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Delirium Care Pathway Model Design: STOP DELIRIUM

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1. Abstract

We present a delirium care pathway model that we have dubbed STOP DELIRIUM. Due to delirium's magnitude and effect in elderly hospitalized patients, we recommend hospitals must have a delirium care pathway for early identification, prevention, and delirium management. The protocol STOP DELIRIUM is driven from evidence-based guidelines to help establish the aim "STOP" for Spot, Think, Optimize and Prevent delirium. The clinical pathway model needs to incorporate a clinical information management system and educational materials to increase delirium awareness. The implementation should be scalable and adaptable to incorporate other departments.

2. Background

Delirium is defined as an acute onset of global impairment in consciousness and cognition [1]. The impetus that led to our decision to develop a clinical pathway for the prevention, early diagnosis and management of elderly hospitalized patients is the significant incidence of this clinical problem. It is not only a cause for hospital admission but a leading cause of prolonged hospitalization [2, 3]. Although the incidence is significant in all specialties, we initially plan to concentrate on patients admitted to the internal medicine units [2,3]. The incidence of patients admitted to internal medicine units with delirium is up to 25% and for non-delirium patients admitted to an internal medicine ward as many as 29-31% will develop delirium during their hospitalization [2].

3. Rationale

Our rationale for choosing delirium is its detrimental effect on mortality, length of stay (LOS) and morbidity as measured by falls, bedsores, cognitive and functional decline, as well as hospital-acquired infection [2-4]. We will therefore use these factors as our metrics. Previous research indicates that delirium is associated with an increased LOS of 7.78 days and long-term poor functional

recovery at six months post-discharge for internal medicine [3, 5]. As such, the early detection, diagnosis, and intervention of delirium are extremely important to elderly hospitalized patients.

4. Charter

Problem statement: delirium causes significant morbidity, mortality and increased LOS in hospitalized elderly patients which directly impacts safety and quality of care.

Aim Statement: reduce morbidity, mortality and hospital stay by at least 30% at 12 months by improving early detection and delirium management.

Target population: age ≥ 65y, inpatient internal medicine.

Evidence-based guidelines and related papers: Evidence-Based Practice Guideline: Delirium; Australian and New Zealand Society for Geriatric Medicine Position Statement Abstract: Delirium in older people; Delirium: Suspect it, spot it, and stop it; Stop. Think. Delirium! A quality improvement initiative to explore utilizing a validated cognitive assessment tool in the acute inpatient medical setting to detect delirium and prompt early intervention [6–9].

Decision support tools: Confusion Assessment Method (CAM) [10]

**Workflow tools:** STOP DELIRIUM protocol.

Clinical information management system: Electronic Patient Record (EPR), medication alert system and dashboard for tracking metrics.

Education materials: healthcare provider (Residents, Physicians, Nurses, pharmacists) and Patients' families.

Outcomes Metrics: mortality, length of stay, morbidity (fall, bedsores, hospital acquired infection) and opioid use.

5. Dmais Process and Community

As with implementing any clinical pathway, we will need to incorporate a DMAIS model (Define, Measure & Analyze, Improve, Sustain) for change (figure 1). We wish to develop a data-driven, quality strategy for improving the processes related to this condition. We will also engage the learning community and follow the learning health system model. These will include frequent assessments and measures of our successes as well as changes required in the process to ensure uptake and success of the clinical pathway.
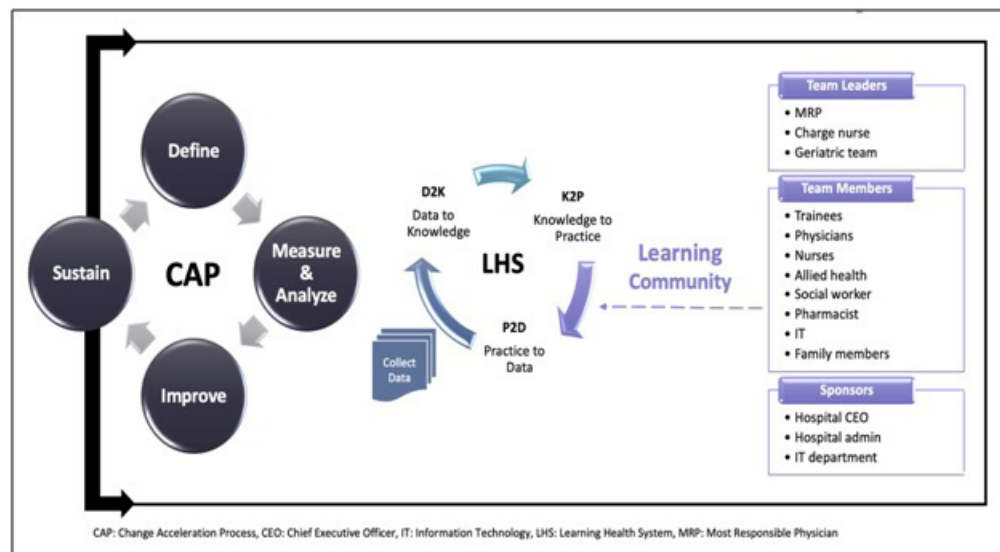
Figure 1: DMAIS and learning community: starting from the left using the DMAIS model (Define, Measure & Analyse, Improve, Sustain) for change acceleration process, we define the charter then measure and analyze causes, including an audit to using evidence-based practices for delirium to reduce mortality and morbidity of delirium, improve aspects of clinical care delivery and collect metrics to measure success. The right side represents the learning health community within the learning health system and aid in moving practice-to-data (P2D) to data-to-knowledge (D2K) to advance the new evidence-based best practices.

6. Clinical Pathway

Our proposed protocol will involve a pathway that consists of several components but can be summarized as a **S**pot, **T**hink, **O**ptimize and **P**revent (**STOP aim**) (figure 2). The protocol follows the acronym **STOP DELIRUIM** (Spot risk factors, Think delirium, **O**rientation/Cognitive function assessment, **P**ain control, **D**e-Line as soon as possible, **E**nsure, **L**ength of stay, **I**nfection identification and prevention, **R**educe falling risk, **I**mmediate management, **U**nderlying cause treatment, **M**edication review and deprescrib-

ing). (Figure 3)

The clinical pathway starts with spotting risk factors (such as age of 65 years and above, previous history of delirium, a history of alcohol/medication abuse disorder) to identify patients more susceptible to delirium and then implementing the pathway. This will trigger the initiation of STOP DELIRIUM followed by planned assessments of patient's orientation and cognitive function, assessing appropriate pain control, and removing lines and tubes as soon as possible, promoting the increased orientation and awareness of

the patients, including the use of visual and hearing assistance, early mobilization, and maintenance of a sleep pattern

Anticipating barriers to discharge and discharge planning will also be an important component. These factors can significantly contribute to LOS. Decreasing factors known to contribute to delirium development will include early identification of infection, reducing fall risk, and immediate management of delirium as required. A strategic component of this pathway will also include medication review and informed deprescribing.
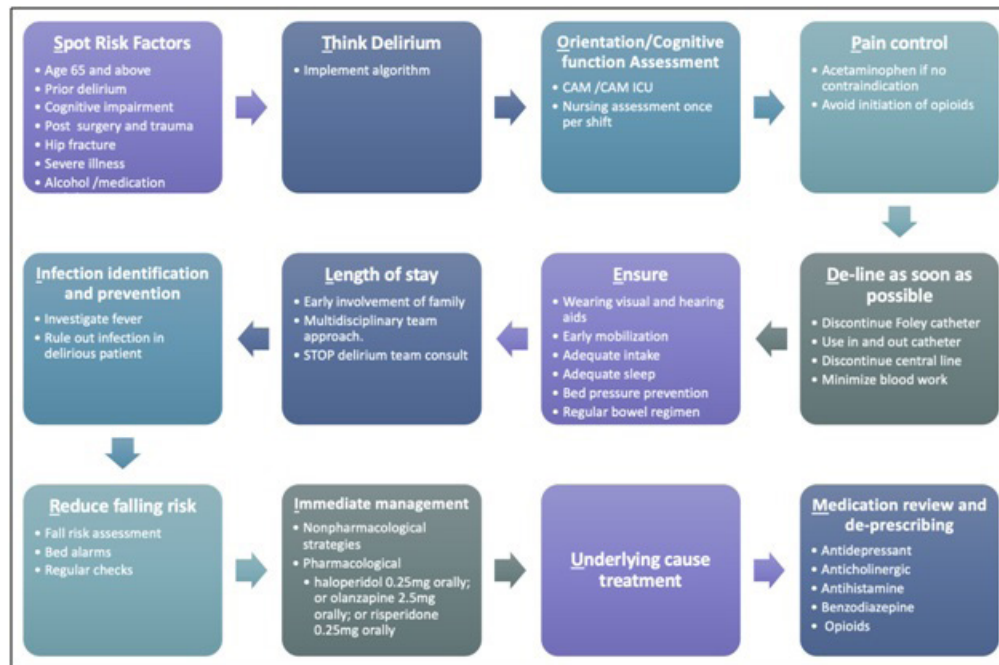

**Figure 2**: Aim STOP.

Figure 3: STOP DELIRIUM protocol.

7. Implementation

The implementation of any pathway includes multiple phases: design phase, education phase and follow-up phase (figure 4). The design phase will include designing an order set for delirium, a medication alert system to address drug-induced delirium, which is a major contributor to hospital-acquired delirium and STOP DELIRIUM campaign. The education phase will be for all staff and new trainees with an ongoing campaign to increase awareness. Triggers to initiate the protocol and the components involved in the activation of the protocol should be discussed. The follow-up phase will consist of monthly meetings with the nurse manager, chief medical officer and department chief, decision for expanding the campaign to include other departments and expanding the initiative to create a STOP delirium team for rapid access to address delirium on non-medical floors.

The outcome measures will be used to educate the group during monthly meetings to inform successes and challenges with implementing the pathway. The pathway itself will be informed by increasing staff awareness to trigger the pathway and tools to assist front-line staff in considering interventions to mitigate risk factors for the development of delirium within the inpatient population. Data collection will inform the successes and challenges of the implementation of the pathway.
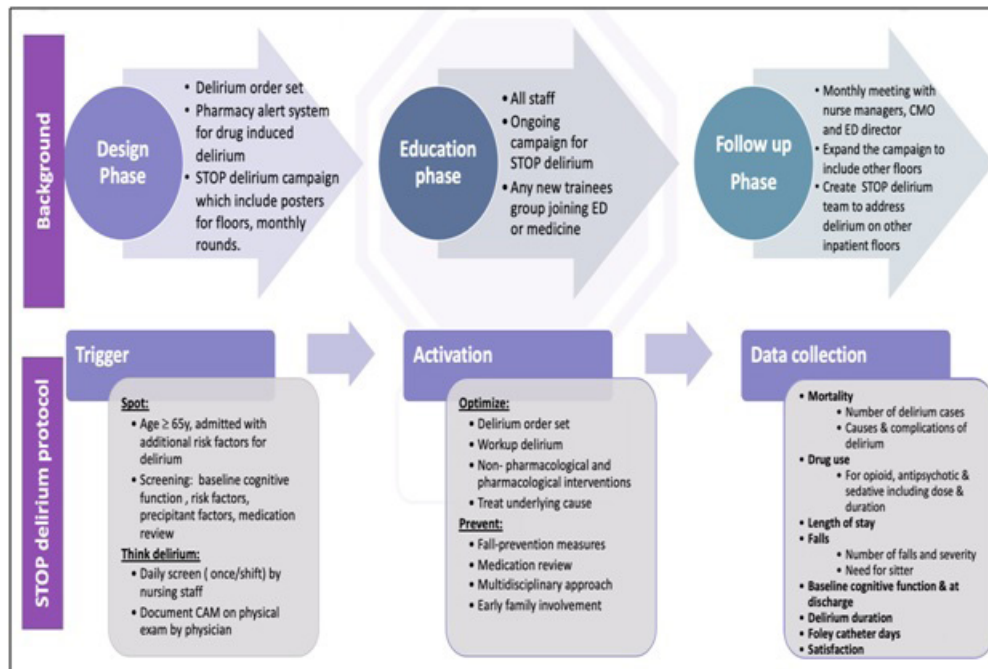
Figure 4: Clinical pathway implementation in three phases, design phase, education phase and follow-up phase. The trigger and activation of the pathway will depend on Spot, Think, Optimize and Prevent aim the data collection for measuring the metrics.

8. Metrics

We will concentrate on mortality, LOS, falls, opioid use and satisfaction measures as indicators of our outcomes both before and after implementing the pathway. We would aim to reduce four of the metrics by at least 30% at one year and an overall improved score on satisfaction measures.

We would do analysis at 3-, 6-, 9- & 12-months post-implementation but realize that goals may be delayed based upon our population base and the adoption of the protocol. The dashboard is an illustration of how our progress will be identified and shared with stakeholders (figure 5).

Figure 5: Clinical information management.

9. Discussion

The clinical pathway is unique and in line with the movement of designing an age-friendly healthcare system for the elderly population with a focus on mentation, medication, and mobility [11]. The pathway is a multidisciplinary approach to STOP delirium. The use of a clinical information system and medication alert system will help alert and track indicators of delirium. The important step is to identify and spot patients who are at risk of developing delirium and trigger the implementation of preventive measures. Identifying and removing or modifying risks contributing to delirium early on and deprescribing, are essential elements in the STOP DELIRIUM protocol.

We do appreciate that there will be challenges as with any introduction of a new protocol. We see the change in approach to the assessment of these patients as one of the barriers and the cost and ability to assess patients' cognitive status post-discharge, as potential barriers to markers of our success. We also recognize that deprescribing may be a challenge for patients on long-term prescriptions for flagged medications as well as implementing a major change during a pandemic. We feel that even an early success in the pathway's rollout will support the implementation across internal medicine wards.

There are certainly alternative approaches and modifications that can be considered. These include assessing only patients at risk, which could decrease the cost involved and only implementing

this pre-emptively. We support an educational program that could be extended to primary care providers that would provide a framework for evaluating and modifying risk factors before any need for hospitalization. We feel that implementing this pathway on the inpatient internal medicine unit will inform rollout to other inpatient units, including surgery, intensive care unit, and the emergency department.

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