

Project Title

Optimising Acute Delirium Care in TTSH

Project Lead and Members

- Dr Chong Mei Sian, Senior Consultant, Department of Geriatric Medicine
- Dr Tan Thai Lian, Head, Senior Consultant, Department of Geriatric Medicine
- Jasmine Kang, Nursing / Advanced Practice Nurse
- Magdalene Lim, Nursing / Senior Nursing Manager
- Melanie Kam, Operations (Community) / Operations Manager

Organisation(s) Involved

Tan Tock Seng Hospital

Project Period

Start date: 2012

Project Category

Care Redesign, Process Improvement, Process Redesign, Quality Improvement

Keywords

Patient-Centric Care, Care & Process Redesign, Quality Improvement, Geriatric Monitoring Unit, Delirium, Improved Clinical Outcomes, Pressure Ulcer Rate, Improved Functional Abilities, Acceptable Fall Rates, Restraint-free Environment, Reduction of Antipsychotics, Reduce Length of Stay, Healthcare Resource Saving, Cost-effectiveness, Tan Tock Seng Hospital, Geriatric Medicine

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ENTRY FORM FOR CLINICAL SERVICE IMPROVEMENT CATEGORY

A clinical improvement project that was successfully completed in any of the specialized (technical) areas of hospital management, such as Nursing, Laboratory, Radiology or in specialty clinics such as Eye center, Kidney center, etc. The project should show measurable results of having improved the service in such areas as reduction in medication errors, reduced waiting times, prevention of service defects, or faster results with little or no capital outlay.

INSTRUCTIONS

- a. Please fill out all the sections below and abide strictly by the word count. Words exceeding the maximum word count will be cut off automatically/truncated.
- b. IMPORTANT: It is necessary that the CEO certifies that all information you provide is true and correct by signing the form indicated in the last page.
- c. By submitting an entry, you agree that HMA will share relevant aspects of the Entry submitted on the HMA or related Resource Center website.

Background Information

Project Title Optimising Acute Delirium Care in TTSH

Date Project Started Pilot from October 2012 – Jun 2012
Regular service from July 2012 onwards

Key staff involved in the project

1. Name Dr Chong Mei Sian

Department/Function Senior Consultant, Department of Geriatric Medicine

2. Name Dr Tan Thai Lian

Department/Function Head, Senior Consultant, Department of Geriatric Medicine

3. Name Jasmine Kang

Department/Function Nursing / Advanced Practice Nurse

4. Name Magdalene Lim

Department/Function Nursing / Senior Nursing Manager

5. Name Melanie Kam

Department/Function Operations (Community) / Operations Manager

PLEASE ANSWER THE FOLLOWING QUESTIONS USING THE MAXIMUM WORD ALLOCATIONS INDICATED

1. Please give some background to the project or program including how it originated. Give details of what clinical improvements were achieved and how the project improved quality of care as a result of these improvements. **MAX 350 WORDS.**

A first in Singapore, the Geriatric Monitoring Unit (GMU) at Tan Tock Seng Hospital was set up in September 2010 by the Department of Geriatric Medicine, as a 2-year pilot programme to test a new model of delirium care for hospitalized older adults.

Delirium, a common and serious cause of morbidity and mortality among older patients, associates patients with poor survival and deteriorating functional outcomes. There is increased risk of institutionalization following the delirium episode and therefore warrants early diagnosis and prompt treatment.

Recognizing the need to enhance care for elderly patients, the 5-bedded GMU was piloted, incorporating:

- *Specific room design with an elder-friendly environment*
- *Structured delirium care interventions*
- *Lower staff-patient ratio*
- *24-hour intensive nursing care*
- *Light therapy*
- *No-restraint policy*

Over the 2 years, GMU has improved the clinical outcomes for delirium patients in the following aspects:

- *Elimination of use of physical restraints (44.7% → 0%)*
- *Improved functional abilities (Modified Barthel Index (MBI) Score improvement of 7.5 → 19.2)*
- *Reduction of pressure ulcer rate (61.7% → 3.2%)*
- *Reduction in use of sedatives:*
 - *Reduction in use of antipsychotics (48.9% → 30.5%)*
 - *Reduction in dosage of antipsychotics (Chlorpromazine 0.38mg/day → 0.28 mg/day)*

GMU has also improved the quality of care through:

- *Reducing delirium days by 7.5 days (15.1 to 7.6 days)*
- *Reducing hospital stay by 4.7 days (21.9 to 17.2 days)*
- *Maintained acceptable rate of falls (0.35 falls/month), despite zero use of restraints, in this high-risk group of patients.*

The establishment of GMU is significant to the prevention of functional decline, prevention of deterioration of condition, which would lead to subsequent reduction in the utilization of healthcare resources. The benefits of this improvement are amplified when taking into account the projected profound age shift of Singaporeans above 65 years old from 9% currently, to 18.9% by 2030.

Word count: 309 / 350

2. Please describe how the project was beneficial from the patient's perspective and experience, and how it improved patient care, patient safety or service. Preferably please present quantifiable information such as "before and after" measurements if any. **MAX 200 WORDS.**

The extensive and specialized care provided by GMU has reduced patients' delirious days significantly, thereby improving their survival and minimizing functional decline and deterioration of condition. This also minimized their chance of experiencing a fall, since 50% of falls, through a previous study, was shown to be related to delirium.

The reduced length of stay also allowed the patient to go home earlier, thus reducing risk of iatrogenesis, and discomforts of a hospital stay.

Holistically, it is crucial to note that the benefits of GMU extend beyond the patient's sphere to include family and caregivers. Family members & caregivers recognize the role of GMU in providing good clinical outcomes as evident through surveys conducted.

- *95.2% of patients' family members were satisfied or very satisfied with the care provided in GMU*
- *82.2% of patients' family members found the multi-component interventions to be moderately useful or very useful*
- *86.5% found the GMU environment to patient recovery moderately useful or very useful*

Word count: 162 / 200

3. Please explain how the project reduced costs of or what other benefits were derived? Is it simple yet effective, something other departments can also adopt or adapt? Were appropriate analysis tools used or was it only a matter of throwing money at the problem? **MAX 200 WORDS.**

In addition to the benefits described above, the total length of stay for delirium patient was reduced from 21.9 days to 17.6 days. This translates to significant increased availability of hospital resources, allowing for provision of care to more people.

There were indirect monetary savings from improved clinical outcomes of delirium patients managed in GMU. Specifically, these are the reduction in pressure ulcer rate, improvement of functional abilities, maintaining acceptable fall rates in a restraint-free environment, and reduction in use and dosage of antipsychotics. These improvements lead to lower utilization of healthcare resource with a follow up study on the cost-effectiveness currently underway.

Additionally, medical and nursing staff felt a greater sense of empowerment and an improvement in staff satisfaction was observed.

Following success of the GMU pilot, management decided to adapt the protocol for general hospital-wide use, to improve the safety in acutely confused patients with high fall risk, demonstrating internal transferability of GMU's best practice within the hospital.

Externally, GMU's key characteristics of a controlled environment, intensive nursing care and protocolized care can be easily transferred to another organisation due to defined and structured components which enables the systematic delivery of good geriatric care for the delirious elderly.

Word count: 200 / 200

4. Please explain how significant were the results or outcomes? Are these measurable? Are there testimonials, awards or other support to show impact on improvement of the department or unit's service? **MAX 150 WORDS.**

Recognition of the intentions and value of GMU was given by Singapore's Ministry of Health's (MOH), through provision of seed-funding for the pilot project (October 2010 – June 2012). During this time, GMU had demonstrated significant improvement, that subsequently led to the hospital's decision to convert the service to a regular clinical service in July 2012.

GMU has also been featured locally in the news for their impact on patients (see attached article).

GMU has been nominated for MOH's Excellence in Public Service Awards 2013, under category for Best Practice Award. Results will be known end-May 2013.

In addition, the GMU protocol has been published in BMC Geriatrics and has earned the status of "Highly Accessed" articles, giving credence to the impact of GMU. The benefits of GMU have been presented at numerous scientific forums across the globe, including Society of Geriatric Medicine, American Geriatrics Society and BMJ Quality Improvement Conference.

Word count: 150 / 150

5. Please give some background to the project team that originated, studied and developed the project or program. **MAX 200 WORDS.**

As part of the Health Manpower Development Plan (HMDP) for staff, Dr Chong Mei Sian (Geriatrician), Magdalene Lim (Nursing Manager), Jasmine Kang (Advanced Practice Nurse) attended a conference on Hospital Elder Life Program (HELP). HELP is a program for hospitals, designed to prevent delirium by keeping hospitalized older people oriented to their surroundings, meeting their needs for nutrition, fluids, and sleep and keeping them mobile within the limitations of their physical condition. During the study trip, the team had the opportunity to visit several institutions which implemented HELP and Delirium Room (ICU for delirious patients).

In recognizing the benefits from the delirium room and the need for such care in Singapore, the team began to assess the feasibility of setting-up a local model of the delirium room, enhancing it with other best practices in delirium care. The team, with the inputs of other multidisciplinary professionals (psychologist, physiotherapist, occupational therapists) adapted the protocols to be specific to dementia patients, and culturally relevant to Asian patients. Healthcare operations and facilities management were engaged to design, renovate and establish the necessary workflow processes. Clinical professionals were then trained to implement the protocol, and were assessed for competency.

Word count: 194 / 200

6. Please give any other information, including third party testimonial regarding your project which you think would help convince the judges that this project (or program) should win this category. **MAX 200 WORDS.**

The GMU concept was developed via referencing evidence-based interventions (Delirium Room, HELP Programme, light therapy in ICU and post operative settings) that were found to be beneficial to delirium care. GMU's novelty however, lies in the amalgamation of these interventions, in a multi-faceted approach with key considerations in specific room designs, optimized resource planning, and program specific protocolised interventions. To our knowledge, GMU is the first in the world to have amalgated all three approaches.

Locally, in Singapore, Khoo Teck Phuat Hospital has recognized the benefits of GMU and has sought to replicate the service in their institution. A study visit by the Geriatricians from KTPH was conducted to study the controlled environment and transplant best practices to their hospital where a 10-bedded GMU was to be established.

A clinical fellow from Hong Kong was trained in Q1 2013. There have also been other regional queries on how to develop GMU from professionals in the field of Geriatrics.

Importantly, for nations that are experiencing an ageing population and demographic age shifts, the impact of the GMU initiative has more extensive and far-reaching benefits if implemented not only within hospitals, but across the country as a national-imperative.

Word count: 196 / 200

■ HOT NEWS

'Holistic care is the way to go'

This will help Singapore meet challenges, such as managing the rise of chronic diseases: Health Minister

SINGAPORE — Focusing on holistic care instead of episodic care will help Singapore face healthcare challenges, such as managing the rise of chronic diseases, said Health Minister Gan Kim Yong yesterday.

He added that an outcome-oriented framework has enabled Singapore to develop a healthcare system that meets the needs of its population.

"It is not how much we spend on healthcare, but how we spend the least resources to achieve the best outcomes," Mr Gan said.

Speaking at the Healthcare in Asia con-

ference organised by *The Economist* yesterday, he said the healthcare framework here involves integrating care for patients to move seamlessly across healthcare providers.

But as healthcare needs here change, he stressed the financing framework will also "need to evolve to help Singaporeans meet the new realities".

"In the past, we focused our financing framework to address the needs of in-patients. This was the right approach for that time — our population was young, and the main financial impact was from

hospitalisation," Mr Gan said.

"However, an ageing population requires more frequent care and this care should, where possible, be delivered in the community instead of acute hospitals," he added.

Singapore's healthcare infrastructure includes a financing framework that benefits those in the long-term care sector, as well as evidence-based interventions, such as insurance scheme Medisave for chronic disease management.

"While individual outpatient bills may be smaller compared to hospital bills, their

cumulative impact can be substantial," Mr Gan added.

"We have, therefore, enhanced our financing system such as increasing subsidies for long-term care, increased assistance for drug costs for the lower and middle income and enhancing portable subsidies for primary care."

To ensure that healthcare remains affordable, the Government must be judicious in deciding what to subsidise, focusing on measures that would achieve the best outcomes, Mr Gan added.

SARA GROSSE

Too many stroke patients not attending therapy

SINGAPORE — Experts in Singapore have said they are worried about the high rate of stroke patients who drop out of supervised therapy after being discharged from hospital.

Doctors at the National University of Singapore (NUS) Saw Swee Hock School of Public Health said those who do not continue with therapy greatly reduce their ability to perform daily activities.

Stroke is the fifth leading cause of death in Singapore, accounting for more than 1,400 deaths in 2010.

In Singapore, there are more than 10,000 new stroke patients every year. Of these, more than 60 per cent become moderately or severely disabled three months after a stroke attack.

But a study conducted from 2002 to 2005 on more than 200 patients from the Thye Hua Kwan Hospital and St Luke's Hospital showed only a third continued with supervised therapy after they were discharged.

While this is comparable to that of the United States and above that of Australia, experts fear the number of immobile stroke patients will increase with time.

NUS Saw Swee Hock School of Public Health Associate Professor Gerald Koh said researchers followed up with stroke patients after they left the inpatient rehabilitation setting and went back into the community where they were told to continue rehabilitation.

"We compared those who

did more rehabilitation versus those who did less and we found those with more community rehabilitation not only had faster functional recovery at the end of one year, they also had greater functional recovery at the end of one year," he added.

A key reason stroke patients do not continue with therapy even after discharge is the high financial burden.

On average, a day rehabilitation session costs about S\$40. Experts normally recommend patients to go for it twice a week, so the cost comes up to about S\$320 a month. Other reasons include the lack of caregivers who can accompany the patients.

With Singapore's ageing population, doctors fear the number of stroke patients will rise. While they urged Singaporeans to do their part by staying healthy, doctors also urged the Government to look into ways to help these patients.

They said one way of incentivising patients to continue with therapy would be to provide subsidies for post-discharge therapy.

In the United Kingdom, for example, the government pays for post-discharge rehabilitation so it is no surprise that the adherence rates there are much higher, at about 90 per cent.

Funded by tax payers, the National Health Service of UK pays for ambulance service to ferry the stroke patients to rehabilitation centres and back.

CLAIRE HUANG

A 5-bed ward to combat elderly delirium

AMANDA LEE

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SINGAPORE — A pilot initiative at Tan Tock Seng Hospital (TTSH) has helped to reduce patients' length of stay at the hospital and the number of days they suffer from a medical condition known as delirium.

The Geriatric Monitoring Unit (GMU), which was started in October 2010, is a specialised five-bed ward set up for the management of elderly hospitalised patients with delirium and difficult-to-control behaviours.

Delirium is a common, serious and potentially reversible condition which affects many elderly admitted to the hospital.

An elderly patient suffering from delirium is at a higher risk of falling, suffering incontinence and developing back ulcers. Hence, these patients require higher level and frequent observation for acute delirium and redirection of behaviour.

The unit aims to treat these

patients through "minimal physical and medication restraints, made possible with a programme that enables focused care", said Dr Chong Mei Sian, Senior Consultant of the Geriatric Medicine Department in TTSH.

A total of nine trained geriatric nurses are deployed in the ward to take care of the patients. Inside, a foldable activity table will be set up during the day for patients to engage in activities such as mahjong sessions.

"Together with a multi-disciplinary team, patients have improved functionality and they recover faster with shorter length of stay," added Dr Chong.

According to a study conducted between August 2010 and September last year, the average length of stay for patients suffering from delirium reduced from 22 to 17 days.

The number of days patients suffer from the condition have also been shortened to eight days, from

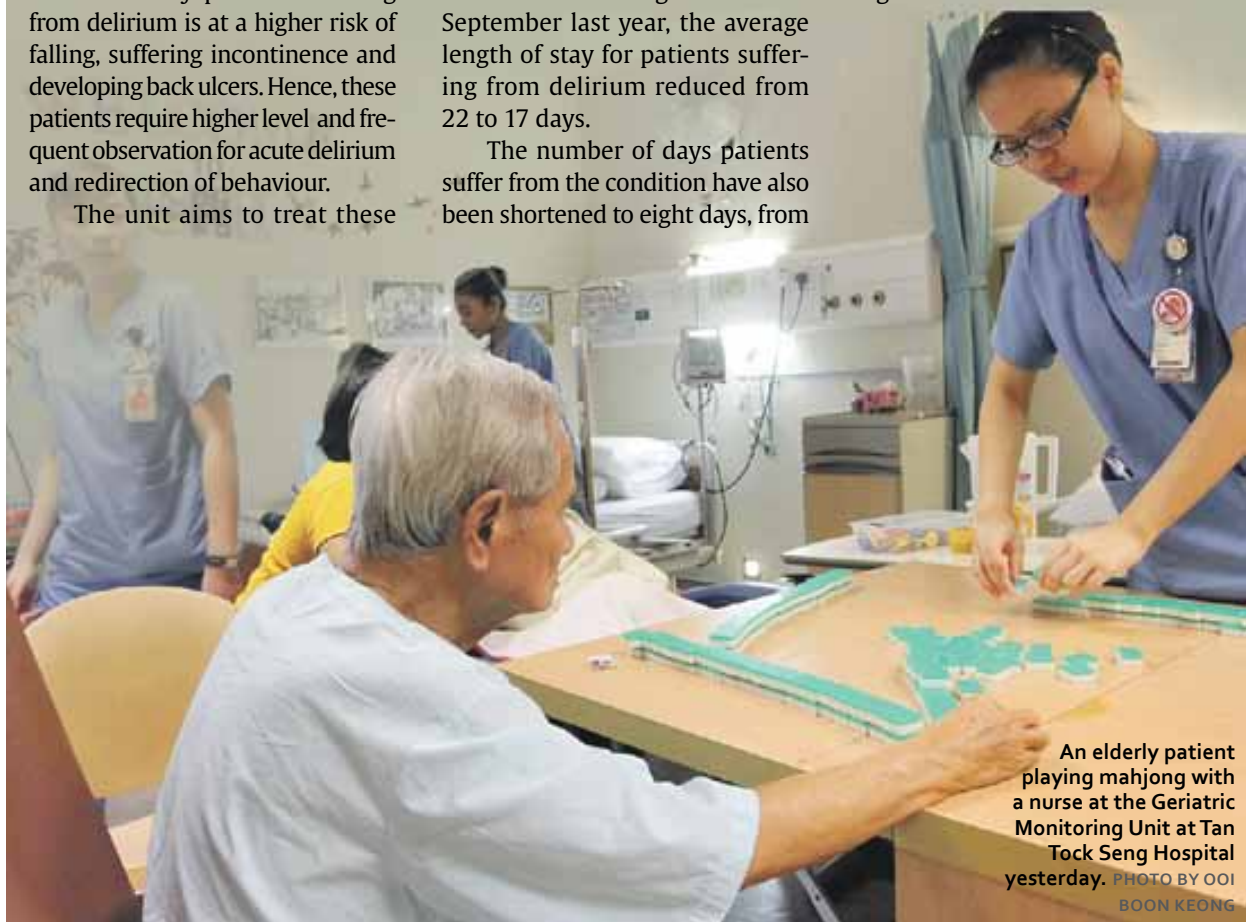
15 days previously.

While no patients staying in the GMU ward need to be physically restrained as yet, the rate of patients needed to be administered with medication has also fallen — from 78.7 per cent of patients previously to 70.2 per cent.

Admissions and discharges are determined by a specialist, based on a set of pre-determined clinical criteria.

Patients who stay in the GMU pay between S\$30 and S\$150, on top of their hospitalisation fees.

The GMU pilot, which is funded by MOH, has no plans to expand just yet. The hospital intends to compile results from a two-year long study, before deciding further.



An elderly patient playing mahjong with a nurse at the Geriatric Monitoring Unit at Tan Tock Seng Hospital yesterday. PHOTO BY OOI BOON KEONG

LIST OF PUBLICATIONS, PRESENTATIONS, MEDIA PUBLICITY

PUBLICATIONS & PRESENTATIONS

1. The GMU protocol has been published in BMC Geriatrics. Chong *et al.*: **A New Model of Delirium Care in the Acute Geriatric Setting: Geriatric Monitoring Unit**. *BMC Geriatrics* 2011, **11**:41]
2. **“A New Model of Delirium Care in the Acute Geriatric Setting: Geriatric Monitoring Unit”**. APN Jasmine Kang. Poster presentation at Australian and New Zealand Geriatric Scientific Meeting) ANZGSM Annual Scientific Meeting May 2011 (Auckland, New Zealand)
3. **“Psychotropic Use in Geriatric Patients with Delirium following Implementation of a Geriatric Monitoring Unit (GMU)”** Tan Y, Chan M, Ang A, Tay L, Chong MS. Poster presentation completed at Society of Geriatric Medicine Scientific Meeting 2011.
4. **“A multicomponent delirium management program improves functional outcomes in hospitalized older persons”**. Chong MS, M Chan, L Tay, J Kang, Han HC, M Lim, Ding YY, Tan TL. Achieved “Best Poster” award at the Society of Geriatric Medicine Scientific Meeting 2011.
5. **“Delirium severity and subtypes at presentation predict cognitive and functional outcomes in acute ill elderly. Initial 6-month experience from the Geriatric Monitoring Unit (GMU).”** M Chan, L Tay, J Kang, Han HC, M Lim, Ding YY, Tan TL, Chong MS. Poster presentation completed at Society of Geriatric Medicine Scientific Meeting 2011.
6. **“Potential for Functional Recovery Following Delirium in Older Adults with Dementia: Impact of a Multi-component Delirium Management Program”** L Tay et al. Oral presentation completed at the Society of Geriatric Medicine Scientific Meeting. Writing up currently for publication
7. Abstract in American Geriatrics Society 2012 Annual Scientific Meeting Abstract Book. *J Am Geriatr Soc* 2012; 60 (Suppl s4): **“A multicomponent delirium management program improves functional outcomes in hospitalized older persons”** Chong MS, M Chan, L Tay, J Kang, Han HC, Ding YY, Tan TL. Accepted for poster presentation at American Geriatrics Society 2012, Seattle, USA. May 2012.
8. **“Bright light therapy as part of a multicomponent management improves sleep, cognitive and functional outcomes in delirious older hospitalized adults”**. Poster presentation accepted for SLEEP 2012, Boston, USA. 26th Annual Meeting of the Associated Professional Sleep Societies, LLC. June 2012.
9. Speaker invitation for the Presidential Symposium on Sleep Disorders in the Elderly. Part of an international panel of speakers at International Association of Geriatrics and Gerontology (IAGG) 2013, South Korea. “Sleep Disorders in the acute hospitalized elderly” (Dr Chong MS)
10. Invitation for presentation at the Asia Pacific Geriatric Conference Hong Kong Nov 2012 (Dr Tan TL)
11. **“Geriatric Management Unit - Optimising Acute Delirium Care”**. Poster presentation at International Healthcare Improvement BMJ Quality Conference 2013, London (Dr Chew AP).
12. **Potential for Functional Recovery Following Delirium in Older Adults with Dementia: Impact of a Multi-component Delirium Management Program**. L Tay, M Chan, Chong MS. *J Hosp Med* 2013 (accepted)
13. **Bright light therapy as part of a multi-component management improves sleep, cognitive and functional outcomes in delirious older hospitalised adults**. Chong MS, Tan KT, Tay L, Chan M, Wong YM, Ancoli-Israel S. *Clin Intervention Aging* 2013 (in press)

CONFIDENTIAL

14. Symposium presentation at the European Delirium Association meeting in Sept 2013 - Leuven, Brussels. Dr Chong MS, Dr Mark Chan, Dr Laura Tay
15. Presentation at Singapore Health and Biomedical Congress (SHBC) 2013, Sept 2013 (Dr Tan TL)
16. Presentation at SHBC 2013 HSR Symposium track: "From primary to post-hospital care – the effectiveness of innovative health care technologies and services" **Evaluation of a multicomponent delirium management programme: The Geriatric Monitoring Unit (GMU) experience (Dr Chong MS)**

MEDIA PUBLICITY

1. News coverage on the listed channels.

- a) Channel 5 (6 Apr, 9.30pm)
- b) ChannelNewsAsia (6 Apr, 10pm)
- c) Suria (6 Apr, 8pm)
- d) Warna FM (6 Apr, 5pm & 7 Apr, 8am)

All coverage explained that the TTSH Pilot Project (5-bedded unit) was set up to render more focused care for delirium patients, who have a higher risk of falling, incontinence and back ulcers from lying in bed. The initiative has seen many making quicker recoveries with the average length of stay fallen from 21 days to 17 days. The ratio of the number of nurses to patients is also higher at 2 nurses to 5 patients, enabling nurses to provide more attention to patients.