Introduction

St James's Hospital (SJH) General Intensive Care Unit (GICU) is a dynamic 18 bedded unit. The unit is a tertiary referral centre, providing advanced therapies and supports a wide range of specialties. In 2014, 854 patients were admitted to the unit requiring complex critical care. The GICU is led by a team of intensive care consultants, registrars and a complement of 140 highly skilled nurses.

Incomplete knowledge of best practices by health care providers and error prone delivery processes can offset the potential benefits of critical care support. This is particularly important in the course of critical illness ('Golden Hour') when errors and delays can lead to poor outcomes. Patients in ICU are particularly prone to such errors because of the complexity involving multiple organ systems and the immediacy of the decision-making required.

Simple interventions such as early appropriate antimicrobial treatment, low tidal volumes, and head of bed elevation are critical to the successful outcome of critically ill patients. Devising processes to ensure best practice delivery is of the utmost priority to improve patient outcomes.

Advances in medical informatics provide an opportunity for implementation of clinical decision support tools that can be applied in critical care settings. The CERTAIN tool (Figure 1) uses a systematic approach to error prevention through the use of checklists & electronic algorithms. It is a web based application comprising of 2 modules; a stabilization module for newly admitted patients & a rounding module for daily assessment. The CERTAIN application is evidenced based and promotes the delivery of best practice. This is an international multi-site study led by the Mayo Clinic, USA.

Figure 1

There is a need for an effective, easy to use and context appropriate decision support tool to facilitate best practice.

Aims

The specific aim of the study is to demonstrate that implementation of the CERTAIN decision support tool, will result in improved patient outcomes. It is envisaged that CERTAIN will increase compliance to >90% with best practice such as ventilator care bundles, sedation reduction and other recommended processes of care. It is hypothesized that CERTAIN will improve hospital survival, ICU length of stay and ICU acquired infections.

Methods

Phase 1 – Pre Implementation

The pre implementation phase consisted of three months retrospective data collection, which included epidemiological data, daily assessment of processes of care, organ function and support. Length of ICU and hospital stay and outcome were also recorded. Sixty patients were included in the pre implementation phase.

Baseline Simulation

Local champions were identified and the CERTAIN training phase commenced (see Figure 2).

Figure 2

Phase 2 - Implementation Phase

An education campaign to train clinical users was developed, this included the use of PowerPoint presentations, posters & crib cards. Local champions are responsible for the education and training of fellow users in a “train the trainer” approach. The tool will be implemented in stages, initially commencing with 2 ICU beds. The rounding module will be introduced first followed by the admission module.

Phase 3 – Post Implementation Data Collection

Phase 3 consists of 6 months data collection similar to baseline data collection. Once all data collection is complete, data cleaning, outcome assignment, outcome validation and outcome tracking will all be performed electronically.

Results

Currently Phase 2 of the study is on-going. This involved the development of a key working group to promote and lead the project. Local champions are responsible for driving the awareness campaign and launch of the tool. SJH local champions include 1 ICU consultant, 2 ICU registrars, 1 CNM, 1 staff nurse and 2 clinical audit nurses. It is anticipated that > 80% of staff will be trained in the use of CERTAIN to include >80% of patients.

Conclusion

The potential benefits of this study include improvements in the processes of care which may lead to a reduction in the number of adverse outcomes. It will guide clinical staff in the appropriate delivery of care which in turn may lead to a reduction in the use of expensive interventions i.e days of mechanical ventilation. Similarly it is anticipated that CERTAIN training will facilitate timely improved best practice delivery.

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