

Causes for the Evolution of Case Management and the Development of a Working Model in an Acute Care Hospital in Singapore

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Abstract

Case management is a collaborative process which assesses, plans, implements, co-ordinates, monitors and evaluates options and services to meet an individual's health needs. The case manager performs a key role in ensuring that collaboration and communication between the multi-disciplinary healthcare team and patient is maintained, and that quality clinical outcomes are achieved and the patients reach an optimal level of wellness and function. Patients that can benefit from case management in an acute hospital setting are frequently elderly and have complex medical and care issues arising out of changes in functional status. The components of a successful case management system include identifying a suitable model for implementation and recruiting the correct persons to function as case managers. A defined assessment and recruitment guideline will ensure that appropriate patients are placed on case management. Communication and collaboration with all stakeholders in formulating a patient's plan of care are essential. The subsequent implementation and monitoring of the plan is crucial, as variances that occur must be adequately managed in order to ensure that a satisfactory clinical outcome is achieved without inappropriate expenditure of resources. The barriers to a successful case management programme can result from inappropriate case loads and failure of the other healthcare team members to understand and appreciate the case manager's role and functions. However, this can be overcome by education and using outcome data to demonstrate the effectiveness of case management.

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Introduction

In 1999, significant changes to the healthcare funding structure were introduced to public sector hospitals in Singapore. This was the advent of casemix-based funding for acute inpatient and day surgery episodes. The changes were prompted by a need to ensure quality and affordable healthcare to all Singaporeans. With this change, hospitals were forced to review the way that healthcare was being delivered in order to meet the expectations of patients and to ensure that resources are used in the most cost-effective and efficient manner.

Tan Tock Seng Hospital (TTSH) is a 1400-bedded acute care hospital in Singapore. By virtue of its strategic central island location at the intersection of 2 major expressways, the hospital sees a high proportion of inpatient cases that were admitted through the emergency departments. In 1997, emergency admissions accounted for 72% of admissions and by 2000 this had increased to 80%.

In addition, recent trends showed that the proportion of elderly patients aged 65 years and above had been increasing, both in the inpatient and the outpatient setting (Table I). This is consistent with Singapore's rapidly ageing population.

Elderly patients would be expected to have higher incidence of concomitant medical problems and a greater incidence of functional decline after an acute medical illness. The increasing medical complexity in such patients, and the need for co-ordinated inter-disciplinary care posed enormous challenges to healthcare professionals who are traditionally trained to view patients from a specialty specific rather than a patient-centric viewpoint. Care co-ordination also extended beyond the acute hospitalisation episode as post-discharge care, placement of patients back into the community and maintaining their health status was recognised as equally important issues that had to be addressed to provide holistic care to our patients.

Case Management as a Solution

Case management is defined by the Case Management Society of America (CMSA) as "a collaborative process which assesses, plans, implements, co-ordinates, monitors and evaluates options and services to meet an individual's health needs through communication and available resources to promote quality cost effective outcomes."¹

We made a review of the roles of case managers in

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TABLE I: AGE PROFILE OF PATIENTS IN TTSH FROM 1997 TO 2000

	% of inpatients aged ≥ 65 years	% of outpatients aged ≥ 65 years
1997	34.3%	17.1
1998	37.5	18.5
1999	38.5	16.8
2000	39.6	21.5

various settings drawn from the American experiences.¹⁻⁴ The hospital felt that case management was a solution that would address the needs of both the hospital and the patient, not only within the hospital setting, but also the needs of the patient as he transits out of acute hospital care back into the community. Introduction of case management was seen as a means to manage care, outcomes and costs.

The Model of Case Management

As TTSH is an acute hospital, we initially focused on the acute care model for case management. A decision was made to implement a specialty-based model as opposed to unit-based or physician-based models. We felt that this model would help to promote the development of relationships between case managers and clinical teams, provide greater accountability and allow them to focus on a specific patient group. This would allow the case managers to become “experts” in their fields⁵ and be able to provide effective case management services with a full understanding of the particular needs and clinical issues around the particular specialty. A total of 8 clinical disciplines were identified for case management implementation as these were the disciplines that had the highest burden of inpatient cases and long-stayers. Case managers were assigned to these disciplines based on the total inpatient workload, so that each case manager would not have to deal with excessive and overwhelming case numbers.

Understanding the Problems

Before we implemented case management, a study was undertaken to provide an understanding of the patients’ profile and their needs so that required services as well as potential barriers to success could be identified.

A retrospective medical record review was performed on 200 randomly selected outlier patients that were discharged from the hospital in the last quarter of 1999. Outlier status was defined as patients who stayed beyond two standard deviations from the national length of stay as defined by Diagnosis Related Group (DRG) groupings. Outlier patients were studied as it was felt that this would be the group of patients that would benefit from case management interventions. The review was performed by a group of 6 case managers over a 4-week period using a standard data collection form.

TABLE II: AGE DISTRIBUTION OF PATIENTS IN REVIEW

Age (y)	%
≤ 40	9.9
41-50	6.8
51-60	8.0
61-70	16.0
71-80	27.0
≥ 81	32.0

Results of Review

1. 94.5% of patients were emergency admissions and 88% of these patients had opted to stay in B2 and C class wards, which are heavily subsidised by the government. There was an equal distribution between males (49.5%) and females (50.5%). Almost 60% of these patients were above the age of 70 (Table II).
2. Patients had an average of 1.96 co-morbidities and 0.82 in-hospital complications during their period of stay. Of the co-morbidities, hypertension (47%), type II diabetes mellitus (42%), ischaemic heart disease (28.5%) and previous stroke (19.7%) were the most commonly occurring conditions.
3. The pattern of intra-hospital referrals supported the observation that these patients required multi-disciplinary care from various healthcare workers at varying occasions during their hospital stay (Table III).
4. Changes in functional status were also reviewed to study the requirements for community and step-down care. Ten per cent of our outlier patients registered a decreased ability to independently perform activities of daily living, while a further 7.1% had deterioration in ambulation status when compared to pre-admission. In addition, the number of patients that were classified as “high risk for falls” doubled from 17.6% on admission to 34% at the point of discharge.

TABLE III: DISTRIBUTION OF IN-HOSPITAL REFERRALS FOR CONSULTATIONS AND SERVICES

Referral type	Specific service	%
Physician consultation	Medical	50.0
	Surgical	25.3
Allied health services	Physiotherapy	66.7
	Occupational therapy	45.2
	Medical social worker	32.0
	Dietician	17.8
	Speech therapist	17.3
Specialist nurse consultation	Continence care	3.5
	Wound care	2.5
	Asthma	2.0
	Diabetes	1.5

5. In terms of discharge destinations and linkages to community-based services and step-down care, 63.4% of patients were discharged to their own homes, with another 15.1% being discharged to nursing homes and 8% to community hospitals. In total, 36.5% of patients were discharged with continuing care requirements. Figure 1 shows a breakdown of the specific requirements.
6. When reasons for prolonged hospital stay were analysed, medical complexity was a major factor. The ability of the patient and the family to cope with the acute illness and its sequelae was the second major factor as evidenced by the number of families that delayed making a decision on transition care or who were unwilling to take steps to complete caregiver training. A significant number of patients could not identify a specific caregiver (18.5%), while 3% of patients actually lived alone. A third reason for extension of hospital stay was a failure to initiate discharge planning activities early (10.5%) and the delays incurred while waiting for placement in step-down care facilities (9.5%). Unfortunately, these delays in discharge lead to a higher incidence of hospital-related complications developing in these patients which further increased the length of stay.

Conclusion of Review

The typical outlier patient in our hospital is expected to be an elderly patient who comes into hospital for an unexpected acute medical problem. The care of these patients tends to be complicated and requires co-ordination between a number of healthcare professionals. Patients are likely to face a significant deterioration in functional status, which would increase their needs and the burden on the family and increase need for social services. Many families are

unprepared and unable to cope with such changes, given the emergency nature of many of these episodes. Hospital teams were not pro-active enough in planning for transition care with the patients, families and step-down care facilities.

Goals of Case Management

Based upon the knowledge of the needs and requirements of our local population, we developed the following goals for our case managers:

1. To recruit patients and to receive referrals for case management.
2. To be a member of the multi-disciplinary team for the purpose of development, co-ordination and implementation of a care plan for a patient, and to ensure that the plan is comprehensive and individualised to meet his needs.
3. To ensure that care plans are communicated clearly to patient, family and all healthcare providers.
4. To act as a liaison between hospital and community-based programmes and agencies.
5. To assist the primary team in ensuring that patient and caregiver education is delivered.
6. To assist patient and healthcare team in discharge planning to achieve a seamless and smooth transition after acute hospital care.⁶
7. To ensure that patients can achieve an optimal level of wellness and function by facilitating timely and appropriate access to health services and to encourage patient awareness and participation in his own health plan.
8. To monitor clinical outcomes and promote the use of evidence-based medicine.
9. To identify opportunities for process and quality improvements.
10. To encourage appropriate and effective use of hospital and community resources by eliminating duplication and reducing delays.

Case Management Workflow

The following activities were created as part of the case management workflow:

1. Screening
2. Recruitment
3. Assessment
4. Planning
5. Implementation
6. Review
7. Disengagement

A brief description of each activity is provided below.

Screening

Not all patients in the review required case management

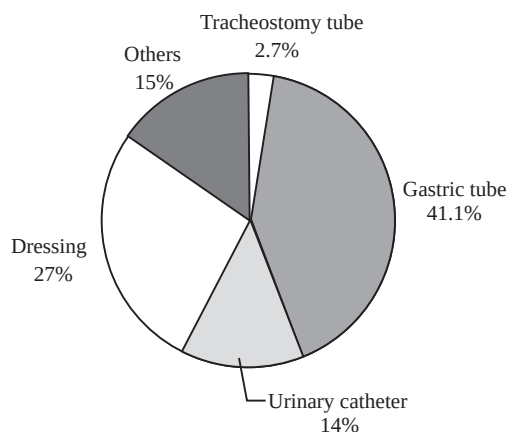


Fig. 1. Breakdown of patients with continuing care requirements after discharge (n = 73 patients).

services. Prioritisation and triage of patients to receive case management services were important. This helped to ensure that case managers were assigned to appropriate patients and that the service would be cost-effective.

All inpatient admissions, both emergency and elective, were screened within the following working day by a case manager. Based on the patients' profile and problems identified in the outlier review, a set of screening criteria were developed and tested for a period of 6 months. After the initial period, a review was done and the criteria further refined. The current criteria are shown in Figure 2.

Recruitment

All patients that met one or more of the above criteria were recruited for case management as it was felt that such patients would benefit from case management interventions. Patients or their families would also have to consent to the provision of case management services.

As patients' conditions and needs were likely to change during the course of the hospital stay, we also allowed for referrals for case management at any point of time. Referrals could be initiated by any member of the healthcare team. The case manager would evaluate each referral and decides on the need for case management.

To encourage referrals, we deliberately made the process informal (via paging or verbal notification of case managers). We found that initial referrals occurred towards the planned discharge date. As time progressed and with increasing awareness of the role of the case managers, doctors started to refer patients earlier during the hospital episode. This helped the case managers to deliver services to patients in a more timely manner.

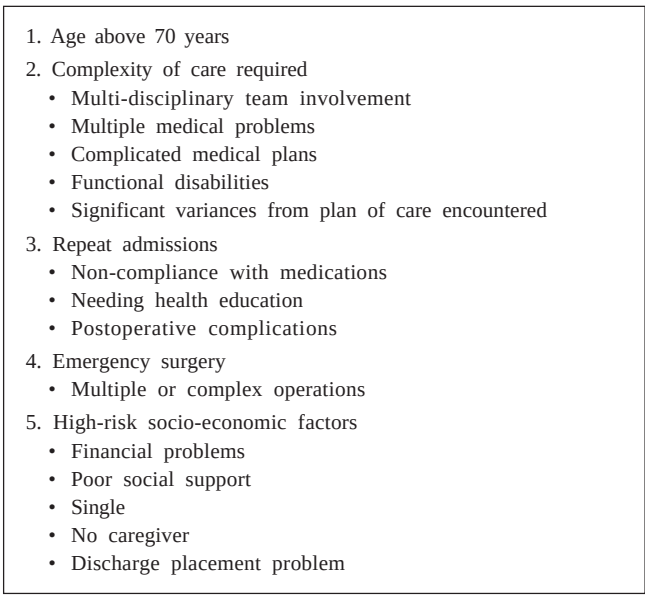
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1. Age above 70 years
 2. Complexity of care required
 - Multi-disciplinary team involvement
 - Multiple medical problems
 - Complicated medical plans
 - Functional disabilities
 - Significant variances from plan of care encountered
 3. Repeat admissions
 - Non-compliance with medications
 - Needing health education
 - Postoperative complications
 4. Emergency surgery
 - Multiple or complex operations
 5. High-risk socio-economic factors
 - Financial problems
 - Poor social support
 - Single
 - No caregiver
 - Discharge placement problem

Fig. 2. Criteria for case management.

Assessment

The case managers developed a Patient Assessment Form for Case Management that provides for collection and documentation⁷ of information regarding

- patient's family structure and relationships,
- home environment,
- other psycho-social needs,
- economic and employment information,
- medical conditions and needs,
- functional status.

The multi-disciplinary team would be interviewed to understand the care plans and interventions planned for the patient. In addition, members of the patient's family would be interviewed for additional information to aid in the understanding of the patient's needs, aspirations, cultural and spiritual background.

Planning

Based on the needs and requirements identified in the assessment, the case manager would proceed to develop and document an individual's care plan. This decisions would be made with the patient and the multi-disciplinary team and, where appropriate, with the family or caregiver. A variety of methods may be utilised by the case manager to accomplish agreement with the care plan. This may involve education, family conferences, counselling, liaison and mediation.

The goals and targets that are set have to be agreed upon by the patient, multi-disciplinary team and family where appropriate. Goals may be set in various areas e.g. clinical management, rehabilitation, discharge planning, social functioning, etc. The case manager will attempt to ensure that the goals reflect the needs of the patient and are realistic and achievable. In some situations, the case manager can also act as a patient advocate.

Planning also involves setting intermediate targets where applicable, outlining strategies and helping to make a decision on the best strategy to achieve the outcomes decided. Target dates and persons responsible for achieving the targets will also be determined.

The agreed plan is documented clearly in the medical records, communicated to all members of the healthcare team and also forwarded to agencies that are asked to provide services to the patient.

Implementation

While the multi-disciplinary team is responsible for many aspects of the care of an individual patient, the case manager's role is seen more as a monitor and co-ordinator. Direct clinical services may also be provided by the case manager, e.g. caregiver training. In addition, the case manager can help to facilitate specialist clinical services

such as rehabilitation assessment.

The case manager will also be responsible to liaise with and procure services outside the hospital as detailed in the plan of care. In this respect, they work closely with the medical social worker and other placement agencies such as integrated care services to facilitate patient access to medical and social services in the community.

Review

The case manager will, as part of the plan of care, establish the frequency of review of the outcomes achieved. Any variations between assessed and planned needs and service provision have to be addressed as soon as possible.

A check has to be made at every review to ensure that original needs identified are still relevant, new needs are identified and assessed, and revisions to the plan made to address additional requirements.

Reviews of patients need not necessarily only occur within the setting of the acute hospital. The case manager has a responsibility to ensure that case management is successfully transferred and continued when the patient moves across a boundary where applicable. This may require referral of a patient to a community case manager and continued liaison after discharge. Planned post-discharge follow-up via phone may also be instituted for specific patients.

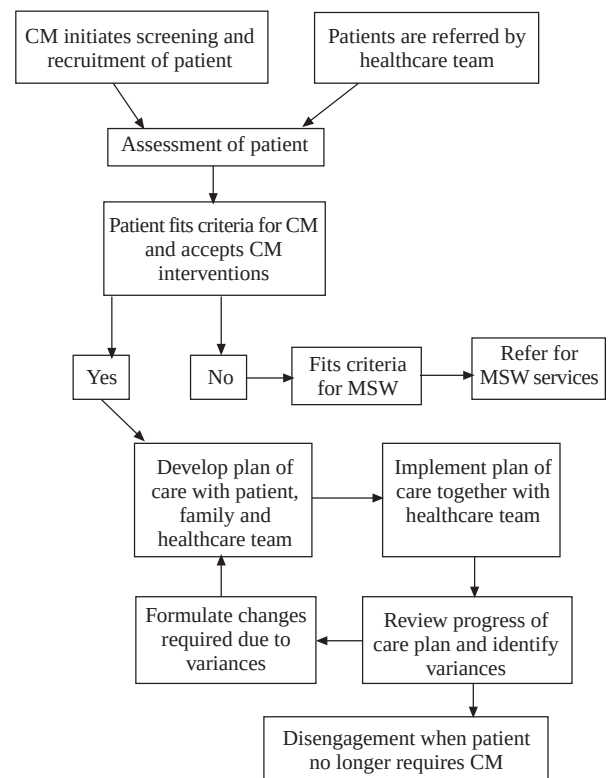
Disengagement

Disengagement and case closure refers to the termination of case management services. This can occur when the patient no longer has a need for case management and if the patient or family refuses case management services.

The Case Management Workflow is shown diagrammatically in Figure 3.

Problems During Implementation of Case Management

As the hospital was starting from ground zero for case management, the case managers had to work with a theoretical knowledge and improvise along the way to meet local needs and differences. Some of the initial problems were related to a lack of understanding and clarity as to their roles and activities, particularly in relation to the role that was being performed by the medical social workers who were also responsible for procurement of certain services. We were fortunate to be able to learn of the “dyad model”, employed by St Vincent’s Hospital in New York City, which helped us to integrate and establish a collaborative network with the medical social work team. This helped us to use professionals in the areas where their expertise lie⁷ and to avoid duplication of services.



Legend
CM: case management
MSW: medical social worker

Fig. 3. Diagrammatic representation of case management workflow.

The nursing staff initially tended to rely heavily on the case managers to deal with even the simple cases for discharge planning. This had a negative impact upon the case managers’ effectiveness as they became overloaded and their resources were diluted. The case managers approached this problem by actively supporting the nurses who approached them for help. This provided reassurance and increased awareness of the possible interventions that could be employed. At the same time, the case managers worked to educate other healthcare professionals on the options available for patients after discharge.

Early Outcomes of Case Management

Case management was formally introduced in TTSH in May 2000. It has been difficult to measure outcomes of case management from aspects of length of hospital stay and patient satisfaction rates, as many other factors have an impact on these two measures. Nevertheless, a preliminary review was performed after 9 months of operations. The average length of hospital stay was maintained between 5.0 and 5.1 days, while the high outlier rate dropped marginally from 5.12% in the second quarter of 2000 when case management was introduced to 4.34% by the 1st quarter of 2001.

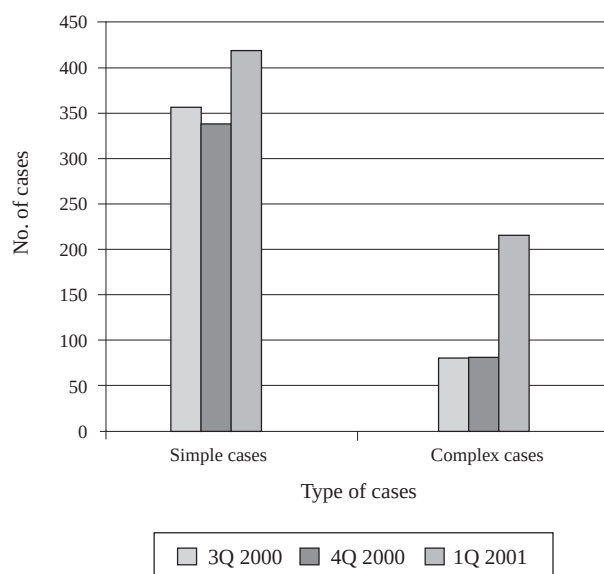


Fig. 4. Numbers of simple versus complex cases managed for first 3 quarters after implementation.

Patients case managed during this period were divided into 2 groups—those that were deemed simple cases, and those cases that were considered highly complex, required multiple service links and high level of direct case manager involvement (Fig. 4). An interesting observation was that while the numbers of cases for simple case management remained fairly constant, there was a significant increase in the number of patients that came under complex case management. We feel that this is a reflection of the increasing confidence of the case managers in handling the more complex cases as they learn to provide more innovative and imaginative solutions.

On average, simple case-managed cases were reviewed 3 times during the entire admission, whereas complex cases were reviewed 5 times, reflecting the greater intensity of service for the more complicated patients.

A staff satisfaction survey was conducted 6 months after case management was implemented. All groups of hospital staff were targeted. Respondents were asked for their feedback on selection of cases for case management, timeliness of response to referrals and satisfaction

with case management outcomes. Overall, the staff felt that the case managers helped to reduce workload of ward staff and there was improved communication between the patients and the staff. The feedback garnered in the survey resulted in further refinement of the process and selection criteria.

Conclusion

We described the development and adaptation of the USA model of case management in the setting of a large acute hospital in Singapore. Aspects of the USA model that incorporate utilisation review, casemix analysis and managed operations were not deemed to be relevant to our local practice currently. While the initial deployment of this new system can be considered a relative success, we have yet to analyse its full impact. The next step for us would be to perform a more in-depth analysis of case management outcomes and variances with a view to better understand the barriers that still exist and devise strategies to overcome them.

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