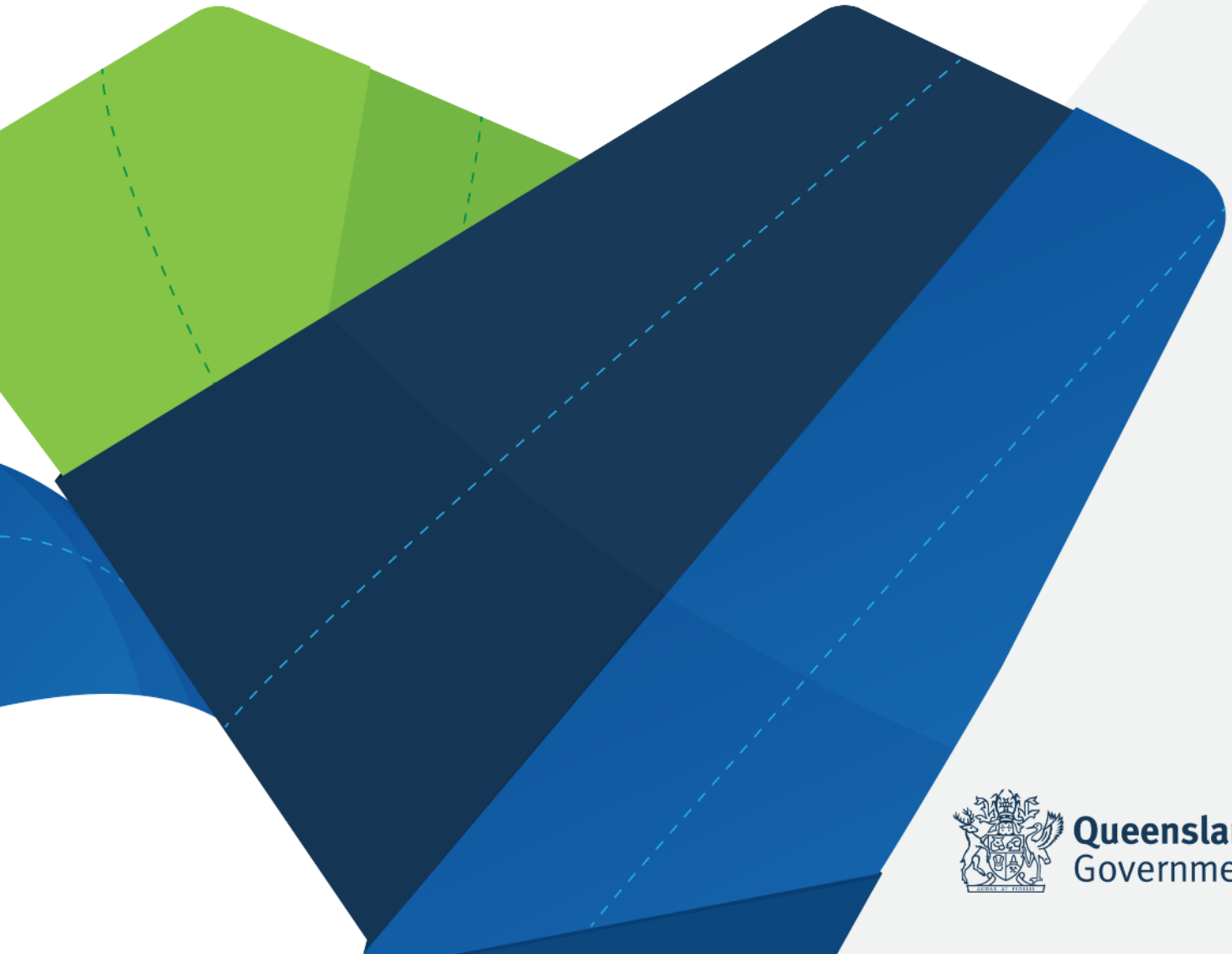
Queensland Health

# Transition of Care Pharmacy Project

## Final Report December 2023



Queensland Government

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# Executive Summary

## Background

In 2020, the Queensland Government made a commitment to *'Work with the Pharmaceutical Society of Australia to pilot a model of care that embeds transition of care pharmacists in inpatient-care teams to facilitate seamless, safe, timely handover of medication-related care to the primary care team.'*[1] The Office of the Chief Allied Health Officer was directed to establish the Transition of Care Pharmacy Project (ToCPP) to fulfill the Government's commitment.

## Development and planning

A literature review and current state analysis were conducted to define usual care, identify the study population, and inform the design of the model of care. A project model of care for patients discharging to home was developed in collaboration with the ToCPP Oversight Committee and other site-based stakeholders.

The project was implemented across three Queensland Health facilities in specific patient populations:

- Site 1: Internal Medicine Services
- Site 2: Gerontology
- Site 3: Vascular surgery

Patients were managed by the pharmacist delivering the intervention (ToC pharmacist) according to their estimated risk of readmission. The key features of the model of care included a post-discharge review of the patient by the ToC pharmacist and increased handover of medication-related information to the patient's nominated general practitioner (GP) and community pharmacy.

A model of care for patients discharging to residential aged care facilities (RACFs) was developed following project implementation. This model of care involved enhanced clinical handover to primary healthcare providers and post-discharge medication reconciliation.

Project resourcing supported the appointment of 1.0 full-time equivalent (FTE) Health Practitioner Level 5 (HP5) pharmacist project officer to develop, implement, and evaluate the model of care. Additionally, resourcing was provided for 1.0 FTE Health Practitioner Level 4 (HP4) pharmacist and 0.5 FTE Clinical Assistant Level 4 to deliver the service at each site.

## Evaluation

The project was evaluated as two separate components: a service evaluation and an economic evaluation. The service evaluation analysed service activity data and identified stakeholder perceptions through surveys and semi-structured interviews. A comprehensive analysis of the service evaluation data and a discussion of the findings is presented in the ToCPP Service Evaluation Report.

The economic evaluation is being conducted through the Griffith University Centre for Applied Health Economics. It will examine the cost of delivering the service and patient outcome data including re-presentation, readmission, and mortality. The Economic

Evaluation Report is due to be released to the Office of the Chief Allied Health Officer in March 2024.

# Key findings

## Service activity data

A post-discharge review was completed for 742 patients. The highest number of reviews were completed at Site 3 (53.2%), followed by Site 2 (27.1%) and Site 1 (19.7%). Of the 742 patients who completed a post-discharge review, 128 (17.3%) were scheduled for a further review. The proportion of patients receiving a subsequent review was higher at Site 3 (28.4%) due to the local model of care, which supported a subsequent ToC review where appropriate. A RACF review was completed for 78 Site 2 patients (85.7%), 8 Site 3 patients (8.8%), and 5 Site 1 patients (5.5%).

In post-discharge reviews, a median of 3 (range 0-10) recommendations were made per patient to GPs, 2 (range 0-6) to community pharmacists and 2 (range 0-7) to each patient. On average, 0.8 medication-related problems were identified per patient at post-discharge review, 0.7 per patient at subsequent review, and more than one per patient at RACF review.

## Stakeholder perceptions

The activities within the model of care appeared to be acceptable to most stakeholders, though service capacity issues were identified for both hospital and primary healthcare professionals. ToC pharmacists identified opportunities to streamline the model of care; however, some of these suggestions could compromise the enhanced clinical handover associated with the service.

Enhanced continuity of care was identified as the main advantage of the ToCPP service. Interview discussions focused on the benefits of the post-discharge review and the additional handover information supplied to primary healthcare providers.

Most patients perceived the service to be beneficial. Patients felt that the post-discharge review resolved their concerns, provided an opportunity to discuss adverse effects, and reassured them that they were managing their medication appropriately.

Healthcare professionals perceived that the ToCPP service was effective in engaging patients with their healthcare, increased patient education opportunities, and facilitated improved medication understanding and adherence. It was also felt that the service enabled post-discharge medication optimisation through increased clinical handover and targeted medication recommendations. The ToCPP service was considered to improve patient safety by facilitating patient follow-up and the identification of medication-related problems. However, ToC pharmacists highlighted the lack of feedback from primary healthcare providers in relation to the recommendations provided and the issues identified.

The main barrier to service delivery was the method for communicating patient information to GPs and community pharmacists. None of the Queensland Health-approved information transfer methods were fully functional for project needs. There was evidence from surveys and interviews that ToCPP communications did not consistently reach primary healthcare providers, and ToC pharmacists perceived that information and communications technology (ICT) limitations prevented them from establishing bidirectional communication pathways.

Training and support from peers, managers, and the project officer were considered facilitatory to service implementation and delivery. Resourcing for the project officer, ToC pharmacist, and clinical assistant positions was also highlighted as a service enabler.

There was considerable support for continuing the ToCPP service. Healthcare professionals considered there was good patient engagement and the service was beneficial. Expansion of the service to additional patient populations and facilities was also recommended. Resourcing was perceived to be the greatest barrier to ongoing service provision; however, it was considered that the activity-based funding generated through post-discharge patient review would offset staff costs to an extent.

## Key considerations

Findings from the service evaluation informed the following considerations:

- Consideration should be given to the continued provision of transition of care services, including expansion to additional patient populations and facilities.
- Consideration should be given to changes to the RACF model of care in future services.
- Consideration should be given to ensuring additional pharmacy resourcing is available to enable transition of care services.
- Consideration should be given to clinical assistant resourcing requirements and service models to enable the future optimisation of clinical assistant roles to support clinical pharmacy services, including transition of care.
- Consideration should be given to the implementation of a single simplified management pathway for patients clinically identified as having a high risk of medication misadventure or readmission.
- It is suggested that future care models do not use the LACE Index to determine patient risk.
- Further consideration needs to be given to service optimisation and streamlining of the model of care, including which patients require a discharge medication record and medication management plan and how best to manage the secure, timely transfer of discharge medicines information whilst minimising the volume of information sent to primary care providers.
- It is suggested that future models of care retain the option for a subsequent review.
- It is suggested that a discharge-focused or outpatient referral service delivery model is employed to optimise patient access to transition of care services.
- Consideration should be given to collaboration with Queensland Health ICT services on the identification of immediate and future solutions to medication information transfer issues.
- Future evaluations should assess the clinical effectiveness of transition of care services, including primary healthcare provider uptake of recommendations and resolution of identified medication-related problems.

# Abbreviations

| | |
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| ABF | Activity-based funding |
| CA | Clinical Assistant |
| DMR | Discharge Medication Record |
| EDS | Enterprise Discharge Summary |
| eLMS | Enterprise Liaison Medication System |
| ESM | Enterprise Scheduling Management |
| FTE | Full Time Equivalent |
| GP | General Practitioner |
| GPLO | General Practice Liaison Officer |
| HHS | Hospital and Health Service |
| HP | Health practitioner |
| ICT | Information and communications technology |
| ieMR | Integrated Electronic Medication Record |
| MMP | Medication Management Plan |
| PHN | Primary Health Network |
| RACF | Residential aged care facility |
| SWT | Secure Web Transfer |
| ToC | Transition/s of care |
| ToCPP | Transition of Care Pharmacy Project |

# Introduction

## Background

Transitions of Care (ToC) are defined as '*the various points where a patient moves to or returns from a particular physical location or makes contact with a healthcare professional for the purposes of receiving health care*'.[2] Studies consistently show high levels of unintended medication discrepancies in patients transitioning across episodes of care, with discrepancies especially prevalent on hospital admission and discharge.[2-4]

In 2020, the Queensland Government made a commitment to *'Work with the Pharmaceutical Society of Australia to pilot a model of care that embeds transition of care pharmacists in inpatient-care teams to facilitate seamless, safe, timely handover of medication-related care to the primary care team.'*[1] The Office of the Chief Allied Health Officer was directed to establish the Transition of Care Pharmacy Project (ToCPP) to fulfill the Government's commitment.

## Governance

The ToCPP was sponsored by the Chief Allied Health Officer, Clinical Excellence Queensland who provided strategic direction, approval, and advice to ensure alignment to Department of Health objectives, commitments, and plans.

A ToCPP Oversight Committee was formed to provide guidance and endorsement relating to the development and implementation of the project model of care. The Committee consisted of key stakeholder representatives across primary health care and hospital and health service settings.

# Development and planning

## Pilot sites

It was determined that the project would be implemented in three pilot sites. Two of these (Site 1 and Site 3) were situated in a metropolitan area and the third (Site 2) was situated in a regional centre.

## Scoping

A literature review and current state analysis were conducted to define usual care, identify the study population, and inform the design of the model of care. Consultations were undertaken with a wide range of stakeholders to review existing services at the three identified pilot sites. Discussions with the following groups assisted with service mapping and the identification of current transition of care activities and service shortfalls:

- Hospital pharmacists
- Hospital medical officers (consultant leads and junior medical officers)
- Nursing staff
- General practitioners (GPs)

- Primary health network (PHN) representatives
- General practice liaison officers (GPLOs)
- Pharmacists providing existing Transition of Care Services
- Pharmacy organisations (Pharmaceutical Society of Australia and the Pharmacy Guild of Australia)

The literature review and current state analysis identified the following key points:

- Multiple electronic systems, for example, the Enterprise Discharge Summary (EDS), the Enterprise Liaison Medication System (eLMS), My Health Record, and The Viewer, are used to transfer medicines information during transitions of care in Queensland. The only platform that facilitates the bidirectional sharing of health information and is accessible to Queensland Health staff, general practitioners (GPs), and community pharmacists is My Health Record.
- Problems relating to the timely and accurate communication of medicines information between hospitals and primary healthcare providers were identified:
    - There is evidence that discharge summaries may be missing, delayed, not received, or not accessed.
    - Pressure on hospital beds may adversely impact workflow processes, the quality and accuracy of clinical handover documents, and patient education.
    - There is the potential to optimise information transfer in discharge communications and provide additional medication-related information to GPs.
    - GPs suggested that hospital staff should better engage with patients to improve continuity of care. For example, discussing follow-up arrangements, identifying which GP and community pharmacy the patient was planning to attend, and normalising timely GP review.
    - The exchange of medicines handover information between hospital and primary care pharmacists is infrequent and predominantly centres around the ongoing supply or organisation of dose administration aids.
- Both GPs and community pharmacists expressed the desire for bidirectional communication pathways to facilitate connection with hospital teams to resolve identified medication-related problems.
- Evidence relating to pharmacist-led transition of care interventions indicted:
    - There is considerable heterogenicity in outcome evidence from transition of care studies. Several systematic reviews found that transition of care interventions reduce hospital readmission rates;[5-8] however, a 2021 Umbrella review concluded that the impact on health care usage was inconclusive.[9]
    - There is evidence that transition of care interventions reduce medication discrepancies and potential adverse effects.[9]
    - Reported interventions are frequently composites of individual elements including medication reconciliation, patient education, medication review, and improved communication of medicines information.[10, 11]
    - Interventions are typically delivered via a mixture of pre-discharge activities and post-discharge follow-up.[10, 11]
    - Using a composite intervention that combines different elements of the transition of care process is likely to produce better patient outcomes.[11, 12]

# Model of care

The literature review and current state analysis informed the development of the project model of care. The model of care was developed in collaboration with the ToCPP Oversight Committee and other site-based stakeholders. A wider consultation was undertaken with other relevant medical and pharmacy stakeholders. Consultation feedback was collated, and the model of care amended accordingly. The final model was endorsed by the Oversight Committee.

The model of care included a stratification of patient management according to risk. Several patient risk assessment tools were evaluated, and the LACE Index was determined to be the most appropriate for project needs.[13] The LACE Index identifies risk of readmissions or death within 30 day of discharge and has been validated in surgical and medical patient populations.[13-15] Calculation of a patient's risk score was facilitated by use of an online calculator.[16]

## ToCPP model of care for patients discharging to home

Patients were managed by the pharmacist delivering the intervention (ToC pharmacist) according to their estimated risk of readmission. The key features of the model of care were as follows:

- Patient assessment to identify the risk of readmission.
- Generation of a discharge medication record (DMR) for moderate and high-risk patients using the Enterprise Liaison Medication System (eLMS).
- Provision of a DMR and medication education to identified patients on discharge.
- Communication of a copy of the DMR directly to the patient's nominated general practitioner (GP) and community pharmacy.
- Telehealth/telephone review of identified high-risk patients by the ToC pharmacist within 7 days of discharge.
- Generation of a post-discharge medication management plan (MMP) containing targeted medication handover information and recommendations.
- Documentation of the MMP in the integrated electronic medical record (ieMR).
- Communication of the MMP to the patient's nominated GP and community pharmacy.

Patients with a low or moderate risk of readmission were eligible to be managed under the high-risk pathway if referred by the medical team for post-discharge follow-up or if there was an identified risk of medicine misadventure.

## Residential aged care facility model of care

Following project implementation, a model of care for patients discharging to residential aged care facilities (RACFs) was developed to further expand the ToCPP service.

The key features of the RACF model of care were as follows:

- Collaboration between the ToC pharmacist, hospital treating team and, where appropriate, outreach aged care services to identify medication handover information to be communicated to primary healthcare providers.
- Input of medication handover information into eLMS by the ToC pharmacist for communication to the patient's RACF and GP via the DMR and electronic discharge summary.

- Follow-up with the community pharmacy servicing the RACF by the ToC pharmacist approximately 14 days following patient discharge. Reconciliation of ongoing medication with discharge medication and handover information to ensure continuity of care.
- Liaison with RACF/GP/outreach aged care service to resolve identified issues.

# Personnel resourcing

Initial project resourcing supported the appointment of 1.0 full-time equivalent (FTE) Health Practitioner Level 5 (HP5) pharmacist project officer to develop, implement, and evaluate the model of care. The position was onboarded in June 2021, with funding provided until December 2023.

Following the development of the model of care, the pilot site Directors of Pharmacy identified that the service could not be implemented within existing resources. Additional funding was approved by the Deputy Director-General, Clinical Excellence Queensland for 1.0 FTE Health Practitioner Level 4 (HP4) pharmacist and 0.5 FTE Clinical Assistant Level 4 at each pilot site. Positions were funded from January 2022 to December 2023. All positions were advertised externally and subject to standard Queensland Health recruitment processes.

# Personnel training

Project onboarding and orientation was provided to all ToC pharmacists by the ToCPP project officer. Orientation was delivered via a mixture of site visits and virtual training, and included orientation to the project background, model of care, service delivery processes, and evaluation. The project officer provided support with stakeholder engagement, the development of the individual site models of care, and the identification and implementation of communication and data collection processes. Pharmacists also undertook local training to use telehealth and appointment scheduling systems.

Clinical support and training regarding the optimisation of transition of care activities was provided through ward and clinic-based observation and feedback. Each ToC pharmacist also submitted sample MMPs for review and feedback by the project officer and local GPLOs. Additionally, the project officer facilitated group-based patient case reviews. Strategic support was provided via regular individual and team meetings with the project officer and Directors of Pharmacy.

Clinical Assistant (CA) orientation and training were provided by both the project officer and the ToC pharmacists. Additionally, all CAs attended training to facilitate appointment scheduling. Whilst ToC pharmacists were responsible for the day-to-day supervision of the CAs, additional support was provided by the project officer in terms of data entry and CA catch-up meetings.

# Information and communications technology

## Transfer of transition of care information to primary healthcare providers

The ToCPP model of care requires the DMR to be communicated directly to the patient's nominated GP and community pharmacy upon discharge and an MMP to be communicated

following post-discharge review. A post-discharge MMP template was created in Microsoft Word®, and feedback on content, format, and utility was provided by pharmacist and GP representatives from the ToCPP Oversight Committee.

All pilot sites requested a ToCPP-specific email with a shared mailbox to facilitate email communication between each other and internal and external stakeholders. The Queensland Health Cyber Security Group guidelines for safe data handling classifies patient information as 'sensitive in nature' and defines recommended transfer methods.[17] However, information transfer was implemented differently across the three pilot sites due to the limitations of the communication options, variations in site work processes, and Hospital and Health Service (HHS) preference.

**Site 2**

During stakeholder engagement, GPLOs at Site 2 indicated their preference for information to be communicated to GPs via secure web transfer (SWT), a Queensland Health application used to send information to external recipients. Information is delivered via a secure messaging service, for example, Medical-Objects® or HealthLink®, directly to individual practitioners listed within a Queensland Health-managed address book. A ToCPP mailbox was established under an existing SWT account with assistance from the GP liaison team.

Unfortunately, the DMR could not be sent by SWT; consequently, the patient's medication list was copied from The Viewer into the SWT application. Whilst eLMS is the source of both The Viewer list and the DMR, the appearance of the medication list when copied into SWT is considerably different to the DMR, and is not as user-friendly.

The MMP for each patient was created as a note in ieMR using an auto text template. It was then copied into SWT for sending. Early feedback indicated the initial tabular format of the MMP template was not maintaining its integrity during transfer, leading to end user readability issues. The ieMR auto text template was, therefore, changed to a headings format.

Most community pharmacies do not subscribe to a secure messaging service and hence are unable to receive patient information via SWT. As the pharmacy department at Site 2 had previously used Kiteworks® to send information to community pharmacists, it was decided to use this method for the pilot. Kiteworks® is a secure file transfer system that enables secure information transfer and file sharing with internal and external recipients. A ToCPP Kiteworks® account was requested and linked to the ToCPP email. The ToC pharmacist attached a pdf copy of the patient's DMR to the Kiteworks® message before sending to the patient's nominated community pharmacy. Following post-discharge review, the completed MMP was copied from ieMR into a Kiteworks® message and sent.

**Site 1**

Early advice from Site 1 GPLOs was to communicate patient information via fax. Upon patient discharge, a copy of the DMR was printed and faxed to the patient's nominated GP and community pharmacy. The ToC pharmacist or CA then phoned the recipient to confirm receipt.

The MMP for each patient was created using the MMP template in Microsoft Word®. A copy of the MMP was printed, faxed to the patient's nominated GP and community pharmacy, and saved as a note in ieMR.

Following project implementation, Site 1 GPLOs indicated a preference to commence SWT communication, and an SWT access request was submitted in June 2022. Unfortunately, the

Corporate Secure Transfer Service advised that it was not possible to set up SWT for the pilot because there was no suitable SWT account at Site 1 to which a ToCPP mailbox could be linked.

**Site 3**

The Site 3 ToC pharmacist predominantly used the same methods as Site 2 for transferring information and saving the MMP in ieMR. The DMR and MMP were occasionally sent via encrypted email when the community pharmacy or medical practice did not have fax capability.

Site 3 GPLOs subsequently indicated a preference to implement SWT communication to GPs. Engagement with the local HHS identified that they were in the process of implementing a hospital-wide SWT account at Site 3. Unfortunately, this was not operational during the pilot.

## Telehealth and scheduling systems

Under the Independent Hospital Pricing Authority Tier 2 Non-Admitted Services Definitions, the ToCPP post-discharge telehealth/telephone review was eligible for activity-based funding (ABF) as a clinical pharmacy service.[18]

The Enterprise Scheduling Management (ESM) system is used to schedule, manage, and report outpatient activity. To claim ABF for the post-discharge review, it was necessary to establish an ESM ToCPP 'resource' at each of the three sites. A telehealth virtual clinic was also set up at each site to facilitate telehealth reviews.

## Documentation of transition of care information in patient records

There is a need to document a record of the post-discharge review in the patient's medical record. This not only facilitates continuity of care but is a requirement for ABF eligibility.[19] Both Site 2 and Site 3 are advanced ieMR sites and all patient records are digital. Pharmacists at both sites, therefore, had access levels which enabled them to generate a patient note within the system. Site 1 is a basic ieMR site; paper-based medical records are generated during admission and then subsequently scanned into ieMR following patient discharge. Pharmacists at Site 1 do not routinely have authority to create documents within ieMR, and it was necessary to request 'direct entry' access for the ToC pharmacist so a record of the post-discharge review could be made.

There are a variety of note types that can be created in ieMR. Prior to project implementation, pharmacists creating notes in an outpatient setting were required to use the generic 'progress notes outpatient' note type or alternatively use a specialty specific note type (e.g., 'Outpatient cardiology'). Most other allied health professions have a profession-specific note type (e.g., 'Outpatient Physiotherapy', 'Outpatient Occupational Therapy'). Using the generic note type makes it difficult to search and identify pharmacy notes within ieMR and may impact continuity of care. An Application Configuration Change Control request was submitted, and an 'Outpatient Pharmacy' note type became live in ieMR in June 2022.

# Stakeholder engagement

As previously described, stakeholder engagement commenced at the initiation of the project with the formation of the Oversight Committee, project scoping, and the development and endorsement of the model of care. Additional stakeholder engagement was associated with model of care implementation. The project officer gave a presentation to pharmacy staff at each of the three sites and provided project briefings to the Queensland Directors of Pharmacy Senior Assembly and the Queensland General Medical Clinical Network.

A consumer information brochure was developed, tested, and approved at each site. The aim of this brochure was to provide additional service information to supplement verbal patient/carer engagement.

Whilst the project was implemented across a large geographical area, the patient population receiving the service at each site was relatively small. Widespread, extensive stakeholder engagement was, therefore, considered impractical and inappropriate. Instead, a newsletter-style briefing was circulated to GPs and primary care pharmacists within the local area of the pilot sites. A ToCPP website was designed and published to provide additional project information for GPs, primary care pharmacists, and patients to further support stakeholder engagement and project communication.

Once onboarded, the ToC pharmacists undertook local engagement with medical officers, nursing staff, and GPLOs associated with their area of practice. Additionally, standardised communications were developed to forward copies of the DMR and MMP to primary healthcare providers. These communications contained introductory information about the Project and a link to the website.

Project updates were subsequently circulated via the local PHNs, the Pharmaceutical Society of Australia and the Pharmacy Guild of Australia following survey feedback indicating a lack of project awareness amongst GPs and community pharmacists.

# Site-specific variations to models of care

Whilst the endorsed project models of care guided the implementation of the service at each of the three sites, site-specific models of care were also created. This facilitated the development of a service that was appropriate to the local environment in terms of patient population, usual work practice, and information and communications technology (ICT) capabilities.

## Site 1

The pilot population at Site 1 initially comprised those admitted under two general medical teams. The more senior ToC pharmacist position was added to the existing junior ward pharmacist allocation for these teams. The model of care was integrated into existing pharmacy services, with the extra resource enabling ToCPP service delivery. The intent was for the team-based pharmacist and ToC pharmacist to work together in a manner analogous to the medical model of a junior house officer and registrar, with the ToC pharmacist providing higher level support to complex patients. The ToC pharmacist attended the post-take ward round to identify high-risk patients. They then provided pharmaceutical services to the patients during admission, facilitated discharge, and conducted a post-discharge

review. The ToC pharmacist was, therefore, involved in the care of these patients throughout their journey.

Feedback from the initial ToC pharmacist indicated that this service model resulted in handover inefficiencies and that the junior pharmacist did not require additional clinical support. Following the resignation of the ToC pharmacist in November 2022 and a subsequent review of the service, the service delivery model was modified. The service was moved to a new clinical setting in stroke and neurology, where two newly appointed ToC pharmacists (equivalent to 1.0 FTE) provided a full ward service in addition to undertaking ToCPP activities. To facilitate this, the project-funded CA worked on the ward in an expanded scope capacity. The CA aimed to reduce the workload of the ToC pharmacists by performing some tasks that a ward pharmacist would traditionally perform, hence freeing the ToC pharmacists to conduct post-discharge reviews and generate MMPs.

## Site 2

The identified Site 2 patient population initially comprised gerontology patients on the medical gerontology and sub-acute care unit. However, during the height of the COVID-19 pandemic, gerontology rehabilitation patients were moved for management off-site, thus reducing the eligible pilot population. The service was, therefore, expanded to include gerontology patients outlied to other medical wards and orthopaedic patients co-managed by gerontology consultants.

Early in the pilot, the ToC pharmacist was involved in ward activities, especially the discharge process. This involvement in usual care activities did, however, diminish over the course of the project. Whilst the original intent was to provide a more integrated model, project expectations regarding the number of patients managed resulted in the ToC pharmacist focusing primarily on the transition of care activities. There was also a greater focus on delivering the RACF model of care at Site 2 due to the gerontology patient population.

## Site 3

The pilot patient population at Site 3 initially comprised vascular surgical patients. Due to low patient numbers resulting from a temporary downturn in elective surgery during the COVID-19 pandemic, the service was extended to high-risk respiratory patients discharged to home from the respiratory ward. The service excluded patients receiving active oncological or palliative management, with active tuberculosis infection, or receiving any other ongoing outpatient hospital pharmacist follow-up.

The ToC pharmacist worked closely with the ward pharmacist and medical officers on both the vascular surgical and respiratory wards to identify patients. The ToC pharmacist did not typically undertake usual care ward activities but engaged with the patient at the point of discharge to provide the DMR and patient education, verbally consent the patient for the ToCPP service, and discuss follow-up arrangements.

In addition to the post-discharge review, the Site 3 model of care included the option for a subsequent review for identified patients who were considered at further risk of medication misadventure. For vascular surgical patients, this review was scheduled to coincide with the patient's 6-week post-surgical appointment and was frequently undertaken in the outpatient clinic.

# Evaluation

The project was evaluated as two separate components: a service evaluation and an economic evaluation.

## Economic evaluation

The economic evaluation is being conducted through the Griffith University Centre for Applied Health Economics. It will examine the cost of delivering the service and patient outcome data including re-presentation, readmission, and mortality. The Economic Evaluation Report is due to be released to the Office of the Chief Allied Health Officer in March 2024.

## Service evaluation

Full details of the service evaluation can be viewed in the ToCPP Service Evaluation Report; however, a summary of the evaluation methods and data collected is provided below.

### Service activity

ToC pharmacists at each site collected quantitative data for high-risk patients receiving the full model of care. Data collection tools were used to collect service activity data including patient demographics, rationale for review, service completion rates, service activities, and feedback from primary healthcare providers.

### Stakeholder perspectives

The experiences and views of project stakeholders were evaluated using both quantitative and qualitative methods. Patient, GP, and community pharmacist surveys were used to gain an overview of stakeholder perspectives, whilst subsequent semi-structured interviews facilitated a more in-depth exploration of stakeholder perceptions. Interviews were conducted with:

- Hospital pharmacy staff involved in service delivery (ToC pharmacists, CAs, ward pharmacists)
- Patients
- Healthcare providers who had interacted with the ToCPP service (GPs, primary healthcare pharmacists, and hospital medical officers)

# Key service evaluation findings

A comprehensive analysis of the service evaluation data and a discussion of the findings is presented in the ToCPP Service Evaluation Report.

## Service activity data

Data was collected for a 17 month period for patients discharged between 31 March 2022 and 31 August 2023.

## Completion rates

A total of 862 high-risk patients were identified for post-discharge review as per the model of care. Of these, 12 (1.4%) refused the service and 850 (98.6%) agreed to participate. Most patients who refused the service considered that follow-up was not necessary because they were confident with their medication.

A post-discharge review was completed for 742 (87.3%) of the 850 patients. The main reason for non-completion was readmission (5.6%). The highest number of reviews were completed at Site 3 (53.2%), followed by Site 2 (27.1%) and Site 1 (19.7%). The reasons most frequently provided by the ToC pharmacist for conducting a post-discharge review were medication changes during admission, high risk of readmission, and high-risk medicines. These reasons were all in concordance with patient identification as per the model of care.

Of the 742 patients who completed a post-discharge review, 128 (17.3%) were scheduled for further review. The proportion of patients receiving a subsequent review was higher at Site 3 (28.4%) due to the local model of care, which supported an additional review where appropriate.

A RACF review was completed for 78 Site 2 patients (85.7%), 8 Site 3 patients (8.8%), and 5 Site 1 patients (5.5%).

## Patient demographics

Most patients were reviewed within seven days of discharge as per the model of care. The median age of patients receiving the service was 73.6 years, and most were over 60. This is unsurprising given the inclusion of gerontology as a patient population at Site 2. Additionally, medication use increases with age[20] hence elderly patients at the other pilot sites were more likely to be identified as suitable for service inclusion than younger patients. Medication use was high, with patients prescribed a median of 9 regular medicines on discharge.

As previously described, the LACE Index was used to identify patients at high risk of readmission and hence suitable for post-discharge review; however, low and moderate risk patients could be managed under the service where appropriate. Most patients (83.6%) were classified as high-risk, and only 0.9% were classified as low risk. This provides some validation to using the LACE Index for identifying patients suitable for service inclusion.

## Consultation

The discharge-to-home model of care specifies the provision of a DMR to patients upon discharge, and activity data indicates there is high concordance with this component of the service. A DMR was sent to less community pharmacists than to GPs because a higher proportion of patients declined to nominate a regular community pharmacy compared to a GP.

The most frequently provided services at post-discharge review were medicines review, medicine reconciliation, adherence assessment, medication management assessment, and medicine education. These services were typically repeated at subsequent review, although medication history confirmation was also undertaken with over 70% of patients.

Medicines reconciliation and confirmation of medication continuation/discontinuation were the most frequent activities in RACF reviews. This aligns with the post-discharge reconciliation focus of the RACF model of care.

The predominant mode for conducting patient review was by telephone (95.0% of post-discharge reviews and 62.8% of subsequent reviews). A higher proportion of subsequent reviews (33.0%) were conducted in-person because subsequent reviews at Site 3 frequently took place in the vascular outpatient clinic when patients attended their post-surgical follow-up.

## Medication management plan

ToC pharmacists generated an MMP for over 90% of post-discharge reviews. The reasons for not sending an MMP included no regular GP or community pharmacy, no issues identified, no changes to discharge information, and the patient being readmitted. The MMP completion rate was much lower for subsequent reviews (40%), usually because the ToC pharmacist felt there was no additional information that needed to be conveyed. In post-discharge reviews, a median of 3 (range 0-10) recommendations were made per patient to GPs, 2 (range 0-6) to community pharmacists, and 2 (range 0-7) to each patient.

On average, 0.8 medication-related problems were identified per patient at post-discharge review, 0.7 per patient at subsequent review, and more than one per patient at RACF review. However, activity data highlighted the lack of feedback from primary healthcare providers, and it is unknown whether problems were resolved, and recommendations accepted.

# Activity based funding data

Whilst not a formal component of the service evaluation, data relating to activity-based funding (ABF) was also captured.

Table 1 shows the ABF generated for each site across the financial years in which the service was operational. It should be noted that 2022/23 is the only full financial year.

**Table 1: Revenue generated through activity-based funding for ToCPP services**

| Financial year (months active) | Queensland price $ | | Total ABF (mean ABF for months active) $ | | |
|---|---|---|---|---|---|
| | telephone | telehealth / in-person† | Site 1 | Site 2 | Site 3 |
| 2021/22 (April-June 2022) | 62 | 218 | 3,350 (1,117) | 2,599 (866) | 5,143 (1,714) |
| 2022/23 (July 2022-June 2023) | 177 | 307 | 18,666 (1,867) * | 31,397 (2,616) | 76,970 (6,414) |
| 2023/24 (July-October 2023) | 177 | 413 | 7,854 (1,964) | 17,895 (4,474) | 36,542 (9,136) |

† Queensland price for telehealth/in-person = service price + PBS price

*The Site 1 service was inactive for 2 months during the financial year; hence, the mean is over 10 months

Site 3 conducted the highest number of post-discharge and subsequent reviews and hence generated the most ABF. As previously highlighted, a higher proportion of reviews were undertaken in-person at Site 3 due to the local model of care, which facilitated subsequent review concurrent with the patient's post-surgical review in the outpatient clinic. The Queensland price for telehealth and in-person reviews is higher than for telephone reviews and this also contributed to the higher revenue at Site 3. ABF is much lower at Site 1 due to the integrated model of care where the ToC pharmacist undertakes ToC activities in addition to usual pharmaceutical care.

The ability of a service to offset resourcing costs by generating ABF may make it more appealing from a sustainability perspective; however, ABF cannot be relied upon as a source of funding. ABF is a funding framework used to allocate funding to larger Queensland Health hospitals based on the healthcare services (activities) delivered. Activity is defined in terms of a standardised unit of measurement called the Weighted Activity Unit (WAU), and individual patient care activities are assigned a WAU value dependent on the complexity and resource requirements. HHSs receive funding dependent on the WAU they deliver; however, this funding has a growth cap, and generating additional WAU through new services will not result in extra income if an HHS's funding cap has been exceeded.

# Stakeholder perspectives

Data from individual surveys and interviews was collated and is presented here to provide an overview of stakeholder perceptions relating to the model of care, service delivery, and service performance.

## Models of care and service delivery

### ToCPP model of care for patients discharging to home

The activities within the model of care appeared to be acceptable to most stakeholders; however, service capacity issues were identified for both hospital and primary healthcare professionals.

Whilst service activity data indicated the validity of the LACE Index in identifying patients suitable for service inclusion, hospital pharmacists increasingly relied on their clinical judgement to identify suitable patients, and calculation of the LACE Index became superfluous to service needs. ToC pharmacists generally considered that conducting the patient review within seven days of discharge, as per the endorsed model of care, was appropriate. Pharmacists did, however, note that a delayed follow-up was sometimes required depending on the clinical situation, for example, to confirm a patient had ceased a temporary medication as instructed 14 days following discharge.

A component of the endorsed ToCPP model of care was to provide a copy of the DMR to patients, and implementation of the service appeared to increase the number of patients receiving a DMR, especially in areas of limited pharmacist resourcing. A copy of the DMR was sent directly to the patient's nominated GP and community pharmacy, and ToC pharmacists considered the value of this was less clear, especially as it was accessible through other sources, for example, the discharge summary, MyHealth Record, and The Viewer. However, both GP and community pharmacist surveys indicated that respondents were predominantly

accessing the patient's medication list via the copy of the DMR sent through the ToCPP service.

ToC pharmacists considered the requirement to generate an MMP to be time-consuming and potentially unnecessary for all patients. They also expressed concerns regarding the capacity of primary healthcare providers to review and action the recommendations made in the MMP. It was suggested that many medication recommendations could be identified at discharge and communicated to GPs via the discharge summary. Generation of MMPs would then be reserved for complex patients and instances where issues were identified at the post-discharge review. There was, however, little evidence in both the GP survey and interviews to indicate work capacity was a barrier to the ToCPP service, although GPs noted that much of the work they undertake in relation to transitions of care is unpaid. Conversely, over a quarter of community pharmacist survey respondents considered they had insufficient time to act on recommendations in the MMP. Community pharmacist interview participants also expressed concerns regarding the workload associated with the service.

A component of the endorsed model of care was for community pharmacists to undertake medicines reconciliation, and ToC pharmacists were encouraged to recommend that community pharmacists complete a MedsCheck review with ToCPP patients. A MedsCheck review can be provided within a community pharmacy and includes medication reconciliation, medication management assessment, adherence assessment, and patient education. Service providers receive payment for MedsCheck reviews, although service exclusions and caps apply. Service activity data, hospital pharmacy staff interviews, and community pharmacist survey findings indicated that MedsCheck reviews were not routinely undertaken for ToCPP patients. Community pharmacist interview participants confirmed this is often due to workload issues; however, they also highlighted the limitations of the MedsCheck Program and questioned whether it was used appropriately. It would, therefore, appear that the MedsCheck service is not currently effectual in facilitating medication continuity in transitions of care.

The option to complete a subsequent review was a component of the local model of care at Site 3, although service activity data indicated that ToC pharmacists at both Site 1 and Site 2 also completed a small number of additional reviews. There appears to be good support for this option, with ToC pharmacists typically reserving subsequent reviews for complex patients, those with unresolved medication issues, and situations where post-discharge medication changes were pending.

## RACF model of care

A second model of care was developed to facilitate transition of care for patients discharged to residential aged care facilities. This model involved increased clinical handover and post-discharge reconciliation of patient medication lists.

At one site, it was not standard practice to send a copy of the DMR to the RACF upon patient transfer. Hospital pharmacists at this site considered that the requirement to send a DMR as a component of the ToCPP service improved communication. Additionally, the improved clinical handover and follow-up associated with the RACF model of care was thought to enhance the management of complex patients who were frequently readmitted. Further comments relating to the health performance benefits of this model of care are integrated into the relevant subsequent sections.

## Service delivery models

As previously described, the service delivery model varied across the three pilot sites. At Site 3, the ToC pharmacist focused on discharge education and post-discharge review, and it is clear from the service activity data that this enabled a larger number of patients to receive the ToCPP service. Service delivery at Site 2 gradually moved from a more integrated model to a discharge-focused service, whilst Site 1 delivered a fully integrated model, with the ward-based CA working in an expanded scope capacity to assist the ToC pharmacist in providing patient care from admission to post-discharge review.

The fully integrated model at Site 1 appeared to have the most barriers to service delivery. The ToC pharmacists working under this model described the work pressure of the added activities and the juggle of managing ward expectations whilst completing post-discharge reviews. They provided examples of being interrupted during their post-discharge consultations and unable to complete ToC documentation in a timely manner.

It was perceived that whilst the integrated model provided patient continuity benefits, it would be difficult to expand to more areas and may lead to pharmacist burnout. Most ToC pharmacists supported a discharge-focused model moving forward, especially if there was pressure to offset service resourcing through ABF income generation. It was considered that the service could operate as an outpatient referral model, with patients referred to the ToC pharmacist for post-discharge review. There was, however, a preference to initiate patient contact prior to discharge and consent the patient for post-discharge follow up.

Most post-discharge reviews took place by phone, and ToC pharmacists perceived this was due to patient preference. From an income generation perspective, it is worth noting that the Queensland ABF price is considerably higher for in-person and telehealth clinical pharmacy reviews compared to phone reviews.

## Clinical assistant role

Provision of the model of care was supported at all sites by a pharmacy CA. The role of the pharmacy CA varied depending on the service delivery model at the site. All CAs supported the ToC pharmacist by undertaking administrative activities, for example, phoning primary healthcare providers to confirm communication preferences; printing and sending patient information by fax, Kiteworks® or email; scheduling appointments; and entering service evaluation data. CAs also assisted the pharmacists with clinical activities, such as calculating the LACE Index score, entering admission medication details into eLMS, and preparing DMRs.

At Site 1, the CA worked successfully in an expanded scope capacity to support the pharmacist in providing the ToCPP service in addition to usual care. The CA performed activities, such as printing bed lists, identifying new patients, reviewing medication charts, and supplying medication. Additionally, the CA assisted the ToC pharmacist with medication history taking by retrieving pre-admission medication information from community pharmacies, medical practices, and previous admissions and then entering it into eLMS for confirmation. Benefits of the expanded CA role outside of the model of care were identified, especially in relation to timely medication supply.

The CA working in an expanded scope capacity felt that they were confident in the role and the limits of their responsibilities were clear. Whilst there were opportunities for the CA to

work in an expanded scope capacity at Site 1, there was evidence of barriers to CA role expansion at other sites.

## Barriers and facilitators to service delivery

### Information and communications technology

The main barrier to service delivery was the method for communicating patient information to GPs and community pharmacists. None of the Queensland Health-approved information transfer methods were fully functional for project needs. Faxing was considered time-consuming and unreliable, and email encryption was thought to be inappropriate due to the difficulties in forwarding encrypted messages to other staff within medical practices or community pharmacies. Secure web transfer (SWT) was only implemented at Site 2 and could not be used for transferring patient information to community pharmacists. There were also concerns regarding the readability of information sent by this method; however, despite these concerns, GPs expressed a preference for direct electronic transfer of information into their practice software.

There was evidence from surveys and interviews that ToCPP communications did not consistently reach primary healthcare providers, and ToC pharmacists perceived that ICT limitations prevented them from establishing bidirectional communication pathways.

### Project awareness

Hospital pharmacy and medical staff felt they had received sufficient information about the project, describing stakeholder engagement activities conducted by the ToC pharmacist, for example, one-on-one communication and local education sessions. However, findings from surveys and interviews highlighted a lack of project awareness amongst primary healthcare providers, with some stating they knew nothing of the project prior to receiving patient-specific clinical handover information. There was, however, no consensus regarding how information could be effectively conveyed in the future, with some stakeholders stating that they did not have time to read communications sent to them via PHNs.

It should be noted that ToC pharmacists used standardised communications to forward copies of the DMR and MMP to primary healthcare providers. These communications contained information about the project and a link to the website. Additionally, it is unlikely that a lack of prior project knowledge would impact the GP and community pharmacist's utilisation of the supplied information.

### Training and support

Training, including peer review and input to MMP writing, was considered facilitatory to service delivery. Support for the project was also considered an enabler of service implementation. The value of the project officer in service development, implementation, and maintenance was noted, and participants also described the support from the Directors of Pharmacy, pharmacy colleagues, consultant leads and other medical staff.

The project resourcing for the project officer, ToC pharmacist, and clinical assistant positions was also highlighted as a service enabler. However, the absolute necessity of the CA position for ongoing service provision was unclear, particularly within an outpatient referral model. CA support for patient scheduling, preparation of DMRs, and communication of medication information reduces the burden on the ToC pharmacist, allowing more patient reviews to be

completed. Whilst these activities could be undertaken by other pharmacy staff, there is still an ongoing resourcing requirement if patient numbers are to be maintained.

ToC pharmacists also considered it essential to have an appropriate physical space to conduct the post-discharge patient consultation.

# Health performance

Many of the evaluation findings were closely aligned to the health system dimensions within the Australian Health Performance Framework.[21] The Framework was, therefore, used to categorise the findings.

## Continuity of care

Not surprisingly, enhanced continuity of care was identified as the main advantage of the ToCPP service. Interview discussions focused on the benefits of the post-discharge review and the additional handover information supplied to primary healthcare providers.

It was noted that patients receive a large amount of information at discharge. The post-discharge follow-up was considered to provide the opportunity for patients to ask questions, confirm their understanding of medication, and discuss medication concerns. ToC pharmacists perceived that the review enabled them to check the patient's progress, confirm medication comprehension, deal with supply problems, identify emergent concerns, and follow up on issues that were unresolved at the time of discharge.

Both hospital and community pharmacists felt that pharmaceutical handover was traditionally reserved for patients using dose administration aids and that the ToCPP service improved the transfer of information for patients who did not.

There was some evidence from GP surveys and interviews that the discharge summary does not consistently reach the intended recipient; therefore, information sent from other sources supports effective handover. The additional information that ToC pharmacists provided regarding the rationale for medication change was considered to facilitate medication continuity. Primary healthcare providers felt that increased access to clinical handover information, for example, diagnosis, desired outcomes, and therapeutic plans, enabled them to monitor and manage participants more effectively. They also perceived that sharing information facilitated a multidisciplinary approach, and patients were more receptive to advice because all their primary healthcare providers were saying the same thing. A large majority of both GP (92%) and community pharmacist (86%) survey respondents agreed that they would like to receive an MMP for more of their high-risk patients.

The increased clinical handover and follow-up associated with the RACF model of care was considered to improve the management of complex patients who were frequently readmitted.

## Effectiveness

Most patients perceived the service to be beneficial. Patients felt that the post-discharge review resolved their concerns, provided an opportunity to discuss adverse effects, and reassured them that they were managing their medication appropriately. Findings from the patient survey supported this, with 93% of respondents agreeing that they knew how to take their medication correctly. There was, however, some evidence from patient interviews that

patients were still confused about certain aspects of their medication, and it is suggested that there is ongoing education and training of ToC pharmacists to optimise patient-centric consultation practices.

Healthcare professionals perceived that the ToCPP service was effective in engaging patients with their health care, increased patient education opportunities, and facilitated improved medication understanding and adherence. It was also felt that the service facilitated post-discharge medication optimisation through increased clinical handover and targeted medication recommendations.

Survey and interview findings indicated that primary healthcare providers considered the information in the MMP useful. Survey findings also evidenced the appropriateness of the ToC pharmacists' recommendations. The majority of GP and community pharmacist survey respondents agreed with the recommendations (78% and 83% respectively) and were likely to act on them (75% and 83% respectively). Additionally, when questioned about the follow-up service provided by the ToC pharmacist, 91% of patient survey respondents agreed that the pharmacist provided helpful suggestions.

ToC pharmacists described the lack of direct feedback from primary healthcare providers in relation to patient recommendations and medication-related problems. This may be because primary healthcare providers are too time-poor or felt it unnecessary to communicate their responses to suggestions and identified issues. Whilst the lack of feedback to ToC pharmacists may not impact ongoing patient management in the community, it could interrupt continuity of care should the patient later re-present to hospital. Additionally, the lack of feedback makes it difficult to gauge whether the service is meeting stakeholder needs and prevents the ToC pharmacists from adapting their practice to optimise patient care.

## Safety

The ToCPP service was considered to improve patient safety by facilitating patient follow-up and the identification of medication-related problems. It was felt that the post-discharge review provided an opportunity for ToC pharmacists to check whether plans to cease or modify medication following discharge had been followed and to confirm that the patient was taking the correct medication. Interview participants provided examples of medication-related problems that had been identified and resolved by the ToC pharmacist at post-discharge review.

The increased clinical handover was also perceived to impact patient safety. It was considered that the additional information facilitated medication reconciliation by primary healthcare providers and reduced the risk of errors, including medication omissions. The RACF model of care, which included post-discharge reconciliation of medication by the ToC pharmacist, was considered to facilitate the identification and resolution of medication discrepancies.

The value of having additional health professionals involved in reviewing the patient's medication was also noted. It was perceived that this reduced the risk of an issue or error being overlooked and provided a different perspective on medication management.

## Appropriateness

Most of the evidence for the appropriateness of the service came from the patient survey. A large majority of patient respondents agreed or strongly agreed that the hospital pharmacist had an appropriate manner (94%), understood their medication concerns (95%), and answered their questions in a way they understood (96%). Additionally, most respondents (95%) agreed or strongly agreed they had enough time to discuss medication issues.

When asked what they liked about the service, patients frequently described the personal attributes of the pharmacist, using such adjectives as friendly, helpful, kind, caring, understanding, and informative. Some patients said the pharmacist treated them holistically and made them feel valued. Several patients commented on the pharmacist's communication style, stating the pharmacist was easy to understand, explained things simply and clearly, and was easy to talk to.

Most survey respondents had a post-discharge review appointment at a time that suited them and experienced no problems with connection or technology.

## Accessibility

There was relatively little evidence relating to service accessibility benefits. There was some indication that ToC pharmacists assisted patients with medication supply issues and facilitated timely access to medication packing services. It was also noted that many patients were experiencing difficulties accessing their primary healthcare providers, and the ToC pharmacist could provide support in the interim.

## Efficiency and sustainability

ToC pharmacists and CAs highlighted inefficiencies associated with the model of care, particularly relating to the generation of the MMP, communication of patient information, scheduling appointments, and collection of evaluation data.

There was some suggestion that the service facilitated quicker patient discharge. However, it is likely that this is due to the CA and ToC pharmacist assisting with usual care discharge activities, such as DMR preparation and patient education, rather than being a direct result of the service itself.

Although they considered the support provided by the ward-based CA invaluable, ToC pharmacists working within the fully integrated model of care at Site 1 felt that this did not fully offset the time it took them to undertake ToC activities. The ward-based CA role did, however, result in efficiencies outside of the ToCPP model of care, particularly in relation to the timeliness of medication supply to the ward. The CA's presence was considered to reduce the time spent by nursing staff ordering and chasing medication supplies. The CA also assisted with the prioritisation of patients for pharmacist review.

There was considerable support for continuing the ToCPP service. Healthcare professionals considered there was good patient engagement and the service was beneficial. Expansion of the service to additional patient populations and facilities was also recommended; however, it was felt that a discharge-focused or outpatient referral model would work best if the service was extended.

Resourcing was perceived to be the main barrier to ongoing service provision; however, it was considered that the ABF generated through post-discharge patient reviews would offset staff costs to an extent. It was noted that, if funding was identified, it would be important to protect the transition of care service and ensure pharmacists did not get diverted to cover usual care activities.

There was less support for continuing the current RACF model of care. Some respondents considered that with aged care pharmacists embedded in RACFs in the future, there may not be an ongoing need to provide a medication reconciliation service. It was felt that a clinical handover should be provided to such pharmacists, and they would be responsible for performing medication reconciliation and identifying and resolving problems. It should also be noted that ABF cannot be generated under the current RACF model of care.

Another barrier to sustainability was the previously described ICT limitations. It was considered that the identification of an appropriate ICT system to facilitate efficient, consistent, and user-friendly patient information transfer would greatly facilitate ongoing service provision.

# Key considerations

## Future transition of care services

The ToCPP service appears to be well accepted by both patients and healthcare providers. There is evidence that the service delivers patient benefits, and there is support for ongoing service provision and potential expansion to additional patient populations and facilities.

- **Consideration should be given to the continued provision of transition of care services, including expansion to additional patient populations and facilities.**

Following the 2022 Federal Government announcement of funding to embed aged care pharmacists in RACFs, it is important to consider the place of the RACF model of care in future ToCPP services.[22] If services provided by aged care pharmacists in RACFs are sufficiently resourced to enable reconciliation of discharge medication lists, there will be no need for the ToC pharmacist to undertake this activity. There is, however, an ongoing requirement to supply appropriate clinical handover to RACFs, and ToC pharmacists are well placed to provide targeted medication information, including rationale for changes and recommendations for medication optimisation and ongoing monitoring.

- **Consideration should be given to changes to the RACF model of care in future services.**

The integrated service model demonstrated that, even with additional CA resourcing, the ToC pharmacists found it challenging to deliver the ToCPP service in addition to usual care activities. It is, therefore, unrealistic to expect that ward or team-based pharmacists can prioritise their workload to undertake post-discharge reviews for their existing patient allocation.

- **Consideration should be given to ensuring additional pharmacy resourcing is available to enable transition of care services.**

CA support in patient scheduling, preparation of DMRs, and communication of handover information to primary healthcare providers undoubtedly reduced the burden on the ToC pharmacist, enabling the completion of more patient reviews.

The service evaluation highlighted the value of the CA in an expanded scope ward-based role where they can potentially assist the ward pharmacist in DMR preparation, medication chart screening, and medicine supply, thus freeing the ward pharmacist to undertake clinical review, medication optimisation, and patient education activities.

- **Consideration should be given to clinical assistant resourcing requirements and service models to enable the future optimisation of clinical assistant roles to support clinical pharmacy services, including transition of care.**

## Future models of care

Streamlining the model of care may reduce the workload for pharmacists delivering ToC services in the future, allowing them to focus on patient follow-up and enabling more reviews to be conducted. The ToCPP model of care defines different management pathways for patients at low, medium, and high risk of readmission. However, most ToCPP activities focus on high-risk patients, and a simplified management pathway would optimise service provision.

- **Consideration should be given to the implementation of a single simplified management pathway for patients clinically identified as having a high risk of medication misadventure or readmission.**

Hospital pharmacists tended to rely on their clinical judgement rather than using the LACE Index for patient identification.

- **It is suggested that future care models do not use the LACE Index to determine patient risk.**

The evaluation identified that service efficiencies could be achieved by ceasing the sending of DMRs to GPs and community pharmacists. ToC pharmacists suggested that routine recommendations could be communicated to GPs upon discharge instead of after the post-discharge review. The MMP would then be reserved for complex patients, where ToC pharmacists needed to provide additional detail or notify issues identified at follow-up. Such changes would reduce the frequency of communications sent to primary healthcare providers and the time spent reviewing the information supplied.

Hospital pharmacists do not have access to the Enterprise Discharge Summary (EDS) system, and hence are unable to add content to discharge summaries. Information can be communicated using the 'recommendations to GP' function within eLMS. These recommendations are uploaded into EDS and appear on the discharge summary. However, recommendation fields in eLMS are text-limited and unsuitable for conveying detailed information.

Whilst reducing the volume of information sent to primary healthcare providers may address work capacity concerns, the project aimed to improve clinical handover. Additionally, primary healthcare providers highlighted the value of ToCPP information. Optimisation of medication information in the discharge summary by adding pharmacist-generated content may streamline communication. However, project scoping and the service evaluation

identified that primary care providers do not receive discharge summaries for all their patients.

- **Further consideration needs to be given to service optimisation and streamlining of the model of care, including which patients require a discharge medication record and medication management plan and how best to manage the secure, timely transfer of discharge medicines information whilst minimising the volume of information sent to primary care providers.**

ToC pharmacists supported the model of care option to complete a subsequent review with selected patients, and activity data evidenced judicious patient selection.

- **It is suggested that future models of care retain the option for a subsequent review.**

A discharge-focused or outpatient referral service delivery model appears optimal in maximising the number of patients managed and generating ABF to support service sustainability. Whilst fully integrated models support continuity of patient care, they will be difficult to implement widely and liable to service interruptions due to workload fluctuations.

- **It is suggested that a discharge-focused or outpatient referral service delivery model is employed to optimise patient access to transition of care services.**

## Information and communications technology

ICT was identified as a major barrier to service delivery, impacting service efficiency, reliable transfer of project information, and opportunities to create two-way communication between hospital and primary healthcare professionals. There is currently no single Queensland Health system that can effectively meet service requirements to electronically transfer medication information securely and directly to individual GPs and to community pharmacies.

- **Consideration should be given to collaboration with Queensland Health ICT services on the identification of immediate and future solutions to medication information transfer issues.**

## Patient outcomes

A mean of 0.8 medication-related problems were identified per patient at post-discharge review, 0.7 per patient at subsequent review, and more than one per patient at RACF review. These rates are comparable to data in the Pharmaceutical Society of Australia's *Medicine Safety: Take Care* report, which states that over 90% of patients have at least one medication-related problem following discharge from hospital.[4] However, ToC pharmacists highlighted a lack of feedback regarding their interventions and recommendations, and it is unknown whether identified medication-related problems were resolved.

- **Future evaluations should assess the clinical effectiveness of transition of care services, including primary healthcare provider uptake of recommendations and resolution of identified medication-related problems.**

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