A service improvement project on sepsis management in emergency department

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Introduction
Sepsis is a medical emergency in which patients’ outcome hinges on timely delivery of resuscitation, appropriate antibiotics and source control. The Surviving Sepsis Campaign 2012 guidelines stated a grade IB recommendation of antibiotics to be given within 1 hour of recognition of septic shock. An audit on sepsis management, followed with strategies for improvement, was conducted in the emergency departments (ED) of NTWC in 2014.

Objectives
To audit on the management of severe sepsis in ED and to implement improvement strategies in accordance with Surviving Sepsis Campaign guideline.

Methodology
An audit was performed from July to September 2013. All patients managed in resuscitation rooms with features compatible with severe sepsis were included. The main outcomes to be audited were blood culture rate in ED, antibiotic-within-1-hour rate, and mortality. A series of interventions were conducted in July 2014, including 1. Adoption of a departmental guideline comprising recommendations on septic workup, hemodynamic support, time and choice of antibiotic. 2. Workflow Enhancement including preparation of all-in-one sepsis kit, antiseptic swab-sticks and investigation shortcut in computer system. 3. Liaison with pharmacy to provide stocks of antibiotics in ED. 4. Education for doctors and nurses concerning the importance of sepsis management and adherence to the guideline. Post-intervention audit was performed
after guideline implementation from August to October 2014 with washout period in July.

**Result**

Twenty-six patients in the first audit period and nineteen patients in the second audit period were included. The baseline characteristics in these two patient groups, including age, premorbid medical illness and initial vital signs were comparable. The ED blood culture rate raised from 23.1% to 63.2% after the interventions (p=0.009). Antibiotics that could be administered within 1 hour was 30.8% (pre-intervention) and 63.2% (post-intervention) respectively (p=0.031). The overall compliance to the departmental guideline in the post-interventional audit was 57.9%. There was no significant difference in mortality before and after implementation of the guideline (26.9% vs 26.3%, p=1.000). Conclusion: A dedicated program to enhance sepsis management in ED could improve the rate of antibiotic within one-hour time pledge, which would be beneficial to patients with severe sepsis.