

## CARE TRANSITIONS IN COMPLEX PATIENTS

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**ABSTRACT**

**Healthcare delivery is transforming from hospital-centric episodic care to a more patient-centric comprehensive and continuing care that caters to the changing needs of an ageing population and finite healthcare resources. The transition period during which patients move between healthcare settings is a period of vulnerability that requires well-executed care transitions. The relatively less-developed primary, intermediate and long-term care sector further underlines the importance of good transitional care. This article serves to introduce Family Physicians to the importance of transitional care, its broad concepts and a simple framework to help manage complex patients comprehensively in any Family Medicine practice setting.**

**Keywords: Transitional Care; Care Integration; Complex Patients; Hospital Readmission; Primary Care;**

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**CASE STUDY**

Mdm LYK is a 79-year-old Chinese female with no functional or mobility issues. She is married with no children and works as a cleaner. Her past medical history includes type 2 diabetes mellitus; hypertension; hyperlipidaemia; ischaemic heart disease with dual vessel disease which was stented in 2006 and 2007; chronic kidney disease; gout; anaemia of chronic disease; and left sternoclavicular joint septic arthritis which was treated. Her chronic diseases were well controlled and she is on active follow-up at the polyclinic.

In April 2016, she first presented to ABC Hospital with symptoms of progressive weakness for 1 week. She was initially diagnosed to have mononeuritis multiplex and was transferred to XYZ Hospital for rehabilitation. Three weeks into her stay at XYZ hospital, she developed severe myasthenia crisis and was intubated. This was also complicated by type 2 non-ST-elevation myocardial infarction (NSTEMI), extended-spectrum beta-lactamases (ESBL) *Escherichia coli* urinary tract infection with septic shock, acute chronic kidney injury, and worsening anaemia. Her care was escalated back to ABC hospital for further management. Her myasthenia gravis was treated with pyridostigmine, corticosteroids and immunosuppressants, and a tracheostomy was done for prolonged mechanical ventilation. The NSTEMI was conservatively managed and a two-dimensional

echocardiogram showed a left-ventricular ejection fraction of 48 percent, regional wall movement abnormalities, and pulmonary hypertension. The septic shock was treated with intravenous meropenem and piperacillin/tazobactam which she responded to. Her anaemia was investigated with endoscopes and she was found to have non-erosive gastritis and duodenitis, likely stress related. She was successfully weaned off the ventilator and had her tracheostomy decannulated.

Her prolonged hospital stay was associated with significant functional decline. Because of multidrug resistance organism carriage, she was unable to receive further rehabilitation at a Community Hospital or a Transitional Care Facility, and could only complete a period of rehabilitation at ABC hospital. She was discharged with 20 different medications, including subcutaneous insulin, which was newly started because of steroid-induced hyperglycaemia. On discharge, she needed contact guard assistance in her activities of daily living and required supervision while ambulating using a rollator frame. Caregiver training was given to her husband who now had to stop work to look after her full time. She stayed a total of 86 days in ABC Hospital and was discharged home to their 1-room rental flat.

**INTRODUCTION**

Singapore's population is rapidly ageing with an increasing chronic disease burden.<sup>1</sup> Older patients with multiple chronic diseases and organ failures are arguably the most vulnerable of patient groups. They may also have concurrent nursing, functional, psychosocial, and financial needs that add another layer of complexity. Not surprisingly, such complex patients often require extensive health and social care from multiple care providers across multiple settings.<sup>2</sup>

Transitions of patients across different settings are vulnerable periods that expose high-risk patients to gaps in care and lapses in quality and safety. On an individual level, poor care transitions often impact health, result in morbidity and mortality; and at a systems level, increase utilisation of emergency services, hospital admissions and healthcare costs.<sup>3-5</sup> The post-discharge period from acute hospitals to home can be a stressful period for patients and family as they are expected to self-care and navigate complex healthcare systems. Many older patients and family members reported being excluded in the discharge planning, frustrating discharge processes, poor communication with healthcare providers, inadequate knowledge of health-related information, and unmet need to access community services.<sup>6</sup>

Transitional Care (TC) is a term used to describe a set of time-limited actions involved in ensuring good coordination and continuity of care plans and avoiding preventable negative

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outcomes among vulnerable patient populations as they transit from one care setting to another.<sup>3,7</sup>

The movement of patients can occur:

1. Within the same setting across different levels of care acuity (e.g. within the hospital setting: from the High Dependency Ward to the General Ward; or within the community setting: from a Primary Care Clinic to Home Hospice).
2. Between different settings (e.g. from the Acute Hospital to a Community Hospital or from home to the Acute Hospital).
3. Between care providers (e.g. from a Specialist to a Family Physician and vice versa).

Because resources are finite and not all patients require handholding during periods of care transition, TC should target the high-risk, vulnerable patient groups to maximise its impact. And quality TC aims to provide care that is effective, efficient, timely, and respectful of patients' and families' preferences, values and goals after shared decision-making.<sup>8</sup> While the main goals of TC are to reduce hospital readmission rates and length of stay, while increasing quality of life and patient satisfaction, its interventions should take into consideration goals of care, and should not put patients, families or even healthcare workers at additional risk of harm.

Because of the different permutations and combinations of transition sites, the rest of this article will focus mainly on the transition of patients from a level of higher acuity (i.e. Acute Hospital), to a level of lower acuity of care (i.e. Community Hospital or Primary Care), which represents the bulk of the focus and work of TC services in Singapore.

**ELEMENTS OF TC**

TC programmes comprise several key elements as shown in Table 1,<sup>9</sup> namely:

1. Risk stratification;
2. Comprehensive assessment;
3. Care planning;
4. Care-plan communication;
5. Inter-setting patient care; and
6. Self-management support.

40% in those 60-69 years, and 60% in those 70-79 years. (Soriano et al, 2003)<sup>3</sup>

Emerging evidence suggests that interventions may be more effective when they are in the form of multi-component bundles<sup>10-12</sup> and started early in the care cycle.<sup>10,13</sup>

**Table 1: Elements of TC**

Element	Objective	Rationale
Risk stratification	Identify patients at high risk of care discontinuity.	High-intensity TC programmes are resource and labour intensive. Cost effectiveness is achieved by targeting patients who are at increased risk.
Comprehensive assessment	Identify medical and social care issues.	TC is largely anticipatory and preventive in nature. Preventive interventions require effective identification of care issues that may potentially delay transfer to the next appropriate setting of care or result in discontinuity during transfers.
Care planning	Develop interventions for rapid optimisation of patients' conditions and prevent discontinuity of care.	Care planning occurs in 3 phases: <ol style="list-style-type: none"> <li>1. Pre-discharge care plans aim for rapid stabilisation and getting patient ready for timely transfer to the next appropriate setting of care.</li> <li>2. Discharge planning involves taking measures to prevent lapses in care during handovers.</li> <li>3. Reception planning is done by the receiving party to ensure safe and timely admission to the next phase of care.</li> </ol>

Care plan communication	Ensure all parties in the transition process have a shared understanding of the care plan.	There are multiple parties involved in the transfer of patients with complex care needs. The communication is often multidisciplinary and multi-institutional in nature. Use of multidisciplinary meetings, family conferences and information technology is critical. Stakeholders involved in the communication include patients, caregivers, clinicians and administrators. Institutions involved include payers, government agencies, health and social care providers.
Inter-setting patient care	Bridging care between settings to support care continuity.	Typically involves case managers and/or clinical staff visiting the community or the patients' homes. May also involve care teams providing care in different settings for the same patients.
Self-management support	Invoking self-care to enhance care continuity.	Interventions under this element include health education, disease-based action plans, caregiver training, home monitoring (with or without telehealth) and call-centre support.

TC can also be seen as two main segments: hospital pre-discharge planning and immediate post-discharge follow-up in the community. Both pre-discharge and post-discharge elements are important and there should be deliberate interventions to link the two. Studies have shown that programmes that focus solely on inpatient discharge planning without post-discharge support are doomed to fail.<sup>7,14,15</sup> There should be ongoing two-way communication between these elements and the healthcare team at each site to ensure proper handover of care plans. Despite the increasing awareness of the importance of integrating care across the care cycle, healthcare workers on the ground continue to encounter barriers including ineffective communication within the multidisciplinary team in the hospital and with primary care providers in the community.<sup>16</sup>

Many TC programmes and models have been developed overseas to target the needs of patients in care transition. The Transitional Care Model (TCM) is Advance Practice Nurses (APN) led and involves a multidisciplinary team.<sup>17</sup> TCM includes comprehensive inpatient assessments, goal setting, continuing active engagement with patients, families and healthcare team, and a one- to three-month post-discharge follow-up of the patient in the community. The APN aims to help patients identify early signs of deterioration, expedite early intervention, and avoid hospital admission. Another TC model is Better Outcomes for Older Adults through Safe Transitions (Project BOOST), which was developed by the Society of Hospital Medicine with the aim of improving care transition and reducing hospital readmissions.<sup>18</sup> This model focuses on

systematic discharge processes by using the BOOST risk-assessment tool and improved communication with patients and the receiving healthcare team. Other notable TC programmes in Singapore include the Aged Care Transition (ACTION) programme<sup>19</sup> and the Singapore General Hospital transitional home care programme<sup>20</sup> that have shown effectiveness in reducing readmissions and healthcare utilisation.

TC can be seen as a continuum with possible periods of relapse and destabilisation. An uncomplicated course of TC is the best outcome for patients, where their condition continues to stabilise and they transit smoothly to the next community provider. In other instances, patients could suffer from an acute deterioration during the course of TC and require readmission to the hospital. They would then require TC again on discharge.

## THE ROLE OF FAMILY MEDICINE IN TC

Family Physicians (FPs) play an important role in the care transition of complex patients at various Family Medicine (FM) practice settings. These include step-down intermediate care at community hospitals, and long-term care or primary care clinics in the community. Most patients are discharged from the acute hospitals with a memo to primary care clinics for follow-up on sub-acute medical issues; while others may require intermediate care in a community hospital before being followed up by primary care or home care. Well-trained FPs should be able to function as both the referral team and the receiving team. They should be able to lead a multidisciplinary team (comprising nurses, case managers, medical social workers, and allied health

**Table 2: Application of Family Medicine principles in Transitional Care**

Domain of Family Medicine Competency	Application in Transitional Care
Primary	Taking on the role of the most responsible physician who is overseeing care transition.
Personal	Contextualising care according to the care needs of the patient based on the bio-psychosocial model.
Preventive	Reducing the risks of repeated and prolonged hospitalisation by maintaining the health of the patient in the community. Prevent suboptimal outcome due to care fragmentation.
Comprehensive	Managing the full range of medical conditions of the patient in consultation with the specialists. Reduce unnecessary specialist consults.
Continuing	Bridging the divide between the hospital and the community to ensure that smooth and seamless care transition is not disrupted as the patient moves from one setting of care to the next.
Community	Returning the care of hospitalised patients back to the home and community. Linking up medical and social care to ensure that patients remain well in the community.

professionals) to coordinate care around the patient. They should also be able to execute good discharge planning and confidently take on the subsequent management of complex patients to further stabilise medical issues, identify and manage bio-psychosocial problems early, empower patients and families in self-care, and continue as patients' primary care provider.

TC principles are very much aligned with the core principles of Family Medicine: Person centered, Primary, Preventive, Continuing, Comprehensive, Care in the Community (Table 2).<sup>(9)</sup> In a recent SG50 appreciation dinner for Pioneer General Practitioners, Health Minister Mr Gan Kim Yong also reiterated the importance of FPs to be trained in TC.<sup>(21)</sup>

## DISCHARGE PLANNING

Important areas to address prior to discharge include:

1. Medication reconciliation;
2. Ensuring appropriate follow-up appointments;
3. Functional decline (if any) needing a period of rehabilitation;
4. Functional aids and equipment required for the care of patient;
5. Caregiver training and competency;
6. Financial aid to relieve the cost of care; and
7. Linking up with the necessary community partners and services.

The core to good discharge planning is good ongoing communication with: 1) the patient and family members on

how best to manage their medical conditions at home, which is most effective in patients who are activated, willing to participate in shared decision-making, and have adequate health literacy; and 2) the receiving healthcare team or doctor on the issues that need continued monitoring and intervention.

Project BOOST<sup>18</sup> has identified 8 evidence-based risk factors — known as the “8P” — for hospital readmission which should be deliberately sought and managed by the team “upstream” prior to discharge. These are also applicable to the receiving or “downstream” provider because of potential gaps in care transition. The risk factors are: *problem medications; psychological issues or depression; principal diagnoses that are at increased risk of adverse events after discharge* (e.g. cancer, stroke, diabetes, chronic obstructive pulmonary disease and heart failure); *polypharmacy; poor health literacy; patient support* (rather, poor social support); *prior hospitalisation in the last 6 months; and palliative care.*

## Dissecting the Discharge Memo: A Practical Framework for the Receiving Doctor

Ideally, the referring team and receiving team should have a good understanding of each other's scope of work, nature of services and limitations, so that there can be a good match of patient's needs to the appropriate community services and avoid issues such as over-promises and inappropriate referrals. The two teams should also communicate, ideally face to face, with the referring team handing over important information to the identified next care provider for follow-up and review. This will ensure that the next care setting is adequately equipped to manage the needs of

the patient. Currently, the situation is far from ideal and the usual channel of (one way) communication is through a non-personalised discharge memo. Limitations notwithstanding, the discharge memo still contains a wealth of information about the patient from which an astute physician can prioritise the care issues.

Further history can be taken during the consultation to address the dearth of details in poorly written medical summaries and to also actively look out for issues which are not explicitly written down.

It is equally important to consider the months and even years leading up to the current admission. This will identify recurring themes contributing to patients' poor health, such as non-compliance, poor health literacy, poor social support, and inability to self-care. The trajectory of disease progression, functional decline, and hospital admission patterns can be identified.

A practical approach when reviewing a complex patient during care transition is the Stott and Davis consultative model.<sup>22</sup> The extended Stott and Davis model<sup>23</sup> further considered the environmental and functional aspects of the patient. It has a simple mnemonic: A, B, C, D, E, and F.

A is for "Acute". Have the acute issues that were identified in the previous admission been resolved and are there any new issues?

B is for "Behaviour". This can describe a variety of patient health-related behaviour. It can be used to describe patients' health- or help-seeking behaviour; patient behaviour that is detrimental to their health; and behaviour as a result of their underlying disease.

C is for "Continuing problems" or "Chronic diseases". How are patients' other co-morbidities?

D is for "Disease prevention" and traditionally refers to opportunistic health promotion. For TC, it is more useful to focus on "prevention of hospital readmission", what needs to be done to manage the patient well in the community, and reducing the chance of the patient needing acute care services.

E is for "Environment" and this includes the social and physical environment. Social environment refers to patients' family backgrounds and care structures which include help from community care providers. Physical environment refers to the place that the patient actually stays. This assessment should focus on the identification of gaps in the patients' environment that result in an inability to meet their care needs, and should recommend appropriate interventions or even a more suitable place of care.

F is for "Function". This requires an assessment of patients' previous and current function using the Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (iADL) scale, trajectory and any acute change in functional

needs. Decide whether any intervention needs to be put in place to prevent further deterioration in function and to help patients and families cope with increased functional demands.

An updated list of medications is usually part of the discharge memo. But more importantly, there is also a need to compare with the previous pre-admission medication list, looking for any new medications, omissions, changes in dosages, and rationalise the reason for these medication changes. In a busy hospital setting, errors in prescriptions can occur. The receiving physician must perform **medication reconciliation** and be aware of drug-drug interactions and problem medications such as warfarin, antiplatelet, opioids, furosemide, oral hypoglycaemic agents, insulin, and prednisolone. Medication de-prescribing should be actively considered.

Finally, the patient's **outpatient appointments** would need to be reviewed and consolidated.

### **The Problem List and the Multi-Faceted Bio-Psychosocial Needs of a Complex Patient**

After reviewing the discharge memo, taking a good history and completing the patient assessment with a targeted physical examination, active problems should be identified and reorganised into a problem list based on the bio-psycho-social model. Broad categories include Medical, Nursing, Functional, Psychological, Social, and Financial. A well-organised problem list helps in the effective execution of management plans and subsequent follow-ups.

### **Common Issues During the Transition Period**

#### ***Healthcare-associated infections (HCAI)***

Patients discharged from hospitals are at increased risk of healthcare-associated infections. These include pneumonia, and urinary tract and intra-abdominal infections, and can occur up to 90 days after discharge from the acute hospital.<sup>24</sup> Even if patients are well in the post-discharge period, HCAI should always be a differential diagnosis for patients who present with symptoms suggestive of an infection, especially when they do not respond to standard treatment.

#### ***Inadequate communication between the hospital team and patients***

Inadequate communication of information from the healthcare team to the patients and their caregivers may compound pre-existing deficits in self-care knowledge. The receiving FP may need to explain, in simple language, the diagnoses, investigation results, treatment received, and reasons for certain decisions. An informed patient can be activated to take part in shared decision-making on management and preventive care.

#### ***Medication errors***

Medication reconciliation should be done with the patient or caregiver in person, comparing the pre-discharge list, post-discharge list, as well as the actual medications and dosages that are being administered. Information on changes in dosage, stopped medications and new medications will need to be

reinforced. The techniques of parenteral and inhaled medications, as well as the storage methods need to be checked. Some ways to ensure compliance could be to simplify the dose regimen whenever possible (e.g. from 3 times a day to twice a day), displaying the medications in a simple chart form, using pill boxes and even pre-drawing of insulin doses.

### **Unexpected increased functional and cognitive needs & inability to self-care**

Serious and prolonged illnesses result in functional and cognitive decline in frail, at-risk elderly.<sup>25,26</sup> Patients and their caregivers may not be adequately informed or prepared to manage these increased functional and cognitive needs. Good discharge planning includes consideration of the patient's post-discharge function, rehabilitation requirements, rehabilitation potential, and the availability of a caregiver. Appropriate community services can be activated to support the patient to remain well in the community after hospital discharge. Briefly, these services include inpatient rehabilitation in a community hospital or transitional care facility, or centre-based rehabilitation such as in day rehabilitation centres and home-based rehabilitation. More details on community services are covered in other units of this skills course.

### **Unmet social care needs**

There are many community based organisations that help patients in their daily care needs. Some of these include home help services, home meals delivery, escort services for follow-up and case management services. This is especially important for socially isolated or single elderly who lack family support and require these services to help them cope and keep them healthy in the community.

### **Back to the Case Study**

The ABC hospital's TC team worked closely with the inpatient team in the discharge planning process. The TC team ensured that the necessary community care resources were activated, mobility equipment was obtained, and caregiver training was completed. Because the same TC team will also be following up on her progress on discharge, continuing care plans were seamlessly followed through. A combined doctor-and-nurse visit was done as early as the following day after discharge to perform a thorough needs assessment, looking out for potential early destabilisation, and ensuring that both patient and husband were coping and competent. Further home-based rehabilitation was provided by the team's allied health personnel as necessary. The TC care nurse kept the patient under regular phone surveillance; and both the patient and her husband could contact the TC team anytime and as many times as they required, with timely home visits arranged when necessary.

## **THE FUTURE OF TC**

TC in Singapore is still in its infancy. The Ministry of Health and the various Regional Health Systems are actively reviewing their own TC programmes for their efficacy and cost effectiveness. There is increasing evidence on what works and why in TC. Transitional Care programmes are being evaluated

in increasingly rigorous study designs that form evidence-based TC theories. When applying TC theories to design an effective TC programme, a "one size fits all" mentality is a set-up for potential failure. The needs of the patients being enrolled into a TC programme must be identified to inform the most effective and appropriate interventions. Such complex interventions must be evaluated with rigour and many feedback loops for continuous quality improvement. There is a need to share best practices to help scale up effective TC services to meet the increasing demands of our ageing population. There is still some way to go before a suitable TC programme is shown to be effective and is nationalised as part of the healthcare system.

Current TC programmes in Singapore are mostly initiated from and staffed by the acute and community hospitals. The next challenge for the Family Medicine fraternity comes with the readiness of primary care to take on the role of receiving complex patients immediately from the acute hospital without the need for an intermediate TC team. In other words, primary care needs to up the ante, with systems robust enough to cater to the immediate sub-acute needs of patients. This requires mindset change, systems change, a constant drive to improve with further training, and better collaboration between community partners and FPs in varying places of practice. A strong collaborative FM network that will be able to meet the future needs of Singapore's ageing population is a goal to work towards.

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## LEARNING POINTS

- **TC has received more attention in recent years and is recognised as an important component in the complex patient's journey. TC will increasingly play a significant role in catering to the multi-dimensional needs of complex patients in the post-discharge period in a rapidly ageing population.**
  - **Quality TC aims to cost-effectively keep patients as stable as possible in the next place of care, empower them for self-care, reduce the needs for emergency department visits, and hospital readmissions. The interventions to achieve these should not put patients at increased risk of harm.**
  - **With strong roots in the care of patients in the community and in intermediate and long-term care, FPs are well positioned to take on the principal role of coordinating the care around complex patients. This requires continuing FM training, systems change and increased collaboration among FPs in various FM settings to cater to this evolving need.**
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