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**Phased implementation of the National  
Residential Medication Chart in NSW  
residential aged care facilities:  
Summary of evaluation**

**June 2014**

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## INTRODUCTION

Australia has a large network of residential aged care facilities (RACF). Many of the residents take medicines supplied through the Pharmaceutical Benefits Scheme (PBS), which was originally designed to supply medications to people living in the community. The regulatory and operational arrangements for the PBS, while they have been adapted to the different milieu of the residential aged care sector over time, have been reported to cause some frustration for staff, visiting medical practitioners, pharmacists, and residents.

The Australian Commission on Safety and Quality in Health Care (the Commission) had previously developed and implemented Australia's nationally standard general ward medication chart, the National Inpatient Medication Chart, to reduce the incidence of adverse events throughout the medication management cycle. That chart has improved safety in the acute care settings for which it is designed. When used in RACFs, however, it has proved problematic due to differences in medication management processes in the two settings.

As part of a larger initiative, the Supply and Claiming of PBS/RPBS Medicines from a Medication Chart in Residential Aged Care Facilities,<sup>1</sup> the Commission worked closely with stakeholders over 18 months to develop the National Residential Medication Chart (NRMC). Because of the variable IT capacity in the sector the NRMC is a paper-based booklet.

Earlier work had identified that the main issues that needed to be considered in the development of the NRMC were as follows.

1. Each RACF used different arrangements for the management of medications, meaning that people involved with more than one RACF, such as nursing agency staff, pharmacists and medical practitioners, had to become familiar with multiple approaches, thereby increasing the risk of error.

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<sup>1</sup> This is an initiative under the Fifth Community Pharmacy Agreement (Australian Government 2010) which is managed jointly by the Department of Health and Ageing as the Commonwealth's representative and the Pharmacy Guild of Australia, with oversight by the Agreement Consultative Committee.

2. Each RACF had multiple records in different formats and places, meaning nobody could look at a resident's medication documentation and be sure they had it all.
3. Medical practitioners needed to write the same information twice – once for pharmacists as a PBS prescription and again for RACF staff to administer the prescribed medication.
4. Pharmacy staff complained of spending considerable amounts of time chasing prescriptions for orders which had been made by telephone.
5. RACF staff found it difficult to reconcile the items supplied by the pharmacy with the prescriptions presented for signing.

The NRMC was designed to be the main communication tool for medications information between prescribers, dispensers, administrators and reconcilers. It would initiate supply and claiming of most PBS/RPBS medicines directly from the chart without the additional need for a written prescription. It was also intended to improve safety through standard fields, layout and an intuitive design.

There have been considerable improvements in safety and quality, including a reduction in the number of medications prescribed from 13.8 per resident to 5.7 per resident over the eight months studied and a reduction in the number of medication errors from 9.2 errors per 1000 prescriptions to 3.5 errors per 1000 prescriptions.

This report summarises the process and outcomes of its phased implementation.

## THE PROCESS

Phased implementation of the NRMC was developed as a project by the Commission, with specific funding from the Australian Government through the Fifth Community Pharmacy Agreement. It would test the functionality and usability of the design and layout in a live environment.

Phased implementation took place in NSW over eight months in 2013. It involved 22 RACFs of mixed size, location, operational characteristics and track record of resident outcomes, delivering care to 1,689 residents. Evaluation was based on data from 4,673 NRMCs used by 1,747 RACF staff, 220 general practitioners and 16 pharmacies.

Data collection was based on a quantitative and qualitative design, with intensive iterative feedback loops. Audit tools were purpose built. Pre, during and post NRMC implementation data enabled cross comparisons between the NRMC and existing medication charts in use at each RACF and provided valuable information for the final iteration/development of the NRMC.

The design allowed that lessons learned would be incorporated throughout the project. To this end, the medication chart went through three iterations (NMRC1, NMRC2 and NMRC3) and supporting materials were progressively refined.

Further details of the process are available at <http://www.safetyandquality.gov.au>

## RESULTS

The phased implementation of the NRMC produced improvements in the way in which medication charts were used in RACFs, and also the safety and quality of care for residents.

### Functionality and usability

The functionality and general usability of the NRMC were assessed positively. In particular:

- prescribers said they spent less time writing prescriptions
- pharmacists said they spent less time chasing missing prescriptions
- RACF and medical practitioners appreciated having all information related to medications in one place
- RACF staff felt less stress dealing with medications
- RACF felt included in the process of managing medications, which had previously been a transaction between prescriber and pharmacist
- RACF staff noted that the NRMC reduced the requirement for producing and storing separate documents for the documentation of blood glucose levels, weight and pathology results
- RACF staff noted and approved of a holistic approach to medicine administration.

### Safety and quality

There were considerable improvements in safety and quality.

In particular, there was a reduction in the number of medications prescribed from 13.8 per resident to 5.7 per resident over the eight months studied (see Table 1).

**Table 1: Medications per resident**

	<b>Pre-NRMC (n=1,970 residents)</b>	<b>NRMC2 / NRMC3 (n=2,567 residents)</b>
<b>Medications per resident</b>	<b>13.8</b>	<b>5.7</b>
Regular medications	9.7	4.8
PRN medications	3.8	0.6
Nurse-initiated medications	0.05	0.03
Short term medications	0.18	0.10
Variable dose (mainly warfarin)	0.04	0.04
Insulin	0.03	0.03

There was a measureable reduction in the number of medication errors from 9.2 errors per 1000 prescriptions to 3.5 errors per 1000 prescriptions.

**Table 2: Errors per 1,000 prescriptions**

	<b>Pre-NRMC (n= 27,186 prescriptions)</b>	<b>NRMC2 / NRMC3 (n=14,505 prescriptions)</b>
<b>Errors per 1,000 prescriptions</b>	<b>9.2</b>	<b>3.5</b>
Pharmacy medicine supply		
Incorrect packaging	4.3	1.7
Incorrect signing sheet	0.7	n/a
Shortage of stock	0.2	0
RACF incidents		
Resident identification	0.1	0
Incorrect dose	0.7	0
Incorrect time	0.7	0.3
Incorrect medicine	0.1	0
Medicine not given	1.0	1.0

Participants also reported:

- improved collaborative clinical decision making
- improved information management with a single place of documentation
- increased reporting of anomalies in blood glucose level readings and weight loss readings, as staff could instantly recognise a change through the visual display of information on graphs
- increased use of two signatures for administration of high risk medicines.



## DISCUSSION

This project set out to build on the work in developing the NRMC by piloting it in selected RACFs.

Through an intensely iterative process, the NRMC and its supporting materials were refined to the point where they were widely accepted by users.

The chart is now a 52-page booklet that is valid for up to four months, and is kept with the resident. Copies of relevant parts of the chart are sent to the pharmacy each time medicines are needed. It acts as both the prescription form for prescribers, and the medication chart for those administering medications. This saves duplication, and also makes it easier for medical practitioners and RACF staff to check that medications prescribed have been administered.

It incorporates all the required data about the resident in one place. It highlights alerts concerned with identity and medication issues, and has separate areas for medicines which are prescribed regularly, those with variable doses, those required PRN and those which are nurse-initiated. It also has a graph where weight is charted – the visual representation encourages early identification of weight loss.

Most importantly, each resident has only one chart. The possibility of duplication or of medication orders being missed is significantly reduced.

Feedback from users suggests many positives beyond the functionality of the chart, including the re-engagement of RACF staff in the medication process and the saving of time and resources. While cost-efficiency was not specifically measured, qualitative feedback suggests the NRMC is a cost-effective solution to many of the problems faced in the sector around the management of medications.

Implementation of the NRMC also led to considerable improvements in quality and safety. The number of different medications prescribed fell from 13.8 to 5.7 per resident. There were declines across all types of prescribing – regular, PRN, nurse-led and short-term – while the rate of prescribing of warfarin and insulin remained stable. These results suggest a marked improvement in prescribing patterns, and also suggest the data has internal validity. They also suggest that the possibility of adverse events and of drug interactions will be reduced through widespread adoption of the NRMC in the residential aged care sector.

There was also a marked reduction in medication errors from 9.2 to 3.5 errors per 1,000 prescriptions. The reduction in errors applied at both the pharmacy stage and the RACF stage.

These improvements are all in line with the principles of the quality use of medicines.

The process of implementation was also the catalyst for review of jurisdictional therapeutic goods regulations, to complement and enable Commonwealth requirements for the supply and claim of PBS/RBPS medicines from a medication chart.

## APPENDIX: STAKEHOLDERS

The NRM Reference Group, providing oversight to the project, consisted of representatives from:

- Aged and Community Services Australia
- Aged care sector management
- Australian Medical Association
- Australian Nursing Federation
- Consumer groups
- Department of Health (Cth)
- Department of Human Services (Cth)
- Department of Veterans' Affairs (Cth)
- Governments of NSW, SA, and Victoria
- Leading Aged Care Services, formerly the Aged Care Association Australia
- Pharmaceutical Society of Australia
- Royal Australian College of General Practitioners
- The Pharmacy Guild of Australia.

The First Tier Communications Group included stakeholders that held major influence in the residential aged care sector and consisted of the following member organisations:

- Aged Care IT Vendors Association
- Australian Aged Care Quality Agency, formerly the Aged Care Standards and Accreditation Agency
- Australian College of Nurse Practitioners
- Australian College of Nursing, formerly the Royal College of Nursing Australia and The College of Nursing
- Australian and New Zealand Society for Geriatric Medicine
- Australian Nursing Federation
- Council on the Ageing Australia
- Medical Software Industry Association
- Office of Aged Care Quality & Compliance, Department of Social Services, formerly Department of Health and Ageing
- Subject matter experts including medication management proprietors, directors of nursing, managers and academics.