Improving sepsis recognition and management in the Paediatric ED

Drew McDonald, Senior staff nurse Emergency Department Royal Aberdeen Children’s Hospital (RACH)
Dr Catharina Hartman, Specialty doctor Emergency Medicine RACH

Improvement Issue and Context

Sepsis is a major cause of mortality worldwide. Severe sepsis accounts for 1000 admissions to paediatric intensive care units (PICU) in the United Kingdom every year and 200 of these children die. Good pre-PICU care includes early sepsis recognition, prompt administration of antibiotics and adequate cardiovascular support with fluid resuscitation and inotropic drugs. These measures greatly improve outcomes and are outlined in the Advanced Paediatric Life Support and American College of Critical Care Medicine-Paediatric Advanced Life Support (ACCM-PALS) guidelines.

There was no sepsis algorithm or consistent treatment plan used in RACH. We also did not have any sepsis data collected in our hospital.

Methods and Measurement

The Scottish Patient Safety Programme (SPSP) sepsis 6 algorithm was implemented in our Emergency Department (ED) in 2014. We designed a sepsis recognition tool for nurse triage to highlight children who show signs of sepsis. The tool triggers an immediate review by a senior doctor if the patient shows clinical features related to sepsis according to a specified list of criteria. The clinical diagnosis of sepsis is determined by the doctor during the review and treatment commences according to a treatment protocol if indicated. All children that present to the ED with an illness problem are screened with the recognition tool. The time it takes from arrival to administration of the first antibiotic dose is the lead measure and this is presented on a run chart and submitted to SPSP. We also measure several other aspects of our sepsis care.

Evidence of Improvement

Over 3500 children have been screened for sepsis since October 2014. A total of 85 patients have been treated for sepsis in accordance with our Sepsis 6 protocol since inception and all were identified for early review by a senior doctor with our recognition tool. We have an overall median time to antibiotics of 38 minutes. The time to administration of the first dose of antibiotics has steadily decreased from 52 minutes in 2014 to 45 minutes in 2015 and 28 minutes in 2016. No patients transferred to PICU after sepsis 6 treatment in the ED have died. One child died due to sepsis in our department; this patient had a cardiac arrest with initial return of circulation before reaching the ED.

On average we screen 1 in 10 of our paediatric ED population and treat 1 patient per week for sepsis. A bacterial pathogen from a sterile source is identified in 20% of those treated for sepsis.

Future Steps

We are currently implementing sepsis 6 into our Paediatric Assessment Unit, Dr Gray’s Hospital ED and children’s ward in Elgin, as well as maintaining our standards within our ED. We hope to start work with primary care and Scottish ambulance service. We have also been contacted by other NHS health boards about the possible implementation of our sepsis tools in other hospitals.

We have no conflict of interest to declare.

References: