Surviving sepsis

South Tipperary General Hospital instituted a ‘sepsis survival chain’ with the ultimate aim of reducing sepsis-related deaths, write Donagh Keating and Marcella Lanzinger. Sepsis is an aggressive life-threatening and multi-factorial disease state. Sepsis interrupts oxygen and nutrient supply to the tissues and vital organs such as the brain, intestines, liver, kidneys and lungs. The speed and appropriateness of therapy in the initial hours are likely to influence outcome. Sepsis is medical emergency just like a heart attack or a stroke.

Sepsis has one of the highest death rates from acute disease. It is similar to the mortality rate from myocardial infarction in the 1960s. Medical advances and public information campaigns have significantly reduced mortality associated with coronary artery disease.

<table>
<thead>
<tr>
<th>Death rates from acute conditions</th>
<th>Mortality rate</th>
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</thead>
<tbody>
<tr>
<td>Acute condition</td>
<td></td>
</tr>
<tr>
<td>Sepsis</td>
<td>28-50%</td>
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<tr>
<td>Acute myocardial infarction</td>
<td>2.9-9.6%</td>
</tr>
<tr>
<td>Stroke</td>
<td>9.3%</td>
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<tr>
<td>Ruptured abdominal aortic aneurism</td>
<td>50-73.3%</td>
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South Tipperary General Hospital (STGH) has established a hospital-wide ‘sepsis survival chain’ that supports staff in consistently providing early goal directed treatment for adult septic patients in all departments according to best current international standard of care. In this article we outline how a general hospital in Ireland became an active and enthusiastic member of the ‘Surviving Sepsis Campaign’.

The first step: MEWS

Four years ago in 2009, STGH launched its modified early warning system (MEWS). The merits of a number of national and international examples were adapted by the stakeholders to suit the needs of a then 300-bed Band 3 hospital with its associated staffing.

A MEWS alert prompted escalation of care. The clinical care pathways for chest pain and stroke at STGH ensured these patient groups received early goal directed treatment. Septic patients, however, did not yet have a dedicated pathway.

The second step: Recognising the problem

One year into the MEWS, staff was comfortable in its use but also increasingly frustrated with a perceived shortfall: There was a structural gap for direction of subsequent clinical care for septic patients.

MEWS ended with ‘escalate care’ with no formalised subsequent approach for the significant cohort of septic patients. A patient’s access to intensive care treatment (especially in the early phases of sepsis) could be preceded by a number of phone calls, diagnostics and treatment efforts. This was very frustrating and time consuming. A support structure to facilitate optimal clinical care similar to the MEWS was desired.

The third step: Identifying a solution

There were two freely available solutions to the problem: ‘The Surviving Sepsis Campaign’ and the ‘Sepsis Six Programme’ supported by the College of Emergency Medicine.

Surviving Sepsis Campaign

The Surviving Sepsis Campaign (SSC) is an initiative of the European Society of Intensive Care Medicine and the US Society of Critical Care Medicine. It was developed in 2002 (updated in 2008 and 2012) to improve the management, diagnosis, treatment and improve survival of sepsis worldwide. The campaign’s initial declared goal was to reduce mortality from sepsis by 25% in five years. The new goal for 2012 was to increase the number of hospitals contributing data to the SSC to 10,000 hospitals worldwide and to apply the guidelines to 100% of patients suspected to have severe sepsis or septic shock. It represents an unprecedented global effort to reduce death from sepsis.

The Sepsis Six Programme

In 2006 a group of people working on the implementation of the SSC guidelines in the UK developed a condensed version of the Resuscitation Bundle of the SSC. The group identified a set of six critical initial actions in the management of sepsis.

Bedside nurses can dramatically improve a patient’s chance of survival by ensuring that six simple things (Sepsis Six) are done in the first hour.

The STGH Sepsis Survival Chain

The STGH Sepsis Task Group determined that a combination of a Sepsis Screening Tool, the Sepsis Six and the SSC bundles together with a comprehensive educational effort would provide the best chance of success and sustainable effort. It would fill the gaps in structured care with direct links to the MEWS and ongoing management in intensive care.

The STGH clinical care pathway for the management of severe sepsis and septic shock

During the development of the pathway it was recognised that adjustments would need to be made to account for differences in patient groups and location.

First, the SSC at the time was aimed at adult patients only; thus paediatric patients were excluded.

Second, physiological changes during pregnancy correspond with a significant change in vital signs and parameters. In consultation with the Department of Obstetrics, adjustments were made to the screening tool for recognition of sepsis to allow for pregnancy-related changes.

Third, the dataset available for patients on the wards differed significantly from the ED, where patients were generally presenting without prior data for comparison.

One generic pathway evolved into three specific pathways: for adult patients on the wards, adult patients in ED and maternity patients.

The Sepsis Screening Tool was modified in that we added a parameter for the recognition of the septic patient. This parameter is listed as “patient concern/looks unwell”. The inclusion of this parameter was to allow for assessment and escalation of care of a patient that was felt to be deteriorating without triggering any of the official alerts.

Audit of compliance and outcomes would be vital to the success of the campaign. In order to facilitate data collection, audit data collection was integrated into the pathway.

The fourth step: Implementing the solution

Teamwork makes the dream work: The Hospital-Wide Surviving Sepsis Campaign

The sepsis campaign at STGH originated as a grassroots campaign. Staff were keen to set up a tool to facilitate a consistent approach to the treatment of septic patients.
Previously called the management bundle, this includes a set of actions to be applied after the initial resuscitation is complete. Generally, this phase will be led by intensive care expertise, ideally the patient will have been moved to a critical care unit for further treatment.

Key points
- Initiation by any healthcare provider
- Escalation to senior decision maker (registrar/consultant) upon suspicion of sepsis
- Access to intensive care expertise upon recognition of sepsis.

Resuscitation of septic shock and supportive therapy
Previously called the management bundle, this includes a set of actions to be applied after the initial resuscitation is complete. Generally, this phase will be led by intensive care expertise, ideally the patient will have been moved to a critical care unit for further treatment.
Based on staff feedback, we note significant staff satisfaction on the nursing side with the Campaign. They welcome the ability to initiate care for their patients when they are concerned; the fact that the sepsis pathway empowers them to quantify their concern and voice it in a communal language. The Sepsis Campaign has become part of the culture at STGH.

It was recognised that areas with fewer opportunities to use the pathway will require more frequent education to maintain familiarity with the sepsis pathway. We are confident that our Campaign is successful in ensuring appropriate care and reducing sepsis related death. Survive Sepsis has recently published findings that support our expectations. 2

The fifth step: sustaining the campaign Audit will be essential to demonstrate that we are compliant with best practice. It will enable benchmarking and drive future organisational policy changes. Resources for data entry will need to be identified. All involved have been most supportive and proactive in sustaining the sepsis campaign. This is sincerely acknowledged. September is sepsis awareness month and the STGH Sepsis Task Group is planning a series of internal and public events to highlight the campaign and strengthen our support base.

In the end – It is still just the beginning
“*The thing about a guideline is that it is a nice reference text,*” explained R Phillip Dellinger, lead author of the guideline and professor of medicine at the new Cooper Medical School of Rowan University in Camden, New Jersey. “*It doesn’t change bedside behaviour a lot or very fast,*” he added.

We agree wholeheartedly and we encourage other hospitals to join in and set up their own sepsis campaign. We believe that all Irish hospitals could join the campaign with a national goal of reducing sepsis mortality and related illnesses in Irish patients.

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In memoriam
Margaret Molony, clinical risk manager, who was instrumental in implementing the MEWS at South Tipperary General Hospital.

References
Surviving sepsis campaign bundles. TO BE COMPLETED WITHIN 3 HOURS: 1) Measure lactate level 2) Obtain blood cultures prior to administration of antibiotics 3) 65 mm Hg 6) In the event of persistent arterial hypotension despite volume resuscitation (septic shock) or initial lactate ≥4 mmol/L (36 mg/dL): - Measure central venous pressure (CVP) - Measure central venous oxygen saturation (ScvO2) 7) Remeasure lactate if initial lactate was elevated. Why measure lactate?