Outstanding Resident Poster #2

Name: François Marquis
Position: Staff Physician
Department: Critical Care Unit
Institution: Maisonneuve-Rosemont Hospital
Address: 5415 l'Assomption blvd
City: Montréal
Province: Québec
Country: Canada

Postal Code: H1T 2M4
Telephone: 514-252-3400 #4558
E-mail: f.marquis@sympatico.ca

Co Authors Name: Rahima Jamal, Isabelle Ayotte, Sébastien Ouimet, Yoanna Skrobik

Institution Affiliation: Maisonneuve-Rosemont Hospital

VALIDITY AND RELIABILITY OF BEDSIDE NURSING ASSESSMENTS OF PAIN, SEDATION AND DELIRIUM

François Marquis, Rahima Jamal, Isabelle Ayotte, Sébastien Ouimet, Yoanna Skrobik

Introduction: Critically ill patients should routinely be evaluated for the presence and intensity of pain, assessed as to their sedation level, and screened for delirium. However, assessing both pain and delirium in intensive care unit (ICU) patients is particularly challenging, given the confounding effect of sedation. The purpose of this study was to describe the validity and reliability of real-time practice-based nursing concurrent assessments of pain, sedation and delirium, in an ICU where these three assessments occur as part of routine nursing care.

Methods: Thirty randomly selected nurses were observed by one of two trained adjudicators for documentation and clinical bedside evaluation of pain, sedation level and delirium scoring. The scales were the numeric rating scale,¹ the Richmond agitation and sedation scale² and the intensive care delirium screening checklist³ score for the evaluation of delirium. Each feature was assessed as to documentation in the bedside nursing sheets; accurate use of a scale; and validity of use of the scale with a joint bedside examination of the patient.

Results: The reliability between adjudicators for the bedside evaluation of pain and sedation was 100%. The Cronbach's α score for the evaluation of delirium was 86.3% overall. Except for the agitation/slowing criteria (70.8%), reliability between adjudicators was over 80% for the other seven criteria of the delirium score. A majority of nurses (27/30) documented pain assessments and 20/30 followed recommended standards. Nurses relied on their own evaluation of the patient's pain 25% of the time, without an objective patient-driven scale. Bedside pain evaluation comparing nurses to adjudicators showed perfect correlation. Sedation was often documented (28/30) correctly (27/30); at bedside assessment of sedation, the correlation (r^2) with adjudicators was 0.85 ($P < 0.0005$, Cronbach's α of 0.960). A majority of nurses documented delirium scales (28/30); 18 of the 27 available scores showed proper scale use. Bedside assessments showed a r^2 of 0.854 ($P < 0.0005$, Cronbach's α of 0.957). The daytime shift (mean ICU nursing experience: 11.5 years) had the best overall performance; the night shift was next (mean ICU nursing experience: 2.7 years) and the evening shift (mean ICU nursing experience: 6.3 years) the worst. The highest variability in nursing assessment performance occurred in delirium assessments of psychomotor agitation or slowing.

Conclusions: In a single centre ICU with mandated routine assessments, the evaluation of pain, sedation and delirium occurs over 90% of the time. Assessment quality varies based on type of assessment (with sedation being evaluated best, delirium next best, and pain least well). Daytime, night time, and evening nurses' performance vary significantly, particularly with regard to delirium assessment.

References

- 1 Available from URL; http://www.rnao.org/bestpractices/PDF/BPG_Assessment_of_Pain_Summary.pdf
- 2 Sessler CN, Gosnell MS, Grap MJ, et al. The Richmond agitation-sedation scale: validity and reliability in adult intensive care unit patients. *Am J Respir Crit Care Med* 2002; 166: 1338-44.
- 3 Bergeron N, Dubois MJ, Skrobik Y. Intensive care delirium checklist: evaluation of a new screening tool. *Intensive Care Med* 2001; 27: 859-64.

Outstanding Resident Poster #3

Name: Zarychanski, Ryan
Position: Critical Care Resident
Professional Initials: MD FRCPC
Department: Hematology and Critical Care
Institution: University of Manitoba
City: Winnipeg
Province: Manitoba
Country: Canada
Postal Code: R3E 0V9
E-mail:ryan@zarychanski.com

Co Authors name: Ryan Zarychanski, Harleena Gulati, Daniel Roberts, Satendra Sharma, Donald S. Houston, Anand Kumar

Institution Affiliation: Section of Critical Care Medicine,¹ University of Manitoba; and Section of Hematology/Medical Oncology,² University of Manitoba.

SYSTEMICALLY ADMINISTERED HEPARIN IS ASSOCIATED WITH INCREASED SURVIVAL IN PATIENTS DIAGNOSED WITH SEPTIC SHOCK

Ryan Zarychanski,¹ Harleena Gulati,¹ Daniel Roberts,¹ Satendra Sharma,¹ Donald S. Houston,² Anand Kumar¹

Background: Sepsis and septic shock represent a systemic inflammation state with substantial pro-coagulant elements. Unfractionated heparin (UFH) is a well known systemic anticoagulant that also possesses significant anti-inflammatory properties. Unfractionated heparin therapy has been shown to increase survival in experimental models of septic shock. The objective of this study was to evaluate the potential therapeutic benefit of UFH in a cohort of patients diagnosed with septic shock.

Methods: This retrospective case-matched cohort study involved 788 patients diagnosed with septic shock who were admitted to Winnipeg regional intensive care units (ICUs) from 1989–2004. The study group consisted of 394 patients who received systemic full dose anticoagulation with UFH within 48 hr of admission, and who lived at least 48 hr. Clinically relevant outcomes were compared to 394 matched control patients who received either no heparin or only prophylactic doses, and who survived a minimum of 48 hr in an ICU setting. Patients in each group were matched 1:1 for APACHE II score, site of infection, and time to effective antimicrobial therapy. The primary outcome variables were hospital mortality and 30 days survival. Secondary outcomes included, duration of vasopressor/inotrope therapy, duration of mechanical ventilation, and both hospital and ICU length of stay.

Results: Major baseline patient characteristics were similar in the study and control groups. Administration of therapeutic heparin was associated with a significant reduction in hospital mortality (42.6% *vs* 51.3%, $P = 0.02$). Intensive care unit mortality was similarly decreased. Cox proportional regression analysis demonstrated a sustained survival advantage among patients receiving therapeutic dose heparin over 30 days (hazard ratio 0.72 [95% confidence interval 0.59–0.88], $P = 0.01$).

Conclusion: Early administration of therapeutic dose UFH is associated with decreased mortality when administered to patients diagnosed with septic shock. These findings are both clinically significant, and economically important given the minimal cost of UFH.