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EDITORIAL

When cases of sudden death in hospital are reviewed at mortality case review meetings or coronial inquests, there are common themes that repeatedly emerge. These themes are the critical elements that need

www.vifmcommuniques.org

g/wp-content/uploads/2015/12/Clinical-Communique-Vol-2-Issue-4.pdf A valuable source of cautionary tales.

Case #2 THE SUBTLE SIGNS OF SEPSIS

A 21-year-old female delivered a healthy baby, complicated only by a small perineal tear. A week after delivery she felt faint while showering, and the next day had severe pain above the right knee. A DVT was ruled out by US. She was afebrile; HR 105, BP 110/60. The cause was not clear and referral from the peripheral hospital was sought, but declined by the O&G registrar. CRP was 362 but there was delayed reporting of that; lactate 3.8. She deteriorated and despite antibiotics and resuscitation died.

The pathologist found that the cause of death was multiple organ failure as a result of overwhelming *Streptococcus pyogenes* Group A (GAS) infection. GAS was present in the uterine cavity, the perineal wound, and the right thigh muscle in the form of necrotising fasciitis.

The coroner examined the delayed recognition and management of sepsis, and delays and obstruction with retrieval; worth reading



REVIEW ARTICLE

Review article: Sepsis in the emergency department – Part 1: Definitions and outcomes

The first of 3 excellent review article in the *Journal* on sepsis and why it is often not straightforward, starting with recognition.

SEPSIS DEFINITION

Sepsis is defined as life-threatening organ dysfunction caused by a dysregulated host response to infection.

Sepsis is defined by organ dysfunction, and the literature is ICU based. It is not based on presenting vital signs, with both SIRS and qSOFA criteria flawed as regards initial recognition in ED. It's hard to start

intervention early for a condition that is difficult to recognise.

The question of how to optimally identify sepsis in the ED remains unresolved.

SIRS and qSOFA are not validated for sepsis evaluation in ED

SIRS: temp >38 or <36; HR >90; RR >20; WCC >12, or <4, or >10% bands

qSOFA: altered mental status; RR >22; SBP <100. It is a prognostic guide, and is not intended to be used to diagnose sepsis.

Journal of Critical Care (2018) 2228
DOI: 10.1016/j.jcc.2018.11.024

Critical Care

RESEARCH

Open Access

Performance of the quick Sequential (sepsis-related) Organ Failure Assessment score as a prognostic tool in infected patients outside the intensive care unit: a systematic review and meta-analysis

Evaluating sepsis

	Sensitivity	Specificity
qSOFA	0.51	0.83
SIRS	0.86	0.29

No biomarker to date has been sufficiently validated as a single test to rule-in or rule-out sepsis

CRP is a biomarker. If high it can alert to a problem; a low reading in no way rules out sepsis. Similarly with procalcitonin.

Quality of antibiotic prescription and preceding blood cultures may be more important than rapid antibiotic administration in most patients with sepsis.

Imperatives for rapid administration of broad-spectrum antibiotics for all patients with sepsis may not be supported by contemporary data.

Although early antibiotic administration is important in sepsis, unintended consequences of KPIs mandating early intervention include over use of broad spectrum and inappropriate

antibiotics. Inadequate cultures taken prior to administration complicates subsequent management. The impact on outcomes is not as clear as suggested by older data. Nothing suggests a delay is of any benefit, however some thought is required.

imposition of tight time frames may have consequences regarding misdiagnosis, overuse of broad-spectrum antibiotics and suboptimal quality of cultures obtained, as well as downstream effects

delays to second doses of antibiotic in sepsis were common

Any benefit of early intervention is compromised if ongoing care is delayed.

there are still unresolved questions regarding the most effective fluid and vasopressor regimens, the role of hemodynamic monitoring, and appropriate targets in the resuscitation of patients with sepsis and septic shock.

N ENGL J MED 376(23) NEJM.ORG JUNE 8, 2017

You'd think there would be greater clarity by now, but not so. Trials are currently underway on the optimal fluid regimens and whether restrictive fluid strategies will be supported by evidence rather than FOAM and hype.

Recent trials on restrictive fluid strategies post operatively were not encouraging.

THE NEW ENGLAND JOURNAL OF MEDICINE

ORIGINAL ARTICLE

Restrictive versus Liberal Fluid Therapy for Major Abdominal Surgery

for the Australian and New Zealand College of Anaesthetists Clinical Trials Network and the Australian and New Zealand Intensive Care Society Clinical Trials Group*

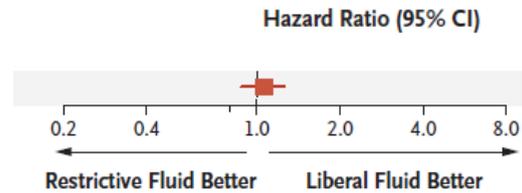
This article was published on May 10, 2018, at NEJM.org.

Guidelines recommend a restrictive IV fluid strategy for major abdominal surgery, however, the supporting evidence is limited.

The RELIEF trial randomised 3000 patients to a restrictive v liberal IV-fluid regimen up to 24 hours after surgery. Median volume of fluid given was 3.7 L (IQ range 2.9-4.9 L) v 6.1

(5.0-7.4 L). Acute kidney injury was 8.6% in the restrictive fluid v 5.0% in the liberal fluid group (P<0.001), with more surgical site infection (16.5 v 13.6 %, P 0.02). There was no survival benefit in the restricted fluid group

Primary outcome of death or disability:



N Engl J Med Volume 376(23) 2235-2244 June 8, 2017

THE NEW ENGLAND JOURNAL OF MEDICINE

More rapid delivery of a 3-hour sepsis-care bundle was associated with lower mortality.

Despite opinionated blogs the introduction of sepsis bundles has led to improved outcomes. Early antibiotics was associated with improved outcomes; early fluids not so. The Revised SSC 2018 Update advocates a 1 hour bundle.

Measure lactate level. Remeasure if initial lactate is >2 mmol/L.
Obtain blood cultures prior to administration of antibiotics.
Administer broad-spectrum antibiotics.
Begin rapid administration of 30ml/kg crystalloid for hypotension or lactate ≥4 mmol/L.
Apply vasopressors if patient is hypotensive during or after fluid resuscitation to maintain MAP ≥65 mm Hg.

Intensive Care Med Published online: 19 April 2018

It involves measuring lactate, getting cultures and giving antibiotics, with fluids and vasopressors. Early administration of vasopressors are recommended within the first hour to achieve MAP >65 mm Hg if IV fluids do not achieve that. The limited evidence to support the recommended 30 ml/kg is acknowledged (no need to tell them - they know). Monitor elevated lactate levels to assess response to care.

The clear downside is that intervention will be inappropriate for those who do not have sepsis and when early recognition of what is sepsis and what is not is difficult.

These updates are a review of current literature at the time of writing and are the views of Dr Brendon Smith, FACEM. Over time they will become outdated. They do not replace local treatment protocols and policy. Treating doctors are individually responsible for following standard of care.
<http://www.heti.nsw.gov.au/programs/emergency-medicine-training/emergency-medicine-training-test/educational-resources/em-clinical-updates/>