

to be made to the standard Quick DASH protocol, the tool appears to be usable in non-traditional settings.

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### The systemic inflammatory response syndrome as a predictor of mortality among febrile children in the emergency department

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**Introduction:** Sepsis is defined as a known or suspected infection in a patient with elements of the systemic inflammatory response syndrome (SIRS). Septic patients present with a variety of clinical manifestations, but temperature dysregulation, tachycardia, tachypnoea, and an abnormal white blood cell (WBC) count are considered cardinal components of SIRS. We investigated the predictive value of SIRS criteria for in-hospital mortality among febrile children under 5 years old presenting to the Emergency Department (ED) at Muhimbili National Hospital in Dar es Salaam, Tanzania.

**Methods:** This was a descriptive cohort study of febrile children under 5 years, presenting to our ED. Providers prospectively completed a standardized data sheet. Outcome data was obtained from hospital records and telephone follow-up. Study data were entered into Excel (Microsoft, Redmond, WA, USA) and analysed in SAS 9.3 (Cary, North Carolina, USA).

**Results:** We enrolled 105 patients between August and November 2012. The median age was 14 months, with 80% over 6 months old, and 63.8% were male. 57 (54.3%) children were referred from outside facilities. The overall mortality rate was 19%, and 90% of children who died had  $\geq 2$  SIRS criteria. Mortality in children with  $\geq 2$  SIRS criteria (in addition to fever) was significantly higher (27.7% versus 5%) than in those with 0–1 SIRS criteria, and children with fever and  $> 2$  SIRS criteria were seven times more likely to die (OR 7.05,  $p = 0.01$ ). 85 children were discharged from the hospital, and of the 64 (75.3%) children we were able to reach after discharge, all were alive at 14 day telephone follow-up. 19/85 children who survived to hospital discharge were lost to follow up.

**Conclusion:** SIRS criteria may be helpful to predict febrile children at high risk of mortality. Further studies are needed to validate these findings in larger cohorts.

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### A very complicated pleural effusion

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**Case report:** A 33-year-old male attended the emergency department with a three day history of dyspnoea. He had previously completed treatment for pulmonary tuberculosis and was HIV-positive on anti-retroviral therapy. On examination, he was tachypnoeic with saturations of 89% on air. He had reduced air entry throughout the right lung and muffled heart sounds. He was afebrile and haemodynamically

stable. Plain chest radiograph showed large bilateral pleural effusions, worse on the right. Urgent small-bore catheter drainage of the right lung was performed. Biochemistry showed an exudative effusion. 3.2 litres of fluid was drained within 4 hours, with an improvement in clinical condition. The patient then became increasingly tachypnoeic and rapidly desaturated. Repeat chest radiograph showed partial drainage of the effusion, however now with a 2 cm pneumothorax and oedematous right lung field. Sublingual nitrate, furosemide and an intercostal drain were placed with initial good response. The patient was admitted, but unfortunately died overnight.

**Discussion:** Re-expansion pulmonary oedema is a recognised complication of large pleural effusion drainage. The mechanism remains unclear, although reduced left ventricular function, in this case from a possible pericardial effusion, may be a precipitant. To prevent this phenomenon the British Thoracic Society recommends draining a maximum of 1.5 litres of fluid. This case was further complicated by a pneumothorax; again a recognised complication, especially if there is underlying poor compliance of the lung parenchyma. Re-expansion pulmonary oedema has an incidence of  $< 1\%$  and pneumothorax  $< 5\%$ . Their occurrence has not previously been reported simultaneously. Large pleural effusions are commonly encountered in clinical practice in South Africa. The existence of multiple co-morbidities including tuberculosis, HIV and impaired cardiac function may complicate their management. This case highlights the need for close monitoring and controlled drainage of pleural effusions in emergency practice.

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### Sustained knowledge acquisition among Rwandan physicians participating in six-month ultrasound training program

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**Introduction:** Point-of-care ultrasound (POCUS) is ideal for diagnostic use in resource-limited environments, but its use is often limited by lack of local expertise. Some training courses have been established to bridge this knowledge gap, but little is known about the efficacy of these courses. This study evaluated the effectiveness and sustainability of a six-month POCUS training program for Rwandan physicians. **Methods:** A prospective observational cohort study of Rwandan physicians was conducted over six-months. Participants completed a ten-day course introducing ultrasound skills, followed by a six-month clinical phase. Trainees used ultrasound independently with remote image review, completed regular observed structured clinical examinations (OSCE) in POCUS, and received ongoing feedback and web-based mentorship. An image-based assessment (IBA) was administered before and after the ten-day course, and again after six months. Hands-on image acquisition skills were assessed via OSCEs administered at four time points. All calculations were by paired  $t$ -test.

**Results:** Seventeen Rwandan physicians completed the initial course. All completed the IBA prior to and at the completion of the training phase. Seven trainees were lost to follow up at the six-month mark due to reassignment. Ten trainees completed the six-month IBA. Mean scores on the IBA increased from 36.9% to 74.3% after the training phase ( $p = < .001$ ) and to 85% ( $p = 0.04$ ) at the end of the clinical phase. Ten trainees completed at least three OSCEs. The average score