



Evidence Briefings on Interventions
supporting safer Transitions of Care

Strategies to facilitate safer medication management at transitions of care

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Strategies for Safer Medication Management at Transitions of Care

PURPOSE

This briefing paper summarises the evidence on the effectiveness of strategies that support safer medication management during transitions of care (TOC). It is designed to assist health organisations and relevant health professionals across all settings to gain awareness of evidence used to optimise medication management during TOC. These strategies can be considered and tracked by existing governance committees and processes.

CURRENT EVIDENCE SHOWS

- Medication-focused strategies at admission and/or discharge reduce medication errors and other medication-related problems (MRPs) during TOC. They also improve medication adherence and patient satisfaction.
- Medication reconciliation at admission and discharge are effective strategies for resolving medication discrepancies and errors.
- Partnered pharmacist medication charting or prescribing reduces prescribing errors at admission and discharge. It can also shorten patients' hospital stay if done at admission.
- Coordination of medicine supply and medication administration charts, usually led by hospital pharmacists (particularly at discharge), can facilitate timely and continuous access to medicines.
- Pharmacist-led medication review services post-discharge are effective for reducing MRPs and emergency department (ED) visits.

Background

Transitions of care (TOC), the transfer of healthcare between providers or settings, are at risk of incomplete information transfer, miscommunication, and delays in access to medicines and medication charts.¹ Poor TOC are associated with adverse events such as higher rates of hospital readmissions and medication errors, posing risks to patient safety.¹

In Australia, medication-related errors contribute to over 250,000 hospital admissions annually, with an estimated cost of \$1.4 billion.^{2, 3} A Cochrane review revealed that 559 out of every 1000 patients experience medication discrepancies during TOC, which can cause patient harm.⁴ Studies have shown that inadequate discharge arrangements can lead to costly and unnecessary hospital readmissions, preventable adverse events and drug related errors.^{5, 6} The complete absence of a discharge summary at TOC was associated with a 79% increase in the risk of readmission within seven days and a 37% increased risk of readmission within 28 days.⁷

Reducing patient harm during TOC is a global priority under Australia's Response to the World Health Organisation's Global Patient Safety Challenge: Medication Without Harm.⁸ Yet, multiple issues have been identified demonstrating the complex processes required for safe medication management at TOC. This includes the need for coordination between settings with effective communication, collaboration and information sharing and the availability of tools and systems to support safe medication management at TOC.⁹ Previous strategies have largely focused on medication reconciliation and communication of medicines information. A TOC stewardship approach provides opportunities to focus organisational resources, foster multi or inter-disciplinary collaboration, and improve coordinated care when individuals transfer to/from different settings.⁹ Evidenced-based strategies for optimising medication management during TOC are therefore

crucial to supporting safe and timely care.

Methods

A rapid literature review was conducted to identify approaches to support optimal medication management during TOC to and from the hospital (i.e. admission and discharge). The literature search spanned three databases (PubMed, Scopus, and Embase), and covered January 1, 2013, to October 18, 2023. Inclusion criteria were confined to studies explaining medication-focused strategies during TOC, published in English, and with accessible full-text. All study designs, including randomised controlled trials (RCTs) and observational studies, were included when considering the range of strategies used. The database search was supplemented with a hand search of the literature (including relevant older Australian studies) and an environmental scan of 58 organisations to locate relevant documents. For assessing effectiveness, where possible, findings from systematic reviews and RCTs were considered first. Findings from non-randomised studies were considered when there was insufficient RCT data.

Results

The literature search identified 11,383 articles, of which 112 were included in the analysis. Of these 112 articles, 17 described medication management-focused services upon hospital admission, 12 described medication management-focused services upon hospital admission and discharge and 83 described medication management-focused services during and after hospital discharge. Significant heterogeneity was reported in the intervention type included in the studies. The environmental scan identified 58 frameworks and policy documents from government or professional organisations.

Strategies for supporting safer and high quality medication management at TOC

The literature review and environmental scan identified seven strategies to facilitate safer medication management at TOC at hospital, community and residential care levels (Figure 1).

1. Medication reconciliation at hospital admission

Two systematic reviews have shown that pharmacy-led medication reconciliation at admission reduced medication discrepancies by 66%,¹⁰ and the risk of medication errors by 63%.¹¹ Although no improvements in mortality, hospital readmission, or length of stay (LOS) were reported in RCTs evaluating this strategy,¹²⁻²⁸ this may be because these outcomes are not specifically medication-related. Furthermore, medication reconciliation at admission should be supplemented by follow-up medication review to potentially influence these outcomes. There also may be adverse events avoided that were not measured in studies, including patient-reported outcomes, such as pain control. Previous Australian²⁹⁻³³ and international literature^{13, 14, 34-36} highlight the importance of timely completion of medication reconciliation, suggesting that these should be completed within 24 hours of hospital admission to avoid adverse medication events in hospital.

2. Medication reconciliation at and post hospital discharge

In Australian settings, observational studies reported that medication reconciliation reduced the number of medication discrepancies and errors upon discharge.^{37, 38} Two systematic reviews found medication reconciliation at discharge reduced Medication Related Problems (MRPs).^{10, 39} Although reductions in mortality, readmissions or ED visits were not reported in one review,³⁹ the other review by Mekonnen et al. (2016) assessed comprehensive programs extending beyond a discharge medication reconciliation upon discharge. This included follow-up/home visits and patient counselling during the 30-day post-discharge period.¹⁰ They showed that pharmacist-led medication reconciliation services resulted in a substantial reduction of 67%, 28% and 19% in adverse drug event-related hospital revisits, ED visits and hospital readmissions compared with usual care, respectively. However, effect on mortality and composite all-cause readmission/ED visits remained inconclusive based on the current body of evidence and requires further high-

quality research.¹⁰ Therefore, although discharge medication reconciliation alone may not effectively reduce readmissions or ED visits, integrating more comprehensive interventions, such as bundle of medication reconciliation with patient education and post-discharge follow-up, could enhance the likelihood of a positive impact on hospital readmissions and ED visits. This supports the notion of a multidisciplinary stewardship approach to better coordinate medication management interventions at TOC.

3. Partnered pharmacist medication charting and prescribing on admission and discharge

Partnered pharmacist medication charting (PPMC), or collaborative prescribing, is where credentialed pharmacists chart medicines after completing a medication reconciliation, reviewing, and discussing the patient's needs with a medical officer.²⁷ This collaborative model has been implemented in Australia, and evidence shows that PPMC upon hospital admission is associated with a significant reduction in the median length of hospital stay (4.7 vs. 4.2 days; $p < 0.001$) and a reduction in the proportion of patients with at least one medication error (from 66% to 3.6%).^{32, 33, 36, 40} Similar findings have been replicated in other Australian settings.¹⁰ Pharmacist-led collaborative discharge prescribing has also been shown to reduce medication errors.^{41, 42} Lastly, a pre-post study showed pharmacist-prepared prescriptions in an electronic system at hospital discharge resulted in patients being discharged 57 minutes earlier ($p = 0.01$).⁴³ By integrating pharmacists into the prescribing process, hospitals can ensure more accurate and timely medication management, particularly for patients at high risk of medication-related problems.

4. Provision of medicines-related support to patients and carers during transitions of care

Providing medication information and supporting medication adherence can reduce MRPs and enhance medication adherence and patient satisfaction during TOC.⁴⁴⁻⁶⁹ This is primarily offered to patients and their carers through verbal counselling and/or written documentation. In particular, integrating support for medication adherence into patient and carer counselling showed an improvement in medication adherence.^{47, 48, 52, 53, 61, 70-74} Patient-friendly material and comprehensive and accurate medication lists have been promoted to empower patients to be their medicine safety advocates.^{75, 76} However, no RCTs were identified to evaluate the impact of patient-friendly medication materials on patient outcomes, highlighting the need for further research in this area.

5. Communication of information between healthcare providers during transitions of care

Clear, timely and accurate communication between healthcare providers have been shown to support TOC. This communication includes verbal and written information (such as documentation in patients' medical records).^{45, 50, 54, 57, 61, 68, 77-83} Discharge medication summaries, which are transmitted by paper, email, or fax, and other TOC interventions can provide a comprehensive overview of the patient's care plan, transferring information from hospital-based clinicians to healthcare providers in the primary care setting.^{51, 64, 66, 79, 84} Communication between hospital and community pharmacists addressing medication discrepancies, has been shown to improve patient satisfaction post-discharge.^{79, 84} An Australian RCT showed that pharmacist-prepared medication management plans on discharge summaries led to significant reductions in medication errors per patient (62% vs 15%, $p < 0.01$).⁸⁷ Pharmacist-physician collaboration has also been shown to improve communication of medication changes in discharge summaries.³⁷ Furthermore, the use of standardised discharge medication management templates can be associated with significant reductions in MRPs and associated harm.⁸⁵⁻⁸⁷ This highlights the importance of effective communication during TOC.

6. Provision and coordination of medication supply, including dose administration aids and interim medication charts where necessary

Hospital-supplied medications and interim residential care medication administration charts (IRCMACs) are an effective strategy for facilitating continuity of medication administration after discharge from hospitals. Medication supply at the hospital bedside prior to discharge, coupled with discharge counselling, has been proven to be effective in reducing hospital readmissions.^{46, 88} Furthermore, several Australian studies showed IRCMACs provided with discharge medications significantly lowered the proportion of patients with missed or delayed doses in the 24 hours post-discharge to a residential care home, and fewer patients requiring locum General Practitioner (GP) attendance to write medication orders.⁸⁹⁻⁹¹ No RCTs were identified examining the impact of dose administration aids or interim medication charts on post-discharge clinical outcomes, indicating a need for further studies in this area.

7. Medication review and patient education following hospital discharge

Existing literature evaluating medication review services following hospital discharge suggests pharmacists play an essential role in facilitating the ongoing quality and safe use of medicines. A 2023 systematic review determined that post-discharge pharmacist-led medication review services can decrease hospital readmissions.⁹² Medication reviews post-discharge were effective in reducing MRPs^{45, 51, 63, 66, 93} and improving patient satisfaction,⁸⁴ however, they were not cost-effective,⁴⁵⁻⁴⁷ with only one study showing cost reduction.⁹⁴ This study by Freeman et al. showed integrating pharmacists into general practices who provided post-discharge medication review services in Australia resulted in a significant (54%) reduction in ED presentations (but not hospital readmissions) and health-related costs.⁹⁴

In Australia, hospital-initiated medication reviews (HIMR), facilitated by a hospital-based liaison pharmacist, significantly reduced the number of days to a pharmacist-led post-discharge medication review compared to the time to a standard home medicines review (HMR), which requires a GP referral.⁹⁵ Hospitals with an Outreach Pharmacy service may offer Hospital Outreach Medication Reviews (HOMRs). A study examining this service showed that HOMRs were well-received by patients (99% felt the HOMR was worthwhile) and GPs (96% agreed with recommendations).⁹⁶ Evidence from the primary literature⁹⁷ and systematic reviews^{98, 99} demonstrates the effectiveness of timely HMRs and residential medication management reviews (RMMRs) in identifying and preventing general MRPs. One study in patients prescribed warfarin showed improved clinical outcomes, including reduced haemorrhagic or thromboembolic events when the patients received a post-discharge medication review service.¹⁰⁰ Therefore, further work should be conducted to develop and implement a standardised framework for timely post-discharge medication reviews to enhance medication safety.

Conclusions

The most effective strategies at TOC are pharmacist-led and delivered in collaboration with other healthcare professionals. The evidence supports increased pharmacist involvement in collating medication histories, charting or prescribing medications, preparing medication management plans and IRCMACs, and conducting post-discharge medication reviews.

Integrating timely strategies into daily practice is crucial for reducing medication errors and their harm to patients during TOC. This effort relies on interdisciplinary collaboration among healthcare professionals in the acute and primary care settings to ensure comprehensive patient care and safety during care transitions. As these strategies need to be delivered in a timely manner to prevent harm, a coordinated stewardship approach at TOC is warranted and can lead to better patient outcomes.

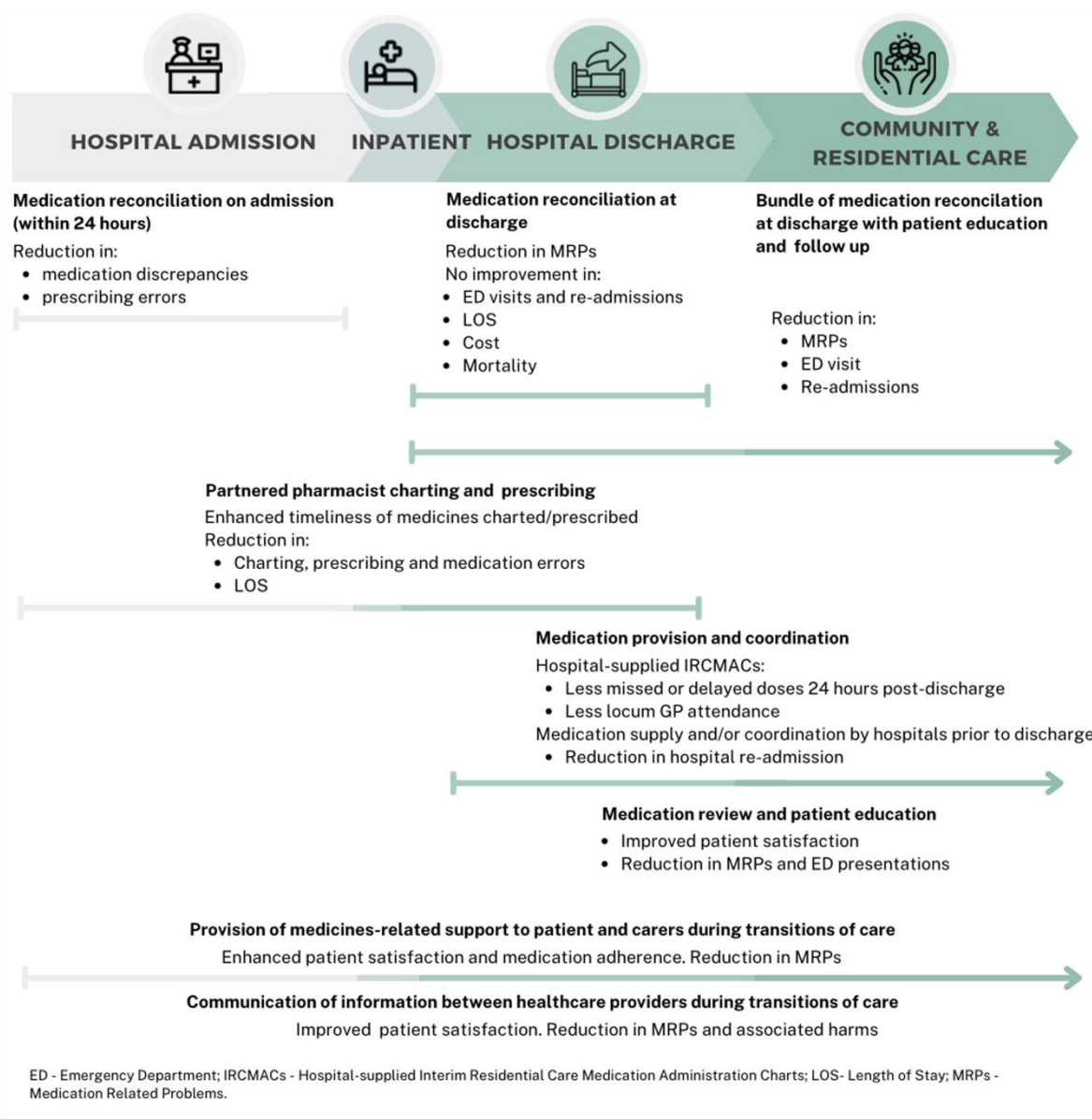


Figure 1. Strategies to facilitate safer medication management at transitions of care.

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