Background: Sepsis and septic shock are medical emergencies and necessitate early and timely recognition and intervention. Failure of early recognition can lead to significant deterioration and may unfortunately culminate in death.1,2 Young people are considered at high risk of sepsis.3,4 Despite hundreds of trials and a multitude of approaches, an effective and efficient sepsis-cure agent does not exist. Most research into sepsis management has ended with non-conclusive and sometimes confusing results. Current evidence recommends a bundle of simple interventions to be accomplished as soon as possible and preferably within the first hour of sepsis recognition.2,5

A number of international initiatives aim at reducing sepsis mortality.2 Recently the World Health Organization (WHO) urged governments to set national mechanisms to tackle sepsis. A nation-wide sepsis program was developed to improve sepsis care for people in Qatar. A parallel National Paediatric Sepsis Program was developed to provide appropriate guidelines, education, a unified national care pathway, and to increase awareness of paediatric sepsis. Here we discuss the design and outcome of the Qatar paediatric sepsis program to date.
Figure 1. Hamad Medical Corporation Care Sepsis Care Pathway.
Methods: The program aims for early sepsis recognition and 95% compliance with the Sepsis Care Bundle by the end of 2019. To achieve this target a multi-faceted approach to paediatric sepsis care across all public healthcare sectors in Qatar was adopted. This includes Sidra Medicine and Hamad Medical Corporation and its Paediatric Emergency Centres.  

An overarching system-wide sepsis committee was established and included major stakeholders within emergency medicine, critical care, infection prevention and control, and infectious disease and clinical
A paediatric multidisciplinary sepsis committee was established in 2017 and the National Paediatric Sepsis program was developed.

International evidence-based Institute for Health Improvement (IHI) methodology was adopted for program development. Major areas of the program were dedicated to the formulation of clinical practice guidelines, standardised care pathway, standardised EMR order set for all clinical areas, and ongoing education and awareness for healthcare providers at all facilities.

Sepsis simulation sessions were conducted to fill knowledge gaps and an improvement ramp module was included based on the PDSA (Plan-Do-Study-Act) strategy. A number of other PDSA initiatives were undertaken and included the following:

1. Establish the paediatric sepsis clinical pathway and guideline (Figure 1);
2. Introduce the sepsis watchers' concept to daily safety huddle;
3. Provide a standardized paediatric sepsis diagnostic kit;
4. Create unified paediatric sepsis antibiotics kits for all units with a safe first dose preparation protocol;
5. Develop and implement an e-learning module with education materials and paediatric sepsis order set in the electronic system.

Ongoing data collection and performance evaluation for sustainability and dissemination of information demonstrated the following:

1. Paediatric sepsis incidence varies per facility and over time. Between 30 to 100 cases/month (Figure 2).
2. Recognition: Percentage of Clinical Review, Rapid Response Team (RRT) activation, and sepsis alerts that were appropriately escalated is 91%.
3. Order set use: 26% initiating the well-established electronic paediatric sepsis golden-hour order set.
4. 42% bundle compliance (Figure 3).
5. IV antibiotics within 60 minutes of time zero showed 81% compliance.

Conclusion: Current literature suggests that systemic and supervised implementation of an evidence-based pathway for suspected and confirmed paediatric sepsis saves lives. Our data demonstrated poor bundle compliance but significant improvement is seen in the areas of early recognition and antibiotic administration within one hour. Education and awareness are key to improve performance.

Keywords: sepsis, pediatric, pathway, bundle, compliance, guidelines

Ethical approval

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