED. One aspect of the intervention is to provide support materials to paramedic team managers to rectify misconceptions and advise them of the benefits of bringing POM to hospital.

## References

1. Yong G, Dent AW, Weiland TJ. Handover from paramedics: Observations and emergency department clinician perceptions. *Emergency Medicine Australasia*. 2008;20(2):149-55.
2. Proportion of patients presenting to the Emergency Department by ambulance. MedTrak Health Information System, Austin Health [Database]. 2006 [Accessed 9 October 2006].
3. Talbot R, Bleetman A. Retention of information by emergency department staff at ambulance handover: do standardised approaches work? *Emerg Med J*. 2007 August 1, 2007;24(8):539-42.
4. Vira T, Colquhoun M, Etchells E. Reconcilable differences: correcting medication errors at hospital admission and discharge. *Qual Saf Health Care*. 2006 April 1, 2006;15(2):122-6.
5. Ong SW, Fernandes OA, Cesta A, Bajcar JM. Drug-Related Problems on Hospital Admission: Relationship to Medication Information Transfer. *Ann Pharmacother*. 2006 March 1, 2006;40(3):408-13.
6. Lau HS, Florax C, Porsius AJ, De Boer A. The completeness of medication histories in hospital medical records of patients admitted to general internal medicine wards. *Br J Clin Pharmacol*. 2000 June 1, 2000;49(6):597-603.
7. Beers MH, Munekata M, Storrie M. The accuracy of medication histories in the hospital medical records of elderly persons. *J Am Geriatr Soc*. 1990 November 1, 1990;38(11):1183-7.
8. Van Hessen PA, Petri H, Urquhart J. Do prescribed drugs always follow the patients to hospital? *Pharm Weekbl Sci*. 1990 April 27, 1990;12(2):66-70.
9. Cornish PL, Knowles SR, Marchesano R, Tam V, Shadowitz S, Juurlink DN, et al. Unintended Medication Discrepancies at the Time of Hospital Admission. *Arch Intern Med*. 2005 February 28, 2005;165(4):424-9.
10. Rogers G, Alper E, Brunelle D, Federico F, Fenn CA, Leape LL, et al. Reconciling medications at admission: safe practice recommendations and implementation strategies. *Jt Comm J Qual Patient Saf*. 2006 January 1, 2006;32(1):37-50.
11. Institute for Safe Medication Practices. Using medication reconciliation to prevent errors. *Medical Safety Alert*. Issue 35 - January 25, 2006. [cited 22nd September, 2008]; Available from: [http://www.jointcommission.org/SentinelEvents/SentinelEventAlert/sea\\_35.htm](http://www.jointcommission.org/SentinelEvents/SentinelEventAlert/sea_35.htm).
12. JCAHO looking closely at medication reconciliation. *Hosp Peer Rev*. 2006 May 1, 2006;31(5):65-7.
13. The Society of Hospital Pharmacists of Australia. Committee of Specialty Practice in Emergency Medicine. SHPA Standards of Practice in Emergency Medicine Pharmacy Practice. *J Pharm Pract Res* 2006; 36:139-142.
14. Chan EW, Taylor SE, Marriot JL, Barger B. Medications brought into the Emergency Department by Ambulance: Does this impact on the accuracy of prescribing on admission? [abstract]. Abstracts of the Annual Scientific Meeting of the Australasian College for Emergency Medicine 2006. *Emerg Med Aust* 2007; 19 (Suppl. 1), A25.
15. Chan EW, Taylor SE, Marriott JL, Barger B. Intervention encouraging ambulance paramedics to bring patients' own medications to the Emergency Department reduces prescribing errors on hospital admission. [abstract] SHPA 28th Federal Conference 2007 8-11 November 2007, Sydney Convention and Exhibition Centre. p 59.
16. Pope C, van Royen P, Baker R. Qualitative methods in research on healthcare quality. *Qual Saf Health Care*. 2002 June 1, 2002;11(2):148-52.

17. Boockvar K, Fishman E, Kyriacou CK, Monias A, Gavi S, Cortes T. Adverse Events Due to Discontinuations in Drug Use and Dose Changes in Patients Transferred Between Acute and Long-term Care Facilities. *Arch Intern Med.* 2004 March 8, 2004;164(5):545-50.
18. Boynton PM. Administering, analysing, and reporting your questionnaire. *BMJ.* 2004 June 5, 2004;328(7452):1372-5.
19. Iarossi G. The power of survey design: a user's guide for managing surveys, interpreting results, and influencing respondents. Washington: The International Bank for Reconstruction and Development/ The World Bank; 2006 [cited 2006 8th August]. Available from: [www.worldbank.org](http://www.worldbank.org).
20. Boynton PM, Greenhalgh T. Selecting, designing, and developing your questionnaire. *BMJ.* 2004 May 29, 2004;328(7451):1312-5.
21. MedicAlert® is the Ultimate in Emergency Patient Protection. [cited 2008 24 April]; Available from: <http://www.medicalert.com.au/>.
22. Nassaralla CL, Naessens JM, Chaudhry R, Hansen MA, Scheitel SM. Implementation of a medication reconciliation process in an ambulatory internal medicine clinic. *Qual Saf Health Care.* 2007 April 1, 2007;16(2):90-4.
23. Cohen V, Jellinek SP, Likourezos A, Nemeth I, Paul T, Murphy D. Variation in medication information for elderly patients during initial interventions by emergency department physicians. *Am J Health Syst Pharm.* 2008 January 1, 2008;65(1):60-4.
24. Valoppi G, Taylor SE. Inaccuracy of sources of medication regimens: A major barrier to rational prescribing in the Emergency Department. Proc. Society of Hospital Pharmacists of Australia (Victoria Branch) conference, Bendigo, Victoria. Novemeber, 2002. .
25. Gleason KM, Groszek JM, Sullivan C, Rooney D, Barnard C, Noskin GA. Reconciliation of discrepancies in medication histories and admission orders of newly hospitalized patients. *Am J Health Syst Pharm.* 2004 August 1, 2004;61(16):1689-95.
26. Murphy D, Cohen V, Likourezos A, Nemeth I, Paul T, Levick N. Assessment of Medication History Accuracy for Emergency Department Elder Patients. *Acad Emerg Med* 2005; 12(5): suppl1; 133-134.
27. Carney SL. Medication accuracy and general practitioner referral letters. *Intern Med J.* 2006 February 1, 2006;36(2):132-4.
28. Varkey P, Cunningham J, O'Meara J, Bonacci R, Desai N, Sheeler R. Multidisciplinary approach to inpatient medication reconciliation in an academic setting. *Am J Health Syst Pharm.* 2007 April 15, 2007;64(8):850-4.
29. Levine SD, Colwell CB, Pons PT, Gravitz C, Haukoos JS, McVaney. KE. How well do paramedics predict admission to the hospital? A prospective Study. *J Em Med.* 2006;31(1):1-5.
30. Pointer JE, Levitt MA, Young JC, Promes SB, Messana BJ, Ader ME. Can paramedics using guidelines accurately triage patients? *Ann Emerg Med.* 2001 September 1, 2001;38(3):268-77.
31. Good P, Hoschke D, Klarenaar K. TABLETS - Tablets are bagged letting Emergency *treat safely. Australian Resource Centre for Healthcare Innovations (ARCHI); 2007* [updated 2007; cited 2007 8th January]; Presentation. Available from: [http://www.archi.net.au/data/assets/pdf\\_file/0004/33862/tablets.pdf](http://www.archi.net.au/data/assets/pdf_file/0004/33862/tablets.pdf).
32. Good P, Klarenaar K. TABLETS - Tablets are bagged letting Emergency treat safely. 2007 [updated 2007; cited 2007 8th January]; Article. Available from: [http://www.archi.net.au/e-library/health\\_administration/awards06/ministers\\_innovation\\_award/tablets](http://www.archi.net.au/e-library/health_administration/awards06/ministers_innovation_award/tablets).
33. Vuong T, Marriott JL. Unnecessary medicines stored in homes of patients at risk of medication misadventure. *J Pharm Prac Res.* 2006;36:16-20.

34. RUM. Returning Unwanted Medicines. The National Return & Disposal of Unwanted Medicines Limited.; [cited 22nd September 2008]; Available from: <http://www.returnmed.com.au/faq>.

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