Delirium Care Pathway Model Design: STOP DELIRIUM

AlhussainiAnhar[1,2*],AltoubAbdulaziz[1,3],HenryDane[1,4],MukuhaCarolyne[1,5],NessimDoris[1,6,7],OttoMorkelJacques[1,8]and Watson, Mary-Lynn[1,9]

[1]Safety,Quality,InformaticsandLeadership(SQIL)program2020/2021cohort,HarvardMedicalSchool,Boston,Massachusetts, United States

[2]Master of Education for Health Professions candidate, School of Education, Johns Hopkins University, Baltimore, Maryland, United States

[3]DepartmentofEmergencyMedicine,KingSaudUniversity,Riyadh,SaudiArabia

[4]Chiefexecutiveofficer,LakeRegionalHealthSystem,OsageBeach,Missouri,UnitedStates

[5]SeniorProgramOfficer-CRISSPprogramQualityImprovementandLearning,UniversityofNairobi, Kenya

[6]HealthcareandPharmacyLeader,Consultant,Canada,andUnited States

[7]McMasterUniversity,DepartmentofFamilyMedicine,Hamilton,Ontario, Canada

[8]Co-founder,DirectorandHeadClinicianatIntraVitaInternational,Colchester,UnitedKingdom

[9]DepartmentofEmergencyMedicine,AssociateProfessor,DalhousieUniversity,Halifax,NovaScotia,Canada

*Correspondingauthor:

AnharAlhussaini,
Safety,Quality,InformaticsandLeadership(SQIL)
program 2020/2021 cohort, Harvard Medical
School, Boston, Massachusetts, United States,
E-mail:anhar.alhussaini@medportal.ca

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Authors'Contributions:

AnharA,AbdulazizA,DaneH,CarolyneM,DorisN,JacquesOM,Mary-LynnW,Allauthorscontributedequallytothiswork

1. Abstract

We present a delirium care pathway model that we have dubbed STOPDELIRIUM. Due to delirium's magnitude and effect in el- derlyhospitalizedpatients,werecommendhospitalsmusthave 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 man- agement system and educational materials to increase delirium awareness.Theimplementationshouldbescalableandadaptable to incorporate other departments.

2. Background

Deliriumisdefinedasanacuteonsetofglobalimpairmentincon- sciousnessandcognition[1].Theimpetusthatledtoourdecision todevelopaclinicalpathwayfortheprevention,earlydiagnosis

andmanagementof elderlyhospitalizedpatientsisthesignificant 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 medicineunits[2,3].Theincidenceofpatientsadmittedtointernal medicine units with delirium is up to 25% and for non-delirium patientsadmittedtoaninternalmedicinewardasmanyas29-31% will develop delirium during their hospitalization [2].

3. Rationale

Our rationale for choosing delirium is its detrimental effect on mortality,lengthofstay(LOS)andmorbidityasmeasuredbyfalls, bedsores, cognitive and functional decline, as well as hospital-ac- quired infection [2-4]. We will therefore use these factors as our metrics.Previous research indicates that delirium is associated withanincreasedLOSof7.78daysandlong-termpoorfunctional

recoveryatsixmonthspost-dischargeforinternalmedicine[3,5]. As such, the early detection, diagnosis, and intervention of deliri- um 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.

AimStatement:reducemorbidity,mortalityandhospitalstayby atleast30%at12monthsbyimprovingearlydetectionanddelir- ium management.

Targetpopulation:age≥65y,inpatientinternalmedicine.

Evidence-basedguidelinesandrelatedpapers: Evidence-Based Practice Guideline: Delirium;Australian and New Zealand Society for Geriatric Medicine Position Statement Abstract: Delirium in olderpeople;Delirium:Suspectit,spotit,andstopit;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].

Decisionsupporttools:ConfusionAssessmentMethod(CAM) [10]

Workflowtools:STOPDELIRIUMprotocol.

Clinical information management system: Electronic Patient Record(EPR),medicationalertsystemanddashboardfortracking metrics.

Educationmaterials:healthcareprovider(Residents,Physicians, Nurses, pharmacists) and Patients'families.

OutcomesMetrics:mortality,lengthofstay,morbidity(fall,bed-sores, hospital acquired infection) and opioid use.

5. DmaisProcessandCommunity

As with implementing any clinical pathway, we will need to incorporateaDMAISmodel(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.Wewillalsoengagethelearningcommunityandfollowthe learninghealthsystemmodel.Thesewillincludefrequentassess-ments and measures of our successes as well as changes required intheprocesstoensureuptakeandsuccessoftheclinicalpathway.
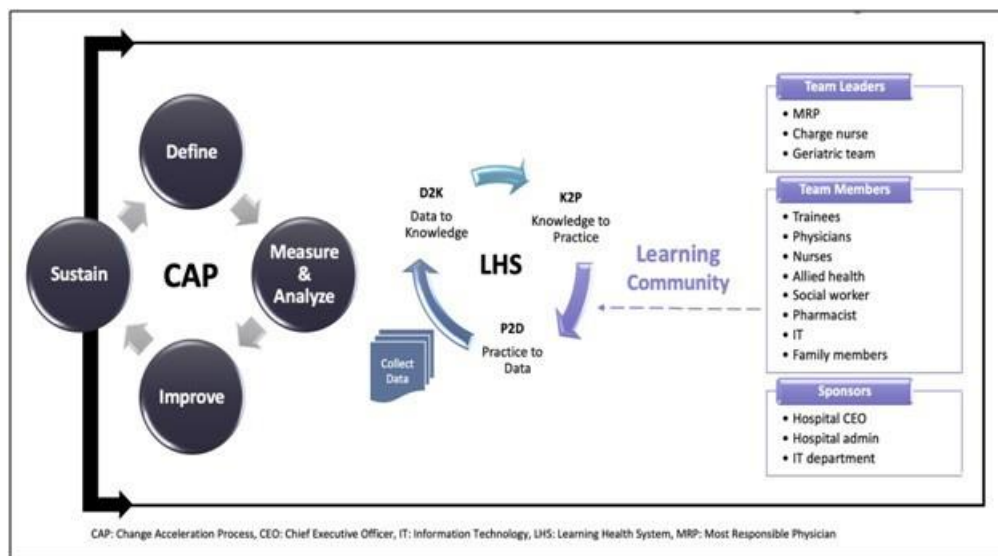

Figure1:DMAISandlearningcommunity:startingfromtheleftusingtheDMAISmodel(Define,Measure&Analyse,Improve,Sustain)forchange accelerationprocess,wedefinethecharterthenmeasureandanalyzecauses,includinganaudittousingevidence-basedpracticesfordeliriumtoreduce mortality and morbidity of delirium, improve aspects of clinical care delivery and collect metrics to measure success. The right side represents the learninghealthcommunitywithinthelearninghealthsystemandaidinmovingpractice-to-data(P2D)todata-to-knowledge(D2K)toadvancethenew evidence-based best practices.

6. Clinical Pathway

Ourproposedprotocolwillinvolveapathwaythatconsistsofsev- eral components but can be summarized as a **S**pot, **T**hink, **O**ptimizeand**P**revent(**STOPaim**)(figure2).Theprotocolfollowsthe acronym **STOP DELIRUIM** (Spot risk factors, Think delirium, **O**rientation/Cognitivefunctionassessment,**P**aincontrol,**D**e-Line as soon as possible, **E**nsure, **L**ength of stay, **I**nfection identifica-tionandprevention,**R**educefallingrisk,**I**mmediatemanagement, **U**nderlyingcausetreatment,**M**edicationreviewanddeprescrib-

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 sus-ceptibletodeliriumandthenimplementingthepathway.Thiswill trigger the initiation of STOP DELIRIUM followed by planned assessmentsofpatient'sorientationandcognitivefunction,assess-ingappropriatepaincontrol,andremovinglinesandtubesassoon aspossible,promotingtheincreasedorientationandawarenessof

thepatients,includingtheuseofvisualandhearingassistance, early mobilization, and maintenance of a sleep pattern

Anticipatingbarrierstodischargeanddischargeplanningwill alsobeanimportantcomponent.Thesefactorscansignificantly contributetoLOS.Decreasingfactorsknowntocontributetode-lirium 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.
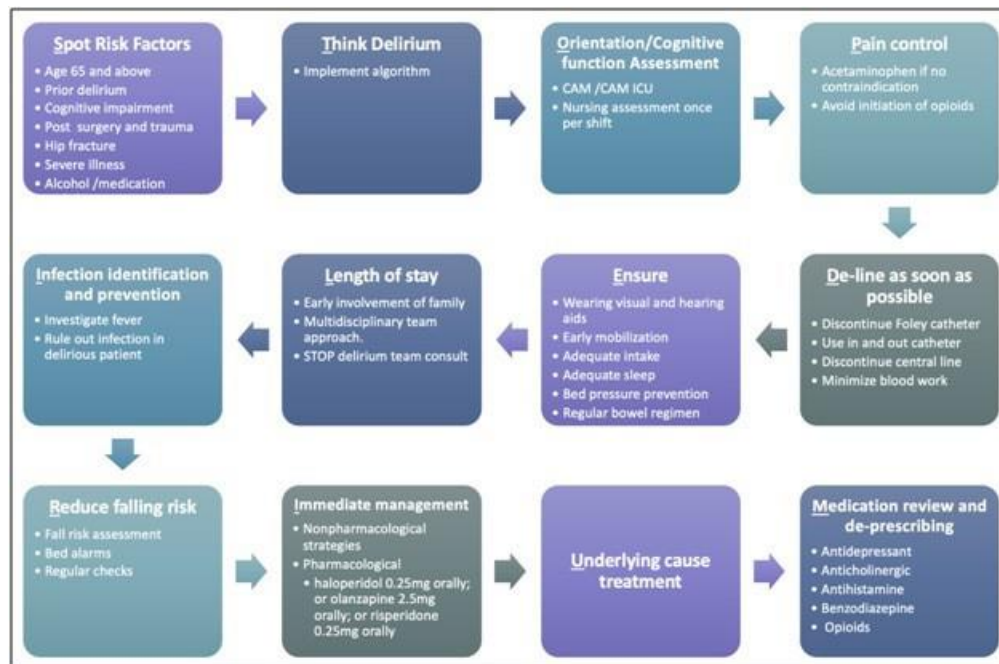

Figure2:AimSTOP.

Figure3:STOPDELIRIUMprotocol.

7. Implementation

Theimplementationofanypathwayincludesmultiplephases:de- sign 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 DELIRIUMcampaign.Theeducationphasewillbeforallstaff andnewtraineeswithanongoingcampaigntoincreaseawareness. Triggers to initiate the protocol and the components involved in theactivationoftheprotocolshouldbediscussed.Thefollow-up phase will consist of monthly meetings with the nurse manager, chiefmedicalofficeranddepartmentchief,decisionforexpanding thecampaigntoincludeotherdepartmentsandexpandingtheini- tiative to create a STOPdelirium team for rapid access to address delirium on non-medical floors.

The outcome measures will be used to educate the group during monthlymeetingstoinformsuccessesandchallengeswithimplementing the pathway. The pathway itself will be informed by increasingstaffawarenesstotriggerthepathwayandtoolstoassist front-linestaffinconsideringinterventionstomitigateriskfactors for the development of delirium within the inpatient population. Data collection will inform the successes and challenges of the implementation of the pathway.
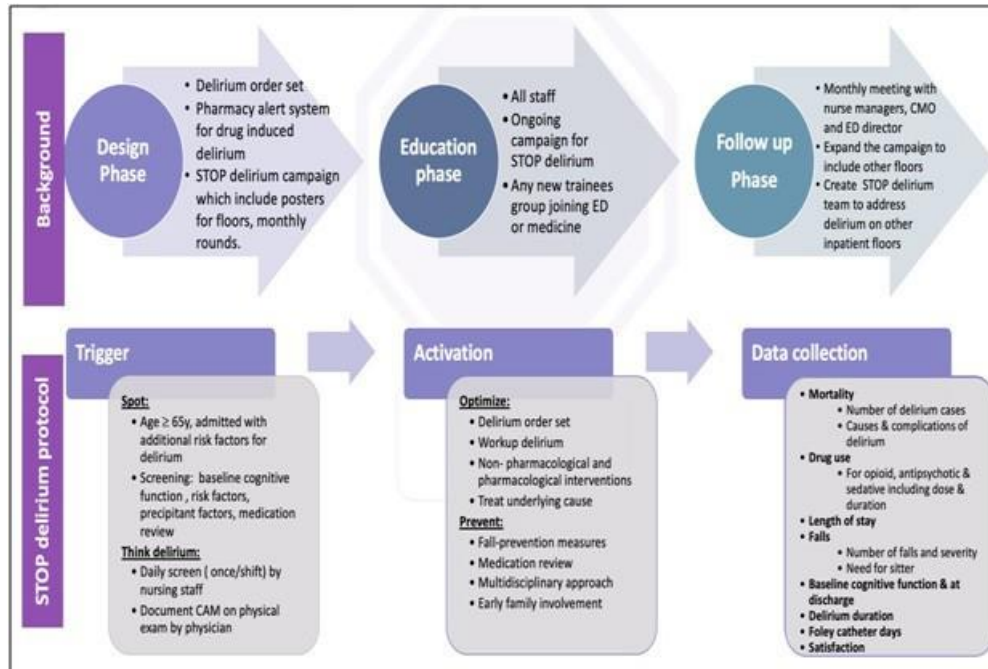

Figure 4: Clinical pathway implementation in three phases, design phase, education phase and follow-up phase. The trigger and activation of thepathway will depend on Spot, Think, Optimize and Prevent aim the data collection for measuring the metrics.

8. Metrics

We will concentrate on mortality, LOS, falls, opioid use and satisfaction measures as indicators of our outcomes both before and afterimplementingthepathway.Wewouldaimtoreducefourof 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-implementationbutrealizethatgoalsmaybedelayedbaseduponourpopu- lation base and the adoption of the protocol.The dashboard is an illustrationofhowourprogresswillbeidentifiedandsharedwith stakeholders (figure 5).

Figure5:Clinicalinformationmanagement.

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. Theuseofaclinicalinformationsystemandmedicationalertsystemwillhelpalertandtrackindicatorsofdelirium.Theimportant step is to identify and spot patients who are at risk of developing delirium and trigger the implementation of preventive measures. Identifyingandremovingormodifyingriskscontributingtodeliriumearlyonanddeprescribing,areessentialelementsintheSTOP 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 costand ability to assess patients' cognitive status post-discharge, as potentialbarrierstomarkersofoursuccess.Wealsorecognizethat deprescribing may be a challenge for patients on long-term prescriptionsforflaggedmedicationsaswellasimplementingamajor change during a pandemic. We feel that even an early success in thepathway'srolloutwillsupporttheimplementationacrossinter- nal medicine wards.

There are certainly alternative approaches and modifications that can be considered. These include assessing only patients at risk, whichcoulddecreasethecostinvolvedandonlyimplementing

thispre-emptively.Wesupportaneducationalprogramthatcould beextendedtoprimarycareprovidersthatwouldprovideaframe-workforevaluatingandmodifyingriskfactorsbeforeanyneedfor hospitalization.Wefeelthatimplementingthispathwayonthein-patientinternalmedicineunitwillinformrollouttootherinpatient units, including surgery, intensive care unit, and the emergency department.

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