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Best oral presentation

Introducing a daily operations brief or 'huddle' into a hospital environment: the effect on patient flow through PICU

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Patient safety initiatives and healthcare efficiency are becoming focal points of most ICU's around the world. However, with increasing pressures on bed capacity and a declining fiscal environment, changes to hospital systems and structures are required to tackle inefficiencies in patient flow. We report the dramatic effect on PICU discharges with the introduction of the hospital 'huddle'.

To improve our institution's effectiveness and efficiency we introduced a fundamental change regarding the situational awareness of the whole hospital. The hospital 'huddle' is a short daily meeting with a focus on prediction, flow and safety. Identified key players from each hospital area, including PICU, meet for 15 minutes every morning at 0800. The service manager, who chairs the meeting, begins by sharing activity for each area and concludes with predictions and actions for the day. The meeting has been made all-inclusive and non-threatening with equal standings among members whether clinical or non-clinical allowing the freedom to speak up and be heard. Gradual improvements have been demonstrated which in turn educated individual specialties of the utility and benefits of the programme. The following items are clarified by 8:15 am:

- Prediction:
  - Unplanned admissions from ED
  - Patients getting sicker (watchers)
  - Patients getting better (discharges)
- Flow:
  - Data from each area on admissions, discharges, transfers, open beds
  - Clarify admissions/beds/cancellations
  - PICU transfers prioritised: who, where and when
  - Appropriate distribution of domestic services
- Safety:
  - Watchers – plan in place or early PICU review
  - Situational awareness
  - Patient/staff safety
  - Escalate/communicate
  - Safety brief

The results showed that delayed discharges from PICU fell from 60% to 6% over a three-month period and allowed a real time understanding of the hospital's status and capability. This value can be viewed as a surrogate marker for patient flow throughout the hospital reflecting an increased overall efficiency, matching beds with patients and staff. In addition it has allowed the collective ownership of problems and risk and improved the understanding of other ward's pressures and strains, which can now be supported early. The organisation can now identify holes in the system before weaknesses aggregate as an event. There is a shared sense of urgency for finding and fixing. The credibility of leadership has risen and has re-connected the managerial staff at the blunt end with the clinical staff at the sharp end. We have now re-calibrated our stance with risk, share it and have established a mechanism to minimise its impact early.

The introduction of a hospital 'huddle' has dramatically decreased the delayed discharge percentage from PICU, which is a surrogate marker of hospital patient flow. In addition it has fostered a culture of camaraderie between individual silos improving cohesion and promoting collective ownership of risk.

Best oral presentation (Medical Student category)

Organ failure, outcomes and deprivation status among critically ill cirrhosis patients – a one-year cohort study

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Liver disease is a serious public health problem in the UK. Cirrhosis rates are increasing, with mortality rates in Scotland now double that of the European average.[1] There has been a corresponding increase in the number of cirrhosis-related admissions to British ICUs with consistently poor outcomes being reported.[2]

This was a 12-month (June 2012-June 2013) prospective cohort study performed in Glasgow Royal Infirmary ICU. Local REC approval had been granted; (West of Scotland Research Ethics Committee 5, REC reference 12/WS/0039). All ICU admissions with a diagnosis of cirrhosis (confirmed by an independent clinician) were entered into the study. Organ failure (respiratory, cardiovascular, renal, or any combination of these) and reason for admission were collected on admission. Deprivation status was attained using the Scottish Index of Multiple Deprivation (SIMD).[3] Patients were followed up until ICU outcome was established. Any association between organ failure, deprivation status and ICU outcome was assessed using the Chi squared test of association.

Fifty-nine patients were recruited into the study over the one-year period, with an ICU mortality of 31%. Twenty-three (39%) were admitted because of respiratory failure compared to 10 (16%) for a GI bleed and five (9%) for non-respiratory sepsis. There was no significant difference in outcomes in relation to diagnosis on admission (p=0.437). There was a significant difference in outcome depending on the number of organ systems requiring support (p=0.017). Of the 17 patients requiring single organ support, one (6%) died, compared to 10 (33%) and six (55%) in the two and three organ support groups respectively. Patients requiring ventilatory support only had a 17% mortality rate compared to 55% for patients requiring support for three organs. Forty-eight (81%) of the patients were from the two most deprived quintiles of society, although this was not significantly associated with ICU mortality (p=0.275).

This 12-month cohort study provides data on a contemporary cohort of critically ill cirrhosis patients admitted to a general Scottish ICU. The 31% mortality rate is low compared to much of the literature, supporting the current downward trend in mortality rates over time. In particular this study has shown that patients requiring ventilatory support alone do particularly well (17% mortality) compared to the 55% mortality rate of patients requiring triple organ support. This study has provided objective data on the socio-economic status of these patients and it is encouraging that a low SIMD status does not affect patient outcomes.

References

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2. **O'Brien AJ, Welch CA, Singer M, Harrison DA**. Prevalence and outcome of cirrhosis patients admitted to UK intensive care: a comparison against dialysis-dependent chronic renal failure patients. *Intensive Care Med* 2012;38:991-1000.
3. *Scottish Index of Multiple Deprivation*. A National Statistics Publication for Scotland. 18 December 2012. The Scottish Government, Edinburgh 2012.

Best poster presentation

Blood stream infection does not increase mortality in intensive care unit

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Blood stream infection (BSI) has a mortality of up to 70% in some populations.[1] Several studies have concluded that BSI does not increase mortality in ICU patients.[1,2] Blood cultures are the current gold standard test for diagnosing BSI.[1] Only 10% of blood cultures are positive and up to half of these may be false positives.[3] This study aimed to determine what percentage of blood cultures drawn in the ICU over an 18-month period were positive and whether BSI increased patient mortality.

This study was a retrospective review of patient records; ethical approval was not required. The results of blood cultures drawn in the ICU between 1.9.11-31.12.12 were obtained from microbiology records. Patient clinical and outcome data (dead or alive at hospital discharge) were obtained from ICU information systems. BSI was assessed for significance based on the organism isolated.[3] Patients with BSI were matched to negative controls using propensity scoring. Logistic regression was used to calculate the odds of mortality in BSI patients compared to controls.

Two-hundred and seventy-nine patients had 1016 blood cultures drawn. Forty-seven (16.8%) patients were considered to have clinically significant BSI. BSI did not increase the odds of mortality compared to controls (OR 1.723, 95% CI 0.743-3.994, p=0.205). One-hundred and twenty-nine cultures (12.7%) were positive. Of these 90 (8.8%) were considered clinically significant. This means 39 (30.2%) positive blood cultures were false positives. Twenty (42.6%) patients with BSI had antimicrobial therapy altered as a result of a positive blood culture.

These results demonstrate ICU patients with BSI do not suffer increased mortality compared to controls. BSI caused by specific organisms has recently been shown to increase ICU mortality.[4] BSI therefore needs to be considered in the light of the organism isolated. The percentage of blood cultures returned as positive in the ICU is in line with previous reports but the percentage of false positives is lower. Nearly half of BSI patients had therapy altered in response to blood culture results, demonstrating their continuing utility in patient care.

References

1. **Laupland KB, Davies HD, Church DL *et al***. Bloodstream infection-associated sepsis and septic shock in critically ill adults: a population based study. *Infection* 2004;32:59-64.
2. **Brun-Buisson C, Doyon F, Carlet J *et al***. Incidence, risk factors, and outcomes of severe sepsis and septic shock in adults. French ICU Group for Severe Sepsis. *JAMA* 1995;274: 968-74.
3. **Weinstein MP, Murphy JR, Reller LB, Lichtenstein KA**. The clinical significance of positive blood cultures: a comprehensive analysis of 500 episodes of bacteraemia and fungaemia in adults. *Rev Infect Dis* 1983;5:54-70.
4. **Lambert ML, Suetens C, Savey A *et al***. Clinical outcomes of health-care-associated infection and antimicrobial resistance in patients admitted to European intensive-care units: a cohort study. *Lancet Infect Dis* 2011;11:30-38.