Accuracy of packaging of dose administration aids in regional aged care facilities in the Hunter area of New South Wales

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ABSTRACT

Objective: To audit the accuracy of dose administration aid (DAA) packaging in regional aged care facilities (RACFs) within the boundaries of the Hunter Urban Division of General Practice.

Design, participants and setting: Each participating RACF audited one DAA for each resident receiving medication between May and August 2006. Registered nurses compared the contents with the medication chart prepared by the general practitioner and recorded any discrepancies as incidents.

Main outcome measures: Number of medication incidents in the provision of DAAs.

Results: 297 incidents were detected from 6972 packs for 2480 residents (incident rate of 4.3% of packs and 12% of residents) from 42 participating RACFs. Reasons for incidents included medications missing from a pack (99 occasions), wrong medication dispensed (12), supply of the wrong strength (32), incorrect labelling (7), pharmacies supplying medication that had been ceased by the GP (37), incorrect dosage instructions (32), medications not delivered to the RACF (13).

Conclusion: The rate of incidents in DAA packaging in RACFs was high. The error types included incorrect packaging, correct packaging but the DAA was no longer required, and operational problems. Recommendations for improvement include: continuing audit and analysis by RACFs; streamlining of communications among GPs, pharmacists and RACF staff; using electronic methods to chart, order and dispense medications; use of generic names as much as possible; development of guidelines for the supply of medication in DAAs.

MJA 2008; 188: 280–282

There are 69 regional aged care facilities (RACFs) in the Hunter Urban Division of General Practice.

Medication advisory committees (MACs) in each RACF are a key part of the implementation of the "quality use of medicines" strategy.[1] The terms of reference of the MACs include conducting benchmarking exercises, developing regional policies, promoting medication management reviews, and the use of information technology for prescribing, clinical records and communication. The committees also act as a conduit for communication between general practitioners and RACFs.

As part of the Aged Care General Practitioners Panels Initiative,[2,3] a network of five regional medication management committees has been established and is supported by the Division to ensure that all local RACFs may participate in MACs. This initiative ensures that all RACFs have access to GPs with interest and expertise in aged care.

Sixty-four facilities have committed themselves to participation, and each regional medication management committee includes a representative from each RACF, two GPs, a geriatrician and a pharmacist. A Divisional peak medication advisory committee coordinates the activities of the regional MACs and provides strategic advice to the Division and the chairs of the five regional medication management committees.

Discussions at the MACs raised concerns about the accuracy of packaging of dose administration aids (DAAs). A DAA has individual doses of a day's or week's supply of drugs arranged according to the dosage schedule for the day.

A study in Queensland concluded that packaging errors may be a significant problem in the RACF setting, but also reported the benefits of aids, including reduced administration errors, time savings and easier medication management.[4] Therefore, on behalf of the regional MACs, we audited the accuracy of packaging of DAAs, by comparing them with charted medications.

METHODS

An audit form was drafted as a result of a review of medication incident forms currently used at aged care facilities. It was then tabled at the MAC meetings and trialled at five RACFs. On the basis of this feedback, a standard audit form was agreed upon and demonstrated at the meetings. Each participating RACF audited one set of DAA for each resident receiving medication between May and August 2006. A registered nurse was requested to compare the contents to the medication chart prepared by the GP and to record any discrepancies.

Incidents were counted by medication identification (ie, if three different drugs were missing from a pack, then three incidents were counted. If one drug was missing from seven doses, then one incident was counted). The Division's Aged Care Panel Project Officer followed up any information gaps. All RACFs were asked on receipt of the completed audit forms to confirm that regular medications for their residents had been audited. All DAAs in the audit were multidose or single-dose Webster-paks. "As required" medications were included if used at least three times within 2 weeks.

Medication incidents and the reasons for them were coded and collated.

RESULTS

In total, 30 nurses completed audit forms for 42 RACFs. From 6972 packs for 2480 residents, 297 incidents were detected, an incident rate of 4.3% of packs and 12% of residents (Box 1). Some RACFs reported the labelling of a drug by the brand name rather than the generic name, but these incidents were not included in the results.

The most common incident was a medication missing from a pack, followed by "other" incidents, supply of a ceased medication, and wrong strength dispensed or incorrect dosage instructions. Errors associated with GPs (ie, script not supplied, illegible script or chart, failure to chart or communicate change) were the attributable reason for the incident on 79 occasions; however, the pharmacy was implicated in 125 incidents. Of the 99 reported incidents of missing medications, 32 were at one low-care facility alone. The reason for supply of a ceased medication was the tendency of some pharmacies to pack them in advance of the time required.

1 Medication incidents identified by an audit in 42 regional aged care facilities in the Hunter region of New South Wales, 2006

	Type of incident									
Reason for incident	Med missing from pack	Wrong med disp	Wrong strength disp	Incorrect label	Supply of ceased med	Incorrect dosage instructions	Delivery did not arrive	Other	Unknown	Total
Prescription not supplied	6	0	0	0	0	0	4	1	0	11
Illegible prescription or chart	3	0	2	0	0	1	0	1	0	7
Failure to chart change in med*	1	0	0	0	0	3	0	22	0	26
Failure to communicate change in med	9	0	5	0	10	5	0	6	0	35
Pharmacy origin	36	11	20	3	13	13	9	20	0	125
Other	13	0	0	0	0	2	0	3	0	18
Unknown	31	1	5	4	14	8	0	11	1	75
Total incidents	**99**	**12**	**32**	**7**	**37**	**32**	**13**	**64**	**1**	**297**

med = medication. disp = dispensed. * For example, change in medication communicated to pharmacist only. ◆

Incidents by RACF: Forty-two RACFs participated in this audit; eight did not detect any incidents, and in the 34 other facilities, the rate ranged from 1% to 54%. The RACF with the most incidents cited communication problems with an attending GP as a major contributing factor. Characteristics of RACFs with zero errors were a greater use of medical software and fewer individual GPs caring for residents.

Incidents by pharmacy: The RACFs had 12 supply pharmacies. No incidents occurred in two pharmacies, and the rate of incidents (compared with resident numbers) in the 10 other pharmacies ranged from 1.9% to 22%.

Incidents by GP: Of about 210 GPs attending RACFs, 89 were associated with an incident. The number of incidents by an individual GP ranged from zero to 20, and the median for those GPs associated with an incident was 3.3.

Incidents by medication class: The results are presented in Box 2.

2 Medication incidents by type of drug, from an audit in 42 regional aged care facilities in the Hunter region of New South Wales, 2006

Medication class	No.
Analgesics	71
Cardiovascular drugs	50
Gastrointestinal drugs	39
Psychiatric drugs	21
Anticoagulants	14
Endocrine drugs	10
Antimicrobial drugs	12
Neurological drugs	10
Musculoskeletal drugs	0
Other	70

DISCUSSION

The rate of incidents in DAA packaging was high (4.3%). The error types fell into three main categories: incorrect packaging; correct packaging, but the DAA was no longer required; and operational problems. There were many reasons for these errors, including poor communication, poor systems and human error.

The rate of reported incidents varied widely across the RACFs. Reporting could have been influenced by the study design (eg, nurses may have misinterpreted our instructions and there was no verification of the error by a pharmacist); however, the result is similar to that from a Queensland study, in which directors of nursing reported a packaging error rate of 1.4%, and observations of DAA packs and residents' charts indicated an error rate of 3.1%.[4]

Many changes to medication were made without GP attendance. Thus, errors may have arisen if orders were telephoned and prescriptions or charts had to be sent at a later time. Some GPs are gaining remote electronic access to RACF medical records, which should improve communication, but most RACFs have not yet implemented electronic medical records.

Hospital transfers may also have contributed to the number of errors. The GP is not usually present at the time of a patient's transfer back to an RACF from a hospital. The facilities rely on hospital documentation for the supply of medication, and changes of medication may be made without input from the GP regarding previous history. There is a need for four-way communication among hospital staff, GPs, pharmacists and RACF staff to ensure all parties have knowledge of any changes in residents' clinical status and prescribed medications.

A review of Australian studies showed that the rate of errors in administration of drugs from bulk stock in the ward ranged from 15% to 20%, and that supplying patients individually reduced this to 5% to 8%.[5] This is the rationale for providing DAAs (ie, a form of individualised supply) to RACFs, but this benefit was somewhat countered by the fact that a significant number of DAA packaging errors occurred. It is important that pharmacies have adequate quality-control procedures to minimise DAA packaging errors. Reasons for packaging errors may arise from inadequate reimbursement for this service. We did not examine this problem in greater depth, but the results suggest that packaging needs to be regarded as a worthwhile endeavour rather than a free service.

Some RACFs noted that brand names were used in preference to generic names. Pharmacists frequently use alternative brands in DAAs; thus, an additional risk may have been created if the GP charted a medication by trade name and the DAA was labelled by a different trade name.

It has been estimated that up to 25% of all medication errors are attributable to confusion of drug names, and 33% to a mistake in packaging or labelling.[6] The New South Wales Therapeutic Advisory Group Safer Medicines Group has produced a document that recommends terminology, abbreviations and symbols to be used in prescribing and administering drugs.[7]

Recommendations

Continuing audit and analysis by RACFs are essential to address the root causes of errors. The scope of regular audits should be included in all contracts between pharmacies and RACFs. Monthly audits, with the pharmacist and a registered nurse in attendance, are recommended.

The system for communicating changes in doctors' orders among GPs, pharmacists, and RACFs should be streamlined. Electronic communication bypasses the risk of errors that occur with verbal orders or illegible writing, and can be used by all stakeholders. Medical computing in RACFs and its use by GPs is a basic first step. Further developments, with electronic signatures and systems to permit the medication chart to be recognised as a legal prescription, are also required.

Guidelines should be developed for the supply of medications in RACFs. These guidelines should address the issue of advance packing of DAAs and aim to reduce the packaging error rate. Other improvements, such as standard use of generic drug names, terminology, abbreviations and symbols in prescriptions and drug charts, are also needed. The Pharmacist Advisor of the Hunter Urban Division of General Practice has begun this task in consultation with local supply pharmacists. Residential medication management reviews provide an additional safety check, and it is recommended that GPs participate in them.

ACKNOWLEDGEMENTS

This project was an activity of the Aged Care GP Panels Initiative, which is funded by the Australian Government Department of Health and Ageing. We would like to thank the registered nurses in the RACFs for raising this issue and for their contribution to data collection, without which the project would not have been possible.

COMPETING INTERESTS

None identified.

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(Received 3 Sep 2007, accepted 29 Nov 2007) ❑

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