Real-time ultrasound-guided subclavian vein cannulation versus the landmark method in critical care patients: A prospective randomized study

Author: Fragou M, Gravvanis A, Dimitriou V et al.


Authors compared the real-time ultrasound-guided subclavian vein cannulation vs. the landmark method in a prospective randomized ICU study. This single center study was done in 463 mechanically ventilated patients in Greece. The real time ultrasound-guided subclavian vein cannulation (200 patients) was compared with the landmark method (201 patients) using an infraclavicular needle insertion point in all cases. Catheterization was performed under nonemergency conditions in the intensive care unit. No significant differences in the presence of risk factors for difficult cannulation between the two groups of patients were recorded. Subclavian vein cannulation was achieved in 100% of patients in the ultrasound group as compared with 87.5% in the landmark one (p < .05). Average access time and numbers of attempts were significantly reduced in the ultrasound group of patients compared with the landmark group (p<.05). In the landmark group, artery puncture and hematoma occurred in 5.4% of patients, respectively, hemothorax in 4.4%, pneumothorax in 4.9%, brachial plexus injury in 2.9%, phrenic nerve injury in 1.5%, and cardiac tamponade in 0.5%, which were all increased compared with the ultrasound group (p<. 05). Catheter misplacements did not differ between groups. Ultrasound guided cannulation of the subclavian vein was found superior to the landmark method and should be the method of choice in ICU patients.

Nicotine replacement therapy in critically ill patients:A prospective observational cohort study

Author Cartin-Ceba R, Warner DO, MD; JT Hays, Afessa B


This prospective observational cohort study from Mayo clinic USA, looked at the impact of nicotine replacement therapy on the outcomes of critically ill patients, because many studies have questioned the safety of giving nicotine replacement therapy to prevent nicotine withdrawal to smokers admitted to the ICU. 330 active smokers were included in the study, of which 174 patients received and 156 did not receive nicotine replacement therapy. There were no significant differences in the unadjusted hospital mortality between the two groups: 14 patients (7.8%; 95% confidence interval, 4–12) died in the nicotine replacement therapy group as compared with ten patients (6.3%; 95% confidence interval, 2.6 –10.3) in the non-nicotine replacement therapy group (p = .59). After adjusting for severity of illness and propensity score for administration of nicotine replacement therapy on intensive care unit admission, nicotine replacement therapy was not associated with increased hospital mortality (odds ratio, 1.4; 95% confidence interval, 0.5–3.9; p = .51). Authors concluded that nicotine replacement therapy is not associated with increased hospital mortality in critically ill patients. However, no clinically significant benefit from its use could be demonstrated in the ICU setting.

A phase II randomized placebo-controlled trial of omega-3 fatty acids for the treatment of acute lung injury
The administration of eicosapentaenoic acid and docosahexanoic acid, omega-3 fatty acids in fish oil, is associated with improved patient outcomes in acute lung injury (ALI) when studied in a commercial enteral formula, but fish oil has not been tested independently in ALI. The authors sought to determine whether enteral fish oil alone would reduce pulmonary and systemic inflammation in patients with acute lung injury. This multicentric study was carried out in mechanically ventilated patients with ALI >18 yrs, who were randomized to receive enteral fish oil (9.75 g eicosapentaenoic acid and 6.75 g docosahexanoic acid daily) or saline placebo for up to 14 days. BAL fluid and blood were collected at baseline (day 0), day 4 ±1, and day 8 ± 1. The primary end point was BAL fluid interleukin-8 levels. Forty-one participants received fish oil and 49 received placebo. Enteral fish oil administration was associated with increased serum eicosapentaenoic acid concentration (p < .0001). However, there was no significant difference in the change in BAL fluid interleukin-8 from baseline to day 4 (p = .37) or day 8 (p = .55) between treatment arms. There were no appreciable improvements in other BAL fluid or plasma biomarkers in the fish oil group compared with the control group. Similarly, organ failure score, ventilator-free days, intensive care unit-free days, and 60-day mortality did not differ between the groups. Authors concluded that fish oil did not reduce biomarkers of pulmonary or systemic inflammation in patients with ALI, and the results do not support the conduct of a larger clinical trial in this population with this agent.

Mitochondria-targeted antioxidants protect against mechanical ventilation-induced diaphragm weakness

Prolonged mechanical ventilation is associated with significant diaphragmatic weakness. Although many pathways contribute to diaphragm weakness during mechanical ventilation, it is established that oxidative stress is required for diaphragmatic weakness to occur. This study tested the hypothesis that elevated mitochondrial reactive oxygen species emission is required for mechanical ventilation-induced oxidative stress, atrophy, and contractile dysfunction in the diaphragm. The cause and effect was determined by preventing mechanical ventilation-induced mitochondrial reactive oxygen species emission in the diaphragm of rats using a novel mitochondria-targeted antioxidant (SS-31). It was observed that compared to mechanically ventilated animals treated with saline, animals treated with SS-31 were protected against mechanical ventilation-induced mitochondrial dysfunction, oxidative stress, and protease activation in the diaphragm. Treatment of animals with the mitochondrial antioxidant also protected the diaphragm against mechanical ventilation-induced myofiber atrophy and contractile dysfunction. Authors concluded that prevention of mechanical ventilation-induced increases in diaphragmatic mitochondrial reactive oxygen species emission protects the diaphragm from mechanical ventilation-induced diaphragmatic weakness. This important new finding indicates that mitochondria are a primary source of reactive oxygen species production in the diaphragm during
prolonged mechanical ventilation. These results could lead to the development of a therapeutic intervention to impede mechanical ventilation-induced diaphragmatic weakness.

**Effect of open and closed endotracheal suctioning on cross-transmission with Gram-negative bacteria: A prospective crossover study**

Authors Jongerden IP, Buiting AG, Hall MAL et al.


It is unknown whether closed suction systems, as compared with open suction systems, prevent cross-transmission of Gram-negative bacteria. This prospective crossover study tried to determine whether closed suction systems, as compared with open suction systems, reduce the incidence of cross transmission of Gram-negative bacteria in ICU. This Dutch study tested both systems in four ICUs between January 2007 and February 2008. Study included all patients admitted to the ICU for >24 hrs. Closed suction systems and open suction systems were used for all patients requiring mechanical ventilation during 6-month clusters with the order of systems randomized per intensive care unit. Microbiological surveillance and genotyping was used for cross-transmission rates of selected Gram-negative bacteria. Among 1,110 patients (585 with closed suction systems and 525 with open suction systems), acquisition for selected Gram-negative bacteria was 35.5 and 32.5 per 1,000 patient-days at risk during closed suction period and open suction period, respectively (adjusted hazard ratio, 1.14; 95% confidence interval, 0.9–1.4). During closed suction period, adjusted hazard ratios for acquisition were 0.66 (95% confidence interval, 0.45–0.97) for Pseudomonas aeruginosa and 2.03 (95% confidence interval, 1.15–3.57) for Acinetobacter species; acquisition rates of other pathogens did not differ significantly. Adjusted hazard ratios for cross-transmission during closed suction period 0.9 (0.4–1.9) for P. aeruginosa, 6.7 (1.5–30.1) for Acinetobacter, and 0.3 (0.03–2.7) for Enterobacter species. Overall cross-transmission rates were 5.9 (closed suction systems) and 4.7 (open suction systems) per 1,000 patient-days at risk. Closed suction systems failed to reduce cross transmission and acquisition rates of the most relevant Gram negative bacteria in intensive care unit patients.

**Diagnostic use of serum procalcitonin levels in pulmonary aspiration syndromes**

Authors El-Solh AA, Vora H, Paul R. Knight PR, Porhomayon J


This prospective observational single center US study was done to assess the predictive accuracy of serum procalcitonin in distinguishing bacterial aspiration pneumonia from aspiration pneumonitis in 65 consecutive patients admitted with pulmonary aspiration and 7 control subjects intubated for airway protection. Quantitative cultures from BAL fluid were conducted on all participants at the time of admission and serial serum procalcitonin levels were measured on day 1 and day 3 using the procalcitonin enzymelinked fluorescent assay. There were no differences in the median serum
concentrations of procalcitonin between patients with positive bronchoalveolar lavage cultures ($n = 32$) and patients with negative BAL cultures ($n = 33$) on either day 1 or day 3 post admission. The areas under the receiver operator characteristic curves were 0.59 and 0.63 respectively ($p = .74$). However, duration of mechanical ventilation and antibiotic therapy were shorter in those who had a decrease in their procalcitonin levels on day 3 from baseline compared with those who did not (6.7 ± 7.1 days and 11.1 ± 13.5 days, $p = .03$; and 8.2 ± 2.6 days vs. 12.8 ± 4.6 days; $p < .001$, respectively). Hospital mortality was associated with radiographic multilobar disease (adjusted odds ratio, 1.14; 95% confidence interval, 1.01–1.31; $p = .04$) and increasing procalcitonin levels (adjusted odds ratio, 5.63; 95% confidence interval, 1.56–20.29; $p = .008$). The authors concluded that serum procalcitonin levels had poor diagnostic value in separating bacterial aspiration pneumonia from aspiration pneumonitis based on quantitative BAL culture. However, serial measurements of serum procalcitonin may be helpful in predicting survival from pulmonary aspiration.

**Economic implications of nighttime attending intensivist coverage in a medical intensive care unit**

Author: Banerjee R, Naessens JM, Seferian EG et al.

Journal: Crit Care Med 2011; 39:1257–1262

The study objective was to assess the cost implications of changing the ICU staffing model from on-demand presence to mandatory 24-hr in-house critical care specialist presence. A pre-post comparison was undertaken among the prospectively assessed cohorts of patients admitted to a medical ICU 1 yr before and 1 yr after the change. The data were stratified by APACHE III quartile and whether a patient was admitted during the day or at night. Costs were modeled using a generalized linear model with log-link and γ distributed errors. The study enrolled all patients admitted to the adult medical ICU on or after January 1, 2005 and discharged on or before December 31, 2006. Patients receiving care under both staffing models were excluded. The intervention included changing the ICU staffing model from on-demand presence to mandatory 24-hr in-house critical care specialist presence. Total cost estimates of hospitalization were calculated for each patient starting from the day of ICU admission to the day of hospital discharge. Adjusted mean total cost estimates were 61% lower in the post period relative to the pre period for patients admitted during night hours (7 PM to 7 AM) who were in the highest APACHE III quartile. No significant differences were seen at other severity levels. The unadjusted intensive care unit length of stay fell in the post period relative to the pre period (3.5 vs. 4.8) with no change in non-intensive care unit length of stay. The study concluded that 24-hr intensive care unit intensivist staffing reduces lengths of stay and cost estimates for the sickest patients admitted at night. The costs of introducing such a staffing model need to be weighed against the potential total savings generated for such patients in smaller ICUs, especially ones that predominantly care for lower-acuity patients.
Will polymerase chain reaction (PCR)-based diagnostics improve outcome in septic patients? A clinical view.

Authors Pletz MW, Wellinghausen W, Welte T


Polymerase chain reaction (PCR)-based techniques allow more rapid and sensitive detection of pathogens compared with conventional blood culture. The current body of evidence suggests that currently PCR can supplement but not replace blood culture and the combined detection rate of both methods was significantly higher when compared with PCR or blood culture alone. Complete determination of antibiotic resistance can currently be performed only by blood culture only. Further increase of the panel of multiplex PCR is complicated and associated with high workload and cost. Except for diagnostics of patients in whom unusual, not culturable, or fastidious pathogens are detected more often, such as immunosuppressed patients with suspected parasitic infection, etc., it might even not be necessary to further increase the spectrum of detectable species. If the primary aim of PCR diagnostics is to decrease inappropriate empirical treatment and improve patient outcome, detection should focus on those pathogens or resistance determinants that are not covered by guideline recommended treatment regimens and that have been identified as the major cause of inappropriate treatment according to current studies. In the authors opinion, such a narrower assay is more cost effective, may achieve higher accuracy due to reduced intra-test interference, and would better address current and emerging clinical needs.

The birth of intensive care medicine: Björn Ibsen’s records.

Authors Reisner-Se´ne´lar L.


Excellent, a must read article which looks back at the historical event - the birth of intensive care medicine that took place in Copenhagen, Denmark, during and after the poliomyelitis epidemic in 1952/1953. The events that led to the creation of the first intensive care unit in the world in December 1953 are well described and it is generally agreed upon that the start of the process was the fact that an anaesthesiologist (Björn Ibsen) was brought out of the operating theatre and asked to use his skills on a 12-year-old girl suffering from polio. The medical record of the girl contains a minute-by-minute description of the historical event. A translation of this part of the record is published as an Online Resource to the article. The role played by the epidemiologist Mogens Björneboe is further analysed. He was the catalyst of the process, being the one with the idea that the skills of an anaesthesiologist could be used for other purposes than surgery. When first Ibsen realized what could be done with his skills, he proved to be one of the most progressive and inventive doctors seen in modern medicine. An interview with Prof. Ibsen in 2006 is published as an Online Resource to the article.
Early and late outcome after single step dilatational tracheostomy versus the guide wire dilating forceps technique: a prospective randomized clinical trial.

Author
Fikkers BG, Staatsen M, van den Hoogen FJA, Johannes G. van der Hoeven

Journal
Intensive Care Med 2011; 37:1103–1109

Percutaneous tracheostomy is frequently performed in long-term ventilated patients in the ICU. Despite many years of experience in performing percutaneous tracheostomy in long term ventilated patients in ICU, the optimal technique is still unknown, especially in terms of late complications. The purpose of this prospective randomized Dutch study was to determine which of the two most frequently used percutaneous tracheostomy techniques performs best with the emphasis on late complications. The trial involved 120 patients, comparing two techniques of percutaneous tracheostomy, the guide wire dilating forceps (GWDF) and the single step dilatational tracheostomy (SSDT) technique. Sixty patients in each group underwent a percutaneous tracheostomy and were followed for up to 3 months after decannulation. The majority of complications in both groups were minor (58.3% in the GWDF group and 61.7% in the SSDT group). The study found a trend towards more major perioperative complications in the GWDF group versus the SSDT group, 1.0% versus 1.7% (p = 0.06). One patient in the SSDT group developed a significant tracheal stenosis. However, this may also have been related to prolonged translaryngeal intubation. Results of magnetic resonance imaging (MRI) investigations showed only minor tracheal changes. Only 37.5% of patients in the GWDF group and 31.8% in the SSDT group had no complaints after their percutaneous tracheostomy. The authors have concluded that SSDT when compared with the GWDF technique shows a trend toward less major perioperative complications with a comparable long-term outcome.

High-dose selenium reduces ventilator associated pneumonia and illness severity in critically ill patients with systemic inflammation.

Authors
Manzanares W, Biestro A, Torre MH et al.

Journal
Intensive Care Med 2011; 37:1120–1127

This single center prospective, placebo-controlled, randomized, single-blinded phase II study was done in Italy to confirm the pharmacodynamics and evaluate the efficacy of high-dose selenium (Se) administered by continuous infusion, following an initial loading bolus of selenite, on clinical outcome in critically ill patients with systemic inflammatory response syndrome (SIRS). Two groups of patients with SIRS, age [18 years, and APACHE II ≥15 (n = 35) were randomized to receive either placebo or intravenous selenite as a bolus-loading dose of 2,000 μg Se followed by continuous infusion of 1,600 μg Se per day for 10 days. Blood samples were analyzed before randomization (day 0) then at days 3, 7, and 10. Clinical outcome was assessed by Sequential Organ Failure Assessment (SOFA) score. Hospital acquired pneumonia including ventilator- associated pneumonia (VAP), adverse events, and other safety parameters were monitored as secondary endpoints. The SOFA score decreased significantly in the selenite group at day 10 (1.3 ± 1.2 versus 4.6 ± 2.0, p = 0.0001). Early VAP rate was lower in the selenite group (6.7% versus 37.5%, p = 0.04), and hospital acquired pneumonia was lower after ICU
discharge ($p = 0.03$). Glutathione peroxidase-3 (GPx-3) activity increased in both groups, reaching a maximum at day 7 ($0.62 \pm 0.24$ versus $0.28 \pm 0.14$ U/mL, $p = 0.001$) in the selenite group. No adverse events attributable to selenite were observed. The study concluded that daily infusion of 1,600 μg Se (as selenite), following an initial bolus of 2,000μg, is novel and without short-term adverse events. High-dose parenteral selenite significantly increases Se status, improves illness severity, and lowers incidence of hospital-acquired pneumonia including early VAP for SIRS patients in ICU.

Eosinopenia, an early marker of increased mortality in critically ill medical patients

Authors: Khalid Abidi K, Belayachi J, Derras Y et al.

Inflammatory markers may have a role in predicting severity of illness of ICU patients. This prospective 4-month study from Morocco tried to determine whether low eosinophil count could predict 28-day mortality in medical ICU. The authors compared the variations in eosinophil count from ICU admission to seventh day between patients who survived and those who died. The best cutoff value was chosen using Youden’s index for identification of patients with high risk of mortality. The patient outcome was 28-day mortality. A total of 200 patients were eligible. Overall 28-day ICU mortality was 28% ($n = 56$). At ICU admission, the median eosinophil count was significantly different in survivors [30 cells/mm$^3$; interquartile range (IQR), 0–100 cells/mm$^3$] and non-survivors (0 cells/mm$^3$; IQR, 0–30 cells/mm$^3$; $p = 0.004$). Absolute eosinophil counts remained significantly lower in non-survivors from admission to seventh day. The 28-day mortality was significantly higher in patients with eosinopenia $\leq 40$ cells/mm$^3$ ($p = 0.011$). Multivariate analysis by Cox model with time-dependent covariates demonstrated that eosinophil count $\leq 40$ cells/mm$^3$ [hazard ratio (HR), 1.85; 95% confidence interval (CI), 1.01–3.42; $p = 0.046$], high APACHE II score (HR, 1.08; 95% CI, 1.01–1.14; $p = 0.014$), high SOFA score (HR, 1.14; 95% CI, 1.03–1.25; $p = 0.008$), and use of mechanical ventilation (HR, 27.48; 95% CI, 12.12–62.28; $p<0.001$) were independent predictors of 28-day all cause mortality. The authors suggested the possibility to use eosinophil cell count at admission and during the first 7 days as a prognosis marker of mortality in medical ICU.

POLYMYXIN B: FRIEND OR FOE? (Poster)

Author: Mandal AK, Singh H, Nandha R et al.
Reference: ICM 2011; S13:0032

Polymyxin B has been reintroduced for the treatment of Multidrug resistant gram-negative microorganisms because of the limited development of new antimicrobials, but acute kidney injury (AKI) in septic patients is the greatest hindrance in its clinical use. The 2 yr. retrospective study from Fortis Mohali (2008-2010) evaluated impact of Polymyxin B on the kidney function and outcome in patients over 18 yrs. of age. Patients receiving Polymyxin B for at least three consecutive days, with serum creatinine measurements available before, during and after the therapy were included. The patients with baseline creatinine [4 mg/dl, undergoing dialysis at the beginning of the antibiotic therapy, with pre-renal acute kidney injury, with obstructive renal failure or those receiving concomitant nephrotoxic drugs were excluded from the study. Demographic profile, renal function...
tests (RFTs) before, during and after treatment with Polymyxin B, hospital stay and outcome (recovery vs. death) records of all patients meeting the inclusion criteria (n = 48) were analyzed. Comparison of the parameters was done between patients without (n = 30) and with AKI (n = 18; defined by the RIFLE classification) at the start of therapy. Unpaired Students t test and Fisher’s exact test were used for statistical analysis using SPSS (ver.12). Patients with baseline AKI had a significantly higher APACHE II and predicted mortality rate at admission versus the controls (14.3 ± 1.16 and 23.7 ± 2.7 vs. 10.4 ± 0.76 and 13.1 ± 1.4; P<0.01; mean ± SEM, respectively). At the end of therapy with Polymyxin B, 73.3% control patients developed AKI while 27.7% of patients in the AKI group had normalization of RFTs. Further there was no significant difference in the length of hospital stay (23.9 ± 3.1 vs. 30.5 ± 4.1; P = 0.13) and overall mortality (44.4% vs. 36.7%; P = 0.76) between patients without and with AKI, respectively. CONCLUSIONS. Polymyxin B causes derangement of RFTs but does not prolong length of stay or worsen outcomes in the setting of a tertiary critical care unit with judicious use of medication, strict monitoring of RFTs, dose modification according to creatinine clearance and aggressive fluid management.

CARBAPENEM-RESISTANT ACINETOBACTER BAUMANNII IN INTENSIVE CARE UNIT: INCIDENCE, RISK FACTORS, COURSE AND OUTCOME (Poster)

Authors: Bajaj P, Singh O, Juneja D et al.

Reference: ICM 2011; S13:0033

Although carbapenems are widely used to treat serious multidrug-resistant A. baumannii infections, incidences of carbapenem-resistant A. baumannii (CR-AB) are on the rise. This retrospective cohort study was undertaken in Max Superspeciality Hospital saket, New Delhi to determine the incidence, risk factors for carbapenem resistance, clinical course and outcome in patients admitted with CR-AB infection in Ian eight bedded medical CU (2008-2010). 80 patients whose cultures grew A. baumannii, mostly from respiratory tract secretions were included for the analysis. Susceptibility testing was performed according to the Clinical Laboratory and Standards Institute (CLSI) recommendations. Patients were divided into two groups- carbapenem sensitive and carbapenem resistant. These two groups were compared. The primary outcome measure was ICU mortality and secondary outcome measures were need for organ support and ICU length of stay. Logistic regression analysis was done to identify risk factors associated with carbapenem resistance. Of the 80 isolates tested 64 (80%)were carbapenem-resistant.

<table>
<thead>
<tr>
<th>Parameter of interest</th>
<th>Carbapenem sensitive (n = 16)</th>
<th>Carbapenem resistant (n = 64)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age, years</td>
<td>55.8 ± 21.3</td>
<td>61.7 ± 18.7</td>
<td>0.273</td>
</tr>
<tr>
<td>Mean APACHE II score</td>
<td>17.3 ± 7.7</td>
<td>20.9 ± 7.6</td>
<td>0.093</td>
</tr>
<tr>
<td>Recent hospitalization</td>
<td>4 (25%)</td>
<td>37 (57.8%)</td>
<td>0.019*</td>
</tr>
<tr>
<td>Need for mechanical ventilation</td>
<td>8 (50%)</td>
<td>48 (75%)</td>
<td>0.051</td>
</tr>
<tr>
<td>Need for vasopressor support</td>
<td>5 (31.3%)</td>
<td>42 (65.6%)</td>
<td>0.012*</td>
</tr>
<tr>
<td>ICU stay, days</td>
<td>15 ± 16.1</td>
<td>19.5 ± 23.2</td>
<td>0.463</td>
</tr>
<tr>
<td>ICU mortality</td>
<td>4 (25%)</td>
<td>26 (40.1%)</td>
<td>0.248</td>
</tr>
</tbody>
</table>
Only recent hospitalization \((p = 0.019)\) and vasopressor support \((p = 0.012)\) was associated with presence of carbapenem resistance. The requirement for organ support was not statistically significant between the two groups. Although a higher ICU mortality was observed in patients with CRAB infection, but it was not statistically significant. The study concluded that the incidence of CR-AB was high and recent hospitalization was an important factor for carbapenem resistance.

**CULTURE AND SENSITIVITY PATTERN IN INTENSIVE CARE UNIT IN A SECONDARY LEVEL HOSPITAL IN INDIA (Poster)**

**Authors:** Dhanda D, Singh U, Dhanda NC

**Reference:** ICM 2011; S13:0042

This retrospective study from Columbia Asia, Patiala analysed more then 100 cases of positive microbiological cultures from the adult ICU to see the the sensitivity and resistant pattern of bacterial pathogens in the ICU. Isolates of the patients from clinical specimen from blood cultures, surgical site swabs, urine samples and bronchoscopy samples were collected from all patients admitted to the ICU December 2009 to December 2010. Species identification and susceptibility testing was performed by biomeurix. Out of 252 samples, 107 were positive for microorganisms (blood 45, urine 50 & BAL 12). The common organisms in decreasing trend isolated from blood were E. coli, S. aureus, Pseudomonas aeruginosa and Acinetobacter and E coli, Klebsiella pneumoniae and S. aureus in urine and acinetobacter in BAL. The sensitivity of organisms resistant to three newer antibiotics (Imipenem, Meropenem and Piperacillin and tazobactam) was also tested with with older antibiotics (Quinolones, Chloramphenicol and Tetracycline).

Resistance to imipenem, meropenem and piperacillin - tazobactam were 21, 40 and 35%, respectively. 20% of the imipenem resistant organisms were sensitive to quinolones, tetracycline and chloramphenicol. The organisms resistant to meropenem and piperacillin- tazobactam were sensitive to quinolones (30%) and tetracycline (18%). The study concludes that carbapenem resistance seems to be increasing, possibly due to their increased use. Nearly 25% of the organisms were resistant to newer antibiotics. Significant numbers of these organisms are sensitive to older antibiotic.

**RELEVANCE OF PRO CALCITONIN AS BIOMARKERS OF SEPSIS AFTER PEDIATRIC CARDIAC SURGERY AND TITRATING RESPONSE TO ANTIMICROBIAL THERAPY (Poster)**

**Authors:** Singh S, Singh V, Varma A

**Reference:** ICM 2011; S13:0066

This 5 month prospective study (June-Oct 2010) from Fortis Escorts Heart Institute, New Delhi, India the high sensitivity C-reactive protein (HSCRP) and serum procalcitonin (PCT) as biomarkers of sepsis in neonates and infants after pediatric cardiac surgery and response to antimicrobial therapy. The study included post children <1 yr who underwent cardiac surgery and had clinical suspicion of clinical sepsis based on SIRS criteria. Patients with preoperative sepsis were excluded.

Of the total 180 cases operated, 25 were evaluated for sepsis based on clinical symptoms. Serum PCT and HS CRP were evaluated on first and seventh postoperative day, with the onset of clinical sepsis.
Paired blood cultures were drawn prior to initiation of empirical broad spectrum anti microbial therapy and on 7th day of antimicrobial therapy. In patients with clinical features suggestive of ventilator associated pneumonia, tracheal cultures were also evaluated. A positive blood culture was considered gold standard for confirming diagnosis of clinical sepsis. At the onset of clinical sepsis, HSCRP was ranging between 0.28 and 24 mg/dL (mean 11 mg/dL) and PCT range was between 0.122 and 21.78 ng/ml (mean 5.04 ng/ml). Nine patients had a positive blood culture, and two cases had a positive tracheal culture. Of the nine blood culture positive cases, we isolated Klebsiella pneumoniae (3 isolates), acinetobacter baumannii (5 isolates) and staphylococcus aureus (1). Both the tracheal isolates were gram- negative organisms. All the culture positive cases had high PCT and HSCRP. On the 7th day, after initiation of antimicrobial therapy, HSCRP ranged between 0.28 and 18.46 mg/l (mean 6.74 mg/l) and PCT range was between 0.120 ng/ml to 1.78 ng/ml (mean 0.4 ng/ml). After initiation of appropriate therapy HSCRP and PCT values gradually declined, with the PCT values revealing a consistent regression with the clinical improvement, but due to the limited sample size, it was statistically non significant. Thirteen cases had thrombocytopenia with onset of clinical sepsis, and in eleven cases it reverted back to normal. Two cases had leucopenia, of which one recovered. Two cases expired and both had culture positive gram-negative sepsis. The study concluded that pro- calcitonin, in comparison to other biomarkers, has higher specificity in assisting diagnosis and deciding duration of antimicrobial therapy leading to better outcome and cost parameters.

**STUDY OF THE ROLE OF POLYMYXIN B DIRECT HEMOPERFUSION AS AN ADJUVANT THERAPY IN SEVERE SEPSIS OF VARIED ETIOLOGY (Poster)**

*Authors:* Javeri Y, Madaan A, Juneja D et al.

*Reference:* ICM 2011; S13:0143

PMX-DHP is a promising option for endotoxin removal and thus for treatment of sepsis. Variations have been observed in response to sepsis and the treatment modalities in different genomic groups. There has not been any study from India on the response to PMX-DHP in severe sepsis.

This retrospective case controlled study was done in Max Superspeciality Hospital, New Delhi, India to assess the impact on outcome of PMX-DHP in patients with severe sepsis. The primary end point was ICU mortality and 28-day mortality. Secondary end points were ICU length of stay and hospital stay, hemodynamics optimization and shock reversal, acute kidney injury, P/F ratio and endotoxin level (few patients). It was also done to evaluate which patients, on the basis of the etiology and disease stage could benefit the most from this therapy.

Participants: 24 patients with severe sepsis of varied etiology from abdominal, thoracic and urinary infections. Group 1: PMX-B DHP + conventional medical therapy; n = 24. Group 2: Conventional medical therapy only; n = 48

1 patient therapy was used twice. Endotoxin activity assay used for collaborative evidence in 7 patients. 2 h sessions with PMX-B DHP therapy either with CRRT or hemodialysis machine were carried out in 24 patients since 2007, in addition to the conventional therapy. The decision as to whether or not use PMX-B DHP was based on severity score, hemodynamic status, futility of care and in few cases endotoxin activity assay. Decision was consensus between critical care team and treating physician.
ICU mortality was 25% in patients treated with PMX-DHP compared to 33.3% in control group, which did not receive any adjuvant therapy. EAA were used for collaborative evidence in 7 patients. We had 16 survivors out of 24 therapy sessions. Sustained hemodynamic improvement was seen in 20 patients. Improved P/F ratio was seen in 16 patients. Only complication seen was cartridge block in three patients. The study concluded that PMX-DHP reduced mortality and is promising adjuvant in treatment of severe sepsis and septic shock.

TRENDS OF C-REACTIVE PROTEIN (CRP) AND PROCALCITONIN (PCT) IN LIVE DONOR LIVER TRANSPLANTATION (LDLT) RECIPIENTS (Poster)

Authors: Gupta S, Govil D, Bhatnagar S et al.
Reference: ICM 2011; S13:0157

This study conducted at Medanta-The Medicity Hospital, Gurgaon, India, evaluated the trends of CRP and PCT in early post-operative phase in LDLT recipients. The serum CRP and PCT samples for first four postoperative days were sent in all LDLT recipients. Clinically significant infections (CSI) were defined as pulmonary, blood-stream, urinary or abdominal infections. Any change in antibiotics was noted and their effect on values of CRP, PCT and total leukocyte counts (TLC) was noted.

A total of 122 liver transplant recipients (26 female and 96 male) were studied. The CRP and PCT values peaked on second postoperative day in all patients and then decreased rapidly but did not reach baseline during the study period. Mean CRP value was 45.09 mg/L (min 5.0 mg/L; max 185.6 mg/L) and mean PCT value was 6.78 ng/mL (min 0.12 ng/mL, max 48.49 ng/mL). Trend in TLC values were independent of trend of CRP and PCT. 32 patients had CSI and their CRP (54.67 vs. 40.72 mg/L), PCT (9.04 vs. 4.09 ng/ml) and TLC values were higher as compared to non-CSI patients but still followed the same trend. The study concluded that CRP and PCT values are uniformly increased in postoperative LDLT recipients, peaking on the 2nd postoperative day and then start decreasing. Patients with CSI have higher values as compared to non-CSI patients and hence a higher cut off may be warranted to support their role as an early marker of sepsis.

IMPACT OF AN “AND” (ALLOW NATURAL DEATH) PROTOCOL ON END OF LIFE DECISIONS IN AN INDIAN ICU (Poster)

Authors: Mani RK, Rawat T, Basu R et al.
Reference: ICM 2011; S13:0257

End of life decision-making is known to be complex and perceived to be difficult in India. Education of the healthcare team and introducing a standard operating procedure (SOP) could facilitate End-of-life decisions (EOLD) and documentation. This prospective interventional study was carried out at the Artemis Health Institute, Gurgaon, India to assess the frequency, type and quality of EOLD before and after the introduction of formal “AND” (allow natural death) SOPs. Data were gathered in Group A (20th February 2009 to 19th February 2010) and (20 Feb
2010 to 19th Feb 2011) in Group B following the introduction of an AND. All EOLDs were documented on a standardized AND form that was signed by the attending physician, next of kin, one witness and validated by a three-member AND committee. Measurements included demographics, disease category, Acute physiology and chronic health evaluation (APACHE IV), ICU Length of stay (LOS), Mechanical ventilator days (MVD), hospital LOS, mortality rate, frequency and type of EOLD, time to EOLD, time from initiation of discussion to EOLD, time to death from EOLD, interventions within 3 day prior to death.

<table>
<thead>
<tr>
<th></th>
<th>Group A</th>
<th>Group B</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total admissions</td>
<td>2328</td>
<td>2698</td>
<td></td>
</tr>
<tr>
<td>Mortality</td>
<td>276 (11.8%)</td>
<td>353 (13.08%)</td>
<td>0.337</td>
</tr>
<tr>
<td>EOLD</td>
<td>21 (7.6%)</td>
<td>82 (23.2%)</td>
<td>0.000</td>
</tr>
<tr>
<td>Age/sex</td>
<td>61.1 ± 15.2 62% M, 38% F</td>
<td>63.7 ± 18.1 56% M, 44% F</td>
<td>0.000</td>
</tr>
<tr>
<td>DNR (Do not resuscitate)</td>
<td>12 (57%)</td>
<td>26 (31%)</td>
<td>0.000</td>
</tr>
<tr>
<td>WH (Withhold)</td>
<td>1 (4%)</td>
<td>20 (24%)</td>
<td>0.000</td>
</tr>
<tr>
<td>WD (Withdrawal)</td>
<td>8 (38%)</td>
<td>36 (44%)</td>
<td>0.14</td>
</tr>
<tr>
<td>APACHE IV</td>
<td>108.28 ± 32.23</td>
<td>95.89 ± 30.46</td>
<td></td>
</tr>
<tr>
<td>ICU LOS</td>
<td>5.19 ± 4.05 days</td>
<td>7.17 ± 8.61 days</td>
<td></td>
</tr>
</tbody>
</table>

In addition to the data summarized in the table there were following observations: The disease categories in group A vs group B: Sepsis 4 (19%), 16 (19.3%), Respiratory 4 (19%), 16 (19.5%), Malignancy 7 (33%), 27 (33%), Neurological 6 (26%), 23 (28%). The mean time from admission to EOLD Group A vs Group B 6.51 ± 6.19 vs 6.53 ± 8.3 days; the time interval between initiation and final EOLD 1.36 ± 1.71 vs 1.57 ± 2.45 days and the mean time to death from EOLD 1.3 ± 2.5 vs 0.82 ± 1.57 days. There was no difference in the number of interventions in the 2 groups within 3 days of death. MVD in group A vs Group B: 4.42 ± 5.59, 3.72 ± 5.91 days (not significant). Hospital LOS group A vs Group B: 8.23 ± 7.32, 9.81 ± 10.63 days (not significant). The study concluded that introducing an SOP for EOLD significantly improves the overall frequency of EOLDs. The DNR decisions were more frequent before while withholding decisions were more frequent after the introduction of AND. There was no significant difference in the MVD, ICU or hospital LOS, or in interventions around the time of death.

DEVICE ASSOCIATED NOSOCOMIAL INFECTION IN A NEWLY COMMISSIONED TERTIARY CARE CENTRE ICU IN NEW DELHI, INDIA (Poster Corner)

Authors: Maurya V, Pande R, Kauts V et al.

Reference: ICM 2011; S13:0303

Health care associated infections; especially from invasive devices is an important cause of concern to the Intensive Care Units (ICUs). Regular surveillance of these infections has resulted in decrease in infection rates and improved health care quality in USA. This prospective cohort surveillance study was carried out in the MICU of BLK Superspeciality Hospital; New Delhi, India to ascertain the incidence of device associated infections (DAIs) in the ICU. The definitions of the US Centers for Disease Control and
Prevention National Nosocomial Infections Surveillance System (CDC-NNIS) were applied. The study duration was from Jan 2010 to March 2011. 1616 adult patients admitted in ICU during this period were enrolled and for an aggregate 5883 patient days acquired 71 DAIs for an overall rate of 4.3% (71/1616) or 12.06 infections per 1000 ICU days.

Of the DAIs, the ventilator associated pneumonia was 56.3% (40/71) or 18.60 per 1000 ventilator days, catheter-associated urinary tract infections, 30.9% (22/71) or 5.87 per 1000 catheter days and central venous catheter-related blood stream Infections was 12.6% (9/71) or 7.41 per 1000 catheter days respectively.

The study concludes that our infection rates were lower in comparison with the study published earlier depicting data from ICUs of large number of developing countries and were comparable with the rates shown in a single large Indian study.

**EPIDEMIOLOGICAL TRENDS, RISK FACTORS AND PREDICTORS OF MORTALITY IN ICU ACQUIRED CANDIDEMIA IN COMBINED MEDICAL AND SURGICAL ICU PATIENTS (Poster Corner)**

Authors: Gupta A, Gupta A, Varma A

Reference: ICM 2011; S13:0304

ICU acquired candidemia is a nightmare for the intensivists. Though a long list of risk factors and predictors of mortality has been mentioned in the literature, uncertainties and doubts do exist. This retrospective 4-year study was done in Fortis Escorts Heart Institute; New Delhi to analyze the epidemiological trends of ICU acquired candidemia, to identify probable risk factors, which can predict the mortality of ICU. Data was collected for a period of 4 years (Jan 2007–Dec 2010).

ICU acquired candidemia was defined as positive blood culture for Candida after 48 h of admission to the ICU. Following information was collected: demographic characteristics, microbiologic profile, risk factors, colonization with Candida, timing of antifungal therapy and outcome. Predictors of mortality were identified using Fisher’s exact test and ‘two-tailed’ P values. 109 episodes of ICU acquired candidemia were noted with an incidence of 1.12/1000 patient-days. Mean age of the patients was 63.1 years. M:F ratio was 2.03:1. Median lengths of ICU stay prior to obtaining the culture that yielded positive result was 9 days. Candida tropicalis was the commonest species identified (31.2%), followed by C. albicans (29.3%), C. glabrata (14.7%), C. parapsilosis (7%), C. kruusi (2.8%) and other Candida (14.7%). The following risk factors were identified: patient on broad spectrum antibiotics (99%), central venous line (98%), mechanical ventilation (88%), recent surgery (54%), patient’s age [65 years (54%), diabetes mellitus (42%), colonization with Candida (38%), use of corticosteroids (37.6%), acute kidney disease(AKD) on dialysis (32%), chronic kidney disease (CKD) (14%), parenteral nutrition (9%) & anemia (6%).

Overall mortality was 55%. The following predictors of mortality were found to be statistically significant: medical ICU patients (p = 0.0001), AKD with dialysis (p = 0.0001), mechanical ventilation (0.017), anemia (p = 0.016), use of corticosteroids (p = 0.046) and CKD (p = 0.049). The time to initiate antifungal therapy after availability of positive
blood culture reports was analyzed. 7 patients received therapy on day 1 (within 24 h), 24 patients on
day 2, 30 patients on day 3, 11 patients on day 4 and 12 patients on day 5. In these patients, mortality
recorded was 71%, 54%, 46%, 63% and 33% respectively. The study concluded that the incidence of
non-albicans Candida like C. tropicalis and C. glabrata is on rise. Despite early effective antifungal
therapy mortality remains high in ICU acquired candidemia.
AKD, mechanical ventilation, anemia, use of corticosteroids & CKD are the
significant predictors of mortality. Direct association between time to initiate antifungal therapy and
mortality cannot be established.

INFECTIVE ENDOCARDITIS IN A DEVELOPING COUNTRY: ARE WE ENTERING THE ‘MODERN’ ERA?
(Poster Corner)

Authors: Gupta A, Gupta A, Vama A et al.

Reference: ICM 2011; S13:0305

The clinical profile of infective endocarditis (IE) has been continuously evolving over last 3–4 decades.
This observational retrospective study (July 2004 to Dec 2009) was done in Fortis Escorts Heart
Institute, New Delhi, India to evaluate the recent changes in the spectrum and clinical profile, and
outcome of IE in a developing country; and to compare with data available from the West and the
Indian subcontinent.

The hospital medical records were reviewed to look at the demographic, clinical, microbiologic and
echocardiographic characteristics, as well as treatment and
outcomes in patients who fulfilled the Modified Duke criteria for ‘definite’ IE and 61 ‘definite’ cases of
IE were identified. Mean age was 49.3 ± 13.7 years. The male to female ratio was 3.3:1. Rheumatic
heart disease was the underlying heart disease in 23 (37.7%) patients, no previously known heart
disease in 9 (14.8%) patients, history of intravenous drug abuse in 1 patient. CHF was the commonest
complication found in 29 (47.5%) patients. Blood cultures were positive in 41 (67.2%) patients.
Streptococci and staphylococci were the commonest microbial isolates, found in 9 (21.4%) patients
each. TEE was done for all the patients. Vegetation’s were detected in 54 (88%) patients. Mitral valve
was involved in 38 (70%) patients. Right-sided IE was seen in just 1patient. 33 (54.1%) patients had
already received antibiotic therapy before presentation to us. 31 patients was treated only medically
while early surgical treatment along with antibiotics was given to 30 (49.2%) patients. In-hospital
mortality was 6.5% (n=4). The study concluded that several new trends like: 1) increasing age category
indicating RHD as a lesser common antecedent to IE, 2) an increasing percentage of IE in patients with
no previously known heart disease, 3) gradually improving culture positivity rates, 4) a gradual rise in
staphylococcal infections. 5), increased usage of TEE, 6) high elective surgical rate and 7) seemingly
improved survival rates. These changes point to the fact that ‘modern era’ changes
in the clinical profile of IE have started appearing in developing countries also.

INTERGROUP COMPARISON OF THE COMPLIANCE TOWARDS HAND
HYGIENE PRACTICES AMONG DIFFERENT CATEGORIES OF HEALTHCARE
WORKERS IN AN ICU IN A TERTIARY LEVEL MULTIDISCIPLINARY HOSPITAL IN INDIA (Poster Corner)

Authors: Javeri Y, Mathur M, Juneja D et al.
Effective hand hygiene practices have been found to be the most simple yet the most potent intervention in reducing the incidence and transmission of hospital acquired infections. The adherence to hand hygiene practices among various healthcare professionals have been found to be poor by various studies.

This 2 month prospective observational study was conducted at Max Superspeciality Hospital, Saket, New Delhi, India to measure and compare the compliance with hand hygiene practices among different groups of healthcare workers in the ICU. The hand hygiene practices of doctors, nurses and other healthcare workers involved in care of patients in ICU during routine working hours (i.e. between 8.00 AM and 5.00 PM) 400 were observed. Each session of observation was of 10-15 min duration.

Adherence to hand hygiene practices during routine contact with patient and during performance of invasive procedures were recorded by independent investigators. Out of total 3261 opportunities of hand hygiene, adequate adherence to hand hygiene practices was found in 54.49% (1777 out of 3261). The compliance was 49.5% (460/928) among doctors, 61.15% (992/1620) among nursing staff and 53.19% (325/ 611) among other healthcare workers. Adherence to hand hygiene practices during performance of invasive procedures was found out to be 64.3% (394/ 612) and 55% (762/1376) during personnel contact and contact with innate objects. The study concluded that the compliance to hand hygiene practices were lowest among doctors and best among nursing staff. The adherence among various groups and adherence during procedures is significantly less than optimal.

EFFICACY AND SAFETY OF PARENTERAL OMEGA 3 FATTY ACIDS IN VENTILATED PATIENTS WITH ACUTE LUNG INJURY (Poster Corner)

Authors: Gupta A

Reference: ICM 2011; S13:0311

MCT/LCT emulsions have been associated with a lower risk of lipid peroxidation and fewer alterations of membrane structures. The LCT/MCT emulsions have been shown to improve the Pao2/Fio2 ratio and a beneficial effect on oxygen delivery. This study was carried out in Mata Chanan Devi Hospital, New Delhi to determine the effects of parenteral Omega 3 fatty acids (10% Fatty acids) on respiratory parameters and outcome in ventilated patients with acute lung injury. 86 consecutive patients with suspected ARDS in the first 48 h of admission were divided into 2 groups: Group 1: standard diet Group 2: standard diet + parenteral Omega 3 fatty acids, Omegaven (Fresenius Kabi), for 14 days. Primary outcome measures included changes in oxygenation assessed at days 4, 7 and 14. Secondary outcomes included length of ventilation, length of ICU stay, length of hospital stay and in hospital mortality. Compared with baseline PaO2/FiO2 ratio (control vs. drug group: 199 ± 124 vs. 145 ± 100; P = .06), by days 4, day 7 and day 14, patients receiving the drug did not show significant change in oxygenation (151.83 ± 80.19 vs. 177.19 ± 94.05; P = 0.26, 145.20 ± 109.5 vs. 159.48 ± 109.89; P = 0.61 and 95.97 ± 141.72 vs. 128.97 ± 140.35; P = 0.36). There was no significant difference in the length of ventilation (LOV), length of ICU stay (LOS) or survival at 28 days between the groups. There was no significant difference in the length of ventilation and ICU stay in the survivors as compared to the non-survivors. The study concluded that in ventilated patients with acute respiratory distress syndrome, intravenous
omega 3 fatty acids alone do not improve ventilation, length of ICU stay or survival.

HEPATOADRENAL SYNDROME: UNDERDIAGNOSED ENTITY (Poster)

Authors: Gupta S, Govil D, Bhatnagar S et al.

Reference: ICM 2011; S13:0553

Adrenal insufficiency (AI) in critical illness has been reported to be associated with increased morbidity and mortality. Occult adrenal insufficiency in chronic liver disease patients is under diagnosed and underreported. The authors hypothesized that adrenal insufficiency is present in critically ill chronic liver disease (CLD) patients and is associated with increased in-hospital mortality. This observational study conducted at Medanta-The Medicity, Gurgaon, India, observed the incidence of adrenal insufficiency in 56 CLD patients admitted to an adult gastrointestinal intensive care unit (ICU) between January 2011 to March 2011. Twenty-one patients, who had received steroids in last 3 months, were excluded. Remaining 35 patients (9 females and 26 males) had random cortisol and serum high density lipoprotein (HDL) level testing at admission to the ICU. Threshold random cortisol value of less than 15ug/dl was kept to diagnose adrenal insufficiency. The need for vasopressor use, renal replacement therapy (RRT), ventilatory support and in hospital mortality was observed.

20 patients out of 35 (57.14%) had adrenal insufficiency by the threshold values. Out of these 20 patients only 11 (55.0%) had low HDL levels. Patients with adrenal insufficiency had higher vasopressor (VP) requirement (72.6 vs. 28.3%), more need for RRT (63 vs.18%), more ventilator days (58.1 vs. 32.6%) and higher in-hospital mortality (82 vs. 36%). The authors conclude that adrenal insufficiency is commonly missed in critically ill CLD patients and is associated with increased incidence of multiorgan failure and increased in-hospital mortality. A Low HDL value does not show a strong correlation with AI.

ACUTE KIDNEY INJURY IN TRAUMA ICU: OUR EXPERIENCE IN LEVEL I TRAUMA CENTRE (Poster)

Authors: Gupta B, D'Souza N, Ramchandani S et al.

Reference: ICM 2011; S13:0589

Acute kidney injury has been difficult to assess due to lack of Standard definitions. However, risk, injury, failure, loss and end-stage kidney (RIFLE) criteria have been proposed to classify AKI as a uniform consensus. This study was carried out at the Jai Prakash Narayan Apex Trauma Center, AIIMS, New Delhi to study the association of AKI with ISSST to analyze the incidence of AKI in critically ill trauma patients. Case records of 100 consecutive patients admitted to the trauma ICU were analyzed for incidence, demographics, ISS, AKI as per RIFLE, and their association with ICU stay and outcome. AKI according to RIFLE occurred in 26% trauma patients in the ICU. As per urine output criteria 14 patients had AKI while 19 patients had AKI according to creatinine. Maximum RIFLE criteria as per class R, class I and class F were seen in 10, 5 and 11%, respectively. Mean age of patients with and without AKI were 32.8 ± 16.1 and 32.4 ± 17.6 years, respectively (p = NS). Ten patients were<12 years, two of these had AKI as per RIFLE (1 risk as per UO, 1 failure as per S. creatinine). Five patients were aged >65 years (1
failure as per UO, 1 at risk as per UO). Trauma patients were predominantly male (88 vs. 12), however, none of the female patients developed AKI as per RIFLE (p = 0.032). The relative risk male developing AKI as compared to female was 1.194 (95% CI: 1.080–1.319). Although the patients with AKI had a tendency towards higher ISS (16.9 vs. 14.4) it was not statistically significant (p = 0.08). Mortality was 30% however; AKI was associated with a significantly higher risk of mortality (p<0.0001) with a relative risk of 4.269. (95% CI: 2.395–7.609).

None of the patients (4) who had documented renal trauma develop AKI as per RIFLE criteria. The study concludes that AKI is a frequent complication in trauma patients admitted to the ICU. Male sex is significantly associated with occurrence of AKI. There was no significant association of AKI with age or ISS. However, presence of AKI as per RIFLE criteria was associated with significantly higher mortality.

COMPLIANCE OF HAND HYGIENE PRACTICES IN RADIOLOGY TECHNICIANS AND HEALTHCARE WORKERS AND ITS IMPACT ON THE MORTALITY RATE IN INTENSIVE CARE UNIT OF A SECONDARY LEVEL HOSPITAL IN INDIA (Poster)

Authors: Dhanda D, Singh B, Dhanda NC, Singh S

Reference: ICM 2011; S13:0652

Evidence-based guidelines for healthcare workers’ hand hygiene practices exist, but compliance with these is very low. This prospective study was carried out in the ICU of Columbia Asia, Patiala, India from May 2010 to Feb 2011 to quantify the compliance rate of hand hygiene protocols in the ICU and to access the outcome of the training methods to improve the compliance. The study included radiology technicians and nursing staff working and visiting the ICU. A team of three unbiased persons observed the compliance of the healthcare workers for multiple sessions of 1 h each during this period. Compliance was calculated as number of times hand hygiene was performed/number of the hand hygiene opportunities. After observing for 4 months active intervention was done in next 6 months to improve the compliance in form of training, lectures, paper distributions to the workers. Again the compliance was noted for next 6 months. Mortality rate of the ICU pts. was observed. Culture and sensitivity patterns of various body fluids sent after 72 h of admission were studied over this period to know the incidence of hospital acquired infections. In the first 4 months, the compliance by the nurses was 45% and 25% for radiology technicians. During the next 6 months, compliance increased to 55% for the nurses and 50% for the radiology technicians, which was significant.

The admissions in initial 4 months were 221 with 21.6% mortality and in the next 6 months there were 405 admissions with mortality of 19.01%. The authors conclude that after interventions radiology technicians performed better than the staff nurses. The promotion of hand hygiene not only improved the compliance but also contributed towards a decline in mortality rate.

A PROSPECTIVE STUDY OF BIOCHEMICAL AND CLINICAL PROFILE IN CASES OF ORGANOPHOSPHORUS POISONING: FACTORS DETERMINING OUTCOME (Poster)

Authors: Kulkarni SG, Srinivasan KV, Gowda M
Organophosphorus poisoning is the most common poisoning in India because of its easy availability. Standard treatment involves the administration of intravenous atropine and oximes to counter the acetyl cholinesterase inhibition at the synapse, but the efficacy of oximes is uncertain. This retrospective study involving 75 patients was undertaken PES Institute of medical Sciences & Research, Kuppam, India to evaluate the clinical and biochemical profile of organophosphorus poisoning in Chittoor and neighboring districts of Andhra Pradesh, a region with the highest suicidal OP poison consumption in the country, with an objective to see the difference in clinical profile of patients treated with both PAM & atropine & patients treated with atropine only, and also to study the correlation between serial BuChE levels and clinical profile of patients with OP poisoning. The study period was from April 2008 to 2009. The diagnosis was established from history taken either from patient or from patient’s relatives. Intravenous atropine and pralidoxime administered as soon as possible. Pralidoxime was administered only to those patients who presented within 6 h of consumption. Butyryl cholinesterase levels measured on admission and every alternate day until the patient’s stay in ITU.

Independent Sample t test, Mann–Whitney test and v2 tests were used for assessing the data for statistical significance. 40% of the cases were brought to the hospital within 6 h of poisoning and received both PAM & atropine. The mean BuChE levels increased gradually over 6 to 7 days. No difference in the clinical profile between those receiving and not receiving PAM was observed. BuChE levels did not correlate significantly with the clinical profile of the patients. Mean Atropine Dose in Group A was 59.67 mg in comparison to 41.32 mg in Group B. BuChE levels on admission in Group A was 340.6 IU/L abd Group B was355.1 IU/L. Mean BuChE levels in Group A was1151.3 IU/ L. While in Group B it was1127.5 IU/L Days on ventilator was on an average 8.45 days in Group A and 10.47 days in Group B. The study concluded that treatment with PAM initiated within 6 h has not shown any difference in BuChE reactivation as measured by serial BuChE levels. BuChE levels did not co-relate significantly with the clinical profile of the patients.

STROKE VOLUME AND SVV MEASUREMENT USING FLOTRAC AND PASSIVE LEG RAISING (PLR) AS A TOOL FOR FLUID MANAGEMENT IN SEPTIC SHOCK NON-VENTILATED PATIENTS ON VASOPRESSORS (Poster)

Authors: Singh G, Singh O, Aggarwal R et al.

Reference: ICM 2011; S13:0907

Because volume expansion does not always improve hemodynamics in septic shock, predictive parameters of fluid responsiveness are needed. Static markers of cardiac preload are poor predictors of volume responsiveness and dynamic markers are often limited by the presence of spontaneous respiration or cardiac arrhythmias. Passive leg raising (PLR) is a reversible maneuver that represents endogenous volume challenge to predict fluid responsiveness in septic patients. The study was performed to confirm the hypothesis that changes in SV, SVV (measured by FLOTRAC) in response to PLR indicate fluid responsiveness in non-intubated patients without mechanical ventilation.
This study from Max Gurgaon, India included thirty septic shock patients requiring volume expansion. An arterial line was inserted if MAP was less than 65 mmHg after fluid challenge on vasopressors and FLOTRAC connected. Measurements of SVV, CO, MAP, BP, HR were recorded before and after PLR. Measurements were then repeated following fluid challenge of 300 ml in those patients who were found to have variations in SVV >10 and/or SV>15%. Incremental boluses were given till a target of 10 of SVV and SV change of<15% was achieved. A total of 65 fluid challenges were given in 30 patients. In 25 (83.33%) patients with 58 (89.23%) fluid challenges, SVV of 10 and SV change of <15% was achieved after fluid challenge and vasopressors were tapered off within 24 h. Corresponding changes to PLR in CO, HR, BP were found in 12 (30.76%) patients, 3(7.69%) patients went into fluid overload and required NIPPV and diuretics, 2 patients developed arrhythmia’s and were dropped from the evaluation. The authors conclude that the changes in stroke volume and SVV using Flotrac in response to PLR can predict fluid responsiveness in non-ventilated patients of septic shock on vasopressors.