

# POSTER PRESENTATIONS

01

## Role of effective CpCr and post resuscitation intensive care unit care in the outcome of perimortem cesarean section patients: A case series of 6 cases

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**Objective:** The aim is to review in pregnant patients with cardiorespiratory arrest, (1) maternal and neonatal outcome. (2) Influence of - timing of advanced cardiac life support (ACLS), perimortem cesarean section (PMCS) and post resuscitation care. **Methodology:** We have retrospectively reviewed six cases requiring PMCS or delivery, over the last decade. Fernandez Hospital is a tertiary care perinatal center with an annual delivery rate of 7000

Final diagnosis of maternal CA	Arrest – delivery interval (min)	Establishment of ROSC (min)	Maternal outcome	The Neonatal outcome	Post resuscitation ICU care
35 weeks, non-compacted LV, acute CHF	4	Simultaneously	Unremarkable	Unremarkable	Stiff cardio-respiratory support over 3 days. No IABP
30 weeks, status eclampticus, GCS 3/15	55	? 7 (elsewhere)	Recovering	Good neonatal outcome	Therapeutic induced hypothermia, barbiturate coma, improving GCS. 5/15, went LAMA
34 weeks, severe DKA, atrial fibrillation, maternal pH 6.8	5	Simultaneously	Unremarkable	Unremarkable	DKA management protocol, extubated and stabilized in 36 h
36 weeks, fulminant sepsis, septic shock	11	—	Mortality	IUFD at admission	—
37 weeks, severe pre-eclampsia	17	15	GCS-7/15 at D3	Mortality	Stabilized in 24 h. Went LAMA
28 weeks, critical MS, acute pulmonary edema	5	5	Em. PBMV done	IUFD at admission	Vaginal delivery post PBMV

MS: Multiple sclerosis; ROSC: Return of spontaneous circulation; ICU: Intensive care unit; LV: Left ventricular; CHF: Congestive heart failure; IABP: Intra-aortic balloon pump; GCS: Glasgow coma scale; LAMA: Leave against medical advice; DKA: Diabetic ketoacidosis; IUFD: Intra uterine fetal death; PBMV: Percutaneous balloon mitral valvuloplasty

plus and has a dedicated obstetric intensive care unit (ICU).

**Results:** Cardiac arrest in the third trimester, maternal and fetal outcome is improved if the return of spontaneous circulation (ROSC) is established within 4-5 min. Early PMCS helps in achieving post ROSC stability. **Conclusion:** Early airway control with ACLS, early PMCS to achieve stable ROSC and appropriate post resuscitation care in ICU is the key for maternal and fetal survival.

02

## Post-operative posterior reversible encephalopathy syndrome in a case of emergency caesarean section

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**Objective:** Early recognition and treatment of posterior reversible encephalopathy syndrome (PRES), to prevent permanent neurological sequelae. PRES is a clinical neuroradiological entity characterized by headache, vomiting, altered mental status and seizures. Magnetic resonance imaging shows white grey matter edema in the posterior region of the central nervous system. Treatment includes management or withdrawal of triggering factor. **Case Report:** A 22-year-old primigravida with non-progressive labor, posted for emergency lower (uterine) segment cesarean section presents with a history of lower respiratory tract infection with fever on tablet paracetamol SOS with inadequate NBM. She had a past history of febrile convulsions until 6 years of age. Examination showed submandibular lymphadenopathy, bilateral pitting pedal edema and red patch on left posterolumbar area. Investigations revealed Hb 10.8 g/dl and platelets 76,000. 5 units of platelets were transfused. Spinal anesthesia was planned, but procedure abandoned due to bloody taps on multiple pricks. General anesthesia with rapid sequence induction given. Healthy female baby delivered. Intra-operatively blood pressure (BP) was consistently high (>140/100 mmHg), managed with propofol. Surgery was uneventful. Expected blood loss 1100 ml. Before extubation, oral suctioning and laryngoscopy reveal blood clots, anterior pillar tear and airway edema. Throat was packed, bleeding stopped. Post-extubation, patient had difficulty in breathing with a drop in SpO<sub>2</sub> so reintubated and shifted to intensive care unit (ICU) for further management. BP reading was 170/110 mmHg and urine albumin 2+. Injection labetalol was started. 4 h post-operatively, patient had an episode of seizures, managed with phenytoin. An urgent computed tomography (CT) scan revealed PRES. **Result:** Patient maintained on antihypertensives + anticonvulsants. Extubation was carried out on day 4 with intact reflexes and no neurological deficits. CT scan findings normal. **Conclusion:** PRES is associated with multiple conditions, most commonly pre-eclampsia, as seen here. Increased incidence of comorbidities in pregnancy warrants introduction of exclusive obstetric ICUs.

03

## Extracorporeal membrane oxygenation for refractory hypoxemia in severe dengue: A case report

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A 13-year-old male patient presented with high-grade fever (temperature 102°F), tachypnea (44/min), tachycardia (173/min), restlessness and

thrombocytopenia (17,000). He was diagnosed to be a case of severe dengue (nonstructural protein 1 antigen positive) with sepsis, acute liver, kidney injury with cardiogenic shock and severe acute respiratory distress syndrome (ARDS) (P/F <100), with an initial acute physiology and chronic health evaluation II score of 32 and sequential organ failure assessment score of 13. The chest X-ray revealed bilateral pulmonary infiltrates involving all lung zones. Arterial blood gas showed severe metabolic acidosis (pH 7.22, base excess -15) with high lactate levels (15.5). The patient was intubated and put on mechanical ventilation and continuous renal replacement therapy (CRRT) was initiated. He improved with antibiotics, CRRT and supportive therapy. Over next 2 days the vasopressors were tapered off, the liver enzymes normalized by day 11 and CRRT was stopped after three cycles due to good urine flow. The thrombocytopenia improved and platelet counts normalized. However, he continued to remain in severe refractory hypoxemia (PaO<sub>2</sub> <55) with rising CO<sub>2</sub> levels. Patient received to tidal volume ventilation initially (ARDS net protocol) with proning and APRV, but there was no improvement in oxygenation (P:F < 100, PCO<sub>2</sub> > 100). It was decided to initiate venovenous extracorporeal membrane oxygenation (VV ECMO) using right femoral and right internal jugular veins. The patient parameters improved significantly with normalization of CO<sub>2</sub> and improvement in PaO<sub>2</sub> with low FIO<sub>2</sub>. However, he developed a major right hemispheric bleed after 36 h necessitating weaning and withdrawal from ECMO and died within next 3 days.

04

### A (un) common cause of acute obscure massive gastrointestinal bleed: Case report

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**Introduction:** Most common causes of massive gastrointestinal (GI) bleed are variceal, ulcer with active bleeding, neoplasms or vascular ectasias. Usually hookworms and roundworms infestation present with chronic occult GI bleed. We present a case of acute massive GI bleed following worm infestation which almost landed up in emergency gastrectomy. **Case Report:** A 65-year-old male chronic smoker, who was on a ventilator for viral meningoencephalitis 7 days earlier presented with recurrent bouts of massive hematemesis and melena. On evaluation, he had pallor (hemoglobin -6.1 g%), hypotension and tachycardia. He was managed with 2 units of packed cell transfusion and proton pump inhibitor infusion. Upper GI endoscopy revealed large ulcer involving fundus and body of the stomach. Gastric malignancy was suspected and biopsy was taken. Contrast enhanced computed tomography abdomen did not show any features of malignancy. Next 3 days patient had recurrent bouts of massive hematemesis and melena. 11 units of packed cells were transfused during the same period. As a patient was getting hemodynamically unstable in spite of all the measures he was posted for surgical exploration, pending biopsy reports. Intraoperatively, there was a large superficial ulcer involving the lesser curvature, extending from the gastroesophageal junction up to the incisura, no active bleeding. Hence gastrectomy was deferred. Later biopsy was suggestive of chronic gastritis. Follow-up endoscopy showed numerous hookworms in the first part of the duodenum. He was treated with tablet albendazole. Patient got asymptomatic with no further GI bleed. **Conclusion:** In tropical countries worm infestations should be considered as an important cause of obscure acute massive GI bleed. Repeated stool examinations for cyst or ova and evaluation of jejunum with push endoscopy or capsule endoscopy may yield a diagnosis of worm infestation.

05

### Prospective observational study of the implications and mechanisms of microalbuminuria in critically ill patients

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**Objectives:** To study the effectiveness of microalbuminuria (MA), a marker of endothelial dysfunction, in delineating sepsis from systemic inflammatory response syndrome (SIRS), the role of vascular endothelial growth factor (VEGF)/soluble fms-like tyrosine kinase (sFlt) in its pathophysiology and its clinical implications. **Materials and Methods:** Setting: Multi-specialty intensive care unit (ICU) in a tertiary hospital (AMRI) in Kolkata. Study Duration: 1 year. **Study Design:** Prospective observational study. Inclusion Criteria: Adult patients (>18 years age) with features of systemic inflammatory response syndrome/sepsis admitted to ICU. Exclusion criteria: Patients <18 years age, brought in from other health facilities or transferred from the wards after more than 24 h of in hospital stay, post-surgical patients, those anuric (for the first 6 h of admission), with macroscopic hematuria, hemoglobinuria, pregnant or menstruating women, patients with neoplasm, known cases of CKD and macroalbuminuria. **Methods:** MA, VEGF and sFlt levels were measured on admission and after 24 h in all critically ill patients with SIRS. Clinical data was collated. **Results:** After screening 184 patients with SIRS, 40 were studied-mean age 57 years, 65% male, 72.5% having been admitted to the ICU from home, 76.7% having SIRS due to sepsis. The average acute physiology and chronic health evaluation IV and APS score in groups with SIRS due to sepsis and without and the disease duration were similar. The degree of MA tended to be higher in patients with SIRS due to sepsis (283 vs. 200) and showed a rising trend. MA failed to decrease at 24 h in the subgroup, which went on to develop multi-organ dysfunction, necessitating organ support. Appropriate interventions viz. quicker administration of right antibiotic and fluid resuscitation was associated with a decrease in MA. MA also decreased in the subgroup, who received steroids. Higher doses of insulin, rather than actual glucose level was seen to decrease MA in non-diabetics. A higher ratio of VEGF/sFlt level on admission was associated with greater MA ( $P = 0.0079$ ). However, it was a rising level of sFlt in 24 h, which correlated with mortality. **Conclusions:** MA, a manifestation of endothelial dysfunction, was more in patients with SIRS due to sepsis and those who developed multi organ dysfunction. Interventions like right antibiotic, fluid resuscitation, insulin, steroids, where indicated, helped to decrease MA. A high VEGF/sFlt ratio correlated with higher MA but a rising sFlt portended a poor outcome.

06

### Clinical profile of pancytopenia in adults and its response to therapy

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**Background and Objectives:** To assess the clinical profile of pancytopenia in adults and its response to therapy in Krishna Institute of Medical Sciences, Karad. **Methods:** A total of 50 patients were taken in the study to assess the clinical profile of pancytopenia in adults and its response to therapy. **Results:** Out of 50 patients studied most common cause was megaloblastic anemia followed by hypoplastic/aplastic anemia. **Conclusion:** Megaloblastic anemia due to vitamin B12 and/or folate deficiency seems to reflect the higher prevalence of pancytopenia in Indian subjects. Other important causes of pancytopenia like myelofibrosis, leukemia, malaria should be kept in mind while planning investigations for the complete work-up of pancytopenic patients. Early treatment can be planned depending upon the cause and severity of pancytopenia.

07

### Stroke volume/surrogate like velocity time integral measurement by transthoracic echocardiography and passive leg raising as a preload responsiveness in a mixed ICU: A prospective study

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**Objectives:** This study was to assess the changes in stroke volume (SV) and its surrogate like velocity time integral (VTI aortic) induced by passive leg raising (PLR) measured with transthoracic echocardiography as an indicator of fluid responsiveness in mechanically ventilated patients with severe sepsis. **Materials and Methods:** Totally 30 mechanically ventilated patients with severe sepsis admitted in the mixed intensive care unit of a tertiary level South Indian Hospital between 2012 August to March 2013 were considered. Patients with non-sinus rhythm, pregnancy, raised intracranial pressure and suspected spine injury were excluded. Measurements were obtained supine (baseline) and during PLR by transthoracic Doppler ultrasound device prior to volume expansion (VE). Measurements were repeated following VE (500 ml of 0.9% normal saline). The change in SV from baseline during PLR was compared with change in SV with VE to determine the ability of PLR in conjunction with SV measurement to predict volume responsiveness. **Results:** Out of 30 patients, 20 were responders (change in SV over 15%) and 10 were non-responders. Among the responders, changes in variables like SV index (SVI) (ml/m<sup>2</sup>), systolic ambulatory blood pressure (ABP) (mmHg), diastolic ABP and mean ABP were significant ( $33.4 \pm 8.2$ ,  $40.6 \pm 11.4$ ,  $P = 0.007$ ;  $100.2 \pm 16.5$  vs.  $116.6 \pm 21.7$ ,  $P = 0.02$ ;  $54.5 \pm 10.4$  vs.  $66.3 \pm 10.7$ ,  $P = 0.005$ ;  $67.5 \pm 11.7$  vs.  $79.9 \pm 12.8$ ,  $P = 0.008$ ). Notably the central venous pressure (CVP) mean, among the responders was statistically significant ( $6.8 \pm 2.8$  vs.  $12.8 \pm 3.6$ ,  $P = 0.001$ ). Post PLR, the area under curve and the receiver operating characteristic curve of change in SVI and change in CVP mean for predicting the responsiveness after VE were  $0.881 \pm 0.065$  (95% confidence interval [CI] = 0.759-1.000) and  $0.801 \pm 0.077$  (95% CI = 0.650-0.969) respectively. The change in SVI of 8.8% predicted fluid responsiveness with a sensitivity of 72.7% and specificity of 80%; whereas the change in CVP mean of 12.7% predicted fluid responsiveness had the same sensitivity and specificity. **Conclusion:** PLR induced changes in SVI/VTI and the change in CVP mean are reliable indices for predicting fluid responsiveness in mechanically ventilated patients. Changes in CVP mean is more predictive of preload than other static indicators.

**o8****Evaluation of a training program for critical care nurses in Saudi Arabia**

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**Aim:** The aim of this study was to evaluate the impact of a specific on job training programme (OJTP) for nurses in the critical care in order to improve the nurses' performance. **Methods:** The study has a quasi-experimental quantitative design with pre-post assessments. It was conducted at King Fahd Hospital in Jeddah, Saudi Arabia. In total,  $n = 75$  nurses with direct patient care in the critical units were included in the study;  $n = 25$  from emergency room,  $n = 25$  from the intensive care unit, and  $n = 25$  from the burn unit. Data collection was performed by measuring the nurses' performance before and after attending the OJTP through nursing performance competency checklist for using of mechanical ventilator and suction machine. **Results:** The results show that the majority (54.7%) of nurses were satisfied and (62.7%) feel competent after attending the OJTP. The present study findings demonstrate that the provision of an on-job training program can have a positive impact on the performance of the nurses working in critical care units. This leads to acceptance of the alternative research hypotheses of the study. Certain factors have been identified by the study that may predict the magnitude of improvement in nurses' scores following implementation of the training program. **Conclusions:** It is concluded that the OJTP is effective in improving knowledge, attitude, and performance

among the nurses. The nurses were satisfied with the training content, process, and outcome, and they feel more competent and more confident to provide care after implementation of the training programme. Conversely, it shows the need for enough time to be taken to meet the nurses' satisfaction with the training programme.

**o9****Risk factors affecting the prognosis in patients with pulmonary contusions**

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**Objective:** The present study was done to assess the outcome of pulmonary contusions and various factors determining mortality in these patients. **Materials and Methods:** A retrospective case study over a period of 1 year of all trauma cases with pulmonary contusions confirmed by X-rays or computed tomography scan of thorax, were included in the study. All the cases were assessed for age, associated injuries, acute physiology and chronic health evaluation (APACHE) II score, simplified acute physiology score (SAPS) II, sequential organ failure assessment (SOFA) score, PaO<sub>2</sub>/Fio<sub>2</sub> ratio, fracture of ribs, presence of hemothorax or pneumothorax, ventilator and intensive care unit (ICU) days and finally hospital outcome. **Results:** A total of 16 cases of pulmonary contusions were included in the study. Five patients died during the ICU stay and 11 survived. All patients had associated injuries. There was significant difference seen in APACHE II score ( $P < 0.001$ ), SAPS II ( $P < 0.001$ ), SOFA score ( $P < 0.001$ ), paO<sub>2</sub>/Fio<sub>2</sub> ratio ( $P < 0.022$ ) and ventilator days ( $P < 0.001$ ) among the survivors and non-survivors. However, no significant difference was seen in the presence of fracture of ribs and presence of either hemothorax or pneumothorax. **Conclusion:** The risk factors that were associated with higher mortality in patients with pulmonary contusions were APACHE II score, SAPS II, SOFA score, PaO<sub>2</sub>/Fio<sub>2</sub> ratio and ventilator days. Close monitoring to improve the gas exchange and better fluid management will help in improving the survival in these patients.

**10****Hypertonic saline in head injury: Trend of use in United Kingdom**

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**Objective:** Hypertonic saline solutions have received renewed attention as effective agents for the treatment of cerebral edema and in brain resuscitation in a variety of brain injury paradigms. With an established trauma system, hypertonic saline added to conventional fluid resuscitation did not improve long-term outcome in multiple injury with hypotension and brain trauma. In intensive care, hypertonic saline reduced intracranial hypertension after subarachnoid hemorrhage, brain trauma, and a variety of other brain diseases, including cerebral edema in acute liver failure. **Materials and Methods:** A telephonic survey was conducted in the established adult neurosurgical units in the UK, they were asked to complete a short standardised survey about their use of hypertonic saline. **Results:** Of the 26 adult units where the data was obtained, 18 used a standardised protocol for managing head injured patients. 70% of the units used hypertonic saline. However, its use is varied from first line pharmacological therapy to use for otherwise intractable cases. 16% of the units only used it for the first 48 h whilst the majority used it beyond this time frame. 60% of the units mandatorily used intracranial pressure monitoring while using hypertonic saline, practice was variable among other centres. Few centers have used numerical values of intracranial pressure for its use and discontinuation. The

general impression was that most units rely on global assessment of the patient's clinical, physiological, and biochemical parameters to guide on-going treatment. **Discussion:** We conclude that there is very variable practice in the use of hypertonic saline between and sometimes within neurosurgical centres. This practice is reiterated by the lack of large scale clinical trials in comparison to mannitol particularly for periods longer than 48 h. The bulk of the data exists for traumatic brain injury, although most of these data are from observational and retrospective analyses, which do not allow for an evaluation of the impact of hypertonic saline on clinical outcomes. Since hypertonic saline has a high risk of injury with inappropriate administration and is considered a "high-alert" drug, safety issues surrounding its dispensing and administration must be considered. Randomized outcome trials comparing mannitol with hypertonic saline in various subpopulations of neurologic injury would add valuable information to the literature and provide a basis for the establishment of best clinical practices. **Conclusion:** Hypertonic saline solutions have evolved as an alternative to mannitol or may be used in otherwise refractory intracranial hypertension to treat raised intracranial pressure. With high osmolar loads, the efficacy of the solution is enhanced, but no simple relationship between the saline concentration and the clinical effects of a solution is established. Whether used as an initial treatment for elevated intracranial pressure or as a rescue therapy for refractory intracranial hypertension, hypertonic saline appears to offer an additional means for lowering intracranial pressure and may provide a bridge to surgical decompression.

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### Predictors of malignant middle cerebral artery infarction in acute stroke

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**Objective:** Space occupying malignant middle cerebral artery (MCA) infarctions are still one of the most devastating forms of ischemic stroke with mortality of up to 80% in untreated patients. Early identification of patients at risk of malignant MCA is needed to enable timely decision for potential lifesaving treatment such as decompressive hemicraniectomy (DC). **Materials and Methods:** To evaluate characteristics of patients with MCA infarctions, admitted in a neuro intensive care unit, a retrospective review of medical records of 130 patients hospitalized with a principal diagnosis of stroke was carried out between August 2012 and August 2013. **Results:** Of 130 patients included 12 (11%) developed malignant MCA infarction (mean age  $74 \pm 4$  years, 60% were men). Six of the 12 (50%) underwent DC. The following parameters were identified as independent predictors of malignant MCA infarctions: National institutes of health stroke scale (NIHSS) on admission and 24 h, atrial fibrillation, Glasgow coma scale, blood glucose levels, blood cholesterol levels and male sex. The only variable that remained significant predictors of poor outcome was NIHSS score (odds ratio 1.3 per point increase in score). The mean NIHSS score was 5 (range 0-34). Modified Rankin scale was 4.5. Mortality was 60% in malignant MCA infarctions. **Discussion:** A recent Cochrane review concluded that DC improves survival compared with medical management, but that a higher proportion of DC survivors experience moderately severe or severe disability. Many questions concerning DC in malignant MCA infarction remain open: The definition of a malignant MCA infarct within the 1<sup>st</sup> h, optimal timing of surgery, quality of life and acceptance of remaining disability, the role of aphasia in patients with dominant hemispheric infarcts, the effect of age, and the influence of the pre-morbid status on decision making. **Conclusion:** Many predictors must be considered in patients with malignant MCA infarctions, DC is aggressive but life saving and should be evaluated as a valid treatment option. NIHSS score on admission can be used to predict outcome among other factors in such situations.

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### Admission hypomagnesemia: Impact on morbidity and mortality in critically ill patients

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Hypomagnesemia is a common but an under-diagnosed electrolyte abnormality in the intensive care unit (ICU). **Aims and Objectives:** To study the prevalence of serum magnesium abnormalities on admission in ICU and its correlation with patient's outcome considering the following parameters: Length of stay in medical ICU (MICU), need and duration of ventilatory support, acute physiology and chronic health evaluation (APACHE) score and mortality. To identify the factors predisposing or contributing to hypomagnesemia. To detect other electrolyte abnormalities associated with hypomagnesemia. **Methods:** A prospective study was done on 100 patients, admitted to MICU at the tertiary care hospital over 2 years period. Observations were made on admission total serum magnesium level, other laboratory tests, need for ventilator, duration of mechanical ventilation, ICU length of stay, and general patient demographics. **Results:** On admission to MICU 16% patients had hypomagnesemia, 10% had hypermagnesemia and 74% had normomagnesemia. There was significant difference in mortality rate (56.25% vs. 21.62%) and need for ventilatory support (62% vs. 32%) in hypomagnesemic patients. The duration of mechanical ventilation (2.70 vs. 1.91 days), stay in the MICU (3.31 vs. 3.05 days) or mean APACHE score on admission did not vary significantly between the two groups of patients. The prevalence of sepsis (62.50% vs. 27.03%), hypokalemia (37.50% vs. 29.73) and diabetes mellitus (56.25% vs. 21.62%) was significantly more in hypomagnesemic patients. **Conclusion:** The patients with hypomagnesemia had higher mortality rate, more frequent need of ventilatory support and was commonly associated with sepsis, diabetes mellitus and hypokalemia. The duration of ventilatory support or MICU stay and APACHE score on admission did not vary in patients with low or normal magnesium.

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### Pulsatile chest wall swelling, a diagnostic dilemma

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**Introduction:** Pulsatile chest wall lesions are usually either chest wall related vascular tumors or intra-thoracic lesions with extensions in to the chest wall. Here we present a 42-year-old patient with a pulsatile chest wall lesion, which turned out to be an abscess in close proximity to the heart, at the time of surgery. **Case Report:** A 42-year-old male patient with a past history of closed mitral valvotomy for severe mitral stenosis presented with symptoms of increasing shortness of breath. Clinically, in addition to severe mitral stenosis, there was a 5 cm × 5 cm pulsatile lesion over the maximal cardiac impulse. This was fluctuant and non-tender. Trans-thoracic echocardiogram confirmed severe mitral stenosis. There was evidence of significant pulmonary hypertension. Doppler suggested a possible flow of blood in to the chest wall lesion raising the possibility of ventricular aneurysm. Computed tomography (CT) scan of the chest with contrast revealed a collection of fluid anterior to the right ventricle. At the time of surgery a moderate collection of purulent material was seen at the entrance site of previous mitral valvotomy. After evacuation of the purulent material mitral-valve replacement with a St. Jude valve was carried out. Post-operative recovery was uneventful. Gram stain and cultures were negative for bacteria. Polymerase chain

reaction for mycobacterium tuberculosis and non-tuberculous mycobacteria was negative. **Conclusion:** No clear infective etiology could be ascertained in this patient. We strongly suspect that the purulent collection was secondary to a burnt out infection introduced at the time of mitral valvotomy 10 years ago. Trans-thoracic echo cardiogram can be misleading and CT imaging can be diagnostic in these cases.

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### Paranglioma: An unusual presentation

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Pheochromocytoma is a rare catecholamine secreting neuroendocrine tumor with an estimated annual incidence of 1-4/million and prevalence among hypertensive patients of 0.1-0.6%. The symptoms and signs of pheochromocytoma include the classic triad of episodic headache, increased sweating and palpitations. We report the case of young female presenting with unusual symptoms with anemia, acute onset breathlessness, following symptoms of acute gastroenteritis, hypertension with cold peripheries, hypoglycemia and drowsiness confounding clinical diagnosis, subsequent evaluation with electrocardiogram, echocardiography, chest skiagram, ultrasonography, renal Doppler, blood investigations (serum metanephrines) and computed tomography of the abdomen revealed the diagnosis of paranglioma or extraadrenal pheochromocytoma. She was initially treated for left ventricular failure with non invasive ventilation and diuretics and dobutamine infusion. She was stabilized and subsequently after treatment with prazosin, hydration and betablockers for a week. Patient underwent excision of paranglioma successfully and was discharged with follow-up to the hospital. Unfortunately pheochromocytoma often remains undiagnosed, given the ample diagnostic tools and good prognosis when treated suitably, the diagnosis should be entertained early in patient presenting with unexplained cardiovascular compromise.

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### Peri-operative and early post-operative complications of liver transplantation in pediatric intensive care unit: A single center study

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The post-operative care of orthotropic liver transplantation (OLT) is complex and needs meticulous monitoring and skilled management to avoid morbidity and early mortality. **Objective:** To determine the peri-operative complications in the recipients of OLT. **Study Design:** Retrospective study. **Subjects and Methods:** Totally 60 consecutive patients underwent OLT from January 2003 to August 2013 at our institution were included. Medical records were reviewed and the clinical and laboratory data were collected and divided into pre-, intra- and post-operative periods. **Results:** A total of 60 patients (35 males) underwent OLT. All transplantations except one were live donor. The median age of recipients was 6 years (range 4 month-16 years). Extrahepatic biliary atresia and Wilson's disease were the common indications in 20 (33.3%) and 16 (26.7%) patients respectively. 10 children required vasoactive during surgery. Hypokalemia (48.3%) and hyperglycemia (53.3%) were common intraoperative metabolic problems. Mean  $\pm$  standard deviation duration of ventilation in post-operative period was 34.7  $\pm$  51.5 h. 41 (68.3%) patients were extubated  $\leq$ 24 h and six required re-intubation. Pleural effusion was the commonest respiratory complication (71%). The arterial hypertension was recorded in 21

(35%) while inotropic support was required in 18 patients (30%). Oliguria developed in 16 (26.6%) patients. There were four graft rejection episodes. The hepatic artery and portal vein thrombosis occurred in two and four cases respectively. 12 patients had culture positive blood stream infections. Seven children required re-operations. There were only four deaths in the study cohort. **Conclusion:** Meticulous, invasive monitoring of all body systems in the perioperative period is required to detect various complications early, and possibly reduce morbidity and mortality.

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### An innovative equipment for infection control in intensive care units

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**Objectives:** Infection control in intensive care units (ICUs) is a concern the world over. Various modalities from simple hand hygiene to costly antibiotics exist. But one simple and scientific fact has been unnoticed until date, that the air exhaled by patients harboring multidrug-resistant and other microorganisms, is released by ventilators into ICU atmosphere itself. This increases infection in ICU atmosphere and poses a risk to other patients. We intended to develop fully indigenous equipment which is an innovation in critical care, which can effectively scavenge contaminated ventilator air. **Materials and Methods:** Some parts of the ventilator are neither disposable nor sterilizable. Over time, microorganisms accumulate in ventilator and act as a source of infection and also contaminate ICU air. This was demonstrated by exposing microbiological culture plates to air from expiratory port of ventilator, whereby dense growth of pathogenic microorganisms was observed. The present prototype of the equipment is totally self-made. It has a mechanism of controlled negative pressure, active and passive systems and various alarms and is versatile to be used with any ventilator. **Results:** This equipment captures the whole of contaminated exhaled air from the expiratory port of the ventilator and directs it out of the ICU space. Thus does not allow contaminated ventilator air to release into the ICU atmosphere. Therefore, there is no chance of exposure of other patients to contaminated air. **Conclusion:** The equipment is first of its kind the world over and is already under patent process. It has rightly been called ICU ventilator air removal system. It holds a chance that this technique will gain widespread acceptance shall find use in all the ventilators in most of the ICUs throughout the world.

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### To study the mortality and morbidity of dengue fever in tertiary care center

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**Objective:** Dengue experience during monsoon in Mumbai suburban tertiary care centre. **Methodology:** Retrospective audit of 106 patients admitted with dengue from 1<sup>st</sup> July 2013-31<sup>st</sup> October 2013. Analysis of diagnostic test, hemoglobin, hematocrit, platelet count, fluid received, platelet transfusion, triggers for platelet transfusion, length of stay and outcome was performed. **Result:** A total of 106 patients were admitted during the study period, 43 were in intensive care unit (ICU) and 63 in wards. Diagnosis confirmed with nonstructural protein 1 (NS1) or immunoglobulin M (IgM) dengue, 69 patients were NS1 positive, 29 patients were IgM positive and eight patients were positive to both. Male:female ratio was 1.5:1. The mean hemoglobin was 13.39 g/dl (standard deviation [SD]  $\pm$  1.93), mean hematocrit was 39.52% (SD  $\pm$  4.77), and mean platelet count was 126.16\*10<sup>3</sup>/ $\mu$ l (SD  $\pm$  60.79), patient received a

mean intravenous fluid of 1226.09 ml/day (SD  $\pm$  682.93), mean oral intake/day was 1337.91 ml (SD  $\pm$  494.53), average length of stay was 6.7 days (SD  $\pm$  3.39). Seven patients received platelet transfusion, the main trigger for platelet transfusion was count of  $22 \times 10^3/\mu\text{l}$ , mean hematocrit of patient who received platelet transfusion was 40.57% (SD  $\pm$  7.08), average length of stay who received platelet transfusion was 9.7 days (SD  $\pm$  4.45). All the patients who received platelet transfusion were in ICU. We had one death. **Conclusion:** This year we had unusually high no of confirmed dengue cases in our hospital, of which 40% require intensive care. ICU admission are associated with platelet transfusion and increase in length of stay by 3 days, also patients who had high hematocrit level ( $\leq 40$ ) has increase length of stay by 1 day.

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### Severe suicidal digoxin and propranolol toxicity with insulin overdose: A case report

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**Case:** We present a case of a 32-year-old male doctor, with type I diabetes mellitus on daily insulin therapy, who allegedly consumed large doses of digoxin and propranolol along with simultaneous administration of large dose of insulin with suicidal intent. Initial investigations revealed serum digoxin levels of 7.5 ng/ml, serum insulin 500  $\mu\text{IU/ml}$ , serum C-peptide 0.43 ng/ml. Digoxin-specific antibody fragments are considered first-line therapy, but it is not available in India. He was managed with charcoal-based hemoperfusion for digoxin overdose along with infusion of glucagon for propranolol overdose. His blood sugar levels were maintained with continuous infusion of 20% dextrose till the patient was allowed to take oral diet. Significant clinical improvement was noticed with this therapy which was evident by progressively declining serum digoxin levels, normalization of pulse rate and adequate blood glucose levels. Finally, with a good hemodynamic profile and a serum digoxin level well within normal limits, he was discharged following consultation with a psychiatrist. **Conclusion:** Thus, we successfully managed this case of multiple drug overdose using specific pharmacologic therapy, hemoperfusion along with basic supportive measures.

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### Hypercarbia: A predictor of outcome for severe scrub typhus infection

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**Aim:** Scrub typhus is one of the differential diagnoses of hemorrhagic fevers with jaundice and/or renal failure. We studied clinical parameters of patients with scrub typhus admitted in intensive care unit (ICU) of tertiary care hospital. **Method:** It is retrospective analysis of patients admitted in ICU over period of 2 months and confirmed with enzyme-linked immunosorbent assay (ELISA) kit for immunoglobulin M (IgM) antibody against *Orientia tsutsugamushi*. **Results:** A total of 38 patients were studied who were positive with IgM ELISA. Out of these 18 (47%) were male. Mean age of the presentation was  $38 \pm 14$  years common symptoms on presentation were fever, body ache, jaundice, breathlessness and rash similar to earlier studies. Mean duration of symptoms was  $8 \pm 2$  days as some patient presented late to hospital (15 day). A total of 15 patient were found positive for dengue IgM ELISA. Out of all, 14 ( $n = 14.37\%$ ) patients expired. Mean  $\text{PaO}_2/\text{FiO}_2$  ratio on admission was  $250 \pm 85$  in patients who survived while it was low ( $163 \pm 30$ ) in expired group. Mean  $\text{PCO}_2$  level on admission was

high in expired group ( $48 \pm 11$  mmHg) as compared to survived patients ( $37 \pm 6$  mmHg). This suggest that non survivors not only had an impaired oxygenation but also impaired ventilation. 36 patients (94%) had lung involvement. Chest X-ray showed bilateral involvement in 36 patients. Ventilatory support was required by eighteen patients ( $n = 18, 47\%$ ). Among expired patients ( $n = 14$ ), hypercarbia and dengue co-infection were significantly associated with mortality.  $\text{PCO}_2$  on admission was high in 72% ( $n = 10$ ) among expired group. Nine patients (62%) among expired group had dengue co-infection. **Conclusion:** Hypercarbia on admission and dengue co-infection were significantly associated with mortality in scrub typhus infection.

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### Deep vein thrombosis in medical ICU patients; incidence and risk factors

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**Introduction:** Undiagnosed deep vein thrombosis in intensive care units (ICUs) remains a risk factor contributing to mortality and morbidity in ICU patients. There is a paucity of data reflecting the incidence of deep vein thrombosis (DVT) upon admission to ICU in the Indian scenario. **Objective:** To determine the incidence and risk factors for lower extremity DVT. **Methods:** Prospective observational study in medical ICU. We enrolled patients admitted to ICU for 1 year (1<sup>st</sup> November 2012 to 30<sup>th</sup> October 2013). Inclusion criteria  $>18$  years of age, expected to be in ICU for  $>48$  h. Exclusion criteria were; post-operative patients, diagnosed pulmonary embolism/DVT on anticoagulants, patients with valvular heart disease/valve replacement on anticoagulants, recently (within 48 h) thrombolysed patients or acute myocardial infarction and acute stroke (cerebro vascular accident). Additional exclusions included pregnancy, coagulation disorders and terminally ill patients. **Interventions:** bilateral lower extremity ultrasound by compression, augmentation of flow and color Doppler within 48 h of ICU admission, thereafter twice weekly and if venous thromboembolism was clinically suspected. Thromboprophylaxis was protocol directed and was universal. We recorded DVT risk factors and acute physiology and chronic health evaluation (APACHE) IV score at baseline. Patients were followed to ICU discharge and death. **Results:** Of the 122 patients enrolled, two developed DVT. All patients received DVT prophylaxis as per their risk score. The mean age was  $60.43 (\pm 16.79)$  years. All the DVT positive patients despite the higher use low-molecular-weight heparin ( $P = 0.01$ ) were asymptomatic and diagnosed exclusively by Doppler screening. The incidence of DVT was 1.60% (95% confidence interval; 0.78-0.81). The higher DVT risk score ([DVT positive 9.0/DVT negative 8.39  $\pm 2.91$ ]  $P = 0.02$ ), APACHE IV score ([DVT positive  $70.0 \pm 3.54$ /DVT negative  $46.71 \pm 19.34$ ]  $P = 0.02$ ) and prolonged use of mechanical ventilation (DVT positive 12.00/DVT negative  $8.40 \pm 11.57$ ) were found to be associated with DVT. Mortality was higher in DVT positive patients. **Conclusions:** In our study, the incidence of DVT was 1.6% despite prophylaxis. High DVT risk score, APACHE IV score and prolonged mechanical ventilation were the risk factors found to be associated with DVT. Doppler screening is a good tool to diagnose DVT.

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### Recent MCA territory ischemic stroke thrombolysed with rt-PA successfully

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**Background:** World Health Organization defines stroke as a "neurological deficit of cerebrovascular cause that persists beyond 24 h or is interrupted by death within 24 h" that could be ischemic

or hemorrhagic. Ischemic stroke occurs because of a loss of blood supply to part of the brain. Brain tissue ceases to function if deprived of O<sub>2</sub> for more than 60-90 s, and after approximately 3 h will suffer irreversible injury possibly leading to death of the tissue. **Case:** We report a case Mr. Anand Rao, 58 year old, right handed retired Income tax officer presented with complains of recent onset (within 2 h) left side upper limb and lower limb progressive weakness with deviation of the angle of mouth towards right side and slurring of speech; with no h/o level of consciousness, seizure in euglycemic normotensive denies addiction taking mixed diet with regular bowel and bladder. O/E- pulse 88/min, blood pressure 140/86 mmHg. Systemic examination: Within normal limits (WNL). **Central Nervous System:** Conscious, oriented with dysarthria; left 7<sup>th</sup> (facial) upper motor neuron palsy with left hemiparesis (power 2/5 in upper limb and lower limb) with absent reflexes and planter dorsal flexion response. Glasgow coma scale 11 national institutes of health stroke scale 8. **Lab Investigation:** Capillary blood count, platelets, prothrombin time/international normalized ratio, S. Creat, random blood sugar - WNL. Electrocardiography- sinus normal rhythm. **Computed Tomography:** No signs of intracranial bleed. Magnetic resonance imaging: Right middle cerebral artery (MCA) territory infarct. Intervention: Under high risk patient have been thrombolysed with injection acylase 0.9 mg/kg i.e., 50 mg dose in 55 kg individual (10% to be given bolus and rest 90% given in an hour). **Outcome:** Patient recovered well with minimal residual left 7<sup>th</sup> cranial nerve and upper limb weakness at time of discharge after 5<sup>th</sup> day of thrombolysis. **Conclusion:** Successful recovery of the recent MCA territory Infarct by thrombolysis with rt - PA.

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### Diagnostic and therapeutic challenges in management of uncommon herbicide pesticide poisoning-Nims experience

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**Introduction:** Deliberate/accidental overdose and poisoning contributes to significant portion of acute medical workload in hospitals, dominated by organophosphate pesticides. Despite widespread availability, reports of herbicide pesticide poisoning from India are uncommon and highly under-reported. Diagnosis is often difficult in absence of proper history, nonspecific clinical features, lack of diagnostic tests besides lack of information concerning antidotes amongst clinicians/intensivists. **Aim of Study:** To study the clinical profile of patients admitted with "unknown poisoning" posing diagnostic and therapeutic challenges during management in the emergency room (ER)/medical intensive care unit (ICU) of our multi-specialty tertiary care university referral teaching hospital. We report a total of four cases admitted in the ER/medical ICU of NIMS, Hyderabad during the period from July to November 13, with male:female ratio of 3:1 in the age range of 18-38 years, mostly. Being referred from other hospitals with confused clinical picture. **Clinical Profile and Results:** The herbicides ingested included: (1) "Cartap hydrochloride", a commonly used low toxicity insecticide, the patient presented with vomiting and after decontamination was treated with conservative measures and with specific antidote - injection bronchoalveolar lavage with uneventful recovery and discharged. (2) "Green top" - a biopesticide with hydrolyzed yeast extract with fillers/media; the patient presented with recurrent vomiting, altered sensorium and seizures, was intubated with ventilatory support along with methaemoglobinemia which was treated and discharged uneventfully. (3) "N-Kick" poisoning - patient presented with progressive cyanosis, jaundice slumped to fulminant hepatic failure/hepatic encephalopathy, methaemoglobinemia and

renal failure and succumbed despite intensive care measures. (4) "Paraquat" poisoning - patient presented with recurrent vomitings with renal failure and respiratory distress, however had to be discharged on request (leave against medical advice). The presentation and clinical profile would be discussed highlighting the diagnostic and therapeutic challenges calling for syndromic management. **Conclusion:** There is an urgent need for increased awareness amongst clinicians/intensivists of unusual poisonings in the ER/medical ICU settings besides establishing early diagnosis by meticulous history taking, to pursue aggressive decontamination and institute comprehensive intensive care/supportive measures in salvaging lives.

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### Stevens-Johnson syndrome: Case series with review of recent culprit drugs and treatment options

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Stevens Johnson syndrome (SJS) and toxic epidermal necrolysis are rare but severe adverse drug reactions. The exact mechanism of SJS is still not known but primarily it is immunogenic phenomenon involving type 1 and 4 hypersensitivity reactions resulting in extensive keratinocyte apoptosis ultimately leading to sloughing of dermal epidermal junction. We present here eight cases of SJS due to various drugs. On the basis of reported cases, we will review the most commonly associated drugs, and treatment options in these severe life-threatening diseases. We will especially discuss the controversial systemic corticosteroid, intravenous immunoglobulin therapy, cyclosporine and the supportive care.

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### Extracorporeal membrane oxygenation: A hope for ILD exacerbations with a possible reversible pathology

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**Introduction:** Idiopathic pulmonary fibrosis (IPF) is a chronic, fibrosing interstitial lung disease. The prognosis of IPF is poor, with a median survival time after diagnosis of 2-3 years. We report a case of 56-year-old lady, who was a known case of IPF from last 2 years, who presented with infective exacerbation. **Case Report:** A 55-year-old female, a known case of IPF since last 2 years, presented with increased breathlessness since last 4-5 days, along with L/G fever, cough with expectoration. Her chest X-ray (CXR) was deteriorating progressively every day and on the 3<sup>rd</sup> day, her CXR was totally whiteout bilaterally. It was a dilemma of whether to ventilate this patient or not. Patient was ventilated and venovenous extracorporeal membrane oxygenation (VV ECMO) was applied to this patient. Patient's CXR started improving from day-2. On day-4 of ECMO, patient was extubated back to bi-level positive airway pressure. On day-7, ECMO was decannulated and on 15<sup>th</sup> day of admission, patient was discharged from hospital. **Discussion:** Studies have suggested mechanical ventilation for acute respiratory failure in IPF patients was associated either with very high mortality, poor short and long-term prognosis or no improvement with mechanical ventilation. ECMO in adult respiratory failure: Mechanical circulatory support has evolved markedly over recent years. ECMO is instituted for the management of life threatening pulmonary or cardiac failure (or both), when no other form of treatment is likely to be successful. **Conclusions:** IPF is a progressive disease and all patients deteriorate over time. If the exacerbation is possibly due to some reversible cause, buying time

with VV ECMO is definitely a lifesaving option and reversibility to the baseline level is a possibility and it should be given a chance.

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**Delay in initiation of nutrition for patients admitted in intensive care unit**

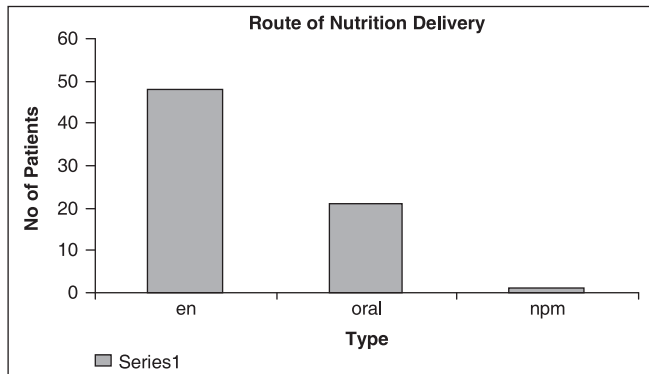
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**Introduction:** Most nutrition guidelines (ASPEN and ESPEN) recommend starting of enteral nutrition within 48 h of intensive care unit (ICU) admission to prevent calorie debt and improve outcome. Early use of the gut has also shown to have other advantages like less infectious complications and less problems related to hypomotility of the gut. Feeding the gut also reduces transmucosal migration of bacteria and fungus from the intestine to the blood stream. We did a retrospective audit to find out the current practices regarding starting nutrition in our ICU and the type of nutrition prescribed. **Methods:** We conducted a retrospective study between 1<sup>st</sup> July 2013 and 31<sup>st</sup> August 2013 at a tertiary care hospital. Baseline demographics, nutritional status, type of nutrition, average delay in starting nutrition and primary diagnosis were recorded and analyzed. Patients were followed for first 48 h of ICU admission. Our population included all admissions to the 20 bedded medical-surgical ICU over the 2 month period excluding those who had a stay for <48 h due to transfer, discharge or death. **Results:** A total of 70 patients were studied out of which 69 patients received nutrition within 48 h of ICU admission and one patient was kept NPM due to abdominal distention from advanced malignancy. EN was given predominantly to 48% of patients and 21% received oral nutrition. Total parenteral nutrition was not offered to any patient within 48 h of ICU admission. Subjective global assessment revealed that 37% of the patients were nourished, 43% moderately malnourished and the rest 20% were severely malnourished on admission. Median time of EN initiation was 19 h and oral nutrition was 9 h.

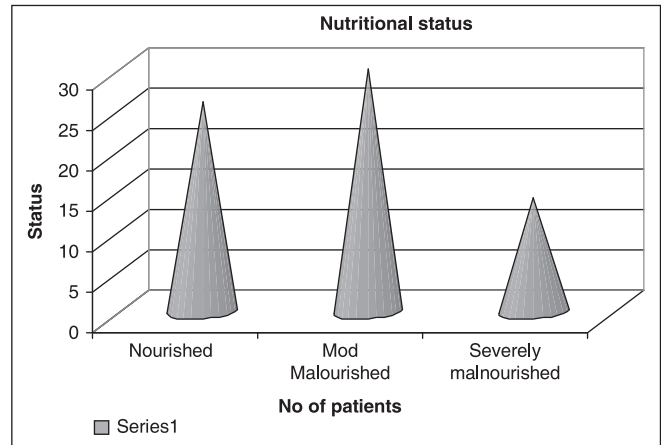
**Table 1: Type of nutrition**

Type of nutrition	No. of patients	Percentage
Enteral nutrition	48	69
Oral nutrition	21	30
Parenteral	—	—
NPM	1	1



**Table 2: Nutritional status**

Nutritional status	No. of patients	Percentage
Nourished	26	37
Moderately malnourished	30	43
Severely malnourished	14	20



**Table 3: Initiation of nutrition after admission**

Type	Median	Mean
Enteral	19 h	19 h
Oral	9 h	13 h
Parenteral	—	—

**Conclusion:** Our study revealed that nutrition practices in our ICU are in line with the standard recommendations and the common mode of delivery of nutrition in the ICU is through enteral route, which is started on an average 19 h after admission.

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**Management of acute renal failure in post-cabg patient with diabetic nephropathy: For paper presentation**

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**Introduction:** Patients undergoing cardiac, vascular and major abdominal surgery and those with pre-operative renal insufficiency are at increased risk for developing post-operative acute renal failure. Pre-renal azotemia and ischemic acute tubular necrosis are the predominant causes. **Objectives:** This case report signifies the need for proper pre-operative evaluation and prophylactic measures to reduce the incidence of perioperative renal failure in post coronary artery bypass grafting (CABG) patients with diabetic nephropathy and also discourages common use of “renal dose dopamine”, loop diuretics and mannitol. **Materials and Methods:** A 43-year-old female patient weighing 53 kg diagnosed with triple vessel disease and advised CABG. She is a known patient of type II diabetes mellitus with nephropathy and neuropathy, hypertension with endogenous depression. Patient developed acute on chronic renal failure post-operatively. Even though patient responded to fluid challenge, diuretics and mannitol initially, patient got deteriorated once again leading to renal shut down. It is at this juncture that the need for maintenance of adequate renal perfusion was given significant priority and thence maintained the same leading to significant improvement of urine output and patient’s clinical condition. **Results:** Patient was thus successfully managed by ensuring adequate intravascular volume to maintain renal perfusion. **Conclusion:** Acute kidney injury is one of the most common complications following cardiac surgery, particularly in high-risk patients. Clinicians must be conscious of individual patient’s risks and recognize early signs of acute kidney injury in order to optimize treatment and limit sequelae.

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**Clinical profile and outcomes in critically ill patients with febrile thrombocytopenia**



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**Objectives:** We aimed to study the clinical profile and outcomes of patients admitted to our multidisciplinary intensive care unit (ICU) with febrile thrombocytopenia. **Materials and Methods:** We prospectively collected data on patients admitted with febrile thrombocytopenia over a 6 month period, including patient demographics, acute physiology and chronic health evaluation (APACHE) and sequential organ failure assessment (SOFA) scores, ventilation days, requirement for renal replacement therapy, ICU days and mortality. Multivariate logistic regression analysis was performed to identify independent predictors of mortality. **Results:** Seventy one patients were admitted with febrile thrombocytopenia during the study period with a mean age of 42.4 years ( $\pm 14.8$ ). 55 patients (77.5%) were diagnosed to have dengue fever by nonstructural protein 1 antigen or immunoglobulin M. The Median APACHE II score was 13 (8.5-19.5). Overall mortality was (22.5%). Organ dysfunction defined as the worst SOFA score of two or more included coagulation (95.8%) liver (62%), cardiovascular (47.9%), respiratory (43.7%), neurological dysfunction (36.6%). The median platelet count was 15,000 (9000-30,500); 39 (54.9%) patients required platelet transfusion. 26 patients (36.6%) required invasive ventilation, whereas 3 (4.2%) patients were managed with non-invasive ventilation. The median ICU stay was 3 (2-5) and ventilation days was 3 (2-4) days. On multivariate logistic regression, APACHE II score of more than 20, lowest platelet count of <20,000, requirement for renal replacement therapy and neurological failure by SOFA score were independent predictors of mortality. **Conclusion:** Dengue virus infection was a common cause of febrile thrombocytopenia associated with multi-organ failure, requiring intensive care. Higher APACHE scores, low platelet counts and neurological failure predicted mortality.

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### Oil immersion induced chemical pneumonitis

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**Introduction:** Chemical pneumonitis is caused by aspiration or inhaling irritants, but by oil immersion due to accidental fall in the oil tank is unusual. Symptoms range from mild to severe, even life-threatening like acute respiratory distress syndrome, sepsis, multi-organ dysfunction and death. **Case Report:** A 24-year-old male worker had an accidental fall in tank filled with oil, from 20 feet height, presented with severe respiratory distress, intubated at private hospital and referred with intermittent positive pressure ventilation with Ambu's bag. On arrival, patient was tachypneic and hypoxic ( $SpO_2$  85%), so at our setup, after sedation, he was put on controlled ventilation, (pressure regulated volume control mode,  $FiO_2$  50%, tidal volume 450 ml, positive end expiratory pressure 2 cm  $H_2O$ , RR 22/min), saturation improved. Blood investigations were normal.  $PaO_2$  ranged from 65 to 75 mmHg. Chest X-ray and high resolution computed tomography thorax revealed right lower zone pneumonitis and left pneumothorax. Left side implantable cardioverter defibrillator was inserted. Endotracheal secretions remained blackish in color for 6-7 days and smelled like engine oil. Antibiotics - carbapenem, metronidazole, Methylprednisolone 1 g was given intravenous for 5 days. Chest physiotherapy, incentive spirometry and nebulization were continued. On day 6, tracheostomy was done, sedation discontinued and ventilation continued. On day 8, patient had high grade fever and tracheal secretions became musty yellow thick mucoid, white blood cell 20,000/cmm. Antibiotic changed to colistin, rifampicin and doxycycline. Tracheal secretions grew *Acinetobacter baumannii*. Patient was conscious oriented, continuous positive airway pressure and then T-piece trial given. On day 11, weaned off ventilator and tracheostomy tube was removed on day 13, shifted to ward and discharged on 16<sup>th</sup> day with stable

hemodynamics. **Discussion:** Controlled ventilation, antibiotics, tracheostomy, chest physiotherapy and incentive spirometry, steroids improve the outcome of patient with chemical pneumonitis.

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### Clinical data of h1n1 infected patients, 2012-2013

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**Objectives:** The present study aims to assess the clinical parameters, response to treatment, improvement in prognosis and mortality in H1N1 positive patients. **Materials and Methods:** Medical records of H1N1 positive patients confirmed by real time-polymerase chain reaction method, admitted in intensive care unit (ICU) and isolation ward in Sterling Hospital, Rajkot, 2012-2013 were collected, retrospectively studied and analyzed. **Results:** Of total 34 patients, (53%) male and (47%) female, 73.5% were of 31-60 years age and 27% of them had comorbidities, hypertension, diabetes. Oseltamivir 150 mg BD was given to all patients in ICU and isolation wards for 14 days. 12 (35.29%) were co-infected with atypical bacterial infection. Out of 29 (85.3%) patients in ICU, 14 (48.27%) required ventilator support, 4 (13.8%) on non-invasive ventilation and 11 (38%) on oxygen therapy. 50% of patients on ventilator had documented ventilator associated pneumonia with multidrug-resistant microorganisms in tracheal secretions culture. Sedation and neuromuscular blocking agents were given to 13 (92.8%) along with low-molecular-weight heparin (LMWH) on ventilator. Steroids were given to 15 (44.11%) patients. Pregnant female were three, of which two underwent cesarian section and gave birth to live baby, both H1N1 negative, and one female expired. 5 (14.70%) patient had sepsis, acute renal failure and required ionotropes. Complications pneumothorax and pneumomediastinum occurred in 4 (11.76%) patients, pulmonary embolism in 2 (5.88%) patients and was treated with LMWH. 23 (67.64%) patients were discharged, 6 (17.64%) expired and 5 (14.70%) had leave against medical advice. **Conclusion:** The study showed decreased mortality because of early administration of oseltamivir on high index of suspicion in suspected cases of H1N1 viral infection along with antibiotics, proton pump inhibitors, deep vein thrombosis prophylaxis, chest physiotherapy and incentive spirometry. Acute respiratory distress syndrome was treated with ventilator support (high positive end-expiratory pressure, low tidal volume) and with noninvasive positive pressure ventilation.

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### Pressure ulcer prevalence survey in northern tertiary hospital of India based on the European pressure ulcer advisory panel minimum data set

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**Background:** Pressure ulcer is one of the frequent problems encountered among hospitalized patients. Many prevalence studies have been conducted across the globe, but there is a paucity of research on pressure ulcer in Indian subcontinent. **Purpose:** The aim was to identify the prevalence and risk factors of pressure ulcer within the selected medical surgical intensive care patients of large multispecialty tertiary care hospital of northern India. **Design:** A cross sectional point prevalence study. **Methods:** Ethics approval was obtained and study was registered in clinical trial registry of India prior to start of the study. Total patients enrolled in the study were 358. All patients above 18 years of age admitted in medical surgical Intensive care units were included in the study. Patients admitted in emergency, day care were excluded. All patients admitted before midnight on the predetermined day

were included. The Braden scale was used to identify the risk of developing pressure ulcers. European pressure ulcer advisory panel minimum data set was used for the same purpose. **Results:** The overall prevalence rate was 7.8%. The sacrum and the heel were the most common affected sites. Grade III was the most common grade (42.8%). Pressure ulcers were associated with increased length of stay, immobilization, post-operative status, the use of sedatives and mechanical ventilation. **Conclusion:** The pressure ulcer prevalence rate in our hospital was lower than that published in international studies. This data provides background information that may help us in developing protocols for applying effective practices for prevention of pressure ulcers.

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### Post-tracheostomy tracheoesophageal fistula: A rare presentation

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Tracheostomy is one of the oldest surgical procedures known to mankind. Though it is a commonly performed bed-side surgical procedure in the modern day intensive care units, it is not devoid of complications. Acquired ulcerative tracheoesophageal fistula (TEF) is a rare, but potentially fatal complication of tracheostomy. We present a case of ulcerative TEF, with a rare, but characteristic presentation, in a ventilator-dependent, tracheostomized patient, diagnosed with Guillain-Barre syndrome. The patient presented with rapid onset of rhythmic and progressive abdominal distension, with each mechanical ventilator breath. Regular monitoring of tracheostomy or endotracheal tube cuff pressures and volumes, along with prevention and treatment of various predisposing factors are advisable for the prevention of this serious adverse event. This case stresses also on the need of a high index of suspicion for the diagnosis and management of TEF in critically ill patients requiring prolonged invasive mechanical ventilation.

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### Correlation between central venous pressure and pulmonary vascular permeability in patients on mechanical ventilation

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**Context:** Central venous pressure (CVP) monitoring for guided fluid therapy requires central line maintenance which is associated with several complications but is still used widely in the intensive care unit (ICU). **Aims:** This study was done to look for any correlation between CVP and pulmonary vascular permeability (PVP) in critically ill patients on mechanical ventilation and thereby to determine whether PVP can be used as a surrogate for CVP to guide fluid therapy. **Settings and Design:** A prospective observational study was conducted in the ICU of a tertiary care teaching hospital. **Methods:** A total of 50 critically ill patients on mechanical ventilation were included in the study. Central line was placed either in right internal jugular vein or subclavian vein using Seldinger's technique. Peripheral line was secured using a 22 G intravenous catheter either on the dorsum of the hand or in the forearm. CVP and PVP measurements were taken using a water column manometer. Measurements were taken separately after passive leg raising (PLR) of 45° and after 10 mmHg tissue pressure application. **Results:** This study showed a fair correlation between CVP and PVP after a PLR of 45° (correlation coefficient,  $r = 0.479$ ;  $P = 0.0004$ ). Mean CVP was  $11.69 \pm 2.82$  cm H<sub>2</sub>O and mean PVP was  $14.97 \pm 3.33$  cm H<sub>2</sub>O. Bland-Altman analysis showed 95% limits of agreement to be -2.912-9.472. Similarly, good correlation was seen between CVP and PVP after 10 mmHg tissue pressure application (correlation coefficient,  $r = 0.584$ ;  $P < 0.000$ ). Bland-Altman analysis showed 95% limits of agreement to be 0.528-11.97. **Conclusion:** PVP can be used as a surrogate for CVP in critically ill patients on mechanical ventilation

but the degree of edema present in the patients should be carefully considered as it affects the correlation significantly.

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### Management of snake bite victims in a tertiary care intensive care unit in North India

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**Objectives:** To study the clinical profile of snake bite envenomation in a tertiary referral north Indian hospital intensive care unit (ICU). **Methods:** Retrospective case note analysis of all cases of snake bite admitted to the ICU from October 2012 to September 2013. **Results:** A total of 22 snake bite victims got admitted to the ICU from October 2012 to September 2013. Most of the cases were young rural men with a mean age of 31.16 years. The male to female ratio was 18:4. All the snake bites occurred at night when the patients were asleep. Out of a total of 22 cases, some 86.36% (19 cases) got admitted from June 2013 to September 2013. Neuroparalytic features, were seen in all patients and hemostatic abnormalities in none of them. All patients were given anti snake venom (ASV) and mechanical ventilated for a mean period of 3.18 days. The mean dose of the polyvalent antsnake venom was 48.63 vials. None of the patients had any adverse reactions to the ASV like anaphylaxis or urticaria. The mean duration of ICU stay was 4.32 days. **Conclusion:** Snake bites are usually seen in the people of rural areas, construction laborers and farmers working in fields or sleeping outdoors. Most human snake bites occur during the monsoon season because of flooding of the habitat of snakes and their prey.

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### Bedside ultrasound imaging for confirmation of central venous catheter position and to detect complications

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**Objectives:** (1) For placement and confirmation of exact position of central venous catheter. (2) Detection of malposition/migration of catheter. (3) Bedside detection of Pneumothorax (ultrasonography [USG] vs. chest X-ray [CXR]). **Material and methods:** A prospective study was conducted on 100 patients who got admitted in intensive care unit and requiring central venous catheter. During the procedure the correct position and malposition of catheter were noted using saline flush test. Lung ultrasound was done immediately, 2 h and 6 h after procedure and compared with CXR taken after 6 h for detection of pneumothorax. **Results:** 100 patients requiring central venous catheter over a period of 6 months were observed prospectively, all patients underwent internal jugular vein cannulation, 14 patients (14%) had negative flush test (catheter malpositioned/migrated to subclavian vein or coiled back), 10 patients (10%) had high positioned catheters (2 cm above superior venacava and right atrium junction) detected by delayed flush test and none of the patient had pneumothorax as it was not detected by USG lung and CXR. **Conclusion:** Ultrasound is an important tool for placement of central venous catheters. Saline flush test can be used to detect exact position and to detect abnormal location of catheters. Bedside ultrasound lung is equally effective in detecting pneumothorax and can replace CXR which has radiation risk.

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### Apnea testing with continuous positive airway pressure for the diagnosis of brain death in a patient with poor baseline oxygenation status: A case report

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**Objectives:** Apnea testing is a key component in the clinical diagnosis of brain death. Patients with poor baseline oxygenation may not tolerate the standard 8-10 min apnea testing with oxygen insufflation through tracheal tube. No studies have assessed the safety and feasibility of other methods of oxygenation during apnea testing in these type of patients. **Materials and Methods:** Here we safely performed apnea testing in a patient with baseline PaO<sub>2</sub> of 99.1 mm of Hg at 100% oxygen. We used continuous positive airway pressure (CPAP) of 10 cm of H<sub>2</sub>O and 100% oxygen at the flow rate of 12 l/min. **Results:** After 10 min of apnea testing, PaO<sub>2</sub> decreased to 75.7 mm of Hg. There was a significant rise in PaCO<sub>2</sub> and fall in pH, but without hemodynamic instability, arrhythmias or desaturation. Apnea test was positive. **Conclusion:** CPAP can be a valuable, feasible and safe means of oxygenation during apnea testing in patients with poor baseline oxygenation, thus avoiding the need for ancillary tests.

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### Challenges of management of cases with refractory/super refractory convulsive status epilepticus in intensive care unit

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We present 10 cases of refractory/superrefractory statusconvulsive epilepticus which were managed in our intensive care unit (ICU). All of the cases had a prolonged ICU stay. They were ventilated for a long time. The patients were on multiple antiepileptic drugs (AEDs) and anesthetic infusions. The most common challenges that we encountered were: (1) Persistent/break thru seizures. (2) Sepsis - Pneumonia/central line-associated blood stream infection/Urosepsis - Multiple organ dysfunction syndrome. (3) Drug AEDs induced organ dysfunction. (4) Hematological complications/coagulopathies - disseminated intravascular coagulation. (5) Arrhythmias - metabolic/anesthetic infusion related/Sepsis related. (6) Neuropathies/Myopathies. (7) Nutritional - Deficiencies/Ketosis. (8) Bedsores. (9) Cognitive dysfunctions. (10) Diagnostic dilemmas. Apart from the ICU complications, other aspects that were equally challenging were: (1) The emotional and psycho social issues. (2) The financial issues (with average stay of more than 40-50 days). (3) The prognostication/communication to the family members. We are still in the learning curve of the disease understanding/management/complications and will like to share these aspects of our journey till now.

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### A case of purpura fulminans with grave complication

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We are presenting a case 6-year-old patient with refractory seizures. The patient developed sepsis which lead to purpura fulminans. This was proven with the clinical features and the coagulation profile of the patient. The patient developed peripheral gangrene in all the limbs. We managed sepsis and coagulopathy. The patient showed improvement but developed left upper limb gangrene in the course of the treatment. Patient underwent left below elbow amputation. Patient recovered from the condition and was shifted from intensive care unit.

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### Initial oxygenation as early mortality predictor in

### acute respiratory distress syndrome: A retrospective study

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**Background:** Acute respiratory distress syndrome (ARDS), initially described is a major contributor to mortality and morbidity of adult patients admitted to intensive care units (ICUs). The mortality rates vary from 30% to 70% even with the best intensive care therapies. To categorize ARDS patients numerous scoring systems for critically ill patients have been developed with the goal of more accurately predicting clinical outcomes. However, the variability in these scores among individual patients, and consequently, their individual predictive ability is quite limited. A persistently low PaO<sub>2</sub>/FiO<sub>2</sub> is associated with worse outcomes and may be useful as a marker of failure to respond to conventional therapy. Compared to PaO<sub>2</sub>/FiO<sub>2</sub> the oxygenation index may be a better predictor of poor prognosis as it incorporates for changes in mean airway pressure in addition to FiO<sub>2</sub>. **Objective:** To evaluate the role of initial oxygenation as an early predictor of mortality in ARDS patients. **Methods:** Demographic, clinical, laboratory and pulmonary variables being recorded retrospectively in patients with ARDS between 1<sup>st</sup> November 2012 and 1<sup>st</sup> November 2013 on the 1<sup>st</sup> day of ICU admission. Mechanical ventilation duration before the onset of ARDS in days will be also noted. These variables will be compared between survivors and non-survivors and will be entered into a stepwise logistic regression model to evaluate their independent prognostic roles. **Results:** The study is in data compilation phase and will be completed by December 2013. The results will be presented at the conference.

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### Profile of mechanically ventilated children of rural pediatric intensive care unit in Gujarat

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**Objective:** To demonstrate profile of mechanically ventilated patients of pediatric intensive care unit (PICU) in a rural tertiary care hospital. **Materials and Methods:** A retrolective descriptive study was done over 1084 critically ill children admitted to PICU of Shree Krishna Hospital, Karamsad over a period of 3 years from August'10 to July'13, of which ~30% required mechanical ventilation (MV). After collecting data of 216 ventilated patients from medical records, factors related to the demographic profile, indication and duration of ventilation, organ dysfunction, course during the stay and final outcomes were analyzed statistically. **Results:** In total ventilated patients ( $n = 216$ ), male:female ratio was 1.8:1 in which 49.07% were 1-11 years, infants -37.03% and adolescents -13.8%. Majority (76.85%) were referred cases of which only 22.2% were transported in ambulance with facility and staff which improved their mortality rate (6.25% vs. 14.88%). Indications for ventilation were respiratory -32.4%, neurological -29.16%, circulatory failure -14.81% and others -23.6%. Pressure synchronous intermittent mandatory ventilation (80%) was most preferred initiating mode whereas continuous positive airway pressure/pressure support ventilation (75.7%) was preferred weaning mode. 14% required prolonged (>7 days) MV. Overall MV complication rate was 43.51% with pneumothorax -0%, ventilator-associated pneumonia (VAP)-5% and post-extubation stridor -15.74% requiring tracheostomy in 5.5% in spite of pre-extubation corticosteroids usage in 32%. Laboratory parameters reflected anemia -78%, disseminated intravascular coagulation -33.8%, metabolic acidosis -61.11%, deranged renal function -28.7% and electrolyte disturbances -42%. vasopressors, central line insertion and renal replacement therapy were offered in 73%, 12.96% and 2.3% cases respectively. Among nosocomial infections; blood

stream (culture proven), VAP and Catheter associated urinary tract infections were 7%, 2% and 0.9% respectively. Mean ventilator days were 3.98. Successful weaning and extubation was achieved in 107/216 (49.53%). Death and leave against medical advice rates were 12.96% and 37.5% respectively. **Conclusion:** Our study offers comprehensive information that may assist pediatric intensivists in the decision-making process to allow better resource allocation in rural settings.

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### Successful management of coincidental cerebral infarction and massive pulmonary thromboembolism

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**Case Report:** A 51-year-old male patient presented with left hemiparesis and shortness of breath referred from other hospital. His magnetic resonance imaging showed right middle cerebral infarct. There was significant increase in D-dimer. Two-dimensional echocardiogram was showing right atrium, right ventricular dilatation with right ventricular dysfunction, severe pulmonary artery hypertension and right wall motion abnormality. Pulmonary computed tomography angiogram was indicative of massive pulmonary embolism. It is mostly due to the existence of a right-to-left shunt at the cardiac level, though occasionally the shunt may be at the pulmonary level. In the current case, patent foramen ovale was not detected on echocardiography, subsequently patient was found to be having hyperhomocysteinemia. Such a situation leads to the great challenge in management since the patient was out of the window period of the thrombolysis and the pulmonary embolism was causing hemodynamic instability. Various risk factors were taken into consideration and a plan was formed with multispecialty approach in which emergency decompressive craniotomy was done and low molecular weight heparin was started 24 h after craniotomy. Patient improved both hemodynamically and neurologically. **Conclusion:** A pulmonary embolism is the second and cerebral infarction is the third most common acute cardiovascular diseases after a myocardial infarction. Successful treatment is possible with timed diagnosis and planned management with multidisciplinary approach where the two conditions coincide.

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### Percutaneous dilatational tracheostomy Abstract

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**Introduction:** Percutaneous dilatational tracheostomy is an elective procedure that uses Seldinger technique to place temporary or permanent tracheal airway. It has been designed for non-emergency use in patients who have an endotracheal tube in place and requiring long term ventilator support. **Case:** K/C/O hypertension presented with c/o sudden loss of consciousness while taking bath. Right sided hemiparesis aphasia, bowel and bladder incontinence. Glasgow coma scale = 4 (E1, V1, M2), non-contrast computed tomography - acute hemorrhage in left basal ganglia and left thalamic region with surrounding perilesional edema. **Methods:** Technique is performed under local anesthesia. In supine position and the neck hyperextended horizontal skin incision was given over third tracheal ring. A curved 12G needle is introduced into the tracheal lumen between the II and III tracheal cartilages in a caudal direction, air is aspirated into the syringe containing 3 ml of 4% lidocaine. Syringe is removed and the guide-wire is introduced through the needle. Percutaneous tracheostome is guided over the flexible metal guide wire, firmly introduced into the trachea, and its jaws fully opened, transversely to the axis of the trachea. The guide wire is removed

and the lubricated cannula, with the obturator in place, is gently inserted into the tracheal lumen between the opened jaws of the tracheostome. The obturator is removed, the cuff inflated, and the cannula secured with neck tapes. **Discussion:** There are several advantages of photodynamic therapy (PDT), like it can be performed in intensive care unit, there is less bleeding as compared to surgical tracheostomy, lower incidence of stomal infection, Morbidity of PDT 3-19% compared with complication rate of 26-63% for open tracheostomy. There are several new advancement in this technique for e.g. Introduction of fiberoptic bronchoscope. Complication are bleeding, stomal infection, subcutaneous emphysema, extra tracheal cannulation, brief episodes of hypoxia and major complications are like loss of airway, conversion to open tracheostomy, tracheo-oesophageal fistula, death.

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### Violence management in Emergency Department: A literature review

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**Introduction:** In healthcare service, in daily basis clinicians are facing risk of being a victim of violence. Although the policy on aggression management is followed by the health industry in development countries, little is known about the effectiveness on violence reduction. **Aim:** The aim of this study was to understand the prevalence of violence in the Emergency Department (ED), a review of the literature was undertaken to explore this concept and locate the available evidence to guide clinical practice. **Methods:** A broad search of computerized databases focusing on articles published in English during 2004-2012 was completed. Extensive screening sought to determine current literature themes and empirical research evidence completed in nursing focused specifically on violence management. **Result:** 10 articles are included in this literature review (theoretical,  $n = 2$ ; editorial,  $n = 3$ ; report,  $n = 3$  empirical,  $n = 2$ ). The literature focuses on ED and violence management, nursing practice, ED and clinical decision-making, and clinical leadership. Considerable mentioned that 80% of the nurses who experienced violence did not report the incident and only 14% of the incidents were reported. Possible barriers of reporting can include; no physical injury sustained, poor response from the management level and lengthy reporting process. **Conclusion:** Violence is unacceptable not only in ED but in all the health care service. Obviously, there is a lack of evidence to guide clinical practice on violence management. Literature suggests that the current researches focus on the incidence rate of violence and are mainly descriptive in nature. The repeated themes of under-reporting suggest that future research needs to explore the barriers or attitudes towards reporting and to develop a user-friendly tool.

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### Fast track extubation in pediatric congenital heart disease surgery patients in a tertiary care hospital: A prospective observational study

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**Introduction:** Changes in health care delivery have influenced all aspects of medical practice, including the field of congenital cardiac surgery. Fast-tracking in cardiac surgery refers to the concept of early extubation, mobilization and hospital discharge in an effort to reduce costs and perioperative morbidity. Fast track extubation (FTE) is the initial foundation stone of fast tracking

strategy. The subsequent events of fast tracking owe their success from the timely correct decision of FTE. FTE is already done on random basis in our pediatric cardiac setup, but not according to a set protocol. Hence the study is proposed to record the data to validate the importance of FTE with evidence. In the current study our aim is to see the success rate of FTE in congenital heart disease (CHD) surgery patients at our setup and to analysis the reasons for delayed extubation in selected patients. We will make it a quality indicator. We will also look into the reasons for reintubation and its percentage among the selected patients. **Objectives:** To record the success rate of FTE in CHD pediatric patients at Aga Khan University Cardio thoracic unit. To analyses the reasons for delayed extubation in the selected patients and to see the reasons for reintubation and its percentage within 24 h post-extubation. **Material and Methods:** After taking informed consent and approval from Energy Regulatory Commission, the study will be conducted in the cardiac operating rooms and cardiac intensive care unit of Aga Khan University Hospital on the patients fulfilling the inclusion criteria. **Study Design:** Prospective observational study. Duration: 8 months. Sample Size: 71 patients will be included in this study on the basis of previous study in which the success rate of FTE in CHD pediatric was observed 65% to 88% patient. Success rate of FTE in CHD pediatric ( $P = 76\%$ ) will be estimated with 10% of the true proportion (error) with 95% confidence interval. **Conclusion:** Early extubation after open-heart surgery for CHD has minimal risk in carefully selected patients.

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### **Snakebite envenomation: A comprehensive evaluation of severity, treatment and outcome; correlation between timing of anti-snake venom administration and complications in snakebite, a study of 100 cases in new civil hospital, Surat, Gujarat**

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**Aims and Objective:** (1) To study the clinical manifestations, severity, treatment and outcome of the snake bite patients using snakebite severity score, in New Civil Hospital (NCH), Surat. (2) To study the relationship between timing of anti-snake venom (ASV) administration due to late arrival of patients at the hospital and subsequent development of complications and mortality. **Materials and Methods:** 100 cases of snakebite were studied in the medical ward and medical intensive care unit of NCH Surat during the period of June 2011 to November 2013. In each case detailed history and examination, necessary investigations were performed. Severity of envenomation was assessed using modified snake bite severity score according to Dart *et al.*, 1996 and Nualong *et al.*, 2005, occurrence of particular symptoms was checked against chart and graded 0-4. Time between the bite and administration of ASV on arrival at our hospital was noted. All patients of snake bite admitted to NCH, Surat ASV will be administered as per the dose schedule within 15 min of patient presentation. **Results:** In the present study most of the patient 60 admitted within 6 h after time of the bite. There were seven patients who admitted in hospital after 24 h. Amongst 20 patients of grade 0, 19 patients presented in <12 h. Similarly, amongst 48 patients of grade 1, 43 patients presented in <12 h. Amongst 12 patients of grade 2, 8 patients presented in <12 h. None of the 7 patients of grade 4 presented in <12 h. Amongst 80 patients who had lower grades (0, 1 and 2) none of the patients expired, whereas those 20 patients who had grades (3 and 4) only 10 patients survived and 10 patients expired. Significant association was found between correlation between time lapsed before admission and snake bite severity grade. Snakebite severity grades were higher (Grade 3 and 4) in those who were admitted after 12 h of snake bite. Amongst the 76 patients in which the bite to needle time was

<12 h only one patient expired, in contrast to those 24 patients in whom bite to needle time was more than 12 h, nine patients expired. **Conclusions:** It can be concluded that as the duration before admission increases the snakebite severity grade increases. Delay in admission can play a major role in deciding the severity and outcome. Those patients who were admitted late had higher severity scores, poor outcome and higher number of complications. The higher snake bite severity grades (3 and 4) are associated with significant mortality than with the lower grades (0, 1 and 2). There is direct proportion severity and outcome to the duration venom in the blood prior to neutralization by ASV due to late arrival of patients at the hospital. Early administration of ASV i.e. less bite to needle time is beneficial in preventing complications and morbidity associated with systemic envenomation. Clinical severity scoring like snakebite severity score will give us a more accurate estimation of the burden of snakebite even if the envenoming species are not available and help the clinicians to take appropriate and timely decisions.

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### **Anesthesia and intensive care within a new liver transplant program: Report on outcomes after evolution of a successful structure after 179 transplants**

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**Background:** Reports suggest that structure of the anesthesia and intensive care (A and IC) team has a large impact on outcomes after liver transplantation (LT). As our center evolved, our A and IC department changed to accommodate requirements and we hereby-present improved outcomes, brought about in part by these changes. **Methods:** Our evolution included two phases. In Phase 1, all 20 anesthetists in the institution participated in the peri-operative management of LT surgeries on an on-call basis. In phase 2, a designated team of 6 dedicated liver anesthetists was created for the entire peri-operative period. In this model, the same team provided routine intensive care management including out of hours cover. We also studied utilization of blood products, length of days on ventilator and length of intensive care unit stay. **Results:** Of the 179 recipients between August 2009 and December 2012 (40 months), 50 recipients were aged 16 or under (Median 3 years), and rest adults (Median age 46; 18 recipients aged over 60 years) of whom 84 were female. There was 1 re-transplant, 2 were performed as auxiliary transplants, and 8 combined liver and kidney transplants (4 living related liver transplantation (LRLT); 1 death). 14 recipients were transplanted for acute liver failure (9 LRLT, 4 demand during lead time; 9 Children). From an A and IC point of view, the first 55 cases (phase 1) showed a 90 days survival rate of 78%. In the phase 2, there were 124 cases with survival rate of 90%. **Conclusion:** After forming a designated team, inconsistencies in clinical management were avoided leading to better outcomes, despite more complex and sicker recipients. This system has achieved better survival rates and also decreased resource utilization. Given significant decrease in mortality with this change, it might be a reasonable model to follow for other new transplant programs.

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### **Bilateral bronchopleural fistula: An unusual presentation**

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Bronchopleural fistula (BPF) is communication between the pleural

space and the bronchial tree. Although rare persistent BPF due to infection represents a challenging management problem and are associated with high morbidity and mortality. We report a patient with fulminant staphylococcus aureus pneumonia complicated by chronic BPF formation which prevented weaning from mechanical ventilation due to severe air leak. A 12-year-old child was admitted in our intensive care unit (ICU) with the chief complaint of fever, headache, vomiting, respiratory distress. HRCT chest revealed multiple cavitary nodules in bilateral lungs with few in sub pleural location suggestive of *Staphylococcus aureus* infection. Blood culture showed growth of *S. aureus* for which antibiotics were started as per culture sensitivity. Patient subsequently developed pneumothorax and bilateral BPF. Management of bilateral BPF and weaning from the mechanical ventilation was a challenge for the anaesthetist, intensivists and cardio thoracic surgeon. ICU management of the above case will be discussed.

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### Comparison of sustained low efficiency dialysis and hemodialysis in acute renal failure in intensive care unit settings

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Sustained low efficiency dialysis (SLED) has enjoyed an unsurpassed renaissance over the last decade for treatment of severely ill patients with acute kidney injury in the intensive care unit (ICU), but still is in infancy in the Indian healthcare. SLED provides good treatment time flexibility at lower costs than continuous renal replacement therapy with the advantage that existing dialysis systems can be used. SLED combines excellent detoxification and good cardiovascular tolerability for severely ill patients in the ICU wherein benefits of hemodialysis (HD) cannot be given. In order to assess the different treatment methods i.e. SLED and HD, consecutive 100 critically ill patients undergoing either HD or SLED were studied. A comparison was made between the biochemical indicators, hemodynamic parameters, acute physiology and chronic health evaluation, average length of hospital and ICU stay, the survival, and the mortality rate. The results are being statistically studied, which will be presented during the conference.

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### A case of posterior reversible encephalopathy syndrome at term pregnancy with eclampsias

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**Introduction:** Posterior reversible encephalopathy syndrome (PRES) is a clinico-radiological entity characterized by variable associations of seizure activity, consciousness impairment, headaches, visual abnormalities, nausea/vomiting and focal neurological signs. Recognition of PRES has evolved with the increasing availability of magnetic resonance imaging (MRI). PRES can develop in association with a vast array of conditions and typically reversible once the cause is removed. Patients with severe manifestations such as coma or status epilepticus, may require admission to the intensive care unit (ICU). Moreover, permanent neurological impairment or death occurs in a minority of patients. The objective of this case report is to provide clinicians with guidance for diagnosing and treating patients with PRES. **Case Report:** A 25-year-old primi presented with complaints of generalized tonic clonic seizures following acute onset of headache. On arrival patient was unconscious, responding to pain stimulus, pedal edema and blood pressure of 170/100 mmHg

with right sided hemiparesis. On auscultation bilateral basal creps present. Patient was intubated and shifted to ICU for mechanical ventilatory support. Initial investigations revealed Hb - 10, platelets - 3.2 lakhs, serum creatinine - 1.7. Serum electrolytes 133/4.6 liver function test and coagulation profile within normal limits except for elevated D-dimer (>10,000) and urine analysis with albumin of 4+. Pregnancy was terminated and baby shifted to neonatal intensive care unit. She was managed in ICU with magnesium sulfate therapy, labetalol, furosemide and mannitol along with central venous pressure monitoring. Fundus revealed bilateral papilledema. MRI of brain suggestive of PRES and small lacunar hemorrhagic infarct in left posterior parietal region. She responded to the treatment and weaned of ventilator over a period of week, maintained on air saturation of 100% with significant neurological recovery and shifted to ward. Rest of her hospital stay was uneventful until her discharge. **Discussion:** The incidence of PRES is unknown and has been reported in young to middle-aged adults with female predominance. Patients have comorbidities such as bone marrow or solid organ transplantation, chronic renal failure, and chronic hypertension. Mechanical ventilation is required in the majority of patients with ICU admission. Familiarity with the imaging criteria is crucial to the diagnosis. Regardless of the underlying cause, the main abnormality is cerebral vasogenic edema. Early recognition and resolution of the underlying cause is the keystone of management.

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### A comparative study of complications and long-term outcomes of surgical tracheostomy and two techniques of percutaneous tracheostomy in intensive care unit

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**Objective:** To compare the peri-procedural complications and long term outcomes of bedside surgical tracheostomy (ST) with two percutaneous tracheostomy (PCT) techniques, namely serial guide wire dilating forceps (GWDF) and Percutwist (PT). **Materials and Methods:** This prospective observational study was carried out in intensive care unit (ICU) of a tertiary referral center over a 3 years period. 90 adult intubated patients in ICU on mechanical ventilation needing elective tracheostomy were included. Patients with anticipated difficult neck anatomy were assigned for ST based on discretion of intensivist. Patients underwent bedside ST ( $n = 30$ ), PCT by GWDF technique ( $n = 30$ ) and PCT with PT ( $n = 30$ ). All cases of PCT were carried out under fiberoptic bronchoscopy. All patients who survived underwent a fiberoptic bronchoscopy before and after difficult decannulation and at 30 days. **Results:** Peri-procedural complications during PCT included major bleeding (>100 ml) in two patients which required conversion to ST and sutures to control bleeding. Two cases of PT technique had a fracture of tracheal cartilage ring and one case each of false passage and damage to posterior trachea wall was seen with GWDF technique. Peri-procedural bleeding was also the main complication in ST, which was controlled by cautery. Increased incidence of granulation tissue and tracheal narrowing in the long term was seen with ST. **Conclusion:** There was no significant difference in complications of ST and two techniques of PCT. It is concluded that proper case selection makes PCT as safe as ST. Use of ultrasound guidance for vascular structures will benefit in further decreasing the main complication of peri-procedural bleeding.

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### Evaluation of rapid response team implementation in medical emergencies: A gallant evidence based medicine initiative

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**Objective:** Rapid response team (RRT) has been implemented in developed countries with the aim of early recognition and response to critical triggers. Implementations of RRT evidently benefit the outcome of patients, but the data concerning their efficacy are sparse and there is hardly any study until date from Indian subcontinent. This study was done to evaluate the impact of RRT implementation on patient outcome during medical emergencies. **Methods:** A retrospective analysis of RRT data sheets was done for patients for whom RRT was activated during 6 months from January 2012 to June 2012. RRT record forms were included for all inpatients irrespective of their age, gender and diseases profile. Outcomes such as patient stayed in the room, patient transfer to intensive care unit (ICU), patient discharge, conversion to code blue, mortality and length of stay in hospital/ICU were measured. **Results:** Analysis of 41 RRT calls showed decreased code blue calls (2.44%) and low mortality (4.88%). Average length of stay in ICU and hospital post RRT assistance for patients was 2.55 and 6.95 days respectively. Conversely percentage of patients requiring a higher level of care was more (75.61%) than those who stayed in their room/ward (24.39%). **Conclusion:** Although implementation of RRT in a critical situation for delivering patient care in this hospital was associated with reduced code blue events and its attendant mortality outside the ICU settings. But more number of patient requiring higher levels of care delineates the need for adherence to the evidence based medicine.

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### A comparative study of parenteral glutamine versus oral glutamine in critically ill patients

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**Objective:** This prospective randomized double blinded study wanted to compare the efficacy of parenteral glutamine with oral glutamine, in decreasing the mortality and morbidity and the role of glutamine therapy in diminishing the duration of intensive care unit stay in critically ill patients. **Methods:** This study was conducted on 60 patients aged (16-60 years) divided into 3 groups ( $n = 20$ ) each. Group A (control group) no glutamine, Group B (oral glutamine) 20 g/day for 5 days, Group C (parenteral glutamine) 0.3 g/kg/bw/day intravenous (IV) infusion for 5 days. Complete blood count was done at regular interval of 24 h. Total protein and albumin were recorded at 5 days interval along with blood culture and urine culture. Primary efficacy variables like leukocyte count, lymphocyte count, total protein, albumin, C-reactive protein were noted. Secondary efficacy variables like length of hospital stay, incidence of infection, mortality and morbidity were also taken. **Results:** The study shows that the increase in TLC, CRP was evident least in Group C (18.7%, 49.6%) followed by Group B (32.5%, 54.4%) and Group A highest (38.2%, 62.3%). The total protein and albumin levels in all three groups decreased and the decrease was evident least in Group C (23.3%, 5.3%) followed by Group B (36.7%, 16.1%) and Group A (39.6%, 24.1%). Incidence of infectious complications were least in Group C followed by Group B and Group A. The treatment did not change the duration of stay and mortality in all the three groups, but parenteral glutamine was associated with higher survival rate. **Conclusion:** Our study concluded that IV glutamine therapy has relative better clinical outcome, less infection and higher survival rate than oral glutamine.

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### Guillian-Barre syndrome: A comparative study of

### treatment modality — intravenous immunoglobulin versus plasmapheresis and outcome in our intensive care unit

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**Objective:** This retrospective, randomized double blinded study wanted to evaluate the management and treatment modality and the outcome of 60 patients of Guillian-Barre syndrome admitted in our intensive care unit (ICU) from January 2011 to December 2013. **Methods:** This study was conducted on 60 patients of Guillian-Barre syndrome of the age group (15-45 years) admitted in our ICU. They were randomized into two groups - one group received intravenous immunoglobulin (IVIG) (I) and the other group received plasmapheresis (P). The presenting features, progression of symptoms, respiratory muscle involvement, neurological findings, cerebrospinal fluid picture, signs of autonomic dysfunction, number of days of mechanical ventilation required and rapidity of recovery etc., of both groups were all taken into consideration in the study. The adverse effects associated with the administration of both plasmapheresis and IVIG were also noted in the study. Certain confounding factors like the need for primary care, delay in the start of the treatment were also taken into consideration. **Results:** In our study, it was found that both the treatment plan had similar efficacy. However, those patients who received IVIG (I) had a better outcome, less respiratory muscle involvement, shorter stay in ventilator, rapid weaning and rapid neurological recovery provided the treatment was initiated early, although it was statistically not significant. **Conclusion:** Our study concluded that both IVIG and plasmapheresis had similar efficacy. The best results could be obtained if treatment is initiated early, young age, slow progression of symptoms, less signs of autonomic dysfunction, less respiratory muscle involvement.

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### Anesthetic management of tracheoesophageal fistula

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A Tracheoesophageal fistula (TEF) is an abnormal connection between the esophagus and the trachea. TEF is a common congenital abnormality, but when occurring late in life is usually the sequela of surgical procedures such as a laryngectomy. Esophageal atresia with tracheo-esophageal fistula is a rare congenital abnormality with incidence of 1 in 3000 newborns. Perioperative management of such patients is quite challenging. Various factors that can affect the outcome in cases of esophageal atresia with tracheo-esophageal fistula are age (in days) at presentation, sex, birth weight, duration of gestation at birth, associated congenital anomalies, condition of chest before operation, anesthesia technique employed, intra operative and post-operative events (like change of tube, cardiac arrest, infection), duration of post-operative elective ventilation. **Conclusion:** We report a case of 1 day old neonate with esophageal atresia and tracheo-esophageal fistula along with ventricular septal defect and right sided aortic arch. Intraoperative course was quite fluctuating but managed successfully. Child was transferred to neonatal intensive care unit and discharged on 10<sup>th</sup> post-operative day.

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### Comparison of cuff leak test and upper airway air column width in prediction of post-extubation stridor

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**Objective:** To compare the standard endotracheal tube cuff leak test versus upper airway air column width (measured using Ultrasound) in predicting post-extubation stridor. **Materials and Methods:** A prospective observational study was conducted on 100 patients who got admitted in intensive care unit and requiring intubation for more than 48 h were included in the study. The upper airway air column width was measured at cricothyroid membrane level just after intubation and before extubation. All patients requiring extubation were extubated after the standard endotracheal tube cuff leak test was more than 100 ml. Patients who developed stridor post-extubation were noted and cuff leak test value was compared with Upper airway air column width ratio. **Results:** The incidence of stridor in our study was 5% (5/100, 3-Female and 2-Male). There was an association between stridor and number of intubation days, and female patients. All 5 patients who had stridor had cuff leak of more than 100 ml. The upper airway air column width ratio (before extubation/after intubation) after cuff deflation in all patients without stridor was 0.95 and upper airway air column width ratio in all patients with stridor was 0.80 ( $P < 0.05$ ). In patients with upper airway air column width ratio of 0.8 or less can have post-extubation stridor even with standard cuff leak test of  $>100$  ml. Hence air column width can predict better post-extubation stridor incidence as compared to standard cuff leak test. **Conclusions:** Upper airway air column width ratio can predict stridor better than the standard cuff leak test. Combination of both the test is more specific.

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### Continuous renal replacement therapy in critically ill children: A single center experience

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**Background:** Multi organ dysfunction syndrome (MODS) with fluid overload (F.O.) is a common occurrence in pediatric intensive care unit (PICU) in sick children. Unfortunately, scanty literature is available in developing countries. **Objectives:** To emphasize the utility of continuous renal replacement therapy (CRRT) in managing critically ill children with MODS. **Materials and Methods:** Medical records of children required CRRT in PICU at Sir Ganga Ram Hospital from September 2010 to October 2013 were retrospectively analyzed to obtain data on demographic factors, CRRT prescription, circuit life span, hemodynamic stability while on CRRT, anticoagulants, feasibility and complications. **Results:** During the study period 20 children required CRRT (male-15). Age group ranged from 13 months to 16 years and weight from 7.5 kg to 52 kg. Eleven patients had a primary diagnosis of sepsis with MODS, whereas 5 had severe dengue with F.O. At initiation of CRRT, all patients were receiving mechanical ventilation, inotropic support (inotropic index  $>15$ ) and had oligoanuria with MODS. A total of 24 CRRT sessions amounting to 778.3 h were given. CVVHDF was preferred in all patients. The mean lifespan of the filter was 31.62 h. Heparin as anticoagulant was used in all except 5 patients. Timing from admission in intensive care unit to initiation of CRRT varied between 13 and 432 h. Though survival rate was 40.5%, ventilation settings and inotropic requirements were reduced in 83% and renal functions improved in 85% of cases. Patients with F.O. ( $>100$  ml/kg) had poorer outcome. Hypokalemia, hypophosphatemia, hypomagnesemia, hypocalcemia were observed in 75%, 55%, 40%, 10% patients respectively. Clotting was the most common circuit related complication. **Conclusion:** Our study shows CRRT had beneficial effects on respiratory and renal status of critically ill children with MODS and F.O. There is a need for prospective study with large sample size to assess mortality benefits in children.

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### Mucormycosis varied presentation in critical care: Case series

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**Introduction:** We had varied presentation of mucormycosis in our intensive care unit, we present case series of three patient whom diagnosis lead to survival. (1) A 25-year-old young female from Agra low lying placenta: Refused lower (uterine) segment Caesarean section complicated vaginal delivery: Fetal loss postpartum haemorrhage: Subtotal hysterectomy, developed septic shock, acute kidney injury, coagulopathy, weaning failure, abdominal distention, gibleed, highly, blackening and necrosis of patella, post-surgical debridement thrice, patelectomy biopsy and culture proven rhizopus, treatment modified, started on combination antifungal (amphotericin B, posaconazole) for 6 weeks, extubated and discharged. (2) Mucormycosis as pulmonary artery aneurysm, very rare entity: 58-year-old male, a known case of diabetes he presented with breathlessness, cough and hemoptysis for 1 day non-enhanced computed tomography chest was done which was reported as "encysted right pleural effusion with adjacent right lower lung collapse consolidation with right perihilar and lower zone bronchiectasis with surrounding pneumonitis with multiple mediastinal lymphadenopathy. Implantable cardioverter defibrillator (ICD) inserted and ATT started. Patient was discharged 2 days later. At home, he was asymptomatic for a week then suddenly one afternoon he developed a swelling in the right axilla. ICD inserted. High resolution computed tomography chest done, which showed similar findings as of previous computed tomography chest report but they mentioned the presence of pulmonary artery aneurysm (PAA) i.e., "a well-defined 35 cm  $\times$  28 cm oval mass lesion with enhancement equal to the adjacent major vessel in the right perihilar region s/o PAA." Right lower lobe lobectomy with PAA clipping was done. The lobectomy specimen was sent for holoprosencephaly (HPE). Patient continued to be sick and difficult to wean. Meanwhile, the HPE report of the lobectomised lung tissue came as invasive mucormycosis which was sensitive to amphotericin. Amphotericin and posaconazole was added and ATT was stopped. He responded well to the antifungal. He became afebrile, total leucocyte counts normalized, chest X-ray cleared and oxygenation improved. He was rapidly weaned of the ventilator and extubated. (3) A 48-year-old male known old, septic shock, on combination antibiotic and fluconazole, continued to be septic with high vasopressors, acute kidney injury, blood culture showed mucor, started on combination antifungal, shock resolved, extubated. **Conclusion:** Can present in immunocompetent as well as immunocompromised. High index of suspicion, early initiation of therapy, combination therapy, optimal (long) duration of therapy, extensive source control, survival benefit.

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### Electrolyte supplementation in intensive care unit patients

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**Aims and Objective:** To study the incidence of electrolyte supplementation viz. sodium, potassium, calcium and magnesium in a tertiary hospital intensive care unit (ICU). **Materials and Methods:** A prospective observational study over 2 week's period, looking at patients age, gender, chief complaints, diagnosis, signs and symptoms past and current medication. Symptoms like drowsiness, arrhythmias, ectopics and vomiting, loose motions were noted. Supplementation if oral or intravenous noted.



For intravenous correction, interventions like central venous cannulation and any complications noted. The number of patients who had over correction of electrolytes, which had to be corrected, were also recorded. **Results:** Among the total ICU 112 patients admitted during this period, 50 patients received electrolyte supplementation either oral or IV. Of the 50 patients, 30 were asymptomatic and 20 were noted to have symptoms. Potassium was the most common electrolyte replaced in 26 patients, followed by sodium in 15 patients and the rest were magnesium and calcium. Of the asymptomatic, 6 patients had low levels of K and were given prophylactic supplementation and 1 patient needed intervention like central venous cannulation and one patient, who required correction via peripheral line developed thrombophlebitis. Among 20 symptomatic patients, 2 had central venous cannulation with no complication. 2 patients became hyperkalemic due to overcorrection, received calcium chloride for lowering the potassium. **Conclusion:** In a tertiary care ICU, prophylactic supplementation of electrolytes is carried in about 40% patients. Of which, more than half are asymptomatic. A little introspection may be warranted for this attention to detail correction.

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### Light at the end of the tunnel - Ulinastatin in paraquat poisoning — A case report

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Paraquat poisoning is associated with high mortality. There are no specific antidotes, management includes: Basic life support. Prevention of absorption by fullers earth or activated charcoal, increase elimination by hemoperfusion, modulation of inflammatory responses with cyclophosphamide, methyl prednisolone. Prevention of oxidation with vitamin C, vitamin E and N-acetylcysteine. Oxygen administration if PaO<sub>2</sub> below 50 mmHg and other organ support as necessary. We have admitted 13 cases of suicidal paraquat poisoning in the last 5 years. 12 of them succumbed despite the above said treatment protocol. The possible reasons could be delayed presentation, development of rapid multiorgan failure. We report our 13<sup>th</sup> case, who had a successful recovery after receiving injection ulinastatin in addition to the described treatment. A 30-year-old male was admitted to intensive care unit (ICU) after suicidal ingestion of 50 ml of paraquat, with vomitings, pain abdomen and retrosternal pain. Patient was given injection ulinastatin 2 vials twice daily for 5 days in addition to standard care. ICU stay was complicated by secondary infection, renal impairment and coagulopathy. Despite this, he recovered, successfully discharged on day 14. Subsequent follow-up was unremarkable. The toxicity of paraquat results from overproduction of reactive oxygen species (ROS) consequent to inhibition of reduction of nicotinamide adenine dinucleotide phosphate, destroying the lipid of cell membranes. Hence, we explored the possible role of ulinastatin in reducing the oxidative stress in this case. Literature review revealed a recent *in vitro* protective role of ulinastatin in alleviating the paraquat induced human type II alveolar epithelial cell damage. The survival rate and the levels of malondialdehyde, myeloperoxidase and ROS were lower in the ulinastatin treated cells. Hence, ulinastatin could be the ray of hope for paraquat poisoning in future.

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### Perioperative management of a patient with hemophilia a with acute subdural hematoma

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The hallmark of hemophilia A is prolonged bleeding and re-bleeding. We report a case of 28-year-old male with hemophilia A who after road traffic accident presented with acute subdural

hematoma which after evacuation re-bleed to extradural hematoma. Prompt diagnosis and treatment with factor VIII infusions peri-operatively and meticulous hemostasis are the key to the management of such cases.

**Keywords:** Hemophilia, intra-cerebral hemorrhage, factor VIII, anesthesia

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### Myocardial infarction (ST segment elevation myocardial infarction) following administration of intravenous immunoglobulin

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**Introduction:** Intravenous immunoglobulin (IVIg) is generally considered a safe medication with no major adverse effects. Contrary to this belief, major complications have been reported with IVIg infusion which at times can be fatal. Here, we report a patient with Guillaine-Barre syndrome (GBS), in whom IVIg infusion resulted in a fatal ST segment elevation myocardial infarction (STEMI). **Case Report:** A 70-year-old female, home maker, presented to neurology outpatient department with an acute history of bilateral lower limb weakness of 5 days duration. Initial investigations were unremarkable. A clinical diagnosis of GBS was made which was confirmed by ENMG. Patient was given IVIg at 0.4 g/kg dose. Within half an hour of infusion, patient developed dyspnea and hypotension. With a high suspicion of anaphylaxis, IVIg infusion was stopped and the patient was observed in intensive care unit. IVIg was restarted after stabilization. Patient remained stable during the first infusion. However, by next day patient started to deteriorate with increasing dyspnea, tachycardia, chest pain and hypotension. electrocardiogram showed ST segment T wave changes in lead 1 and V 1-6. Troponin I was elevated and echocardiogram showed lateral wall hypokinesia of left ventricle with ejection fraction of 30%. Diagnosis of STEMI was made. Despite all supportive measures patient had a rapid deterioration in hemodynamics and succumbed on day 3 of admission. **Conclusion:** Adverse reactions can occur in up to 20% of infusions of IVIg, although most are mild and transient. Serious complications are not uncommon. High risk category includes those receiving high dose IVIg, dehydration, elderly and pre-existing renal or cardiovascular disorders. Diligent use of this molecule might reduce fatal complications.

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### Clinical profile of patients presenting to intensive care unit with thrombosis of cerebral veins and sinuses: An observational study

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**Objectives:** Thrombosis of the cerebral veins and sinuses is a distinct cerebrovascular disorder that, unlike the arterial stroke, most often affects young adults and children. We undertook this observational study to determine the clinical profile of patients presenting with cerebral venous thrombosis (CVT). **Materials and Methods:** All patients getting admitted to medical intensive care unit with diagnosis of CVT presenting to intensive care unit (ICU) between January 12 and December 13 were included in the study. Patient demographics, possible etiological factors, investigation modality, clinical presentation and course of the disease, treatment modality and interventions were recorded. **Results:** 34 patients were included in the study so far. Incidence was higher among females (56.3%). Mean age was 31.7 years (standard deviation [SD]-10.7).

Risk factors, 6 patients (18.7%) were on OCP, 5 (15.5%) were associated with pregnancy/puerperium, 4 (12.5%) procoagulant state, 2 (6.25%) malignancy, meningitis in 2 (6.25%), otitis media in one, ethanol dependency in 5 (15.6%) and head injury in one. Most common presentation was headache, in 22 patients (68.7%). Other presentations included were Encephalopathy (40%), seizures (59.3%), focal neurological symptoms (49.8%). 10 patient (31%) presented with CVT. Among the sinuses most common was superior sagittal sinus (37.5%), followed by transversus sinus (10%), sigmoid sinus (28.1%), straight sinus and cavernous sinus in (6.2%) patients. Neurosurgical intervention was required in 6 (18.6%) patients of which 3 (9.3%) each underwent decompressive craniotomy and intravenous thrombolysis. Unfractionated heparin was used in 19 patients (59.3%) and 13 (40%) received low-molecular-weight heparin (LMWH). Mean ICU days was 5.5 days (SD-3.1) and hospital days was 12.7 days (9.3%). There was one mortality (3.2%). **Conclusion:** Thrombosis of cerebral veins and sinuses needs high index of suspicion. It is a disease of the young unlike the arterial strokes with favorable recovery. Computed tomography or magnetic resonance imaging is diagnostic. Unfractionated heparin or LMWH are equally good.

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### Indications and outcomes of plasmapheresis in a tertiary care hospital

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**Aims and Objectives:** To study the common indications of plasmapheresis in last 2 years in our hospital. Evaluate the response to plasmapheresis for various indications. **Materials and Methods:** Prospective observational study was conducted between January 2011 and October 2013 approved by institutional ethics committee of care hospital. All patients who underwent plasmapheresis during this period were included. **Results and Conclusions:** The mean age of patients was 41. Mean acute physiology and chronic health evaluation (APACHE) II in this group was 13.29. Observed mortality was around 35%. hemolytic uremic syndrome/thrombotic thrombocytopenic purpura, hemolytic anemia and immune mediated graft dysfunction are the most common indications in our hospital and we observed hemolytic anemia patients had the worse prognosis. We observed that high APACHE II and multi organ failure had a poor prognosis.

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### Intensive care management of organophosphate poisoning without oximes — Experience from a tertiary care center

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In our institution, intensive care management of organophosphorus poisoning includes resuscitation, support the breathing if necessary and rapid administration of atropine. Although, World Health Organization recommends the use of pralidoxime, controversy surrounds the role of oximes and its effectiveness remains unclear. A retrospective observational study by reviewing the charts of children admitted with insecticide poisoning during the period October 2008 to September 2012. **Aim:** (1) To describe the clinical profile of children admitted to pediatric intensive care unit with organophosphorus poisoning. (2) To analyze the duration of ventilatory support, incidence of intermediate syndrome (IMS) and mortality rate among these children. **Results and Conclusion:** 35 children aged between 9 months to 15 years were admitted with pesticide poisoning. 32 children consumed OPC, 3 consumed carbamates and 2 organochloride. Male

(22.64%) predominance was noted. 8 (20%) were succidal. 20 (54%) children received primary care before reaching the tertiary center. Most (73%) of them stayed below 3 days in ICU with a range of 1-27 days. All, except the two who had consumed organochloride received atropine infusion. Serum pseudocholinesterase was <20% in 15 (35%) patients, 20-50% in six and eight had more than 50%; 18 (49%) patients needed ventilatory support. Most of them ventilated for <3 days (66%). Only 2 (5%) developed IMS. Two children required readmission due to stridor and recurrence of symptoms respectively. Among the 35, only one left against medical advice because of suspected brain death (mortality rate 3%). Even though oximes are not used, mortality and incidence of IMS was found to be low because of aggressive resuscitation and supportive therapy.

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### Audit of adverse events in a tertiary care pediatric intensive care unit

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**Introduction:** Adverse events (AEs) and adverse drug events (ADEs) remain as important patient safety concerns in intensive care settings. In resource limited settings, intensive care units are prone for several AEs. **Aim:** To determine the rates of AE/ADE and describe the pattern of AE including types and severity. **Materials and Methods:** Retrospective audit of the AE register during the period October 2009 to September 2012. **Results:** During the study period, 3257 children were admitted in pediatric intensive care unit. Total AE documented were 102 in 3257 patients. The most common were endotracheal tube related events (43/108 [39.8%]), followed by line related AEs (36/102 [35%]). 8 (8%) were ADE and 5 (4%) were ventilator malfunction and other mechanical. Other documented events were 10 which included thermal burns, transfusion related, improper transfer, prolonged procedure and fall from cot. Of the 43 ET related events, 23 (22%) were displaced tubes, 12 (11%) self extubations, 6 (5%) tube blocks and in 2 (1%) cut-off of the microcuff extension. Six of the displacements occurred during transport and 5 during procedure. Eight of the self-extubations, 4 of the Tube displacements remain extubated, while others got reintubated. Of the 36 line related events, 20 were peripheral line extravasation and 9 were arterial line related (5 discoloration, 1 thrombosis, 2 drug administration, 1 excessive bleeding). Among eight ADE that were reported, 5 were dose error, two severe drug reaction and one was due to medication error. **Conclusion:** (1) 102 AEs were reported, (2) Endotracheal tube related incidence were the commonest and among this about 44% were preventable. Data provided helps in looking at the risk factors for the critical AE and to implement prevention strategies to decrease the risk to critically ill children.

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### Association of platelet counts with outcome of intensive care unit stay

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**Objective:** Thrombocytopenia is common in intensive care unit (ICU). We studied the association of platelet counts with the outcome of ICU stay. **Materials and Methods:** This was a retrospective study in medical ICU. The ICU outcome was studied in terms of mortality, length of ICU stay (LoS-ICU) and length of hospital stay (LoS-hosp). The independent variables hypothesized to affect ICU outcome were platelet count at ICU admission (Plat-adm), minimum platelet count during ICU stay (Plat-nadir), platelet fall-difference between Plat-adm and Plat-nadir (Plat-fall), acute physiological and chronic health evaluation-II score at ICU admission (acute physiology and

chronic health evaluation [APACHE]-II-adm) and sequential organ failure assessment score (SOFA) at ICU admission (SOFA-adm). **Results:** A total of 48 patients were included. Age and sex didn't affect mortality. In univariate analysis, but not independently, unit increase in APACHE-II-adm and SOFA-adm and an increment of 10,000 in Plat-fall increased the odds ratio of mortality by 14%, 33% and 21% respectively.

Independent variables	Transferred (n = 13)	Died (n = 35)	P value <sup>A</sup>	Crude OR for mortality (95% CI)	P value <sup>B</sup>	P value <sup>C</sup>
Plat-adm	110,215 <sup>D</sup>	141,042 <sup>D</sup>	0.27 <sup>E</sup>	1.03 (0.96-1.10) <sup>F</sup>	0.37 <sup>F</sup>	
Plat-nadir	104,461 <sup>D</sup>	77,857 <sup>D</sup>	0.31 <sup>E</sup>	0.96 (0.89-1.04) <sup>F</sup>	0.31 <sup>F</sup>	
Plat-fall	5754 <sup>D</sup>	63,186 <sup>D</sup>	0.002 <sup>E</sup>	1.21 (1.02-1.44) <sup>F</sup>	0.03 <sup>F</sup>	0.07 <sup>F</sup>
APACHE-II-adm	15 <sup>G</sup>	22 <sup>G</sup>	0.004 <sup>H</sup>	1.14 (1.03-1.25)	0.01	0.32
SOFA-adm	5 <sup>G</sup>	11 <sup>G</sup>	0.002 <sup>H</sup>	1.33 (1.1-1.61)	0.004	0.86

<sup>A</sup>Univariate analysis; <sup>B</sup>Crude OR for mortality; <sup>C</sup>Logistic regression; <sup>D</sup>Mean; <sup>E</sup>Independent samples-t test; <sup>F</sup>OR for mortality for per 10,000 cells/dL; <sup>G</sup>Median; <sup>H</sup>Mann Whitney-U-test. OR: Odds ratio; CI: Confidence interval; APACHE II: Acute physiology and chronic health assessment evaluation; SOFA: Sequential organ failure assessment

Median LoS-ICU and LoS-hosp was 6.5 and 9 days respectively. All independent variables were neither associated with LoS-ICU nor LoS-hosp. **Conclusion:** Patients with a larger fall in platelet counts during ICU stay may have higher odds of dying.

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### The role of bedside contrast transthoracic echo in screening and diagnosis of pulmonary arterio-venous malformation a case report

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Pulmonary arteriovenous malformations (PAVM's) represent a direct communication between one or more pulmonary arteries and one or more pulmonary veins. We had reported a case of refractory hypoxia in a 23/M patient who is not known for any cardiac or pulmonary co morbidity. The history, clinical and radiological scenario at the time of admission was favoring community acquired pneumonia. Despite all optimal treatment, the patient had remained severely hypoxic. The refractory hypoxia and the worsening of the oxygen saturation while changing from the supine to sitting position, evoked the suspicion of syndrome of platypnea-orthodeoxia (RT to LT shunt). Since our patient was on high fraction of inspired oxygen requirement, shifting the patient for further evaluation was not feasible. Initial bedside echo screening didn't revealed major cardiac abnormality. So we decided to go ahead with trans-thoracic echocardiography (TTE) by intravenous injection of echo-cardiographic contrast. In our case contrast initially appeared in right atrium and after 5 cardiac cycles in left atrium. Based on current data-contrast TTE is the best initial screening test due to its excellent sensitivity and availability. If the result is negative, the likelihood of significant PAVM is low. If the contrast TTE is positive, the patient is very likely to have at least microscopic PAVM's.

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### Evaluation of renal functions: Cystatin C versus serum creatinine for early detection of acute renal failure in critically ill and emergency surgical patients

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**Objectives:** To identify whether cystatin C can detect acute renal failure earlier and better than creatinine and help in better management of critically ill and emergency surgical patients. **Materials and Methods:** 36 critically ill and emergency surgical patients age more than 20 year of either sex who were admitted to the intensive care unit (ICU) and satisfied the inclusion and exclusion criteria were included in the study. They did not have chronic renal failure at the time of admission but were at increased risk of developing renal dysfunction. A serum sample was drawn from each patient in the morning on the day of admission and on 3<sup>rd</sup> day of their ICU stay. A 24 h urine sample was obtained just before the serum sample to calculate the creatinine clearance using the formula estimated glomerular filtration rate = (140-age) × weight in kg × (0.85 if female)/(72 × serum creatinine in mg/dl) × Ccr (ml/min) = (urine volume × urine creatinine)/(serum creatinine × 1440). **Results:** Cystatin C is a better indicator of small changes in glomerular filtration rate (GFR) than creatinine. Cystatin C has better sensitivity and specificity when compared to creatinine sensitivity and specificity. Cystatin C has better diagnostic utility than creatinine. Cystatin C is better prognostic marker than serum creatinine. **Conclusion:** Serum cystatin C is a good real time marker of GFR and kidney injury and it can be used as a prognostic marker of kidney injury in critically ill patients Still this study be made more elaborate at different places and clinical scenarios. If these findings are subsequently confirmed, then the simplicity of serum cystatin C may soon replace Ccr as the bio chemical marker of choice for monitoring GFR in routine practice.

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### N-acetyl cysteine as an anti-oxidant: De-lethalising yellow phosphorous an answer to the unanswered!!

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**Objectives:** Yellow phosphorous (rodenticide) poisoning (YPP) has recently become a fascinating toxicology area, owing to its alarming rates of LT and mortal behavior. However, no definite antidote is available to nullify its toxicity till date. Guidelines cited in standard literatures just revolve around rendering supportive care, despite worst experiences over years. Finding an effective antidote would greatly benefit this chapter in the toxicological world. Our search halted on identifying its pathophysiological mimicry with acetaminophen overdose. **Materials and Methods:** Our panel believed that N-acetyl cysteine (NAC) might be the "liver savior" in YPP also. We commenced a single-centered comparative study at Vinayaka Mission Hospital in September 2011 featuring two YPP groups (with a lethal dose consumption i.e., >1 mg/kg) presenting <24 h following consumption. Patients initially managed at outside-hospitals, with history of liver diseases were excluded. Included patients underwent ABC stabilization, decontamination, supportive care and timely referral for LT, when needed. Total duration of study including retrospective data was 3 years. Control group (n = 48; retrospective data) did not receive NAC but study group (n = 44; prospective data) received NAC (150 mg/kg IV bolus + 50 mg/kg in 4 h + 100 mg/kg in 16 h). All other parameters were standardized to avoid bias. **Results:** The mortality rates which were 67% before NAC usage in management fell to 7% (P < 0.01) after its inclusion to the same. The rates of fulminant hepatic failure also decreased drastically (P < 0.01). NAC administration had almost nil adverse effects. **Conclusion:** NAC stands promising as the only available antidote to shortcut liver scapegoating and to fill the antidote vacancy in YPP.

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### Complication of central venous cannulation

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Complications during central venous cannulation are quite common and various attempts have been made to prevent them. Causes can be from inexperienced operator to distorted anatomy. We submit few complications either seen or occurred in our institution like arterial puncture and hematoma, Internal Jugular catheterization from subclavian vein, mediastinal catheterization, pneumothorax and malpositioning.

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### Comparison of rate of complication during central venous catheterization via internal jugular vein with or without use of guide needle

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**Background and Goal of Study:** To compare the rate of complication during central venous catheterization through internal jugular vein with or without the use of guide needle (22 G). **Materials and Methods:** A total of 60 patients were included in this study. Internal jugular vein cannulation was performed with or without the use of guide needle. Number of attempts and incidence of complications were recorded. **Results and Discussions:** Successful cannulation with lesser attempts was more with the use of guide needle (93.8%) than without guide needle (87.5%). Incidence of complications e.g. arterial puncture were less with the use of guide needle compared with without guide needle. **Conclusion:** Internal jugular vein cannulation with the use of guide needle is superior to cannulation without the use of guide needle in terms of the number of attempts and risk of arterial puncture.

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### Acute respiratory distress in amoebic liver abscess: Bronchohepatic fistula as a cause

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**Introduction:** Pleuropulmonary disease including effusion, empyema or atelectasis may be a presenting feature of amoebic liver abscess. Presentation with acute respiratory distress is however rare. Further, sudden onset of respiratory distress necessitating tracheal intubation and further management in an intensive care unit (ICU) is not reported in patients of amoebic liver abscess. **Case Report:** We report the case of a 16-year-old male who presented with acute respiratory distress during the course of conservative management for amoebic liver abscess. On the 18<sup>th</sup> day following admission to the hospital, the patient deteriorated with respiratory morbidity presenting as cough with brownish sputum which within an hour progressed to respiratory failure. When seen by the intensivist at this time upon referral, the patient had a RR of 40/min, SpO<sub>2</sub> of 51% on O<sub>2</sub> by face mask, was disoriented with evidence of accessory respiratory muscle activity and bilateral lungs had crepitations over entire lung fields. The patient's trachea was immediately intubated and brownish secretions were suctioned out of endotracheal tube and mechanical ventilation was started. Following stabilization, patient was taken up for emergency drainage of abscess under general anesthesia which was uneventful. The patient developed continuous air leak through the abdominal drain inserted into the ruptured abscess cavity in the postoperative period. The patient's trachea was extubated after 48 h of assisted ventilation. Computed

tomography scan revealed rupture of abscess into anterior segmental bronchus resulting in a bronchohepatic fistula. Rest of the ICU stay was uneventful and the patient was shifted to ward on the 5<sup>th</sup> post-operative day. **Conclusion:** This case presents the hitherto unreported bronchohepatic fistula as a cause of sudden respiratory distress necessitating lifesaving endotracheal intubation in patients of amoebic liver abscess.

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### Atypical presentation of glyphosate poisoning

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**Background:** Glyphosate is used as a herbicide with low toxicity but, the surfactant contained in it makes it toxic. Less commonly the patient presents with renal failure. This case report adds further evidence to the unusual presentation. **Case Report:** A 28-year-old male patient was referred to our tertiary care hospital from a local hospital with history of sudden loss of consciousness and repeated vomiting. On arrival to the emergency department, the patient was conscious but agitated and had altered sensorium. He was afebrile; vitals were stable except blood pressure which was 80/40 mmHg. Arterial blood gas (ABG) on admission showed uncompensated metabolic acidosis. Patient was resuscitated with fluids, started on noradrenaline and sodium bicarbonate infusion. Computed tomography brain showed normal study. Then, patient was shifted to the intensive care unit (ICU). On repeated questioning in the ICU, the patient confessed that he had consumed roundup (herbicide) Glyphosate poison but, he did not reveal the quantity of poison consumed. Initially, he was on face mask but, later he was intubated and ventilated. All the laboratory investigations were normal except for serum creatinine 1.5 mg/dL and ABG showed compensatory metabolic acidosis. Later, patient's sensorium improved but, he was oliguric. He had mild hyperkalemia and his renal parameters worsened. ABG showed persisting metabolic acidosis. Nephrologist suggested intermittent hemodialysis until his renal parameters improved. He had persistent low grade temperature. Urine culture came positive for *Klebsiella pneumoniae* and it was treated with antibiotics. Patient's sensorium got better in the wards and the temperature spikes settled. Patient had good urine output and hence, dialysis was stopped. Patient was discharged from the hospital after 12 days of hospitalization. **Conclusion:** In pesticide poisoning, identifying the compound correctly is crucial as the severity of poisoning and management varies in each compound. Most of them do not need to be administered antidote if the compound is known.

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### Ludwig's angina and antibiotic cross reactivity: The rarest challenge in critical care

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**Background:** Ludwig's angina is a potentially life threatening infection of the submandibular space which involves the neck and floor of the mouth. This case highlights the rare incidence of Ludwig's angina and the patient developing multiple antibiotic hypersensitivity reactions on treatment. **Case Report:** A 52-year-old obese man initially presented to a local hospital with complaints of shortness of breath on exertion, which gradually increased at rest since 10 days and had wheezing since 3 days. There he was treated as acute exacerbation of asthma with nebulization and supportive care. After stabilizing the patient, he was referred to our multi-specialty

hospital. On arrival to our hospital, he had low oxygen saturation and supported with oxygen by face mask. Computed tomography (CT) pulmonary angiogram was done which came negative. Later, he developed neck edema causing airway obstruction. Exploration with fiber optic scope suspected Ludwig's Angina. CT and USG neck confirmed it. In view of persistent airway obstruction and difficult intubation, surgical tracheostomy was done electively and patient was put on ventilator. Patient was started with piperacillin/tazobactam for which he developed erythematous papules all over the body and tongue edema increased. Switched to Vancomycin for which he developed Red Man Syndrome even after slow infusion rate. Substituted with doxycycline and clindamycin, the later was stopped due to frequent episodes of diarrhea. Added Ciprofloxacin for which he developed skin rashes. Finally, he was treated with metronidazole and doxycycline. For the all the antibiotic reactions, the suspected drug was stopped and no other treatment was given as the patient was on hydrocortisone and nebulization. Patient got better and was discharged after 8 days of intensive care unit stay and 17 days of hospitalization. **Conclusion:** Early identification and quick management is the key. Securing the airway, surgical drainage and choice of antibiotic are very important.

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### Rhythm and outcome of patient who had In-hospital adult cardiac arrest

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**Introduction:** Successful cardiopulmonary resuscitation after in-hospital cardiac arrest depends, the ability to immediately defibrillate the arrested heart and the quality of the CPR intervention. **Aim:** To determine the different electrocardiography rhythms during the cardiac arrest event and also its effect on the survival of the patient. **Methodology:** This was a prospective study conducted in patients who sustained cardiac arrest in a tertiary hospital from September 2009 to May 2013. Tools used to collect data were Modified Utstein style Format for standard reporting of In-hospital cardiopulmonary resuscitation and modified early warning score chart. **Results:** There were a total of 1135 patients in the pre EWS group and there were 820 patients in the post EWS group. There was a significant association between Initial rhythm and survival. When the initial rhythm was ventricular fibrillation/ventricular tachycardia (VF/VT) the survival was better ( $P = 0.001$ ). Out of the 59 patients in the pre EWS, 45 patients were able to do their activities of daily living. 19 patients more died within 6 months and 26 patients were alive. In the Post EWS, out of 138 patients, 99 patients are able to do their activities of daily living. **Conclusion:** First monitored rhythm as VF/VT has significant association with the survival. Modified early warning score helps the nurses and the physicians to identify patients at risk of In-hospital adult cardiac arrest and this improves the survival of the patients.

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### Study of seasonal variation in snake bite patients admitted to a Mangalore based tertiary care hospital

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**Objective:** The study was conducted to assess a seasonal pattern in the incidence of snake bite among patients attending the emergency services following history of the same. **Materials and Methods:** It was a descriptive study of 60 snake bite patients who presented to the emergency services of a tertiary care hospital in Mangalore. The study was carried out over a period of 2 years. Data was collected by

recording the date, time and the history regarding the circumstances that led to the bite. A clinical examination of the site of bite and a systemic examination was carried out. The data was analyzed using mean, frequency and percentage. **Results:** It was observed that 53.8% of the affected patients were involved in agricultural activity. The bite was observed in the left lower limb in 34.8% of the cases. An increased incidence of snakebite was found during the months of May to November as 70% of the bites were observed during this period. Patients were more susceptible to snake bite after the evening hours as 55% of the bites were observed between 6:00 pm and 12:00 am. **Conclusion:** An increased incidence of snake bite during the latter part of monsoon.

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### Acute lung injury in scrub typhus

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**Introduction:** Scrub typhus caused by *Orientia tsutsugamushi* has re-emerged as an important pathogen causing fever with Multi organ dysfunction syndrome (MODS) including acute lung injury/acute respiratory distress syndrome (ALI/ARDS), though known, is less commonly reported. Here we present our experience of ALI/ARDS in scrub typhus. **Materials and Methods:** In a prospective observational study, conducted over a period of 4 months from 01-08-2013 to 31-11-2013, all cases of ALI/ARDS were evaluated for scrub typhus. ARDS was defined on the basis of criteria given by American-European Consensus Committee. Patient were further classified as per Berlin's definition. Diseases severity and predicted mortality was calculated by simplified acute physiology score (SAPS) II. **Results:** 52 cases of ALI/ARDS were admitted in defined period and scrub typhus constituted 38.46% (20) of cases. Mean age of the patients was  $36.8 \pm 13.22$  years with female preponderance (M:F=2:3). Undifferentiated fever followed by breathlessness were the common presenting features. Eschar and lymphadenopathy were seen in 40% and 20% patients respectively. As per Berlin's definition, 15%, 60% and 25% patients respectively had mild, moderate and severe ARDS. MODS was seen in 30% (6/20) of cases. Mean SAPS II in overall case series was 35.33. Respiratory support was provided to all (18-Invasive mechanical ventilation and 2-NIV). Mean duration of ventilation was  $4.6 \pm 1.25$  days with intensive care unit (ICU) stay of  $6.13 \pm 2.38$  days. Azithromycin and doxycycline were used in all patients except two pregnant females, where rifampicin and azithromycin were used. Overall mortality rate was 15% (3/20), all being in moderate and severe ARDS having high SAPS. **Conclusion:** Scrub typhus is a common treatable cause of ARDS in Indian ICUs and empirical treatment must be instituted early.

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### Correlation of procalcitonin, n-terminal brain natriuretic propeptide, c-reactive protein and total leucocyte count as biomarkers of sepsis in intensive care unit

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**Objectives:** To evaluate the association between procalcitonin (PCT), N-terminal brain natriuretic propeptide (NT-proBNP), C-reactive protein (CRP) and total leucocyte count (TLC) as biomarkers of sepsis and its association with intensive care unit (ICU) outcomes. **Materials and Methods:** Sepsis patients in medical-surgical ICU were evaluated retrospectively (10<sup>th</sup> October to 10<sup>th</sup> December, 2013) for values of PCT along with NT-proBNP, semi-quantitative CRP and TLC done within

24 h of PCT. Demographic data, diagnosis, ICU outcome and length of ICU stay (LOS) were recorded. Statistical analysis was performed using Chi-square test, *t*-test, the Mann-Whitney *U*-test and Spearman rank correlation coefficient ( $r_s$ ). **Results:** Out of 41 patients (Mean  $\pm$  standard deviation [SD] 58.57  $\pm$  17.25 years, 57.14% males), 26 (63.41%) survived, 8 (19.51%) died and remaining self-discharged from ICU. Mean LOS was 5.41  $\pm$  5.62 days. The mean ( $\pm$ SD) PCT, NT-proBNP, TLC and median CRP were respectively 8.51  $\pm$  22.06 ng/ml, 6633.14  $\pm$  8459.44 pg/ml, 14.39  $\pm$  8.7  $\times 10^3/\mu\text{l}$  and  $\geq 96$ ,  $< 192$  (IQR  $\geq 24$ ,  $< 48$  and  $\geq 192$ ) mg/L. Significant positive correlation was observed between PCT and NT-proBNP ( $r_s = 0.305$ ,  $P = 0.049$ ) and CRP and PCT ( $r_s = 0.513$ ,  $P = 0.001$ ). Correlations between all other pair of biomarkers were found to be non-significant. Higher PCT (3.82 vs. 17.23 ng/ml,  $P = 0.03$ ; significant), NT-proBNP (6042.92 vs. 10480.62 pg/ml,  $P = 0.104$ ) and CRP ( $\geq 48$ ,  $< 96$  vs.  $> 192$  mg/L,  $P = 0.48$ ) was observed in patients who died compared with those transferred alive from ICU (excluding self-discharges). Correlations between biomarkers were non-significant in sub-group (based on ICU outcome) analysis except between PCT and CRP ( $r_s = 0.517$ ,  $P = 0.01$ ) in live ICU discharges. **Conclusion:** NT-proBNP and CRP have significant correlation with PCT in ICU patients with sepsis. TLC is a poor marker of infection as well as an outcome of sepsis in ICU.

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### Height measurement in the critical care unit: Is there a gold standard?

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**Objective:** Height measurement in the Critical Care Unit (CCU) is necessary for estimating ideal body weight and calculating drug dosage, nutrition goals and setting appropriate tidal volumes in ventilated patients. Variability in height measurements will lead to erroneous calculations and adversely impact outcomes. In this study, we compare three methods of height assessment and evaluate the level of correlation and inter-observer reproducibility between them. **Materials and Methods:** We performed a prospective observational study of CCU patients admitted between December 2012 and February 2013. Patients' heights were assessed using a measuring tape in the supine position, by three different methods: Two-point (single measurement from the vortex of the head to the tip of the great toe), four-point (measurement from head to shoulder to hip to knee to sole of foot) and wing span (distance between tips of the middle fingers of the two outstretched arms) method (height calculated using the standard formula  $1.35 \times \text{wingspan} + 60.1$  for females and  $1.40 \times \text{wingspan} + 57.8$  for males respectively). The measurements were performed independently by 2 different nurses who were blinded to each other's measurements. Correlation between the three methods for each observer and inter-observer reproducibility for each method was calculated using intraclass correlation co-efficient. **Results:** A total of 93 patients were included in the study. The intraclass correlation coefficient of height measurements between the three methods for both the observers was 0.81. The intraclass correlation co-efficient for inter-observer reproducibility were 0.90 for the two-point method, 0.81 for the four point method and 0.83 for the wing span method. **Conclusion:** Patients' height measured using the three different methods correlated well with each other for both the nurses. Of the three methods two-point method showed very strong inter-observer reproducibility. In our study, two-point method seems to be the most easy, accurate and reproducible method.

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### Organ failure in acute pancreatitis and its impact on the outcome in critical care

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**Objectives:** Most important determinant of mortality in acute pancreatitis is organ failure (OF). The aim was to study the incidence of OF in acute pancreatitis and its relation with the extent of necrosis and outcome. **Materials and Methods:** A total of 61 patients were reviewed and parameters studied were OF, extent of necrosis and outcome. Study group was divided into three groups: No organ failure (NOF), transient organ failure ( $< 48$  h) (TOF), persistent organ failure ( $> 48$  h) (POF). **Results:** Out of 61 patients, 30 patients had NOF (49.1%), whereas 11 patients (18%) had TOF and 20 patients (32.7%) had POF. Mean age was 46.5 years with male predominance. Pulmonary and renal failures were most common (32%), followed by cerebral vasospasm, coagulation system and central nervous system. 14 (46.4%) patients had one or two OF, 17 (56.6%) had more than two OF. There was no death in up to two OF but 70% (7) deaths in three organ involvement, 80% (4) in four and 100% in five OF. Percentage of necrosis was evaluated for its relationship with OF. In NOF group, 19 (63.3%) patients had no necrosis, when compared to 11 patients with necrosis in TOF and POF group (35.4%). Out of 61 patients, 13 patients died. All 13 patients who had mortality belonged to POF group ( $P < 0.001$ ). **Conclusion:** Patients with POF have a higher mortality. Early persisting and deteriorating OF had worst outcome of all. There was an increase in mortality with an increase in number of organ involvement. The relationship between the extent of necrosis was directly related with incidence of OF.

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### Sepsis of unknown origin with multiorgan failure syndrome: Think of hemophagocytic syndrome

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**Objective:** Hemophagocytic syndrome (HPS) is a clinic pathologic entity characterized by increased proliferation and activation of benign macrophages with hemophagocytosis throughout the reticuloendothelial system. It is a potentially lethal disorder due to an uncontrolled immune response to a triggering agent. HPS may be primary, or secondary to malignancy, infections, auto-immune diseases and pharmacotherapy. HPS is a rare but life-threatening complication. Herein, we described a female patient with HPS with secondary sepsis. Our objective is to raise the importance of early diagnosis of HPS by presenting a representative case. **Case Report:** The present case report is about a 50-year-old female patient who presented to intensive care unit with fever, rash and loss of appetite progressing to multiorgan failure syndrome including acute respiratory distress syndrome (ARDS), acute kidney injury, bicytopenia (anemia and thrombocytopenia), deranged liver functions (transaminitis), coagulopathy and increased inflammatory markers (C-reactive protein and percutaneous tracheostomy) despite broad spectrum antibiotics. A bone marrow biopsy was performed which revealed histiocytes showing hemophagocytosis. Prolonged fever, splenomegaly, bicytopenia, hypofibrinogenemia, hyperferritinemia and hypertriglyceridemia confirmed diagnosis of HPS. The delays in diagnosis due to its rare incidence lead the patient to secondary sepsis. In spite of aggressive and symptomatic treatment she finally succumbed of severe ARDS, septic shock and coagulopathy. **Conclusion:** This case summarizes the rarity and complexity of HPS diagnosis, due to septic shock-like manifestations. Early diagnosis and treatment with high dose steroids and other immunosuppressants is a key to salvage such patients. This report stresses on awareness among intensivists and physicians about HPS, as early diagnosis and appropriate treatment will achieve a better outcome.

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### Flexible fiberoptic bronchoscopy in critically sick Indian children

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**Background:** Flexible fiberoptic bronchoscopy (FFB) remains a modality rarely used in critically sick Indian children for a variety of reasons. This modality, however, is safe and helpful for both diagnosis as well as guidance of treatment. This study is a brief description of our experience with this modality. **Materials and Methods:** This observational study was conducted in the pediatric intensive care unit (PICU) over a 15 month period from March 2012 to June 2013. Children requiring a bronchoscopy for predefined indications were enrolled in the study. A record was maintained of the indication for the procedure, the patient's clinical status, ventilator parameters, etc. The procedure was performed under continuous cardiorespiratory monitoring. A lavage sample was collected when indicated. Patient's vital parameters and ventilator settings, if any, were recorded before, during and up to 6 h post procedure. The success in achieving objectives, both diagnostic and therapeutic was noted. **Results:** FFB was performed in a total of 43 PICU patients during the study period. The most common indication was persistent radiographic shadows in the form of pneumonia (27.9%) or persistent collapse (20.9%). Other common indications were suspected airway foreign body (20.9%) and acute stridor (16.3%). 15 (34.9%) of the patients were mechanically ventilated at the time of performing FFB. Post FFB radiological clearing was seen in 75% of patients. All patients tolerated the procedure well with no major adverse events. There was a mild increase in ventilator requirements in 6 patients (40%). 4 patients were on inotropic support during the procedure, and inotropic requirements increased slightly in 2 of them (50%). Definitive diagnostic clue to etiology was available in nearly 85% of patients who underwent the procedure. **Conclusion:** FFB in PICU patients has a high diagnostic yield, is safe and well-tolerated.

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**To study the effect of type 2 diabetes on pulmonary function test****Nikhil Panpalia, Sandhya Kulkarni, Swati Aundhkar**

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**Background and Objective:** The purpose of this study was to evaluate pulmonary functions in patients with type 2 diabetes mellitus and to determine their correlations with anthropometric profile, glycaemic control and duration of diabetes. **Materials and Methods:** A total of 40 type 2 diabetic patients, aged 30-60 years, with diabetic duration of 1-20 years, were included in the study. Type 2 diabetic patients were taken, using random sampling method. Detailed anthropometric and physiological data were collected, spirometry was performed and forced vital capacity (FVC), Forced expiratory volume in 1 s (FEV1), and FEV1% are recorded. Peak expiratory flow rate (PEFR) and maximum expiratory pressure (MEP) were recorded by Wright's Peak flow meter and modified Black's apparatus. And the results were compared with age and sex matched control (non-diabetic) subjects. Results were analyzed by calculating mean  $\pm$  standard deviation, using Student's *t*-test, and Pearson correlation. **Results:** All the respiratory parameters are reduced in type 2 diabetic patients compared with the control of which FEV1, FEV1%, and MEP show highly significant reduction ( $P = 5.953E-06, 4.19E-07, 1.206E-06$  respectively for FEV1, FEV1%, and MEP). Lung functions are negatively correlated with glycaemic status and duration of diabetes ( $r = -0.390, -0.342$ ). **Interpretation and Conclusion:** The present study shows reduced dynamic lung function parameters like (FVC, FEV1, FEV1%, PEFR, and MEP) in type 2 diabetes mellitus. Lung function parameters are negatively correlated to glycaemic status and duration of diabetes.

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**Cesarean section in Eisenmenger syndrome:****Anesthetic management with graded epidural using the nebulized alprostadil and pulmonary artery pressure measurement from tricuspid regurgitation jet by transthoracic echocardiography****Nisha Bhojnagarwala, Sugata Dasgupta, Soumi Das, Bijoy Kr Bandopadhyay, Biswajit Majumdar**

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Pregnancy in patients with Eisenmenger syndrome is known to be associated with a high mortality. Recently, with the introduction of selective pulmonary vasodilators in clinical practice, management of these patients has become more possible. In developing countries, these patients present late in pregnancy having received no definite therapy, with exacerbation of symptoms and with very less time for optimization prior to anesthesia. We report here two such cases with Eisenmenger syndrome resulting from two different primary cardiac defects who presented to us near term for elective delivery by Caesarean section. A slow graded epidural anesthesia was administered successfully to both the patients under invasive cardiac monitoring and support of phenylephrine and milrinone infusions. Transthoracic echocardiography was used to monitor the tricuspid regurgitant jet as an indirect measure of pulmonary artery pressures. Immediately after baby delivery both the patients were nebulized with prostaglandin E1 analogue alprostadil. Postoperatively the patients remained stable and were managed in the post anesthesia care unit and were discharged from the hospital after an uneventful stay and a normal cardiac work-up of the newborns. Hence, a slow induction of epidural anesthesia leading to a less fall in systemic vascular resistance and thus preventing an increase in right to left shunt can be a safe mode of anesthesia in Caesarean section in pregnancy with Eisenmenger syndrome. Alprostadil intraoperatively or postoperatively in the intensive care unit can be an easily available and cheaper option as a selective pulmonary vasodilator in set ups with limited resources in developing countries.

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**Lightning injury in a desert: A case report and review****Nissar Shaikh, Firdous Ummunnisa<sup>1</sup>, Ranjan Methias**

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Thunderstorms and lightning are uncommon in the Arabian Gulf. Lightning injury occurs as a result of exposure to massive direct current for a brief period. Most frequently fatalities after the lightning injury are due to cardiorespiratory arrest. It is essential that acute care physicians as well as paramedical personnel are aware of lightning injury and its management. This is a case of a field worker; who had a lightning injury while working and which led to a cardio respiratory arrest. **Case:** A young male was brought to the emergency room with a history of struck by lightning; while he was at work in the desert on a road side project in a thunderstorm. The lightning injury was witnessed by his colleagues and they started immediate basic life support when they found him unconscious without any pulse. He was intubated, ventilated and started on vasopressors in the nearest primary health center. He was then transferred to intensive care unit. He was weaned off vasopressors and ventilation by day 4 and he was extubated then transferred to the ward and subsequently discharged without any major disabilities. **Conclusion:** Awareness of the danger posed by lightning injury is essential. Early life support is important for a better outcome of lightning induced cardiorespiratory arrest.

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**Outcome of patient's admitted with diagnosis of posterior reversible encephalopathy syndrome in a multidisciplinary tertiary intensive care unit**

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**Introduction:** Posterior reversible encephalopathy syndrome (PRES) is a well-recognized, clinical neuro radiological entity characterized by transitory neurological disturbances including altered mental status, seizures, headache and blurred vision, with acute or sub-acute onset. PRES is more often associated with acute hypertension or immune suppression. PRES is usually considered to be a reversible condition if promptly recognized and correctly treated. Otherwise, a delayed or incorrect diagnosis may lead to irreversible damage. **Aim:** To retrospectively analyze patients with PRES on precipitating factors, clinical condition and outcome. **Methodology:** All patients diagnosed with "posterior reversible encephalopathy syndrome" on magnetic resonance imaging who were admitted in our intensive care unit this year were included in the study. All parameters and outcome of the patients were recorded. **Results:** Totally four patients were identified. All were pregnant. 2 of 4 had elevated blood pressure. One patient had no signs of eclampsia until post-operative day 5 after which she had GTCS. All patients had GTCS. Two more patients are due for discharge who will be included in the study once they get discharged making a total number to 6.

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**Cerebritis: Uncommon presentation of infective endocarditis****P George, N Hegde**

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Infective endocarditis is a grave medical emergency and is known for its protean manifestations. We report a 25-year-old male laborer who presented with fever, altered sensorium and seizures since 2 days. Clinical features and investigations including cerebrospinal fluid analysis were highly suggestive of viral encephalitis considering its endemicity. Within 24 h of admission we noticed him to have developed acute aortic valve regurgitation and a subsequent echocardiography identified a large vegetation on the valve leaflet. He was started on broad spectrum antibiotics initially with supportive care. Later switched over to sensitive antibiotics based on culture sensitivity and he responded well to therapy. Infective endocarditis is reported to present as cerebritis in the review of literature but none from the Indian subcontinent. Infective endocarditis must be suspected in a febrile patient by any clinicians for its great masquerading ability.

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**Scrub typhus with acute respiratory distress syndrome — clinical spectrum and outcome****MV Pradeep, S Manimala Rao, Dnyaneshwar Mutkule, Alai Taggu**

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**Objectives:** (1) To compare clinical features, lab values, and outcome in scrub typhus patients with or without acute respiratory distress syndrome (ARDS). (2) Comparison of two commonly used diagnostic tests for scrub typhus (a) Weil-Felix test, (b) immuno-chromatography. (3) Screening criteria for scrub typhus detection. **Materials and Methods:** A prospective study was conducted on 58 patients with febrile illness and thrombocytopenia proved to be having scrub typhus by immune-chromatography test during a period of 12 months were included. Clinical features, lab parameters, and outcome were compared in patients with or without ARDS. **Results:** Among 58 patients 34 patients had no ARDS and 24 patients had ARDS. The clinical feature like dyspnea, cough, low blood pressure (mean arterial pressure <65 mmHg), and inferior vena

cava collapsibility by ultrasound were statistically significant in scrub typhus patients group with ARDS. The laboratory parameters like haemoglobin, hematocrit, total white blood cell counts, serum creatinine, serum total bilirubin, serum glutamic oxaloacetic transaminase, serum glutamic pyruvic transaminase, lactate dehydrogenase, creatine phosphokinase, serum lactate and serum albumin values were statistically significant ( $P < 0.0001$ ) in scrub typhus patients group with ARDS. The higher titers of Weil-felix can be correlated with more severe form of disease according to our observation. All 34 scrub typhus patients without ARDS recovered completely. Among 24 scrub typhus patients with ARDS, 22 patients recovered and 2 patients died. **Conclusions:** This study may be helpful in early diagnosis of scrub typhus patients, and predict the risk of ARDS onset and also explains regarding specificity of Weil-Felix test over Immuno-chromatography test.

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**Impact of hospital acquired infections on morbidity and mortality: A study of critically ill patients in a tertiary care hospital****Pradip Dalvi**

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**Objectives:** (1) To determine the incidence of hospital acquired infections viz. ventilator associated pneumonia (VAP), urinary tract infection (UTI), and blood stream infections (BSI). (2) To study morbidity and mortality associated with healthcare-associated infection (HAI) particularly in association with highly virulent and resistant organisms viz. methicillin resistant *Staphylococcus aureus* (MRSA), vancomycin resistant enterococci (VRE) and extended spectrum beta lactamase (ESBL). (3) To study morbidity associated with HAI in this patient population. **Materials and Methods:** We are conducting an observational study over one year period from 1<sup>st</sup> January 2013 to 31<sup>st</sup> December 2013 in a 48 bed intensive care unit (ICU) population. All adult patients who are diagnosed as having pre-specified hospital acquired infections viz. VAP, UTI and BSI constitute study population. Association of these infections with morbidity and mortality will be evaluated. Association of infections with virulent and drug resistant organisms viz. MRSA, VRE and ESBL will be discussed in detail. Morbidity indices include days of mechanical ventilation (MV), days free of MV, ICU length of stay and hospital length of stay. Data will be analyzed by appropriate statistical tests. **Results:** Out of 1661 patients admitted until date 70 (4.21%) had Hospital acquired infection. 32 (1.92%) had VAP, 5 (0.3%) had UTI and 18 (1.08%) had BSI \_\_\_patient died (\_\_\_\_%). **Conclusion:** Until now, the data shows a strong correlation between HAI and mortality; however final conclusion will be drawn at the end of the study period.

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**Study of serum magnesium level in diabetes mellitus type II****Prasad Gurjar, MM Patil**

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**Objectives:** To study the level of serum magnesium in patient with type II diabetes mellitus compared with non-diabetic healthy individuals. **Materials and Methods:** In the study 50 patients of type II diabetes mellitus (cases) along with 50 non diabetes patients (control) admitted in our medicine department will be taken during a period of July 2012-July 2014. The change in the pattern of serum magnesium level in the type II diabetes mellitus in comparison with the control group will be studied. The study will be conducted using calmagite method. **Study Design:** Comparative prospective study. **Results:** The results demonstrated that: There is hypomagnesaemia



in 30% cases as compared to control 66% patients with uncontrolled type II diabetes mellitus showed a lower level of serum magnesium as compared to patients with control diabetes mellitus. Nearly 72% diabetic patients on insulin therapy showed lower serum magnesium level as compared to patient with oral hypoglycemic drug. **Conclusions:** The serum magnesium level depends on the diabetic status of an individual as well as the type of treatment incorporated.

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### Prevalence of prediabetes in students of a medical college in central India

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**Objectives:** To recognize such students in our medical college who are at risk of developing diabetes in their later years by screening them for prediabetes with the help of significant family history and to find association of any risk factors like obesity by taking their waist-hip ratio (WHR). **Materials and Methods: Study Design:** Prospective community based observational study. Settings: The study is conducted in the Department of Medicine at Acharya Vinoba Bhave Rural Hospital at Jawaharlal Nehru Medical College, Sawangi, Meghe, Wardha. **The Participants:** The total number of participants is randomly selected and is 200 in number. The exclusion criteria will be: (1) Those who have diabetes mellitus and receiving either insulin or oral hypoglycemic drugs. (2) Those who are unwilling to be part of the study. Parameters assessed: (1) Fasting blood sugar level, (2) blood sugar level after 2 h of 75 g of glucose. (3) Waist hip ratio. **Results:** Among the 200 participants 27% were found to be prediabetics out of which 64% were females and 36% were males. Out of 64% prediabetic females 23% had WHR above cut off value. Among 200 participants 37% had a positive family history for diabetes out of which 59.5% were prediabetics. **Conclusion:** Persons with prediabetes actually have the same complications as persons with diabetes but only less frequently. They are at risk of developing both the microvascular and macrovascular. If these patients are intervened early by intensive weight loss and life-style intervention they can substantially improve glucose tolerance and prevent progression from IGT to type 2 diabetes.

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### Prevention of catheter associated urinary tract infections by applying the (catheter associated urinary tract infection) bundle in medical intensive care unit patients

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**Aims and Objectives:** To develop and implement catheter associated urinary tract infection (CAUTI) maintenance and prevention bundle for MICU patients. **Methods:** A multidisciplinary team including infection control, intensivists, intensive care unit (ICU) nurses, and refined and disseminated education tools in education included strategies for prevention post insertion of the catheter. (Daily assessment of need for maintaining urinary catheter documented in clinical notes, close system to be maintained, collection bag kept below the level of bladder (not on the floor), no kinks in catheter and collection tube, securing device used to prevent movement of catheter, metal cleaning done with lukewarm water in each shift, urinary bag is less than two-third full, Assigned nurse aware of method of collecting small volume specimen). Audit on bundle compliance increases the infection of complex rounds. This was communicated to all the nursing in charges, HOD of critical care as well as educated to nurses. **Results:** Before the implementation

of CAUTI bundle we had 20 patients who developed CAUTI, representing 1.53% of total admissions to MICU in 1 year, with 635.53 catheter days and having a CAUTI rate of 2.24. Post bundle we had 8 patients who developed CAUTI representing 0.61% of total admissions, catheter days of 682.46 and a CAUTI rate of 1.02. **Conclusion:** By following the CAUTI bundle we were successfully able to decrease the CAUTI rate by almost 50%.

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### Role of stethoscope in the spread of nosocomial infection in intensive care unit

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**Introduction:** Nosocomial infection remains a significant hazard for hospitalized patients as well as for health care workers. The health care equipments like diaphragms of stethoscopes have been shown to harbor potentially pathogenic bacteria. Following contact with infected skin, pathogens can attach and grow on the diaphragms of stethoscopes and subsequently be transmitted to other patients. **Aims and Objective:** To study the presence of bacteria on the stethoscopes of doctors, nurses in intensive care unit (ICU) and to evaluate the efficacy of alcohol in disinfecting these stethoscopes. **Materials and Methods:** It was a prospective randomized study conducted on 40 stethoscopes of physicians and nurses working in ICU. The diaphragm was pressed firmly and rubbed once on Blood Agar and then MacConkey Agar media and the same stethoscope sample was taken after cleaning with alcohol rubs. Then plates were incubated at 37°C for 48 h. The organisms were identified by standard methods. Antibiotic susceptibility was carried out by Kirby-Bauer disc diffusion method. **Result:** Out of these 40 stethoscopes, 31 different isolates were obtained. Among them 24 were Gram-positive cocci and 7 were Gram-negative bacilli. The common isolates were Coagulase negative *Staphylococcus* (CONS) 18, *Staphylococcus aureus* 6 and *Acinetobacter* species 3. Rest was *Escherichia coli* (2 isolates) and *Pseudomonas aeruginosa* (2 isolates). *S. aureus* were sensitive to gentamycin and cotrimaxazole whereas *Acinetobacter* were to imipenem and amikacin. It was also observed that after cleaning with 70% isopropyl alcohol only 3 isolates were obtained from 2 stethoscopes. **Conclusion:** This study shows that the stethoscopes are a potential source of contamination in ICU and this can be greatly reduced by cleaning the diaphragm of stethoscope with alcohol. Hence we should encourage the cleaning of stethoscope more frequently.

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### Tetanus in closed fracture humerus: An unexpected presentation

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Tetanus is a life threatening disease. Thanks to tetanus vaccine, cases of tetanus are rare these days but not unreported in tetanus prone injuries. We report a case of tetanus in a young healthy patient with closed fracture. A 31-year-old male with closed supracondylar fracture humerus presented with abnormal uncontrollable movements to the intensive care unit on the 5<sup>th</sup> day after residential tenancy act. Patient was conscious, coherent, with opisthotonus posture, dystonic movement of limbs and muscle spasms. Deep tendon reflexes were exaggerated. Autonomic dysfunction manifestations (tachycardia, pyrexia and sweating, urinary retention) were present. Subsequently the airway was

secured and patient sedated and paralyzed. Computed tomography brain and cerebrospinal fluid (CSF) analysis were normal. There was no antipsychotic drug/poisoning history hence a clinical diagnosis of tetanus was made, 7500 units of human anti-tetanus toxin was injected intra-muscularly in divided doses at several sites. Patient received antibiotics and other supportive care. Following clinical improvement, 72 h later patient was extubated successfully. Diagnosis of tetanus is usually clinical with no specific laboratory tests. Clostridium tetani is cultured from the wound only in a 3<sup>rd</sup> of cases. Not all cases with positive cultures develop tetanus; however our patient did not even have a skin abrasion. He received active immunization with tetanus toxoid during his childhood and also at the time of RTA. The presence of high antibodies titer does not confer 100% protection. Tetanus immune globulin (TIG) has been recommended by CDC for tetanus prone wounds with unknown immune status. However this patient improved with TIG. Hence a high index of suspicion is required in diagnosis and timely administration of TIG may be lifesaving.

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### A rare case of dengue induced acute disseminated encephalomyelitis

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**Aims and Objective:** To present a rare and usual case of dengue induced acute disseminated encephalomyelitis (ADEM). **Materials and Methods:** Retrospective case review of an interesting case of dengue fever with neurological manifestations. Case records were reviewed and case prepared. **Case Report:** This was a case of a 12-year-old female patient who admitted with the complaints of fever with chills and rigors for 3 days, two episodes of vomiting altered behavior for few hours. On examination she was afebrile, tachycardic, staring gaze, not obeying commands, lower limb asymmetric weakness and increasing drowsiness. She required elective ventilation for airway protection. Diagnosis of dengue was confirmed with both antigen (NS1) and antibody immunoglobulins M (IgM) test yielding positive results. She was treated with artesunate and doxycycline awaiting malaria results. A magnetic resonance imaging brain confirmed multifocal asymmetric area of altered signal intensity involving bilateral cerebral and cerebellar hemisphere consistent with radiological diagnosis of ADEM. Cerebrospinal fluid (CSF) examination was unremarkable. Diagnosis of dengue induced ADEM established; she was commenced on plasmapheresis on day 3 of her admission. She received 5 consecutive days of plasmapheresis, each of 2 L exchanges. This was followed by 1 mg/Kg of prednisolone started and tapered over the next 4 weeks. Over the next couple of weeks she had a tracheostomy and was gradually weaned off the ventilator. By the end of 4 weeks she was shifted towards, with right sided minimal weakness, but lot of emotional lability. She was discharged for the hospital after rehabilitation at 7 weeks from admission. At the end of 6 months, she is back to her normal school with no neuro psychiatric complications. **Conclusion:** This is an interesting case of dengue which depicts wide array of complications requiring medical interventions.

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### Intensive care unit weight guesstimation study

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**Aims and Objective:** To determine the accuracy of the guesstimated weight of the patients acutely admitted to the intensive care unit (ICU). **Methodology:** Single center prospective observational study. Comparing the difference in weight guesstimation and actual

weight of patients. On admission to Intensive care 50 consecutive patients who could stand on weigh scale safely as determined by treating doctor were enrolled. The patient next of kin, ICU registrar, nurse looking after patient and the ICU consultant were blinded of the actual weight and then asked to guesstimate the weight. The maximum deviation from the actual weight was recorded. **Results:** The closest in weight guesstimation were nurses mean standard deviation of 1.9 Kg followed by the ICU consultant with mean standard deviation of 2.3 kg. Surprisingly the relatives were least likely to guess the weight right with been off target by mean standard deviation of 3.3 Kg and the registrars coming a distant third at a mean standard deviation of 2.9 Kg. Nurses tended to under estimate the weight while the relatives often overestimated the weight. **Conclusion:** In an era where the medical practice in ICU is increasingly weight based it is prudent that weight of patients needs to be accurately measured. Guesstimation can be harmful especially since right from drug dosage to ventilatory strategy is weight based. Hospitals should invest in weighing machines capable of weighing patients who cannot stand or are unconscious.

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### A rare case of refractory status epilepticus — Rasmussen's encephalitis

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**Introduction:** Although a majority of patients with newly diagnosed epilepsy will eventually achieve remission, nearly 1 in 5 of them continue to exhibit chronic recurrent seizures despite optimal treatment with antiepileptic drugs (AEDs). Surgical treatment can be an option for selected patients with medically refractory epilepsy. **Case Report:** A 20-year-old tracheostomized female from Oman presented to our ER, with ongoing right sided seizures (on 7 AEDs), in septic shock. She was ventilated, treated for sepsis and her AEDs were modified. Seizure control was finally achieved by inducing barbiturate coma. She subsequently underwent treatment with immunoglobulins but attempts to wean her off the barbiturates resulted in recurrence of seizures. Magnetic resonance imaging brain showed left hemispheric damage and positron emission tomography computed tomography brain showed gross abnormality (hyperactivity) of the entire left hemisphere, suggestive of Rasmussen's encephalitis. A left functional hemispherectomy was undertaken and her seizures were finally brought under control. She was weaned off from the ventilator and her AEDs were also gradually tapered leading to her discharge after decannulation of her tracheostomy tube, with an M5 response and on maintenance doses of only 2 AEDs. **Conclusion:** Rasmussen's encephalitis needs to be included in the differential diagnosis of all patients with refractory seizures and the surgical means of correcting the same needs to be considered. Hemispherectomy, or hemidecortectomy as it is more accurately described, has been highly effective in reducing or eliminating medically intractable seizures associated with hemiplegia.

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### Acute encephalopathy and polyneuropathy as a presentation of Sjogren's

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**Introduction:** Neurological involvement in Sjogren's syndrome (SS) may be manifested in the central nervous system (CNS) and/or peripheral nervous system. **Case Report:** A female of 33 years

was brought to our ER, on a ventilator, sedated and paralyzed, from an outside center where she had presented with a history of fever, headache and *GTCS* followed by altered mental status. Initial investigations revealed leucopenia, thrombocytopenia, pericardial and pleural effusions with mild ascites. Cerebrospinal fluid showed 50 white blood cells with lymphocytic predominance, (90%) and was negative for all major viral, bacterial pathogens. Magnetic resonance angio brain showed features suggestive of meningitis, negative for any vasculitic pathology. She was treated with antibiotics and low dose steroids, she showed minimal improvement in her sensorium, was extubated, re-intubated in view of persistent tachycardia, tachypnea and subsequently tracheostomized. Considering the possibility of auto-immune encephalitis, her steroid doses were hiked up which led to a remarkable improvement in her overall status in the next 4 days. She was weaned off the ventilator, was conscious, alert and obeying commands though was noted to have severe quadreplegia. NCVs showed severe sensori-motor axonal neuropathy. Her autoimmune panel came positive for anti-Ro/SSA antibodies, suggestive of Sjogren's. She continued her steady progress with improvement in her muscle power and was discharged in another 2 weeks, after decannulation, ambulatory with support. **Conclusion:** CNS involvement represents a rare but not negligible complication of primary SS, prompting attention in the differential diagnosis of apparently isolated neurological syndromes.

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**Safety and efficacy of intravenous thrombolysis in patients with acute ischemic stroke**

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**Objectives:** To determine the "safety and efficacy" of intravenous (IV) thrombolysis in patients with acute ischemic stroke in a JCI accredited Hospital in South India. **Materials and Methods:** A retrospective analysis of the data of 50 patients of acute ischemic stroke, who presented to a tertiary care center, within the window period of 4½ h and subsequently underwent intravenous (IV) thrombolysis with recombinant tissue plasminogen activator (rtPA), was done to determine the safety and efficacy of IV thrombolysis. Safety parameters included presence or absence of bleeding complications, both intracranial and extracranial as well as mortality. Efficacy was assessed by two parameters, (1) drop in NIHSS score by 4 points or more (comparing NIHSS at admission and discharge) (2) modified Rankin scale at discharge. **Results:** Nearly 74% of our patients improved after IV thrombolysis. Bleeding complications were seen in 10% patients, with extracranial bleed seen in 4% of patients, manifested by gum bleeding, hematuria and/or malena, not requiring blood transfusions and intracranial bleed in 6% of patients, mortality rates were close to 6%. **Conclusion:** IV thrombolysis is both safe and effective in treating patients with acute ischemic stroke.

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**Incidence of dysphagia in patients of acute stroke**

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**Objectives:** To try and to determine the incidence of dysphagia in patients admitted with acute stroke in the stroke unit of a JCI accredited Hospital in south India. **Materials and Methods:** A retrospective study of the in-hospital records of 100 patients of acute stroke, both hemorrhagic and ischemic, who were undergoing treatment in the stroke unit of our hospital, during the last 6 months, was done, to determine the incidence of dysphagia in these patients.

Dysphagia was assessed by performing the "swallow test" in all patients who were conscious, not on mechanical ventilation and who were co-operative (not restless, delirious and/or agitated). **Results:** About 23% of all acute stroke patients admitted in our unit had dysphagia, proven by a positive swallow test. 13% of these were patients of ischemic stroke and 10% were admitted with hemorrhagic strokes. In 10% of patients swallow test could not be performed. Incidence of dysphagia was more in large hemispheric strokes and posterior circulatory strokes. **Conclusion:** A significant number of all acute stroke patients are found to have dysphagia, as manifested by a positive swallow test. Dysphagia testing should be mandatory in all stroke units.

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**Threat of Gram-positive infections in intensive care unit-is it overhyped?**

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**Objective:** Recent literature has shown significant increase in incidence of Gram-positive infections in intensive care units (ICU's) in Indian subcontinent in last 5 years. The objective of our study is to find out whether Gram-positive infections are really a threat as claimed in ICU's. **Materials and Methods:** We conducted an observational study in 35 beds Medical ICU over a 3 year period from November 2010 to October 2013. We analyzed the incidence of Central line associated Blood Stream infections (CLABSI), Catheter associated urinary tract infection (CAUTI), ventilator associated pneumonia and health care associated pneumonia (VAP and HCAP) and device related infections caused by Gram-positive bacteria. These infections were defined according to recent CDC guidelines. We also analyzed the culture and sensitivity pattern of these infections. **Results:** There were a total of 1049 cultures positive in the three year period. Community acquired infections were excluded from our list. The incidence of Gram-positive infections was 2.9/1000 ICU admissions. The most common was *Staphylococcus aureus* [Table 1]. *Enterococcus fecium* was second commonest isolate. CLABSI was the most common cause of Gram-positive infections at 37%, Device related and surgical site infections contributed 20% [Table 2]. Almost 85% isolates were sensitive to vancomycin and all were sensitive to linezolid.

	(%)
MRSA (methicillin resistant)	28
MSSA (methicillin sensitive)	14
Coagulase negative staph	13
Enterococcus fecium	36
Enterococcus gallinarum	4

MRSA: Methicillin resistant *Staphylococcus aureus*; MSSA: Methicillin-sensitive *Staphylococcus aureus*

	(%)
CLABSI	39
Device related infections	24
VAP/HCAP	10
CAUTI	27

CLABSI: Central line associated blood stream infections; VAP: Ventilator associated pneumonia; HCAP: Health care associated pneumonia; CAUTI: Catheter associated urinary tract infection

**Conclusion:** The incidence of Nosocomial Gram-positive infections is significantly less in Indian context than reported. All staph are not methicillin resistant. Sensitivity to linezolid is universal. Empirical use of glycopeptides should be discouraged in ICU's and early removal of central lines to be strictly protocolized.

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### Intracranial hemorrhage in a case of dengue

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**Background:** Dengue has emerged as one of the most important mosquito-transmitted arboviral diseases of tropical countries. It is estimated that 100 million cases occur per year, and the at-risk population is around 2.5 billion. Hemorrhagic complications are rare but fatal in dengue. We discuss the management of an interesting presentation of dengue with intracranial hemorrhage. **Methods:** A 28-year-old male patient presented to us with a history of fall and altered sensorium. Initial neuro-imaging showed intracranial hemorrhage. He had a positive dengue NS1 antigen, immunoglobulins M (IgM) and IgG antibody tests, deranged prothrombin time and thrombocytopenia. All relevant parameters and neurologic status were closely monitored. On deterioration of neurologic status he was immediately taken up for neurosurgical intervention. **Results:** The patient had an excellent outcome. **Conclusion:** It can be said that a high degree of suspicion and timely neurosurgical intervention can reduce the morbidity and mortality of this lethal presentation of dengue. At risk patients who have a history of fever classical of dengue and altered sensorium need immediate attention and investigation.

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### Ethical issues: Should cardiac surgery be done on children with congenital heart disease and preexisting severe brain damage? A report of four interesting cases

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**Introduction:** Different studies have shown that children undergoing open heart surgery for congenital heart defect develop some form of neuro developmental impairment post-surgery. The degree of impairment depends on the cardiopulmonary bypass (CPB) factors. In such a scenario, is open heart surgery for congenital heart disease justified in infants with preexisting severe neurological injury. We report four interesting cases of infants who underwent open heart surgery and their outcome. We report 4 interesting cases of different backgrounds who came to our center for cardiac surgery in different time periods in the last 24 months. All four cases had significant preexisting neurological injuries. In addition one case also had associated congenital syndrome. Two cases had in addition multi organ dysfunction, septic shock and high output failure. The last was a late presenting truncus arteriosus with severe pulmonary hypertension, dilated aorta and spastic cerebral palsy. A multidisciplinary team approach was taken regarding decision for cardiac surgery in these patients. The possibility of worsening of existing neurological status was discussed with the parents. All 4 cases underwent successful cardiac surgeries (3 on CPB and one closed heart). Post-surgery they all had a long hospital stay and there was no further deterioration in the neurological status of these patients. One patient was discharged on home oxygen therapy and gavage feeding. Another required lifelong anticoagulation for metallic valve. On follow-up two of the patients showed improvement in their developmental level. **Conclusion:** Open heart surgery in a child with preexisting neurological injury is fraught with risks of aggravation of preexisting neurological injury in the form of infarction/intra-cranial bleed. However children with preexisting severe neurological injury can undergo cardiac surgery but the decision for such a step should be multidisciplinary and should judge the merit of each patient.

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### Bilateral recurrent spontaneous pneumothorax in post-operative complete atrioventricular canal defect in an infant with Down's syndrome

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Bilateral recurrent spontaneous pneumothorax is very uncommon and is mainly seen in patients with underlying lung disease (pre-terms with RDS, cystic fibrosis and congenital cystic malformations). Spontaneous pneumothorax is known in Downs patients. Report of recurrent bilateral spontaneous pneumothorax in a post complete atrioventricular (AV) canal repair Downs infant is unknown. We report such an interesting case. **Case Report:** The present case report is about a 2-month-old female infant, known case of Downs syndrome, presented to our outpatient department with suspicion of congenital heart disease. Echocardiography done at our center revealed complete AV canal defect. She underwent complete AV canal repair on 26/05/2011. Postoperatively she had a long stay in view of respiratory issues leading to recurrent extubation failures. She was well initially. On the 8<sup>th</sup> post-operative day (POD), she developed worsening respiratory distress and hemodynamic instability resulting in intubation. Chest X-ray done revealed significant bilateral pneumothorax which was managed with bilateral chest tube insertion. However, persistent airleaks necessitated insertion of multiple chest drains (3 on left and 3 on right) to expand the lungs. Despite adequate ventilatory maneuvers, she continued to have small airleaks. She underwent chemical pleurodesis with oxytetracycline on 12<sup>th</sup> POD and later she was taken up for left sided open surgical pleurodesis with tissue glue on 19<sup>th</sup> POD. Post open pleurodesis she started improving and her lungs did not have any further airleaks and her chest drains were removed by 30<sup>th</sup> POD. Subsequently she was slowly weaned off the ventilator by 47<sup>th</sup> POD and she was weaned off to room air by 54<sup>th</sup> POD. **Conclusion:** Single chest drains may not suffice in cases with bilateral recurrent spontaneous air leaks to keep lungs expanded. Failure of resolution of airleak will require medical pleurodesis. Open tissue glue pleurodesis on the most affected side is a good option.

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### Incidence and risk factors of acute kidney injury and mortality in pediatric cardiothoracic intensive care unit: First study from India

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**Objective:** To investigate the incidence, implicating factors and outcome of acute kidney injury (AKI) after cardiopulmonary bypass (CPB) in patients admitted to a pediatric cardiothoracic intensive care unit. **Materials and Methods:** Design: Prospective Observational study. **Setting:** Pediatric cardiothoracic intensive care unit. **Patients:** 208 patients with congenital heart disease admitted to the cardiothoracic intensive care unit following CPB between January 2012 and March 2013. **Methods:** Age, sex, diagnosis, baseline and post-surgery haemoglobin, total leukocyte count, platelet count and biochemistry were recorded. Baseline and post-operative, urea (mg/dl), creatinine (mg/dl), urine output (ml/kg/h) and inotrope dose were also recorded daily. The duration of CPB was noted. Post-operatively cardiac, renal, hepatic, neurological and respiratory dysfunctions were recorded. **Results:** 15 (7.2%) children developed AKI stage I, one child (0.5%) developed AKI stage II and four children developed AKI stage III (2%). All patients with AKI had a longer stay in hospital. Eight children required dialysis

for AKI; two required dialysis to maintain the fluid balance post operatively. None developed chronic renal impairment. Using stepwise regression, younger age (<1 year), weight <10 Kg, pump failure, sepsis and duration of CPB >60 min were significant risk factors identified for developing AKI. Infants were more likely to have prolonged CPB time, pump failure, AKI, renal replacement therapy, inotrope requirement, prolonged hospital stay and mortality ( $P < 0.001$ ). **Conclusions:** AKI is common and occurred in 10% of our children following CPB. AKI is an independent predictor for increased hospital stay in children post CPB.

**Table 1: Baseline characteristics and outcome in patients with or without AKI following cardiopulmonary bypass**

Parameters	AKI (N = 20 [%])	No AKI (N = 188 [%])	P value
Prolonged ventilator requirement	12 (60.00)	21 (11.17)	<0.001**
Pump failure	3 (15.00)	5 (2.66)	0.0063
Sepsis	12 (60.00)	29 (15.43)	<0.001**
Hematological complications	8 (40.00)	14 (7.45)	<0.001**
Hepatic dysfunction	2 (10.00)	14 (7.45)	0.6818
RRT requirement	8 (40.00)	2 (1.06)	<0.001**
CPB time (min)	97.00±48.05	69.03±36.25 (n=183)	<0.001**
Inotrope score maximum	13.78±5.59	7.22±4.48	<0.001**
Weight (kg)	13.00±21.93	16.66±15.94	0.3472

AKI: Acute kidney injury; RRT: Renal replacement therapy; CPB: Cardiopulmonary bypass

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### Home oxygen therapy in neonates and infants post cardiac surgery: Social acceptability and cost-effectiveness in a developing country

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**Introduction:** Neonates and infants undergoing high risk and complex cardiac surgery are very prone to need for long term oxygen therapy due to various causes. The provision of supplemental oxygen to such children is challenging as well as expensive. There is always a challenge to the primary care giver as far as social acceptability of such a therapy is concerned. We propose to present our experience of children who underwent complex cardiac surgery and later had to be discharged on domiciliary oxygen therapy. **Materials and Methods:** This was a single unit retrospective study of 950 infants and neonates who underwent cardiac surgery between May 2006 and August 2013. Infants who required home oxygen therapy were analyzed on the basis of various parameters. We excluded those infants who were discharged on oxygen but transferred to another hospital. **Results:** A total of 13 patients (1.3%) with a age range of 1 mo-8 mo (mean 3.5 mo), weight of 1.6 kg-6.5 kg (mean 3.25 Kg) were studied. 9/13 patients (69%) were male and 4/13 (30%) female respectively. 9/13 (69%) patients were Indian and 4/13 patients (30%) were Foreign. 3/13 (21%) patients had transposition of great arteries (TGA) (d TGA ventricular septal defects (VSD), Tausig bing anomaly, and TGA IVS), 3/13 patients (21%) had VSD (large VSD and multiple VSD's), 1/13 pt (7%) had large patent ductus arteriosus, d TGA, VSD pulmonary stenosis 1/13 (7%), total anomalous pulmonary venous drainage 2/13 pt (15%), 1/13 (7%), single ventricle physiology with right ventricle dependent circulation, 1/13 (7%) tetralogy of fallout with anomalous left coronary artery from pulmonary artery. 5/13 patients (38%) were oxygen dependent due to chronic lung disease, another 5/13 pts (38%) due to persistent pulmonary hypertension, 1/13 pt (7%)

due to ongoing congestive cardiac failure post-surgery and 1/13 (7%) due to extensive bilateral bronchomalacia. All patients were discharged on home oxygen therapy. Out of this 2/13 pts (15%) died. Majority of survivors 9/11 (81%) were free from oxygen from 1 mo to 2 mo (Mean 48days), 1/11 patient (9%) became free after 6 mo and one patient (7%) required oxygen for 8 months. The cost of home oxygen therapy ranged from Rs. 34,000 to Rs. 2 lakh INR (Mean Rs. 46,000). Comparative hospital cost came to Rs. 60,000-Rs. 120,000/month. 38% (5/13) required no readmission after discharge. Nearly 58% (7/12 patients) required admission to a hospital. **Conclusion:** The need for home oxygen therapy is much more acceptable to educated parents compared to less educated. The cost of home oxygen therapy is negligible. There is urgent need to overhaul our health system to include the care of this subset of patients. For patients from foreign countries it is imperative to educate the air carriers in the transport of these patients. Home oxygen therapy is the best option for better growth and development of these children.

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### Total prevalence of peripheral vascular disease in patients of stroke

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**Objectives:** (1) To find prevalence of peripheral vascular disease in patients of stroke. (2) To correlate the Ankle Brachial Pressure Index (ABPI) with age of the patients. (3) To correlate the peripheral vascular disease with type of stroke. **Materials and Methods:** Tenure of the study will be 2 years from June 2012 to May 2014. **Sample Size:** 30 Cases. Informed consent will be taken. Inclusion Criteria: All patients of nonfatal stroke. **Methodology:** All the subjects of Stroke will be subjected for ABPI measurement. **Study Design:** Cross sectional study. **Results:** The present study included 30 cases of cerebrovascular stroke being evaluated for evidence of associated peripheral vascular disease. Amongst 30 stroke patients 16 out of 20 males (80%) and 8 out of 10 females (80%) were found to have ABPI <0.9. It was observed that ABPI was <0.9 in 6 cases with age below 60 years (10%) while it was <0.9 in 15 cases with age >60 years (50%). This difference was statistically significant ( $P \leq 0.01$ ). Amongst 30 cases, 21 cases were of thrombotic stroke and 9 cases were of hemorrhagic stroke. Amongst 30 cases studied hypertension was the risk factor in 18 (60%) cases and diabetes in 6 (30%) cases. Amongst 30 cases 21 (70%) cases had ABPI <0.9, thus indicating the prevalence of PVD in stroke patients to be 70%. **Conclusions:** If this quick, easy, non-invasive tool commonly employed by general practitioners, physicians, surgeons and affiliated practitioners. It would improve the timely diagnosis of peripheral vascular disease and allow early intervention. The overall effect of this change in practice would inevitably reduce disease progression, the incidence of generalized cardiovascular complications, and ultimately improve patient outcome.

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### A study of efficacy and safety of piperacillin tazobactam/cefaperazone salbactam alone or in combination with teicoplanin in empiric treatment of nosocomial septicemia in intensive care unit patients

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One major factor contributing to morbidity and mortality in intensive care unit (ICU) patients is nosocomial infection (NI). Blood stream infection is one of the important NI in ICU with an incidence of 18.4% and mortality of 52.0%. **Aims and Objective:**

The objective of this study is to assess the efficacy and safety of piperacillin-tazobactam/cefepazone-salbactam alone or in combination with teicoplanin vis-à-vis the duration of ICU-stay. So that a direct cost effectiveness evaluation in terms of decreased cost of total care, morbidity and mortality can be done to see whether the use of these newer antibiotics (in spite of their high cost) actually reduce the overall cost to the patient and health care system. **Materials and Methods:** After obtaining permission from Institute Research Committee, the present study was conducted at the intensive care unit (ICU) of the Department of Anesthesiology, Sir Sunderlal Hospital, Banaras Hindu University and Department of Microbiology, Institute of Medical Sciences, Banaras Hindu University. In this study a total of 120 Septicemia cases were included. They were divided into 4 groups of 30 cases each and they received antibiotics through random allocation: (a) Group I patients received piperacillin tazobactam alone in doses of 4.5 g IV 8 hourly. (b) Group II patients received cefepazone salbactom alone in doses of 3 g IV 12 hourly. (c) Group III patients received piperacillin tazobactam in doses of 4.5 g IV 8 hourly + teicoplanin 400 mg 12 hourly IV on day 1 then 400 mg daily. (d) Group IV patients received cefepazone salbactom 3 g IV 12 hourly + teicoplanin 400 mg 12 hourly IV on day 1 then 400 mg daily. For patients with impaired renal function, the dosages of study drug were adjusted according to creatinine clearance. Besides study drug, antimicrobials against anaerobic bacteria were allowed to be added. Total duration of treatment was 7 days. In cases of therapeutic failure another antibiotic was allowed to be added. **Results:** Out of 331 samples of tracheobroncheal secretion only 153 (46.2%) samples showed growth and in only 18 cases trcheobroncheal secretion as well as blood had positive culture result. Positive tracheobroncheal secretion in the absence of positive blood culture might be because of colonization because all patients with positive tracheobroncheal secretion did not have respiratory tract infection. Predominant pathogens responsible for septicemia were found to be Gram-negative (33/48 [68.8%]) with *Acinetobacter* species (12/33 [36.4%]) predominating followed by *Pseudomonas* species., *Escherichia coli* and *Enterococcus faecalis* (6/33 [18.2%]) each and *Klebsiella* species (3/33 [9.1%]). Among Gram-positive organisms (15/48 [68.8%]) coagulase-negative *Staphylococcus* predominated. Overall combination therapy was better than monotherapy. Among monotherapy - Group II was found to be better than Group I (100% vs. 33.3%), statistically intergroup comparison was significant ( $P \leq 0.05$ ). Among combination therapy-both groups were equally effective (100% vs. 100%), statistically intergroup comparison was not significant ( $P > 0.05$ ). Failure was observed only in Group I (66.7%) and all were due to persistence of pathogen. In Group II, III and IV no failure was observed. Failure occurred only in Group I and this might be because the number of patients with various underlying diseases was maximum in Group I. **Conclusion:** on the basis of above study it can be concluded that combination therapy using piperacillin tazobactam and cefepazone salbactam along with teicoplanin are the better choice among the monotherapy cefepazone salbactun is the better than piperacillin tazobactam.

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### Efficacy and safety of levosimendan as a primary inotrope in paediatric cardiac surgery

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**Objective:** Although, levosimendan has proved to prevent low cardiac output syndrome (LCOS) in adults with heart failure, its use in pediatric cardiac patients is still limited. We report our experience with Levosimendan in children undergoing cardiac surgery. **Methods:** A total of 110 cardiac surgical patients with a median age of 346 days (11 neonates, 45 infants and 54 children) and a median weight of 6.27 Kg (range 2-46) received levosimendan as

the primary inotrope. Levosimendan was administered as a bolus load of 12 mcg/Kg during rewarming on bypass and continued as infusion of 0.1 mcg/Kg/min for 48 h. Multiple cardiac output parameters were recorded at different time intervals. Addition and omission of cardiovascular agents was done as indicated by the clinical needs of the patient. **Results:** 35 patients did not require any addition of other agents to maintain optimum cardiac output (Qs). 64 patients required addition of 0.03 mcg/Kg/min of adrenaline to maintain Qs. 11 patients had evidence of LCOS requiring further intervention. 3 patients succumbed to LCOS, 2 due to sepsis and 1 due to renal failure. Mean arterial pressures of less than 5<sup>th</sup> centile necessitating discontinuation of the infusion was noted in 13 patients. 57 were extubated in the operating room. **Conclusion:** Primary levosimendan based inotropic regime can be safely used in patients undergoing all types (RACHS scores 2-6) of complex congenital heart surgeries to prevent LCOS.

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### A comparative study of efficacy and safety of low doses clonidine for hemodynamic stability in laparoscopic cholecystectomy

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**Objective:** Laparoscopy has become gold standard surgery for cholelithiasis but it is associated with significant hemodynamic changes. Clonidine,  $\alpha_2$  adrenergic receptor agonist has shown promising results for attenuation of hemodynamic response. However there is wide difference in the doses of clonidine. This study was undertaken with the objective of evaluating, the extent of hemodynamic changes occurring during laparoscopic cholecystectomy and their modification by different doses of i/v clonidine administered. **Methodology:** 90 ASA I and II patients undergoing laparoscopic cholecystectomy were randomized into three groups of 30 patients each. All patients were pre-medicated with metoclopramide (10 mg i/v), fentanyl (1 mcg/kg i/v), midazolam (1 mg i/v). After premedication patients received normal saline 10 ml (group 1) or 0.8 mcg/kg (group 2) or 1 mcg/kg (group 3) over 180 s, 10 min prior to intubation. Anesthesia was induced with 1% propofol (2 mg/kg) and maintained with nitrous oxide 60% in oxygen and isoflurane. At the end of surgery, neostigmine (0.05 mg/kg) and glycopyrrolate (0.02 mg/kg) was given and extubation was done. Heart rate and systolic blood pressure were recorded at various time intervals. Statistical analysis was done by SPSS 19. **Results:** Significant hemodynamic derangements occurring during laparoscopic cholecystectomy at intubation, pneumoperitoneum and extubation was effectively attenuated by premedication with 0.8 mcg/kg and 1 mcg/kg of intravenous clonidine. **Conclusion:** We recommend the use of 0.8 mcg/kg i/v Clonidine, 10 min before intubation to attenuate the hemodynamic stress response of pneumoperitoneum and tracheal intubation/extubation in otherwise healthy patients as it is effective and safe. Dose of 1 mcg/kg though found to be effective but associated with hypotension and bradycardia.

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### To educate patients family about intensive care paraphrenalia

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**Aims and Objective:** To improve the understanding and alleviate anxiety of critical patient's family and friends. **Materials and Methods:** We have prepared an informative poster enclosing images and underlying information about the intensive care procedure and the equipment in English and Hindi language. We routinely

display these posters in companion room. The intensive care registrar and clinical associate explain these posters in detail to the families of all critical patients. **Results:** Patient with his identity and face concealed along with photograph of different equipment are displayed on poster. The equipment's include multi para monitor with various parameters, infusion pump, syringe pump, ventilator, DVT Pump, dialysis machine, defibrillator, high frequency oscillatory ventilator, intra-aortic balloon pump, air mattress. All above equipment carry small information about them and their use which is explained by the doctor, he also explains the procedure its perceived benefits and possible complication e.g. central line insertion. **Conclusion:** This program has been helpful in, alleviate anxiety about intensive paraphernalia, has improved awareness about the intensive procedure, improve the doctor and patients relatives communication, enhanced inter family relationship.

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### A prescription event monitoring study to assess the safety and health outcomes of imipenem-cilastatin in India

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**Background:** Gram-negative Sepsis has been important concern for high morbidity and mortality especially with extended spectrum beta lactamase-producing Enterobacteriaceae and *Pseudomonas aeruginosa* strains showing high levels of AmpC cephalosporinases. Carbapenems are currently the only active beta-lactams effective against these bacteria and widely used for empirical treatment of acquired hospital infections such as those occurring in intensive care unit patients. The objective of the study was to evaluate the safety profile and any adverse health outcome when Imipenem-cilastatin was prescribed in empirical settings for patients with severe infections including Sepsis. **Materials and Methods:** Prescription event monitoring (PEM) study is a method employed worldwide to provide useful safety information on the drug when prescribed in "real-world settings" requiring empirical therapy. Patients with severe infections including lower respiratory tract infections (LRTI), complicated urinary tract infections (cUTIs), intra-abdominal infections (IAI), with/without Sepsis were prescribed Imipenem-cilastatin either as 0.5 or 1 g infusion every 6-8 h. Safety information related as "Events" was captured on the study questionnaire sheet provided to 15 centres across India. **Results:** 131 patient data was collected with mean age of 55 years with 67% (males) and 33% (females) respectively. The indications included LRTI, cUTI, cIAIs, and Sepsis for respectively. 77% patients received treatment for mean duration for  $\leq 7$  days. Organisms isolated were pseudomonas, *Klebsiella*, *Escherichia coli* and *Acinetobacter*. Imipenem-cilastatin was given as combination therapy with colistin, linezolid and clindamycin. Side-effects reported were of mild intensity while in other patient, seizure was noted that required treatment discontinuation. No other serious adverse events were noted that were causally related to the use of the drug. **Conclusion:** Imipenem-cilastatin was safe and well tolerated in patients with complicated infections including LRTI or Sepsis. High-dose administration was associated with negligible side effects especially in empirical settings.

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### Management of term pregnant patient with paroxysmal hypertension due to incidental pheochromocytoma

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The incidence of pheochromocytoma in pregnancy is rare,

<0.2/10,000 pregnancies. The classic triad of pheochromocytoma is headaches, palpitations, and excessive sweating, but it is not so common in the pregnant state. Uncontrolled catecholamine release in patients can result in malignant hypertension, cerebrovascular accidents, and myocardial infarctions. A 25-year-old, full-term pregnant woman diagnosed with pre-eclampsia was referred to our tertiary care hospital with severe resistant hypertension. Her blood pressure (BP) remained labile despite the usual medications, which led to the suspicion of an underlying endocrinological problem. Further biochemical and radiological investigations confirmed the diagnosis of pheochromocytoma. The patient was invasively monitored and treated with alpha blockade, beta blocker, and vasodilators in intensive care unit (ICU). On the 5<sup>th</sup> day, she went into spontaneous labor with confirmed rupture of the membranes. The labor was augmented with intravenous (IV) oxytocin 2 U in 500 ml solution of Ringer's lactate. A nitroglycerin basal infusion was started and titrated to control BP during labor to keep the BP below 160/90 mmHg. An injection of Phentolamine drip and beta blocker esmolol was kept ready, to control the wide fluctuation of BP. She delivered a live, healthy, male infant weighing 2.5 Kg. She was kept in the ICU for 72 h with epidural patient-controlled analgesia. The patient was not keen for a resection of the adrenal tumor immediately after delivery. She was discharged with medical management, with a further plan for surgery in due course. With a multidisciplinary team approach (gynecologist, anesthesiologist, Intensivist, endocrinologist, and surgeon), proper planning, and adequate preoperative medical management; pheochromocytoma in pregnancy can be managed successfully.

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### Factors contributing failed airway by medical emergency team in ward

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**Objectives:** To evaluate the factors which contribute failed airway (FA) by Medical Emergency Team (MET) inward. **Materials and Methods:** The emergency airway management data of consecutive 324 patients were reviewed in Asan Medical Center, Seoul, Korea. We included the patients intubated by our MET in wards from February 2012 to January 2013. **Results:** The patients were classified as difficult airway (DA) group and non-DA group. Among 324 patients, 78 (24.1%) patients were included in DA group, and 246 (75.9%) were in non-DA group. FA occurred in 20 (25.6%) patients in DA group, 35 (14.2%) in non-DA group. The contributing factors to FA in DA group were the low grade of 1<sup>st</sup> attempted physician (odds ratio [OR] 0.206, 95% confidence interval [CI] = 0.062-0.679), the large attempted number (OR = 14.457, 95% CI = 4.209-49.652) and the high Cormack-Lehane score (OR = 1.793, 95% CI = 1.051-3.058). The low grade of 1<sup>st</sup> attempted physician (OR = 0.388, 95% CI = 0.186-0.810), the rigid laryngoscope than video laryngoscope as 1<sup>st</sup> attempted device (OR = 0.244, 95% CI = 0.097-0.611), the large attempted number (OR = 56.503, 95% CI = 15.070-211.850), Jaw relaxation score (OR = 1.814, 95% CI = 1.018-3.233), Cormack-Lehane score (OR = 1.957, 95% CI = 1.099-3.487), the medication for induction (OR = 2.614, 95% CI = 1.037-6.585) and paralysis (OR = 2.681, 95% CI = 1.081-6.651) contributed to FA in non-DA group. In multivariate analysis, the low grade of 1<sup>st</sup> attempted physician and the large attempted number were independent risk factors for FA in DA group. The paralysis and the large attempted number were independently related to FA in non-DA group. **Conclusion:** The experienced, rapid sequence intubation by MET could be key factor for successful intubation.

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### God bless, surgeon hand, anaesthesiologist pulse: Save an unsaved

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**Background:** Miracle happens once in a live time to save an unsaved patient when the pulses of team involved in rhythm. To do such outstanding surgical outcomes the optimum level of anesthetic acumen are require to provide unparallel surgical environment to the surgeon to predict the coming adversity on time and impulsive action to throw out such calamity by commendable pre-anesthetic assessment, intra operative and post-operative care. Here we present such a rarest example of a surgery of huge cemento-ossifying fibroma with intracranial extension manage by our excellent team work without any vital complication. **Case Report:** A 37-year-old male suffering from huge tumor in his right maxilla since last 12 years. The lump had expanded all around in due course of time and finally had disfigured his face; 7 cm lateral deviation of his left eye ball including expansion of mass up to the half of the anterior cranial cavity finally gave him a monstrous look. Even the transporters used to refuse him to carry due to his frightening look. He had become a great source of laughter from all around. Some sensitive people might have shown sympathy for his plight but it was rare. Any way, he wandered here and there with the hope of medical care but in return he received only camera flashes at his face by medical professionals. Finally the case was properly evaluated by the ENT, anesthesia and critical care team of our Institution and was successfully operated and with excellent intensive care management during post-operative period lead to breathtaking outcome. Such miraculous result of the patient was chilling even for the entire team and a sense of peace to the family members as well as for the society. Patient is now a day under the reconstructive measure by prosthesis under dental surgeon. **Conclusion:** Successful management of this case is one of the rarest examples in the history of medical sciences. We herewith want to share few of the salient features of that surgery and its further management in forthcoming scientific sessions.

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### An experience of organ phosphorus poisoning in intensive care unit

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**Objective:** In this article we report our experience with outcomes of serious OP insecticide poisonings and its intensive care management. **Materials and Methods:** A cross-sectional, retrospective, observational, descriptive, study on 58 patients with history of organophosphorus compound poisoning who were admitted to the intensive care unit during August 2010 to July 2013, were selected and nature of the compound, time duration between consumption and admission with clinical features were noted. Patients were selected according to inclusion and exclusion criteria. Serum cholinesterase level was estimated before doing any intervention. The patients were managed in intensive care unit (ICU) with Pralidoxime infusion, atropine bolus and drip, adequate level of atropinization was maintained and if required with mechanical ventilation. The Chi-square test was used for statistical analysis. Data are presented as mean  $\pm$  standard deviation. **Results:** Out of 58 patients 60% were male and 40% were female. All the cases were due to ingestion of organophosphorus agents with suicidal intentions. The most

frequent clinical signs were meiosis, change in mental status, hypersalivation, agitation and fasciculations. Atropine was administered until atropinisation and the average total atropine dose was 0.02-0.08 mg/kg/h. Pralidoxime was given for 5-7 days and the average dose was 500 mg/h. Mortality rate is very low i.e.; only 2% with the management of OP poisoning patient in ICU. Mechanical ventilator is being given to 30% of the patients as they were aspirating and oxygen saturation was decreased to less than 90%. The main reason of patient death due to OP poisoning is respiratory failure. **Conclusions:** OP insecticide poisoning is a serious condition that needs rapid diagnosis and treatment. Since respiratory failure is the major reason for mortality, careful monitoring, appropriate management and early recognition of this complication may decrease the mortality rate among these patients.

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### Inhaled nitric oxide as a salvage therapy in patients with severe acute respiratory distress syndrome: A case series

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Inhaled nitric oxide (iNO) has been shown to preferentially dilate pulmonary vasculature within well-ventilated regions of lung without causing systemic hypotension. Patients with severe acute respiratory distress syndrome (ARDS) may develop pulmonary hypertension, marked ventilation perfusion mismatch and right heart failure. Use of iNO may help mitigate these pathologic changes. So it has a therapeutic potential for patients with right heart failure and refractory hypoxemia. But evidence for the same is still lacking. Furthermore, the benefits are thought to be transient. **Objective:** To assess iNO as salvage therapy in patients with severe ARDS. **Materials and Methods:** We describe 4 cases of pneumonia with ARDS with right heart failure in which iNO was used as salvage therapy to improve right heart failure and oxygenation. Dose of iNO was titrated between 5 and 10 ppm. We monitored pulmonary artery systolic pressure (PASP) using 2-D echo every 24 h and other parameters including CVP, hemodynamic parameters (pulse rate, blood pressure), serum lactate, inotropic requirements, PaO<sub>2</sub>/FiO<sub>2</sub> ratio and PaCO<sub>2</sub> at 6 h intervals before and after initiation of iNO. When oxygenation, hemodynamic status and PASP improved and met the predefined targets, iNO was gradually tapered off in the next 12 h. **Results:** iNO was used for duration ranging from 30 to 120 h in the 4 patients. In all patients hemodynamics, oxygenation and PASP showed improvement that persisted for 24 h after discontinuing NO. None of the 4 patients had methemoglobinemia or other serious side effects. **Conclusion:** iNO may be used as a salvage therapy for refractory hypoxemia and right heart failure in severe ARDS.

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### A study of ventilator associated pneumonia: Incidence, organism isolated, antibiotic resistance pattern and outcome in intensive care unit of a tertiary level hospital of North India

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**Introduction:** Ventilator associated pneumonia (VAP) is a major cause of hospital morbidity and mortality. There is a growing concern in medical fraternity with regards to increasing incidence of antibiotic resistance among organisms causing VAP. **Aims and Objectives:** Our aim is to study: (1) Incidence of VAP in our intensive care unit (ICU). (2) Incidence of early onset/late onset VAP. (3) Organisms isolated in the tracheal aspirate (Gram-positive vs. Gram-vs fungal). (4) Antibiotic resistance pattern among the



isolated organisms. (5) Outcome. **Materials and Methods:** 200 patients admitted in ICU, of either sex, age group of 18-75 years on mechanical ventilation (MV) for >48 h were randomly selected. Patients admitted with pneumonia or developed pneumonia within 48 h, acute respiratory distress syndrome or who died within 48hrs of initiation of MV was excluded. The diagnosis of VAP was made when score of  $\geq 6$  was obtained on modified clinical pulmonary infection scoring system. Data was analyzed and results tabulated on basis of demographic profile, incidence of VAP (early/late onset), organisms isolated, antibiotic resistance pattern and outcome. **Results and Conclusion:** Incidence of VAP in our ICU is approximately 40.5%, which is on higher side (probable reason is nursing ratio of 1:3 and referral from other hospitals). Late onset VAP is more common in our ICU than early onset VAP (72% vs. 28%) and is associated with higher mortality (75% vs. 40%). 63% of the isolated organisms were Gram-negative bacilli. *Acinetobacter* (25%) was the most common organism isolated followed by mixed infection (25%), MRSA (16%), *Escherichia coli* (12%), *Klebsiella* (8%), *Pseudomonas* (7%).

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### Intra esophageal electrocardiography for diagnosis of arhythmias a simple bedside tool

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**Introduction:** In spite of various criteria for diagnosis of arhythmias, especially the differentiation of ventricular and supra ventricular tachycardias is often difficult. Placement of intra-esophageal lead is a very simple procedure which differentiates various arhythmias with certainty. **Materials and Methods:** A Ryle's tube is cut vertically near the tip to allow the lead to come out. Ryle's tube is placed in the esophagus to a length equal to height/5 and fixed. A pacemaker lead is passed through the Ryle's tube and beyond, through the vertical slit. Lead is connected to monitor and tracings recorded. Demonstration of atrioventricular dissociation is unequivocal in this which differentiates VT from SVT. We discuss more than 20 cases of various arhythmias and few cases of posterior myocardial infarctions which we could solve by this simple noninvasive procedure. This can be practiced in even smaller ICU's with minimum technology. **Conclusions:** Intra esophageal electrocardiography is a simple, non-invasive bedside procedure to identify various arhythmias and is very much underused.

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### Proportion of expenditure spend on antimicrobials for intensive care unit patient admitted with sepsis at government university hospital in India

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**Objective:** To estimate the cost and proportion of daily expenditure spend on antimicrobial therapy for intensive care unit (ICU) patients admitted with sepsis at government university hospital. **Materials and Methods:** This prospective observational study was done in 12 bedded ICU of Department of Critical Care Medicine from 1<sup>st</sup> August to 30<sup>th</sup> November 2013. Patient admitted with sepsis were included and their demographic data as well as daily cost on various expenditure were noted on proforma from the computerized hospital information system till the patient discharge from the ICU. Average daily expenditures (INR) were categorized as: Antibiotics, antifungals, other drugs,

consumables, investigations (blood/microbiology/imaging), dialysis, transfusions and bed charges. Descriptive analyses were used with average and range. **Results:** 45 patients were included in the study, age 35 years (range 18-79 years), male:female 51:49% Average APACHE II was 18 (range-4-32) and SOFA was 10 (range 4-17). 41 (91%) patients were in septic shock during admission, 41 (91%) of the patients required mechanical ventilation and 16 (35.55%) required dialysis during the stay. Mean length of ICU stay was 16.8 days. 21 patients (46.67%) were discharged/transferred and 24 patients (53.33%) died. Total average cost per day of ICU stay was 11265 INR out of which 4416 INR (39.19%) were spent on antimicrobials (antibiotics and antifungal) and 6849 INR (60.81%) was spent on other expenditures categorized as, other drugs 1779 INR (15.79%), consumables and surgical items INR 1059 (9.4%), investigations INR 1174 (10.41%), dialysis INR 635 (5.63%), transfusions INR 583 (5.17%) and bed charges INR 1422 (12.62%). **Conclusion:** Average proportion of expenditure on antimicrobials in the ICU of a tertiary care hospital of India is approximately 40% for the patients with sepsis.

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### To study the effectiveness of a newly developed Weaning criteria over the existing burns wean criteria

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**Introduction:** Delay in weaning is associated with the development of ventilator-related complications and longer stays in the intensive care unit. Existing weaning criteria are complicated or difficult to follow. Majority of the weaning are physician driven. It is necessary to have a new protocol, which is easy and simple to follow. We made a simple protocol comprising only 10 variables based on vitals, sensorium, ability to cough, proximal muscle strength, fluid balance. This was validated by expert committee and approved by ethics committee. **Aim:** The objective was to validate VMH criteria against burns Wean criteria in liberating patients from mechanical ventilation (MV). **Methodology:** This is a prospective analytical (observational) multicentric blinded study done in our university teaching hospital from April 2012 to September 2013. Patients aged more than 18 years who required MV were enrolled in the study. Those who were brain dead, NMD, LAMA, were excluded. All patients were weaned according to the Burns Wean criteria. Simultaneously, a different group of emergency physicians who are blinded to our criteria have applied VMH criteria and data were recorded. All the patients were weaned as per the treating physician who followed burns criteria. The final outcome was noted. A third person who is blinded to both, validated new VMH criteria against existing burns wean criteria whether the new criteria is meeting the standards of existing criteria. The results were analyzed statistically. **Results:** The primary outcome measure was success of weaning. A total of 111 patients were included in the study of which 79 were males. 78 patients met burns criteria and other 33 went for tracheostomy. All those who met the burns criteria and successfully weaned also met the Vinayaka protocol. 7 of the 78 weaned patients went for failed weaning and re-intubated. 4 out of 7, who met burns criteria, but failed weaning and re-intubated, did not meet Vinayaka criteria. Specificity for burns criteria was 82.5 as against 92.5 of Vinayaka criteria. Mean time take to fill Vinayaka criteria was 3.42 min whereas for burns criteria it was 5.92 min. **Discussion:** Burns criteria does not look for the proximal muscle power whereas Vinayaka criteria takes that into account which could be one of the reason why Burns criteria failed in identifying those with failed weaning. **Conclusion:** VMH criteria are at par with Burns criteria in weaning but the specificity is better than Burns criteria. Moreover it is time saving and simpler.

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### Deep vein thrombosis of upper extremities due to reactive thrombocytosis in septic patients

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**Objective:** To present two cases of upper extremities DVT due to reactive thrombocytosis during intensive care unit (ICU) stay in their recovery phase of sepsis. **Materials and Methods:** Case 1: 37-year-old male admitted to our ICU on day 23 of his illness, with diagnosis of H1N1 related acute respiratory distress syndrome (ARDS). Patient received proning sessions for ARDS and other supportive care as per protocol. Patient recovered and discharges after 40 days. Case 2: 28-year-old male resident of endemic area of Japanese encephalitis admitted to our ICU on 4<sup>th</sup> day of illness, with diagnosis of viral encephalitis. Patient needed mechanical ventilation for encephalopathy and poor respiratory efforts. Patient is still in ICU. **Results:** Event of upper extremities DVT during ICU stay are as below:

Case 1					
ICU day	Pre-ICU	D1	D7	D14	
Vasopressor	Yes	No	No	No	
TLC ( $\times 103/ml$ )	3-15.7	9	10	12	
Platelet ( $\times 103/ml$ )	83-363	165	622	707	
INR	1.22-1.36	1.22	1.27	1.19	
aPTT	23.5-35.5	30.8	33.9	33.6	
Limb edema	-	-	-	+	
Doppler study				Rt IJV thrombus	
Anticoagulation therapy	Prophylactic			Therapeutic	
Case 2					
ICU day	Pre-ICU	D1	D15	D30	D46
Vasopressor	No	No	No	No	No
TLC ( $\times 103/ml$ )	12.4	12.2	12.8	12.3	11.1
Platelet ( $\times 103/ml$ )	140	194	537	713	827
INR	NA	1.11	1.08	1.06	1.16
aPTT		23.2	34.1	26	26.6
Limb edema	-	-	-	-	+
Doppler study				Rt IJV+SCV thrombus	
Anticoagulation therapy	Prophylactic			Therapeutic	

ICU: Intensive care unit; TLC: Total leucocyte count; INR: International normalized ratio; aPTT: Activated partial thromboplastin time; IJV: Internal jugular vein; SCV: Subclavian vein

**Conclusion:** ICU patient having reactive thrombocytosis during recovery phase of sepsis must be kept in priority for screening to rule out DVT so that timely therapeutic intervention could avoid life threatening pulmonary embolism.

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### Acute inflammatory neuromuscular disorder a rare entity/diagnostic dilemma in intensive care unit setting: A case study

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Acute idiopathic inflammatory myositis with its several complications presents a diagnostic dilemma in intensive care setting due to its inherent rarity and more common presentation of

other entities with muscle weakness. We present such a case with severe electrolyte imbalance, bradycardia, respiratory distress, neuromuscular weakness and rash and discuss its diagnostic predicaments, course of illness and successful outcome.

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### Water balance disorder after neurosurgery: Early triphasic response (polyuria-antidiuresis-polyuria)

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A 58-year-old male patient operated for pituitary macro adenoma twice presented with headache and progressive loss of vision. He underwent right pterional craniotomy and debulking of residual tumor was done. In the immediate postoperative he developed diabetes insipidus and started pouring urine output and developed hyponatremia. On first post-operative day serum sodium was 154 meq; desmopressin spray was used as the patient was getting dehydrated and drowsy. The effect of desmopressin lasted for 16 h and the diuresis returned so the spray was repeated. Now the diuresis got controlled but after 36 h the patient started developing hyponatremia and serum sodium went to as low as 119 so 3% hypertonic saline was started and fluid restriction was advised. Gradually the urine output improved and the serum sodium started improving but despite stopping hypertonic saline at 126 meq the serum sodium kept on increasing and went up to 147 on POD 5 with the return of diuresis. Once again desmopressin nasal spray was repeated. Hence, now the output settled and patient was shifted to ward on advice of 12 hourly serum sodium monitoring. **Conclusion:** This case illustrates the dramatic and sudden changes in water balance that may occur after neurosurgery. Mere manipulation of the pituitary stalk was sufficient to cause these perturbations. A triphasic response (polyuria-antidiuresis-polyuria) can occur after neurosurgery but typically occurs between 7 and 10 days but in this case it was very early but a prompt recognition and proper treatment prevented any further complication.

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### The effect of inotropic support in critically ill patients on bedside whole blood glucose measurements by hand-held glucometer and laboratory measurement of plasma glucose

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**Objectives:** (1) To compare the capillary blood glucose (CBG) and venous whole blood glucose (VBG) measured by glucometer, and venous plasma glucose (VPG) measured by glucose oxidase method. (2) To determine the effect of inotropic support on the agreement between above three methods of glucose measurement. **Materials and Methods:** This study was carried out in critically ill adult patients admitted in intensive care unit. 24 patients were receiving and 27 not receiving inotropes. The capillary blood sample was obtained from the fingertip and analyzed with the glucometer. Simultaneously, 3-4 ml of blood was drawn from the patient's central venous catheter. One drop of the venous blood was analyzed by the same glucometer. The remaining venous blood was sent to laboratory for glucose measurement by glucose oxidase method. The inotropic status of the patients and perfusion index in the sampling arm were recorded. Agreement between the two bedside methods of measuring glucose with VPG was assessed by Bland-Altman plot using the bias and limits of agreement. **Results:** A total of

247 simultaneous triplet measurements (capillary, venous whole blood, and venous plasma), 115 during inotrope infusion and 132 without inotrope infusion were made. The bedside measurements were higher than the laboratory values, CBG by  $17.4 \pm 38.9$  mg/dL and VBG by  $15.7 \pm 22.1$  mg/dL. The bias between CBG and VPG was lower with inotropic group than without inotropic group by 8.3 mg/dL. The bias between VBG and VPG was significantly higher in the presence of inotrope than without inotrope by 7.7 mg/dL. The bias between CBG and VBG was significantly lower in inotropic group than without inotropic group by 15.5 mg/dL. Only 45% of CBG values and 62% of the VBG values were within the acceptance range of VPG. **Conclusion:** Bedside glucose measurement using glucometer is not accurate. When glucose measurement is warranted urgently, a central venous sample is preferable to a capillary sample, especially when the patients are receiving inotropic therapy.

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### Rapidly progressive respiratory failure due to cyclophosphamide lung toxicity

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A 65-year-old known case of pemphigus vulgaris admitted to intensive care unit (ICU) with severe hypoxemia and pulmonary infiltrates. Patient on treatment with cyclophosphamide 500 mg, dexamethasone 52 mg pulse therapy per month with dapsone 100 mg daily. Patient also on treatment for diabetes and hypertension. Patient was admitted to ICU with type 1 respiratory failure requiring oxygen support. Patient later required noninvasive ventilation. In view of persistent respiratory distress and desaturation patient required mechanical ventilation on 3<sup>rd</sup> day of ICU admission. All initial cultures were reported negative. In spite of antibiotic therapy there was progressive increase in infiltrates and severity of respiratory failure. Non contrast computed tomography thorax showed bilateral extensive consolidation. In view of poor progress of patient and no diagnosis transbronchial lung biopsy was done which showed squamous metaplasia with mild dysplasia with sub-mucosal fibrosis consistent with cyclophosphamide toxicity change. Cyclophosphamide induced lung injury appears to be rare, frequency being <1%. Management involves discontinuation of the drug, steroids and supportive management. Histopathology findings and management will be presented.

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### Emergence and associated risk factors in a tertiary care hospital in India

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**Introduction:** *Stenotrophomonas multophilia* is a ubiquitous organism, which has emerged as an opportunistic pathogen mainly in the immune compromised host. This organism is not a virulent pathogen, but has an amazing ability to survive in a wide range of environments. It is frequently multi resistant to antibiotics. **Objectives:** The main objectives of our study were to report the emergence of *S. multophilia* and the risk factors associated for acquiring the pathogen in adult immune compromised patients who were admitted in intensive care unit (ICU) of Apollo Gleneagles Hospital, Kolkata. **Materials and Methods:** Over an 18 month period of time starting from January 2012 to August 2013, 48 patients were diagnosed to have infection with *S. multophilia*. Most of these patients had lower respiratory tract infections and

few had reported bacteremia as well with this pathogen. All these patients were treated in our ICU and the surveillance was carried out to detect possible source from medical devices (indwelling) that were used. **Results:** Out of 48 patients *S. multophilia* were detected in 29 patients from the respiratory tract (bronchoalveolar lavage fluid, ET secretion, sputum), in 9 patients from blood cultures, in 6 patients from central venous catheter, in 2 patients from wound swab and in 2 patients from ascitic fluid. Among 48 patients, 36 patients were intubated and ventilated. All these patients had a common denominator of admission in our ICU and use of common broad spectrum antibiotics. **Conclusion:** *S. multophilia* is emerging as a pathogen among adult patients in ICU who were immune compromised and was on multiple medical devices.

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### Refeeding syndrome: Myth or reality?

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**Objectives:** The objectives of our study were to find out the incidence of risk factor score (RFS) in our intensive care unit by a prospective observational study involving adult consecutive patients at Tata Medical Center admitted to the intensive care unit who were started on enteral and parenteral nutrition support for the first time during this hospital admission.

**Primary Aim:** To determine the incidence of RFS. **Secondary Aim:** To study the association of RFS with various covariates.

**Materials and Methods:** Weight will be considered from the most recent documented weight available in "Full assessment" section of Hospital Management System (electronic medical record used at Tata Medical Center). The nutritional status will be assessed with baseline height, weight, BMI, weight loss over a given time. Height and weight measurements will be used to determine body mass index (BMI) (weight [kg]/height [m<sup>2</sup>]). Weight change over a 6 month before hospital admission will be based on patient or family estimates. A detailed diet history with food allergies, preferences and textures tolerated will be obtained as medically feasible. Nutrition assessment comprising of estimation of nutritional (calories and protein) needs, adequacy of present intake, identification any nutrition problem and risk of Refeeding will be completed. Nutrition intervention for EN or PN along with electrolyte supplementation as needed will be provided as needed. Patients will be classified into as at risk for Refeeding based on assessment. **Results:** We will fit a logistic regression model with Refeeding syndrome (Yes/No) as the dependent variable and age, gender, malnutrition and cancer as the covariates. The odds ratio along with the confidence intervals corresponding to the covariates will tell which of the covariates are associated with Refeeding syndrome as well as the magnitude of the association. **Conclusion:** This is an ongoing study and results are yet to be calculated.

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### Assessment of "restricted antibiotic usage policy" in a tertiary care hospital in India

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**Objectives:** To assess the outcome of restriction on the use of parenteral antibiotics with respect to their utilization and monetary benefits, in a tertiary care hospital in India. **Methods:** Data was collected regarding drug utilization 2 months before and after restriction respectively. A total of 1605 patient records assessed. Drug utilization was expressed as DDD/100 patient bed days. Use of carbapenems was restricted to culture positive cases only.

Antibiotics started for patients as per clinical judgment were issued for 3 days, maximally up to 5 days. Culture sensitivity reports verified physically on a special indent form, before every antibiotic issued thereafter. **Results:** Piperacillin-Tazobactam (DDD/100 BD 1.72 before and 1.29 after restriction) was the commonly used antibiotic. Considering values expressed in DDD/100 BD before and after restriction respectively, substantial decrease in consumption of antibiotics like imipenem-cilastin (0.22-0.16), meropenem (0.30-0.09), piperacillin-tazobactam (1.72-1.29), teicoplanin (0.24-0.05) and vancomycin (0.69-0.40) was observed. An increase in consumption of amoxicillin-clavulanic acid (0.90-1.04) and clarithromycin (0.44-0.55) noted, pointing to a shift in antibiotic use. Restriction decreased expenditure burden on these antibiotics by INR 1,45,911 (17.31%). **Conclusions:** Restriction of antibiotics cuts down consumption and benefits hospital budget immensely.

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### Acute kidney injury in severe traumatic brain injury

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**Objectives:** Non-neurological complications like acute kidney injury (AKI) can affect the outcome of traumatic brain injury (TBI). This study aims to highlight the incidence, predictive factors and overall impact of AKI in patients with severe TBI. **Materials and Methods:** We retrospectively assessed 395 patients who underwent definitive surgery for severe TBI admitted over the period of 1 year at our institute. A total of 95 patients were finally eligible for analysis after exclusion. Their demographic data, laboratory parameters and clinical courses were analyzed. Diagnosis and staging of AKI was made using serum creatinine level as per the acute kidney injury network (AKIN) criteria. **Results:** The incidence of AKI was 11.58% (11 patients). Out of 11 patients with AKI, 7 were in Stage I (63.63%), 3 were in Stage II (27.27%) and 1 in Stage III (9.09%). Nine patients (81.82%) developed AKI within 5 days of admission. Aminoglycoside therapy was associated with occurrence of AKI in these patients. There was no mortality and none required renal replacement therapy (RRT). Renal function of all these patients returned to baseline before hospital discharge. Occurrence of AKI resulted in prolonged length of mechanical ventilation, hospital stay and intensive care unit stay. At discharge their Glasgow coma scale was also lower when compared to non AKI group. **Conclusion:** Though reversible without the need for RRT, occurrence of AKI in patients with severe TBI can result in adverse outcome. Awareness of the entity, appropriate and early identification of patients at risk for AKI and minimizing aminoglycoside therapy may prevent further renal insult and improve the outcome of severe TBI patients.

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### Ventilation dilemma in infants with complex congenital heart disease with repeated extubation failures. Is early tracheostomy the best option?

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**Introduction:** Infants with complex congenital heart defects are well-known to have other multiple congenital defects, the most common being respiratory. These are infants who are most likely to require prolonged ventilation and undergo tracheostomy in the post-operative period. It would hence be prudent in such cases to go for early tracheostomy. **Case 1:** The first case is about

a 3-month-old female infant was brought to our center with the complaints of respiratory distress and suspicion of congenital heart disease by the treating pediatrician. She was found to have obstructed supracardiac Total anomalous pulmonary venous connection on echocardiography. She was initially stabilized in the intensive care unit and later taken up for emergency repair of Total anomalous pulmonary venous connection. Post-surgery she was initially stable on the ventilator and on extubation after 24 h she developed recurrent episodes of worsening respiratory distress associated with respiratory failure leading to multiple extubation failures. Serial echoes done revealed no residual cardiac defects. Computed tomography (CT) scan chest done did not reveal anything significant. She was then taken up for diagnostic tracheobronchography in the cardiac catheterization lab to do a dynamic study of her airways during spontaneous ventilation. Tracheobronchography revealed extensive bilateral bronchomalacia with involvement of the right side more than the left and more involvement of the secondary bronchi. As she continued to require ventilator support with high positive end-expiratory pressure, she underwent a tracheostomy on the 10<sup>th</sup> post-operative day (POD). Post tracheostomy, she required ventilator support for 2 months. We gradually reduced her ventilation support to T-piece ventilation by 55<sup>th</sup> POD and finally was decanulated by 60<sup>th</sup> POD to oxygen by hood which was weaned off to room air by 70<sup>th</sup> POD. Post weaning she remained stable and was finally discharged on 76<sup>th</sup> POD. **Case 2:** The second case is an 8-month-old female infant was brought to our center from abroad with complaints of respiratory distress and diagnosis of complex cardiac defect by the treating pediatric cardiologist. On evaluation at this center, she was found to have multiple congenital defects in the form of complex heart defect, scoliosis of thoracic spine with 'S' curve and cleft palate. Echo done at this center confirmed the complex cardiac anatomy. She was then evaluated in detail for the other associated problems and Chest X-ray done revealed thoracic vertebral scoliosis with 'S' curve and collapse of the left lung with reduced left lung volume. CT scan chest done revealed compression of the left main bronchus due to the dilated right pulmonary artery. After stabilization and detailed counseling, she was taken up for surgery 48 h after admission. Post-surgery she had repeated episodes of extubation failures despite the fact that serial echocardiograms showed no obvious cardiac cause for extubation failure. Tracheobronchogram done revealed significant long segment stenosis of the left main bronchus. In view of this she underwent Aortopexy surgery on 6<sup>th</sup> POD. However, she still was difficult to wean from the ventilator. She then underwent Tracheostomy on 9<sup>th</sup> POD and thereafter was gradually weaned to oxygen by T-piece by 15<sup>th</sup> POD, which was then weaned off to oxygen by hood on 25<sup>th</sup> POD and was gradually weaned to room air by 35<sup>th</sup> POD. Chest X-rays done prior to discharge revealed bilateral expanded lungs with occasional areas of patchy collapse. Her SpO<sub>2</sub> in room air was 96-97% with no distress. **Conclusion:** Infants with complex congenital heart defects are known to have associated defects in other systems and the most common association is in the respiratory system. Detailed evaluation of the respiratory system of such patients is a must. A multi-team counseling of the parents should be done prior to cardiac surgery and post cardiac surgery, we should not wait for repeated extubation failures and should go in for early tracheostomy and slowly wean the patient from the ventilator.

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### Ventilation dilemma in an infant with complex congenital heart disease and extensive bilateral bronchomalacia-what is the best step forward?

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**Introduction:** Incidence of tracheobronchomalacia is very high in infants with congenital heart disease. This leads to a major dilemma for the treating team in managing a post cardiectomy infant with associated tracheobronchomalacia. We present one such interesting case of an infant girl with extensive bilateral bronchomalacia. **Case Report:** This was a case report of a 3-month-old female infant who was brought to our center with the complaints of respiratory distress and suspicion of congenital heart disease by the treating pediatrician. On evaluation, she was found to have obstructed supracardiac Total anomalous pulmonary venous connection on echocardiography. She was initially stabilized in the intensive care unit and later taken up for emergency repair of total anomalous pulmonary venous connection. Post-surgery she was initially stable on the ventilator and on extubation after 24 h she had episodes recurrent extubation failures. Serial echoes done revealed no residual cardiac defects. Computed tomography scan chest done did not reveal anything significant. Bronchoscopy was tried, but she did not have repeated pulmonary hypertensive crises on attempted scopy. She was then taken up for diagnostic tracheobronchography in the cardiac catheterization lab to do a dynamic study of her airways during spontaneous ventilation. Tracheobronchography revealed extensive bilateral bronchomalacia with involvement of the right side more than the left and more involvement of the secondary bronchi. As she continued to require ventilator support with high end expiratory pressures, tracheostomy was done on the 10<sup>th</sup> post-operative day (POD). Post tracheostomy, she required ventilator support for 2 months and we gradually reduced her ventilatory support to T-piece ventilation by 55<sup>th</sup> POD. She was finally decannulated by 60<sup>th</sup> POD to oxygen by hood which was weaned off to room air by 70<sup>th</sup> POD. Post weaning she remained stable and was finally discharged on 76<sup>th</sup> POD. **Conclusion:** Laryngotracheobronchomalacia is a well-known entity in children with congenital heart disease and an astute clinical examination and an high index of suspicion is required for diagnosis. Once diagnosed, extended ventilation with good supportive care are of paramount importance in recovery.

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### Acinetobacter necrotizing fasciitis: An uncommon lethal infection in a post cardiac surgery infant: A report

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**Introduction:** Necrotizing fasciitis is an uncommon, lethal soft-tissue infection that is usually caused by toxin producing virulent bacteria and is characterized by widespread fascial necrosis with relative sparing of skin and underlying muscle. We strive to present an interesting case of necrotizing fasciitis occurring in an infant who underwent complex cardiac surgery. A 3-month-old male infant was brought to our center in a critical condition with suspicion of congenital heart disease. On arrival, he was found to be in respiratory distress and required immediate intubation and ventilation. He was thereafter evaluated and was found to have d-transposition of great vessels, intact ventricular septum and regressed left ventricular. He was planned for atrial switch procedure (Sennings procedure). Pre-operative clinical evaluation prior to surgery revealed gross evidence of generalized capillary leak, reduced urine output, tachycardia and low saturations. Investigations were all suggestive of sepsis syndrome with multiorgan dysfunction in the form of liver dysfunction, renal dysfunction and deranged coagulation parameters. He was stabilized and later underwent high-risk atrial switch surgery (Senning procedure) on 12/01/2012. Post-surgery he had a long intensive care unit stay in view of

pre-existing co morbid conditions, ongoing *Pseudomonas* sepsis, multiple intubations and severe right ventricular dysfunction requiring continued supportive care. On 11<sup>th</sup> post-operative day he started developing necrotic patches over the right forearm and upper back. A pediatric surgical opinion was sought and it was opined that the baby had necrotizing fasciitis which needed urgent debridement. A swab was sent from the lesion for culture and the baby was then planned for wound debridement. However before the baby could undergo life-saving surgery, his condition deteriorated and he died of septic shock. Swab sent from lesion later grew multidrug resistant *Acinetobacter baumannii* spp. **Conclusion:** Necrotizing fasciitis is a lethal infection and early recognition depends on a very high index of clinical suspicion. Infants with ongoing Gram-negative sepsis and low output state requiring inotropic support are at a high-risk of developing such a disorder. Occurrence of such a lesion in a post cardiac surgery patient is very rare.

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### Launch of critical care nursing certificate program

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**Aim:** The objectives are to develop and to design a course which entails the nurses in the critical care areas to deliver an unsurpassed patient care by empowering them with finest nursing skills, application of superlative medical knowledge, ease in the handling of the latest medical equipment and imbibing the culture of critical thinking. **Objectives:** (1) To develop confidence of nurses in handling medical surgical emergencies by allowing them to function efficiently in the intensive care unit. (2) To enhance their communication with the multidisciplinary health care delivery team and their patients. (3) To enhance their skills in performing critical medical procedures done during emergencies. **Methodology:** The program was planned under a detailed phase wise implementation. Phase 1: Syllabus finalization: A committee was formed consisting of clinicians, nurse educators and principal of a college of nursing who worked relentlessly on the syllabus. After repeated reviews the syllabus was finalized. Phase 2: Candidate selection: The candidates were selected after a two phased examination: First was a written test and second was an interview. Through these steps 12 candidates were chosen. Phase 3: Implementation: The program was launched in the month of June. The highlights being staff nurses retain their clinical experience. The course is offered free of cost. The nurses at the end of a year will receive a certificate of completion and a transcript with detailed hours (theory and practical). Faculty: Intensivists, clinicians, nurse educators, principal of college of nursing, etc. **Results:** The community children's nursing students have already done advanced procedures such as intubation, insertion of arterial lines, insertion of central lines etc. The patient care and the outcome has also improved considerably. Second batch of twelve more nurses are also ready to start.

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### Prevalence, distribution and precipitating factors of candida sepsis-a retrospective study in a tertiary care hospital of Kolkata

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Growing populations of immunocompromised hosts, presence of multiple co-morbidities and advancement in medical therapy have all resulted in increased frequency of fungal infection in the ICU.

*Candida albicans* is still the predominant cause of invasive fungal infection in critically ill patients, but non-*albicans* infection are rising rapidly, as high as 50% in some study. Hence, the aim of our study was to assess the frequency of non-*albicans* and the sensitivity pattern of invasive candidemia infection and the presence of precipitating factors predisposing them. In this retrospective study, we included patients who have documented blood culture positive for candida with the evidence of septicemia in between the time period of October "2011 to march" 2013 in our intensive care unit. We documented the incidence of different precipitating factors in our study population. We have collected data regarding associated co-morbidities (cardiovascular, respiratory, renal, neurological etc.); any evidence of immune suppression (diabetes mellitus, human immunodeficiency virus infection, dialysis, post renal transplant, steroid administration, neutropenia, underlying malignancy); recent stressful events (recent hospital admission, bacterial sepsis, recent surgery specially abdominal, ventilatory support, total parenteral nutrition); presence of indwelling catheters (urethral catheter, central venous catheter, any other drainage catheter and its duration); exposure to the broad spectrum antibiotics; exposure to antifungal therapy (prophylactic, empirical and/or therapeutic) and the sensitivity pattern of *C. albicans* and the non-*albicans*. We have also tried to analyze the data to see if there is any correlation between any specific precipitating factor and infection by a specific non-*albicans* species.

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### Altered consciousness secondary to Hashimoto's encephalopathy: A case report

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**Introduction:** Hashimoto's encephalopathy (HE) is a rare neurological condition associated with autoimmune thyroiditis. The mechanism of the disease remains uncertain until date. We present a patient of HE with various neurological manifestations. **Case Report:** A 65-year-old female patient presented with the complaints of tremor, proximal myopathy and diarrhea for 4 months. Her past medical history was significant for hypertension and autoimmune hepatitis (in remission). During her visit to Thailand, she had a sudden loss of consciousness and was intubated in an ambulance for respiratory arrest. Evaluation revealed low consciousness level, hyperkalemia (Serum potassium - 8.9 meq/L) and thyrotoxicosis (Thyroid-stimulating hormone [TSH] - 0.013  $\mu$ IU/ml,  $T_3$  - 243 ng/dl,  $T_4$  - 13.92  $\mu$ g/dl). She regained consciousness within 48 h, but weaning attempts were unsuccessful. She was shifted to our center in air-ambulance. Physical examination was normal. She developed sudden onset diaphoresis, tachycardia and tachypnea post extubation. Carbimazole therapy was started in view of thyrotoxicosis (TSH < 0.01  $\mu$ IU/ml). Patient, however, developed choreiform movements of the face and limb. Cerebrospinal fluid and blood analysis were normal. Anti-thyroid peroxidase antibody level was raised (>1300 U/ml). Provisional diagnosis of HE was established. Electroencephalographic and magnetic resonance image findings were consistent with HE. Patient was given pulse steroid dose with further maintenance dose. Her symptoms improved with therapy. She required percutaneous tracheostomy in view of weaning failure. She was discharged after 13 days. Tracheostomy tube was removed on follow-up visit and she remained euthyroid at 6 months from discharge. **Conclusion:** HE should be considered in the differential diagnosis of an acute confusional state since it is responsive to steroid therapy and represents a readily reversible cause of acute mental status changes.

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### Late migration of central venous catheter in a patient

### of right sided valvular heart disease: A case report

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**Introduction:** Insertion of the central venous catheter (CVC) has some complications. Abnormal position of CVC tip occurs in some cases which are detected by radiography just after insertion. Migration of CVC tip to abnormal position some days later, which was in normal position at the time of insertion is reported rarely. Hence we are highlighting the case. **Case Report:** We report a case of a 77-year-old male patient with a history of type 2 diabetes mellitus and hypertension was admitted with progressively increasing breathlessness since last 3 days and loose motion for 1 day. Initially, he had atrial fibrillation with fast ventricular rate. In view of hypotension, metabolic acidosis, ongoing loose motion, intravenous infusion of amiodarone and vasopressor CVC was inserted in left internal jugular vein. Correct position of central line tip was confirmed with X-ray chest. 2D echocardiography was done on the next day, which revealed severe mitral regurgitation with posterior mitral leaflet chordae rupture. X-ray chest was repeated on 2<sup>nd</sup> and 3<sup>rd</sup> day in view of breathlessness and requirement of noninvasive ventilation. X-ray chest on 3<sup>rd</sup> day showed displacement of CVC tip to the right internal jugular vein. **Discussion:** Abnormal positioning and migration not only may interfere with central venous pressure measurement, but also may lead to adverse effects caused by infusion or bolus dose of drugs. The tip of CVC should be checked daily on chest X-ray to identify late migration of the catheter tip.

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### Multidrug resistant bacterial isolates in an intensive care unit in North-east India: A clinico microbiological study

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**Introduction:** Multi drug resistance (MDR) bacterial infection is a major threat to patients admitted in intensive care unit (ICU). **Objective:** The objective of the following study is to identify the microbiological spectrum and their antibiotic sensitivity pattern, clinical characteristic and outcome of patients with MDR isolates. **Materials and Methods:** A retrospective analysis was done from the records of 10 bedded adult ICU in North-east India. Patients admitted from November 2012 to 2013 with positive cultures for MDR bacteria were included in this study. Patient's clinical characters, type of isolates, sensitivity pattern and the outcome data were collected. Species identification and susceptible testing was performed by Biomeurix system. **Results:** Out of 676 samples sent, 55 MDR strains from 49 patients were isolated. The most common sites were Respiratory tract (80%), followed by urine (14.54%) and blood (3.63%). Nearly 89.09% were Gram-negative, most common being *Acinetobacter baumannii* (36.73%) followed by *Klebsiella* species (26.53%), *Escherichia coli* (20.40%) and *Pseudomonas aeruginosa* (10.20%). *Staphylococcus aureus* was the predominant Gram-positive strain. All Gram-negative isolates where tested were sensitive to Colistin, polymyxin B and tegecycline. The sensitivity pattern of other drugs was as follows: Carbapenem (63.26%), cefepime (26.53%), aminoglycosides (24.44%), pip-tazo (12.24%), aztreonam (12.24%) and quinolones (10.20%). About 40% of MDR strains were isolated within 48 h of admission. Pneumonia was the most common diagnosis (26.53%) followed by cerebrovascular accident (18.36%), sepsis (18.36%), acute pancreatitis (10.20%) and COAD (10.20%). Diabetes (46.93%) and hypertension (57.14%) were the commonest comorbidities. 34.69% of them died during hospitalization. **Conclusion:** Gram-negative strains were predominant MDR isolates. Finding of

carbapenem resistance is alarming. Isolation of MDR isolates in 40% of cases within 48 h of hospitalization suggest possible high incidence of MDR pathogens in the community.

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### Reduction in central line associated blood stream infection (CLABSI) rates after implementation of CLABSI surveillance and prevention program

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**Aim:** To develop and implement central line associated blood stream infection (CLABSI) insertion and maintenance prevention bundles for our intensive care unit (ICU) patients and assessed the impact on CLABSI rates. **Methods:** We started CLABSI surveillance in ICU's in 2010. CLABSI is defined using Centers for Disease Control criteria. A multi-disciplinary team including infection control, intensivists, ICU-nurses and product specialists refined and disseminated educational tools in 2011. Education included strategies for prevention at the time of line insertion (hand hygiene, chlorhexidine skin antisepsis, maximal barrier precautions, sterile draping of full body, daily assessment of need for catheter). As well as 5 strategies for prevention during central line maintenance (hand hygiene, hub care prior to access, site dressing care with chlorhexidine impregnated patch, tubing care, assessment of need for catheter). Dissemination to the entire ICU team included town hall style meetings, increased infection control rounds, audits on bundle compliance and pre and post tests for analyzing the knowledge acquired. **Result:** In the year 2010, CLABSI rates (# CLABSI/1000 central line days) were 2.93 in adult ICU, 1.03 in surgical intensive care unit (SICU) and 1.9 in mixed intensive care unit (MICU). After the early 2011 roll-out of the intervention, in 2012 CLABSI rates were 1.43, (0.645 in SICU and 0.785 in MICU) **Conclusion:** Following a calendar year of implementation of a standardized approach to CLABSI prevention in ICU, CLABSI rates decreased in all settings. This program attempts to highlight the dramatic impact on CLABSI rates that can be achieved in a hospital using an effective CLABSI prevention program.

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### A comparative study to assess the effect of amikacin sulfate and povidone iodine for bladder wash on catheter associated urinary tract infection in intensive care unit

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**Objectives:** (1) To study the effect of amikacin sulfate and povidone iodine bladder wash on catheter associated urinary tract infection (CAUTI). (2) To study the various organisms causing CAUTI and the antibiotic sensitivity and resistance pattern in intensive care unit patients. **Materials and Methods:** This was a prospective randomized controlled study performed on 60 patients. Patients above the age of 18 years, available within 24 h of catheterization with informed written consent were included in the study. The exclusion criteria included patients with positive urine culture within 24 h of catheterization and also patients requiring catheterization for less than 3 days. The patients were randomized equally into two groups- Group A received amikacin sulfate 100 mg bladder wash, whereas Group B received povidone iodine (20 ml 5% solution) bladder wash once daily. Urine culture and sensitivity was performed on day 3, 5 and 10. **Results:** Six patients (20%) in Group B developed CAUTI, while none of the subjects in Group A developed CAUTI ( $P = 0.024$ , Fisher exact test). *Escherichia Coli* was the most common

organism (66.66%). Highest frequency of antibiotic resistance was for ciprofloxacin (75%). **Conclusion:** Amikacin sulfate bladder wash is effective in preventing CAUTI. It can thus decrease the antibiotic usage thereby preventing the emergence of antibiotic resistance.

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### Hypoglycemia at presentation to emergency medical services and in-hospital mortality in patients with sepsis: A prospective observational study from North India

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**Introduction:** Impaired glucose homeostasis has been well-documented in patients with severe sepsis. Studies from resource-rich settings found that hypoglycemia was strongly associated with increased hospital mortality and that its association with mortality was stronger than that of hyperglycemia. There is a paucity of evidence based data from developing countries on this aspect of impaired glucose homeostasis especially hypoglycemia at emergency medical services admission in these critically sick patients with sepsis. **Materials and Methods:** A prospective observational study was conducted at emergency medical services attached to Medicine Department of Post Graduate Institute of Medical Education and Research, Chandigarh. Blood glucose values were obtained on admission with a point of care glucometer. Hypoglycemia was defined as a glucose concentration of  $\leq 80$  mg/dL. **Results:** We analyzed 201 patients with sepsis. Euglycemia occurred in 33.8% (68 of 201) of patients, whereas 15.4% (31 of 201) of patients were hypoglycemic and 50.8% (102 of 201) were hyperglycemic at presentation. Univariate analysis comparing hypoglycemic patients with euglycemic and hyperglycemic patients showed statistically significant patients with hypoglycemia having higher body temperature, higher respiratory rate, lower platelet count, lower mean arterial blood pressure, prolonged prothromb intime/activated partial thromboplast in time, lower arterial pH at presentation and higher rates of in-hospital mortality. Hypoglycemia (adjusted odds ratio 1.7, 95% confidence interval 1.2-4.7,  $P < .05$ ) remained significantly and independently associated with in hospital mortality in the multivariate model. **Conclusion:** Hypoglycemia at presentation is an independent risk factor for in hospital mortality in patients with sepsis.

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### Cardiac tamponade in medical emergency services: An observational study from North India

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**Objective:** To determine the profile of patients presenting to the medical emergency services of a large tertiary care hospital with cardiac tamponade. **Materials and Methods:** Retrospective observational study was undertaken in a tertiary care hospital in North India. A total of 28 patients of which 16 were men and 12 were women presenting to the medical emergency services with features of cardiac tamponade from January 2000 to December, 2012 were included in the analysis. **Results:** The mean age of the cohort was  $49.39 \pm 16.36$  years. Presenting symptoms were breathlessness (92.9%), cough (78.6%), anorexia (67.9%), weight loss (60.7%), fever (42.9%) and chest pain (39.3%). Tuberculosis accounted for 50%, malignant disease for 35.7% and viral infections for 7.1% of cases of

cardiac tamponade. All patients underwent echocardiographically guided pericardiocentesis without any complications. Pig tail catheter pericardial drainage was undertaken in twenty patients (71.4%). All except one patient had recovered. **Conclusions:** Tuberculosis was the most common cause of cardiac tamponade, followed by malignancy. Pigtail catheter pericardial drainage is a safe and effective non-surgical option in these patients.

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### Vinayaka kidney injury score, a new score for predicting acute kidney injury for critically ill patients

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**Introduction:** Patients admitted in Intensive care unit undergo multiple intervention to treat serious medical condition. In addition to acute illness being treated underlying chronic conditions require treatment. As a result this patients are exposed to many therapeutic agents, which are having narrow therapeutic windows and toxic potential. Co-morbid condition altered drug pharmacokinetics and drug-drug interaction may result many end organ toxicities. One such complication is acute kidney injury (AKI). In the intensive care unit (ICU). All predictor of AKI i.e. AKI marker is expensive and not available in all centers in India and hence there is a need of new AKI scale is intensive care unit, which can predict this early and appropriate for our country. **Aim:** A study is to determine new AKI score in the intensive care unit. **Methodology: Study Design:** This is a Prospective, cross-sectional multicentre study done in patients admitted in intensive care unit. **Inclusion Criteria:** All patients admitted in intensive care unit (Surgical intensive care, Medical intensive care and coronary intensive care) in all study centres. **Exclusion Criteria:** (1) Patients who went against medical advice. (2) Patients who treated outside hospital whose treatment history not available. (3) Chronic kidney disease patients. All patients admitted in intensive care unit (Surgical intensive care, Medical intensive care and coronary intensive care) in all study centers are taken for the study based on inclusion and exclusion criteria. All patients are screened for risk factors for nephrotoxicity and common forms of drug induced AKI with pre-fixed proforma and results were analyzed statistically. **Results:** A total of 1786 patients are included in the study on the basis of inclusion criteria. Among them 956 developed. AKI in their stay in ICU. Risk scoring done on basis of statistical significant association of risk factor with developing AKI. **Conclusion:** This new AKI score can predict AKI in intensive care unit early, easily and which can be based on Indian population data.

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### The geriatric critically ill patient in the developing world-mortality and functional outcome at one year: A prospective single center study.

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**Objective:** To study the mortality and outcome of critically ill geriatric patients in a developing country with focus on nutritional and socioeconomic status. **Methods:** A prospective study of 109/215 patients admitted consecutively to the intensive care unit (ICU) from 2011 to 2012. Demographics, Acute Physiology and Chronic Health Evaluation (APACHE) II score, malnutrition universal screening tool score, socio-economic category (SEC), functional status, delirium, mechanical ventilation and length of stay were recorded. Telephonic assessment of outcome was done at 1 year. Appropriate statistical tests compared differences between

sub-groups. Multivariate analysis was performed on significant variables ( $P < 0.1$ ) affecting mortality. **Results:** At 12 months after discharge 46.8% of patients (mean age  $74.7 \pm 8.4$  years, APACHEII  $19.5 \pm 6.5$  and ICU stay  $7.1 \pm 3.3$  days) had succumbed. Risk factors for mortality at 12 months were APACHE II score ( $P = 0.000$ ; odds ratio [OR] 1.2; 95% confidence interval [CI] 1.1-1.4), malnutrition ( $P = 0.01$ ; OR 0.01; 95% CI 0.01-0.60) and delirium ( $P = 0.03$ ; OR 0.32; 95% CI 0.04-1.5). Kaplan Meier survival analysis showed significant association with malnourishment (log rank test  $P = 0.012$ ) but not with SEC. Majority (72%) of the survivors had a favorable functional status. **Conclusions:** Malnutrition, delirium and APACHEII were risk factors for long-term mortality. Survivors had a good functional outcome. Appropriate quality of life tools for this population need to be developed.

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### Profile of cerebral sinus venous thrombosis

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**Introduction:** Cerebral venous and dural sinus thrombosis (CSVT) is less common than most other types of stroke but can be more challenging to diagnose. Due to the widespread use of magnetic resonance imaging (MRI), Venography and rising clinical awareness, CSVT is recognized with increasing frequency. In addition, it is now known to have a more varied clinical spectrum than previously realized. Due to its myriad causes and presentations, CSVT is a disease that may be encountered not only by neurologists and neurosurgeons, but also by internists, oncologists, hematologists, obstetricians, pediatricians and family practitioners. **Aims and Objectives:** A hospital-based population study where CSVT presentation and profile is noted with clinical presentation and investigation. **Materials and Methods:** Over a period of 24 months, all patients admitted with cerebral venous thrombosis were evaluated with MRI imaging, blood investigations and their clinical course documented. **Exclusion Criteria:** Other causes of stroke were ruled out by MRI imaging. Cases where a definite case could not be found. **Results:** Of the 25 patients studied 100% had evidence of cerebral thrombosis. Males were 13 and females 12. There were 9 unconscious or drowsy and 16 were conscious. The presentation was with headache in 70%, visual symptoms in 30%, seizures in 60%, encephalopathy in 15%, coma in 10% cases patients having poor Glasgow coma scale had to undergo decompressive craniectomy and later improved to modified Rankin scale II or III. Further evaluation for cause done to add anticoagulant therapy where ever necessary. **Discussion:** Many causes or predisposing conditions are associated with CSVT most frequent are prothrombotic conditions, oral contraceptive pill, pregnancy and puerperium, malignancy and infection as well no other etiology were found in few cases. Though association of hyperhomocysteinemia is controversial but 4 of our cases had hyperhomocysteinemia and all were males. **Conclusion:** The clinical presentation of CSVT is highly variable. The onset may be acute or sub-acute, or chronic. Headache is the most common symptom and accompanied by papilledema, visual problems as well focal neurologic deficits, focal or generalized seizures or encephalopathy with stupor or coma are not uncommon. Brain MRI in combination with magnetic resonance venography is most sensitive evaluation technique as head computed tomography is normal in up to 30% of cases, further evaluation is mandatory to prevent recurrence of episode. Though treatment is easy but requires proper monitoring in intensive care unit initially to prevent complications. The most common etiology is prothrombotic conditions either genetic or acquired. The most frequent risk factor in young women is the use of oral contraceptives.

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### Leptospirosis presenting as acute respiratory distress syndrome and rapid recovery with early respiratory

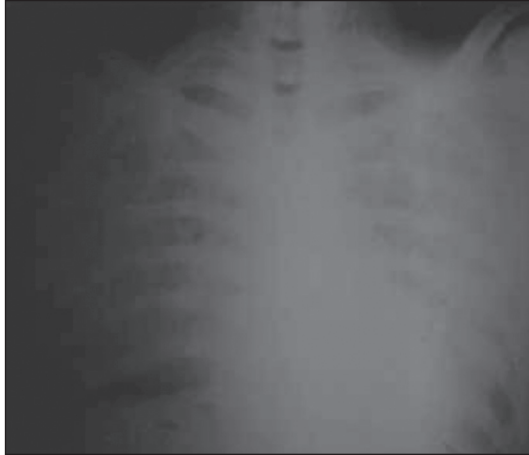


**support with the addition of steroids**

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**Case Report:** This is a report of 24 year old male from District Uran in Maharashtra who presented with a history of pyrexia for 5 days. Patient had a dry cough, accompanied by progressive shortness of breath.



**Conclusion:** Aggressive management of leptospirosis from 1<sup>st</sup> day with respiratory support results in dramatic early improvement in patient 1 day before admission. Patient was admitted with a possibility of pyrexia with acute confusional state and acute respiratory distress syndrome. The investigations showed hepatorenal dysfunction. On admission His serum bilirubin, serum glutamic oxaloacetic transaminase, serum glutamic pyruvic transaminase and alkaline phosphatase at admission were 2.18 mg%, 158 Iu/L, 96 Iu/L and 912 Iu/L respectively. Lep to immunoglobulin M was positive. The urea and creatinine at admission were 72 mg% and 2.3 mg% respectively. His arterial blood gas showed severe acidosis with pH of 7.16 and pO<sub>2</sub> of 89 mmHg, HCO<sub>3</sub> was 10.9 mmol/L, pCO<sub>2</sub> was 44.4 mmHg. Platelet count was 8,000/cumm. Possibility of clinical malaria or leptospirosis was kept and patient treated with injection artesunate injection piperacillin plus tazobactam renal dose and oral clindamycin with injection methyl prednisolone for 5 days. He was immediately given oxygen bi-level positive air pressure support. Patient gradually improved with the same treatment and was on non-rebreather mask after 2 days and spontaneous respiration after 5 days. Platelet counts were normal and at discharge the urea and creatinine were 40 mg% and 1.0 mg% respectively.

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**Drug reaction (or rash) with eosinophilia and systemic symptoms syndrome: An unusual case**

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DRESS syndrome stands for drug reaction (or rash) with eosinophilia and systemic symptoms. It is a syndrome, caused by exposure to certain medications. Treatment consists of stopping the offending medication and providing supportive care.

**Presentation:** There is no gold standard for diagnosis and at least two diagnostic criteria have been proposed.

<b>RegiSCAR inclusion criteria for DRESS syndrome. Three of the four starred criteria required for diagnosis</b>	<b>Japanese consensus group diagnostic criteria for DIHS</b>
Hospitalization	Maculopapular rash developing >3 weeks after starting the suspected drug
Reaction suspected to be drug-related	Prolonged clinical symptoms 2 weeks after discontinuation of the suspected drug
Acute rash*	Fever > 38°C
Fever > 38°C*	Liver abnormalities (ALT > 100 U/L) or other organ involvement
Lymphadenopathy in at least two sites*	Leukocyte abnormalities
Involvement of at least one internal organ*	Leukocytosis (> 11 × 10 <sup>9</sup> /L)
Blood count abnormalities (lymphopenia or lymphocytosis*, eosinophilia*, thrombocytopenia*)	Atypical lymphocytosis (>5%)
	Lymphadenopathy
	Human herpesvirus 6 reactivation

DRESS: Drug reaction (or rash) with eosinophilia and systemic symptoms;  
 DIHS: Drug-induced hypersensitivity syndrome; ALT: Alanine aminotransferase;  
 RegiSCAR: Registry of severe cutaneous adverse reaction

We would like to report a case of 15 year old boy who came to outpatient department (OPD) with complaints of having had episode of convulsion. Patient was started on tablet phenytoin with tablet folvite. After about 25 days, patient came to OPD with the complaints of high grade fever since 2 days with rash centripetal with facial puffiness and pain in the throat and difficulty in swallowing. Patient had generalised lymphadenopathy. A provisional diagnosis of clinical malaria, dengue and acute tonsillitis was made and patient was started on injection artesunate, capsule doxy and injection ceftriaxone. ENT reference ruled out tonsillitis. Blood picture showed eosinophilia (8%), lymphocytosis (82%), leucocytosis (15,000), alkaline phosphatase elevated (300). Malaria parasite-negative, dengue antibodies-negative, sero-negative. A dermatology reference was taken next day after rash and other symptoms worsened. A provisional diagnosis of DRESS syndrome was made. Anti-malarial and tablet phenytoin was stopped. Tablet leviteracetam was started as alternative to phenytoin. Patient was given one dose of injection hydrocortisone. Patient improved with regression of symptoms.

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**Acute methaemoglobinemia in nitrobenzene poisoning**

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**Objective:** To present a case of acute methaemoglobinemia following ingestion of weedicide containing nitrobenzene. **Materials and Methods:** A 22-year-old girl presented with severe cyanosis, hypotension, desaturation and respiratory distress following ingestion of a nitrobenzene compound was managed appropriately in ICU with ventilatory support, supportive measures and vitamin - C. **Results:** A 22-year-old presented to ER with history of consumption of a compound named "Hoover," a herbicide containing 35% nitrobenzene, 10% solvents and 55% water, as a suicidal attempt. On admission, she was severely cyanosed, had hypotension and had a room air saturation (SPO<sub>2</sub>) of 29%. She was immediately intubated and initiated on ventilatory support. Hypotension responded to fluid resuscitation. On positive pressure ventilation with 100% oxygen the SPO<sub>2</sub> improved to 85%

and remained there. X-ray chest and other baseline investigations were normal. Chocolate brown color of a blood sample drawn for arterial blood gas (ABG) and SPO<sub>2</sub> not improving beyond 85% with 100% oxygen and relatively normal ABG with no hypoxia or acidosis led us to suspect methaemoglobinemia and the patient was started on vitamin - c. Intravenous methylene blue was not available at that time and even while attempts to procure and prepare oral methylene blue was on, patient improved and she was weaned off ventilator in 72 h. She continued to have a room air SPO<sub>2</sub> of 78-85% post extubation. She was monitored closely and was discharged on day 8 when her room air SPO<sub>2</sub> was 94%. Methaemoglobin levels estimated on day 5 were 9.9% which confirmed the diagnosis. Her liver function test also showed a conjugated bilirubinemia. **Conclusion:** Acute methaemoglobinemia due to a variety of toxins containing nitrobenzene is relatively uncommon. People treating these types of cases should be aware of it and prompt treatment should be initiated appropriately. Results are satisfying.

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### Prevalence of antibiotic resistance amongst nosocomial infections with particular reference to multi drug resistance, pan drug-resistant and XDR infections

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**Objectives:** Nosocomial infections (NI) are leading health care problem now-a-days, particularly more so due to the increasing incidence of antibiotic resistance and this is true for every intensive care unit (ICU) in India including ICU's in Tier II cities as we have reported previously in our study. Present investigation was undertaken as a continuation of our previous study to report the prevalence and degree of antibiotic resistance (including multi drug resistance [MDR] and pan drug-resistant [PDR] infections) in patients having NI. **Materials and Methods:** Prospective, observational clinical study of the specimens obtained from a period of January 2012 to November 2013. **Results:** Of the 642 samples analyzed from the hospital over a period of 2 years, a total of 184 positive samples were identified (NI = 29%). Gram-negative organism accounted for 80%, Gram-positive for 12%, fungal for 8% infections. Respiratory tract (36%), urinary tract (38%) and bloodstream infection (23%). Pathogens involved were mainly *Escherichia coli* (38%), *Acinetobacter baumannii* (18%), *Klebsiella* (13%), *Pseudomonas aeruginosa* (8%). Extended spectrum beta lactamase (ESBL) infections accounted for 42% and non ESBL 4%. Of all the culture positive samples MDR infections account for 50%, PDR 3% and extensive drug resistant infections are 1%. **Conclusions:** This study clearly shows us the emergence of antibiotic resistance in patients with NI particularly the resistance to the high end antibiotics (including cabapenam and polymyxins).

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### Hyperammonemic encephalopathy

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**Introduction:** Ammonia levels in the brain are normally two times higher than in the arterial blood and in case of an acute rise of blood ammonia this ratio goes up, amplifying the toxicity of ammonia. The increased level of ammonia in the central nervous system leads to a higher production and accumulation of glutamine within the astrocytes, causing increased intracellular osmolarity, cerebral edema and astrocyte. **Case Report:** A 19-year-old girl was

admitted with sudden onset of clumsiness of the left hand followed by episodic twisting and pulling of angle of mouth to one side, stiffness and repetitive involuntary side to side movements of her both upper extremities and uprolling of eyeballs with alteration of consciousness with hyperventilation and oral secretions without fever, headache, vomiting. Movements were non-rhythmic and stereotyped. Skin was normal, there were no lateralizing signs. Blood count, metabolic parameters, magnetic resonance imaging brain and cerebrospinal fluid analysis were normal except raised erythrocyte sedimentation rate and high ammonia. Electroencephalogram (EEG) showed epileptiform activity arising from left fronto-centro-parietal region. However subsequent EEG was normal. Anti convulsants were started and lactulose was added to for cleansing the bowels aiming to reduce the ammonia level. During the course of her hospital stay, she had to be admitted in intensive care unit, intubated and ventilated and later tracheostomy had to done. The management of her persisting involuntary movements continued with anticonvulsants and supportive. Later on dexamethasone, methylprednisolone, anabolic steroids and sodium benzoate were also used. Subsequently, the involuntary movements reduced and ammonia levels also came down to near normal levels. **Discussion and Evaluation:** Idiosyncratic hyperammonemic encephalopathy is a rare occurrence. Intermittent confusional episodes due to hyperammonemia can be easily mistaken with partial seizures inducing medication error, which may worsen the hyperammonemia. Careful monitoring of liver function test and ammonia should be recommended in patients with idiosyncratic symptomatic hyperammonemic encephalopathy is completely reversible, but can induce coma and even death, if not timely detected.

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### Survival of out-of-hospital cardiac arrest patients and feasibility for therapeutic hypothermia in Southern University Hospital

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**Background:** Therapeutic hypothermia is a standard treatment for comatose out-of-hospital cardiac arrest patients after restoration of spontaneous circulation (ROSC). Songklanagarind Hospital, an 855-bed southern university hospital, will establish a therapeutic hypothermia protocol in 2013. **Objectives:** To estimate the survival rate of out-of-hospital cardiac arrest patients and determine factors associated with their survival and feasibility of therapeutic hypothermia in Songklanagarind Hospital. **Design:** A descriptive, retrospective study. **Materials and Methods:** Data were collected from the emergency department from record forms and retrospectively reviewed using patient charts dated from January to December 2012. Inferential statistics, univariate (Chi-square test) and multivariate analyses (logistic regression) were applied for data analysis. **Results:** A total of 122 out-of-hospital cardiac arrest patients were ascertained; 67.2% were male. The most common cause of arrest is presumed cardiac in origin. The most common initial electrocardiogram rhythms was asystole (31.1%). Following resuscitation, 40 (32.8%) patients had ROSC. In our setting, survival rate in patients receiving cardiopulmonary resuscitation (CPR) was 8.2%. Shorter CPR time and higher doses of adrenaline were associated with higher initial survival rate. Only 2 (1.6%) patients were suitable for therapeutic hypothermia. **Conclusion:** The survival rate of out-of-hospital cardiac arrest patients was 8.2%. Only 2 (1.6%) patients were suitable for therapeutic hypothermia.

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### Interesting case of breathlessness

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Morgagni's diaphragmatic hernia is very rare in adults. Literature describes less than dozen such cases, we presented such very rare case in which the herniated content is liver in right thorax causing displacement of heart and mediastinum to the left side. Patient was 55 year old male laborer by occupation, h/o fall in May 2000 for which he had undergone spinal cord fixation at D12 vertebra, hypertensive on regular T. stamlo OD, non-diabetic, complaining of gradual onset of breathlessness increasing on lying down position presently breathless even at rest and having cough with expectoration since 15 days. Patient evaluated with chest X-ray s/o cardiomegaly with the right heart enlargement, blood pressure-130/80 mmHg, RS-B/L scattered rhonchi, no crepts treated with IV steroids, antibiotics and inhalational bronchodilators. Even after 2-3 days of intensive treatment patient was not getting relief so 2D echocardiogram was done which was normal. Then we decided for computed tomography (CT) Thorax but patient was orthopnoeic CT Thorax was withheld, at last we started injection MgSO<sub>4</sub> 2 g IV slowly, on day 3 patient improved symptomatically. After stabilizing his vitals we went for CT thorax which was s/o right anteromedial diaphragmatic hernia with herniated liver at right paramedian anteromedial aspect adjacent to the heart which displaced heart and mediastinum to left side. In discussion routine Tc-99m sulfur colloid liver scintigraphy can serve as a diagnostic means for detection of right diaphragmatic liver herniation. The unique hepatic uptake of sulfur colloid makes it possible to discriminate tissues of liver origin from that of non-liver origins such as diaphragmatic tumors or pleural origins.

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**Comparison of Pediatric intensive care unit of an apex teaching hospital of India against the guidelines given by Indian society of critical care medicine (Pediatric section) and Indian academy of Pediatrics**

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**Introduction:** Organization of intensive care unit includes both quantity and quality of staffing and the leadership taken by the intensive care unit (ICU) medical team regarding medical decisions. **Objective:** This study was conducted to assess the compliance of structural and organizational parameters of pediatric intensive care unit (PICU) against the Guidelines given by Indian Society of Critical Care Medicine (ISCCM-Pediatric Section) and Indian Academy of Pediatrics. **Methodology:** Study was carried out in PICU at All India Institute of Medical Sciences, New Delhi. Structural and organizational aspects were studied against the Guidelines given by ISCCM-Pediatric Section and Indian Academy of Pediatrics. All parameters were assigned equal weightage and scoring was done by assigning a score of 0, 5 and 10 to non-compliance, partial compliance and compliance respectively. Data was collected through direct observations, studying hospital records and unstructured interview of key informants. **Observations:** PICU is an 8 bedded (5 beds and 3 bassinets) closed model ICU with no full time dedicated designated Director. When compared against the guidelines prescribed by ISCCM compliance of 100% in organization, 50% in policies, 0% in periodic review of care, 44.12% in physical facility, 60% in staffing, 50% in hospital facilities and services, 100% in training and continuing education, 65.38% in equipment's and 57.83% in drugs. **Conclusion:** Overall compliance of only 52.38% was observed against the guidelines prescribed by ESICM which is low and leaves with a lot of scope for improvement.

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**Study of effect of n-acetylcysteine infusion in sepsis: A clinical study**

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**Objective:** To study effect of n-acetyl cysteine infusion in sepsis. **Materials and Methods:** Above study was performed in 36 critically ill patients admitted in intensive care unit (ICU) of Nehru Hospital, B.R.D Medical College, Gorakhpur. patients were divided in 2 groups of 18 patient in each group. Group-1-patient received 1600 mg of n-acetylcysteine in 500 ml of 0.9% normal saline 12 hourly within 30 min of admission to ICU for 48 h. Group 2 - received only 0.9% normal saline. Hemodynamic parameters as pulse rate (PR), systolic blood pressure (SBP), diastolic blood pressure (DBP), mean arterial blood pressure, and biochemical markers as serum lactate, total leukocytic count, procalcitonin, C-reactive protein were monitored in both groups. On day 1 and day 3 and were compared. **Result:** There was significant improvement in PR, SBP, DBP on day 3 in Group 1 and in PR, SBP in Group 2. On comparing Groups 1 and 2, difference was not significant. Comparing improvement in biochemical markers there was significant improvement in level of serum lactate and procalcitonin on day 3 in Group 1 and there was significant improvement in TLC, serum lactate and procalcitonin on day 3 in Group 2 but there was no significant difference on comparing both groups. **Conclusion:** From the above study it can be concluded that n-acetyl cysteine neither showed any significant improvement in hemodynamic parameters and biochemical markers of sepsis nor caused any deleterious effect on these. More extensive study is required involving more number of patients to make outcome of study worthwhile.

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**A case of ruptured pseudoaneurysm in a drug addict vikas Raghove, Karampal Singh, Punam Raghove**

Ruptured pseudoaneurysm of the femoral artery is an uncommon but life threatening complication of intravenous drug abuse. Immediate heroic measures are required to save life. A team approach is required with intensivist, anesthesiologist and vascular surgeon. Critical challenges include control of bleeding pre and intra operatively and anesthetic management which is complicated due to hypovolumic status and interactions with the abused drug. We present a case of 25-year-old male drug abuser who had sudden onset profuse bleeding from groin and was referred to us with compression dressing to control bleeding. Examination revealed pulsatile blood spurt. He was immediately rushed to the operating room and prepared with constant manual pressure to control bleeding. Fluid resuscitation was started. General anesthesia was induced and maintained with efforts to maintain hemodynamics. Initial exploration revealed a ruptured pseudoaneurysm of the right femoral artery. After proximal control of vessel to stop bleeding manual pressure was relieved and site was re-prepared. Surgery continued with a bypass synthetic graft placement. Post-operative intensive care unit and hospital stay was uneventful and patient was discharged without any signs of limb ischemia.

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**Multiorgan dysfunction score study in pediatric intensive care unit**

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**Objective:** To develop an objective scale to measure the severity of the multiple organ dysfunction syndrome as an outcome in critical illness. **Material and Method:** Prospective cohort study. In intensive care unit (ICU) of a tertiary-level teaching hospital. Involving all patients admitted for more than 24 h in ICU. Based on previously developed multiorgan dysfunction scales. Five systems were studied (a) the respiratory system ( $PO_2/FIO_2$  ratio); (b) the renal system (serum creatinine concentration); (c) the hepatic system (serum bilirubin concentration); (d) the hematologic system (platelet count); and (e) the central nervous system (Glasgow coma scale); (f) pressure-adjusted heart. Each system was given score 1-4. Maximal scores for each variable were summed to yield a results this score correlated in a graded fashion with the ICU mortality rate, both when applied on the 1<sup>st</sup> day of ICU admission as a prognostic indicator and when calculated over the ICU stay as an outcome measure. **Conclusions:** This multiple organ dysfunction score, mirrors organ dysfunction as the intensivist sees it and correlates strongly with the ultimate risk of ICU mortality and hospital mortality, which therefore is potentially amenable to therapeutic manipulation. Moreover, an instrument that can provide an objective measure of the severity of organ dysfunction at the time of ICU admission and that can quantify subsequent deterioration over the course of the ICU stay may prove useful as an alternative end point for clinical trials involving critically ill patients.

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## Perioperative management of thyroid storm: Case report

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**Introduction:** Management of intraoperative thyroid storm in perioperative period is real challenge for the anaesthesiologist and perioperative physicians in a previously undiagnosed, healthy patient. High index of suspicion and prompt treatment with antithyroid medications and systemic supportive therapy is key in the successful management of this life-threatening complication. We present a case report of a perioperative thyroid storm in a female patient posted for mastoid exploration under general anesthesia. **Case Report:** This was a case report of a 45-year-old female patient with weighing 40 kg was admitted under Otorhinolaryngology Department. She was a diagnosed case of bilateral safe chronic suppurative otitis media, planned for right mastoid exploration under general anesthesia. Her baseline pulse rate on pre-operative evaluation was 110/min, blood pressure was 110/70 mmHg, systemic examination was within the normal limits. Laboratory investigations were normal except for hemoglobin levels which were 8.7 g/L. She was premedicated with midazolam, fentanyl and induced with propofol and non-depolarizing muscle relaxant (vecuronium). Anaesthesia was maintained with oxygen, nitrous oxide and isoflurane. Intraoperative course was uneventful except for tachycardia (pulse rate -130-140/min). At the end of the procedure, pulse rate increased to 170/min and blood pressure increased to 170/110 mmHg. She received injection metoprolol 5 mg bolus dose and was repeated thrice. In view of delayed awakening from the anaesthesia, serum electrolytes and arterial blood gas (ABG) was advised. ABG was suggestive of severe respiratory acidosis ( $PCO_2$  - 110 mmHg). She was hyperventilated with positive pressure ventilation to control  $PCO_2$ . She developed hypotension and pink frothy sputum through endotracheal tube. On auscultation of chest, bilateral coarse crepitations were present. Inotropic support was started with noradrenalin infusion and diuretics were given. She was shifted to surgical intensive care unit for mechanical ventilation and monitoring. Noradrenalin infusion and diuretics were continued. Repeat ABG showed  $PCO_2$  of 60 mmHg. Subclavian central line was inserted. Patient had two episodes of bradycardia, which was treated with injection atropine.

In view of persistent tachycardia, pulmonary edema, delayed awakening and intraoperative hypercarbia, thyroid function test was sent and the patient was empirically started on injection, hydrocortisone 100 mg 8 hourly. Patient received intermittent boluses of beta blocker to control the heart rate. Neurology consultation was taken and started on injection mannitol and injection dilantin prophylactically.

On the 2<sup>nd</sup> post-operative day, thyroid profile report was ( $T3$ -3.31,  $T4$ -29.40, thyroid stimulating hormone-0.01) s/o hyperthyroidism. Tablet neomecarazole 30 mg TDS, potassium iodide 5 drops TDS and tablet propranolol 40 mg QID were started. Steroids were continued. Patient did not received any form of sedatives and muscle relaxant except for analgesics in the form of injection fentanyl intermittently. On the 3<sup>rd</sup> post-operative day, patient regained some muscle activity and eye opening. Noradrenalin was tapered off. Heart rate stabilised to 90-100/min. Her neurological status improved gradually over next few days. She started communicating, but muscle power was grade 1/6 in all the four limbs with no diaphragmatic activity. Hence, she was tracheostomised in view of prolonged ventilator support and airway management with pulmonary toileting. Steroids were gradually with tapered own and stopped. Patient received nutritional support through enteral feedings taking in to account high metabolic demands (35-40 kcal/kg body weight/day). Physiotherapy was continued. Weaning from the ventilator was difficult and gradual weaning was done. She was weaned from the ventilator on 21<sup>st</sup> post-operative day. She gradually regained power initially in upper limbs, than in lower limb after almost 1 month. She was shifted to ward with tracheostomy tube *in situ* for pulmonary toileting. Tracheostomy tube was decanulated on 40<sup>th</sup> post-operative day and patient was discharged on 45<sup>th</sup> post-operative day. **Discussion:** Management of intraoperative thyroid storm in perioperative period is real challenge for the anaesthesiologist and perioperative physicians in a previously undiagnosed, healthy patient. High index of suspicion must be kept in any patient having unexplained tachycardia, hypertension, hypercarbia despite controlled ventilation and delayed awakening from anaesthesia. Precise criteria for diagnosis of thyroid storm were given by Burch and Wartofsky<sup>[1]</sup> which included cardiovascular dysfunction, respiratory dysfunction, thermoregulatory dysfunction, neurological dysfunction, gastrointestinal and hepatic dysfunction and precipitating cause. Total score comes out to be 90. Score more than 45 is more likely indicates thyroid storm, score 25-45 indicates impending thyroid storm and score of less than 25 is less likely thyroid storm. In this patient, the score was 90 on 1<sup>st</sup> post-operative day and gradually decreased to normal. Management of thyroid storm includes antithyroid medications such as neomecarazole, methimazole, potassium iodide, steroids and beta-blockers. Supportive therapies include controlled ventilation, nutritional support, cooling methods both active and passive, antipyretics, physiotherapy apart from basic intensive care management. Being a high catabolic state, Early tracheostomy is indicated in these patients in view of prolonged ventilator support and airway toileting as diaphragmatic function takes a long time to recover. Maintaining nutrition to prevent negative nitrogen balance and muscle wasting is very important. **Conclusion:** Thyroid storm pose a critical diagnostic and therapeutic challenge to anaesthesiologist and perioperative physician. High index of suspicion, early recognition of signs and prompt treatment is key to successful management. With the availability of the array of diagnostic tools, antithyroid medications aimed at stopping synthesis and preventing peripheral conversion to active thyroid hormone and systemic supportive measures, patient of thyroid storm can be successfully managed. Definitive management of thyrotoxicosis will be required to prevent future episodes of thyroid storm.

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### A correlation study between thyroid hormone levels and left ventricular ejection fraction in ST elevation myocardial infarction

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**Background:** Abnormalities in thyroid functions have been described in various acute medical conditions including myocardial infarction. Many prognostic markers also have been stated for myocardial infarction. This study aims to investigate correlation between thyroid hormone levels and cardiac function in patients with ST elevation myocardial infarction (STEMI) using echocardiographical parameters. **Materials and Methods:** Patients admitted in intensive coronary care unit of Father Muller Medical College Hospital, Mangalore with diagnosis of STEMI were included in the study after fulfilling the inclusion and exclusion criteria. The study was conducted over a period of 2 years from 2012 to 2013. Thyroid function tests were assessed using venous sample collected within 24 h of admission and echocardiography was done within 48 h of admission. Data was tabulated and analyzed by Pearson correlation. **Results:** The study comprised of 45 patients, 31 males and 14 females. Of the 45 patients 27 (60%) had normal thyroid function, the distribution of euthyroid sick syndrome, subclinical hypothyroidism, hyperthyroidism, subclinical hyperthyroidism was 10 (22.22%), 5 (11.11%), 2 (4.44%) and 1 (2.22%) respectively and none had overt hypothyroidism. A significant positive correlation was observed between serum levels of T3 and left ventricular ejection fraction ( $r = 0.461$ ,  $P = 0.01$ ). **Conclusions:** As low serum T3 levels correlate with low left ventricular ejection fraction, T3 levels can be considered as a determinant of cardiac function in STEMI and thus also form a prognostic indicator in these patients. However further studies are necessary to understand whether this low T3 levels in this condition is a physiological response to reduce the demand on the already injured myocardium or it is a detrimental response which requires supplementation of thyroid hormones.

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### A study of prevalence and risk factor for delirium in the medical intensive care unit, Siriraj Hospital, Mahidol University, Bangkok, Thailand

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**Background and Objectives:** Delirium is a common problem in critically ill patients, resulting in poor outcomes. The prevalence of delirium in medical intensive care unit (ICU) studies varies, depending upon severity of illness and diagnostic methods, which are limited by difficulty of communicating on patients receiving mechanical ventilation. The confusion assessment method (CAM)-ICU is designed to overcome these problems. The study aimed to determine prevalence and risk factor of this condition in our institute. **Materials and Methods:** This is a prospective cohort study. All patients admitted to medical ICU wards are included. Exclusion criteria included psychosis, dementia or coma (RAAS < 3). Delirium assessments were undertaken within the first 24 h of admission and serially until discharge. Delirium was diagnosed by CAM-ICU assessment and factors associated with this condition were determined. **Results:** Forty-two patients have been included thus far. The mean age was 57 years (range, 17-85), 58% were male, 50% were sepsis, 75% were receiving mechanical ventilation. 14 patients (38%) had delirium during admission. The mechanical ventilation support or anemic patients are statistically significant risk factors of delirium ( $P = 0.048$  and  $P = 0.048$ , respectively), while other factors did not. There is association between ICU delirium and

mortality - prolonged hospitalized duration (>30 days) ( $P = 0.014$  and  $P = 0.046$ , respectively). **Conclusion:** Delirium is common in medical ICU patients and it is associated with prolonged hospital-stay and mortality. More recruitment is in the process in order to get a better understanding of this problem.

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### Mortality and morbidity of H1N1 pneumonia in a tertiary care intensive care unit: A case series

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**Objectives:** We studied the clinical profile and outcome of critically ill patients admitted to our multidisciplinary intensive care unit (ICU) with H1N1 pneumonia. **Materials and Methods:** Data was collected retrospectively for all patients admitted to ICU, from January 2010 to October 2013, with the confirmed diagnosis of H1N1 influenza by reverse-transcriptase polymerase chain reaction method. Data pertaining to the demographic profile, severity of illness, clinical features and course in ICU was collected. Non-parametric variables were compared using Mann-Whitney U-test. A two-tailed probability of  $P < 0.05$  was considered significant. Risk factors for death were analyzed using a univariate and multivariate logistic regression. **Results:** A total of 28 patients were admitted to ICU with H1N1 infection of whom 17 (60.7%) were female and 7 (25%) were pregnant or in the immediate postpartum period. The mean age was 50.46 years with 32.1% of patients below 30 years. 15 patients (53.5%) had at least one comorbid illness. Admission acute physiology and chronic health evaluation II was 17.7 and sequential organ failure assessment (SOFA) was 5.2. Mean  $PO_2/FiO_2$  ratio was 148.9.  $PO_2/FiO_2$  ratio was less than 100 for 11 patients (39.3%), 100-200 for 9 patients (32.1%) and more than 200 for 8 patients (28.6%). 27 patients (96.4%) required mechanical ventilation and 23 patients (82.1%) required invasive ventilation. Mean duration of ventilation was 6.7 days. 12 patients (42.9%) developed acute kidney injury. Mortality was 60.7% ( $n=17$ ). All seven female patients in the peripartum period died. Younger age group, low  $PO_2/FiO_2$  on admission, higher SOFA score on day 3, positive fluid balance and pregnancy was associated with significantly higher mortality in univariate analysis ( $P < 0.005$ ). Number of ventilator free days was significantly higher among survivors ( $P < 0.005$ ). Multivariate analysis however did not show any significant predictor of mortality. **Conclusion:** H1N1 pneumonia requiring critical care is associated with significant mortality especially in the younger age group and peripartum period.

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### Appropriateness and de-escalation of empiric antibiotic therapy in the intensive care unit

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**Objective:** Early appropriate antibiotic therapy to improve survival has to be balanced against inappropriate antibiotic initiation and induction of resistance. This is often challenging in the intensive care unit (ICU) setting. Antimicrobial sensitivity patterns are used routinely to define appropriateness and to consider de-escalation. However, in culture negative patients antibiotic de-escalation and duration vary widely. In this study we evaluated the antibiotic usage and examined the appropriateness of empiric antibiotic therapy and de-escalation practices. **Materials and Methods:** The study was conducted in a multidisciplinary ICU from January to July 2013. All

patients with suspected sepsis in whom empirical antibiotics were initiated were included in the study. Data including the number of empiric antibiotics initiated, culture positivity rates, de-escalation rates on day 4 and outcomes were recorded. 28 day survival was recorded. **Results:** We evaluated 87 patients with suspected sepsis admitted to our ICU. All patients except one had systemic inflammatory response syndrome (SIRS) and 58.6% (51/87) had a shock at the time of antibiotic initiation. Culture positivity was seen in 41.3% of patients with presumed sepsis. Appropriate antibiotic initiation was seen in 86.1% of these patients. De-escalation on day 4 was done on 34.5% of patients with suspected sepsis. Mortality of patients in whom de-escalation was done was 33.3% in comparison to 31.6% in whom de-escalation was not done. In culture negative patients de-escalation was done on day 4 in 23.5% of patients. Culture negative patients in whom de-escalation was done had mortality of 16.6%. **Conclusion:** SIRS and shock seem to be common reasons for initiation of empiric antibiotics in the ICU. De-escalation of antibiotics seem to be safe and did not lead to increased mortality.

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### Factors affecting the outcome in an intensive care unit from west Uttar Pradesh

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**Objective:** To determine the factors affecting the outcome in patients admitted in intensive care unit (ICU) in west Uttar Pradesh. **Materials and Methods:** Data of all patients admitted in ICU were collected prospectively. Clinical data was entered daily. Acute physiology and chronic health assessment evaluation (APACHE) II and sequential organ failure assessment (SOFA) scores were calculated for all patients. Various factors were compared between survivors and non survivors. Chi-square test was applied for discrete variables and *t*-test was applied for continuous variables. **Results:** Of the 156 patients, 105 (67%) were male and 51 were females (33%). The mean age was 45.6 years. Overall mortality was 31%. Most common diagnosis was sepsis (24%) followed by acute exacerbation of chronic obstructive pulmonary disease (12%) and acute on chronic renal failure (8%). Non survivors had higher mean APACHE II scores ( $19.22 \pm 9.06$  versus  $11.26 \pm 6.9$   $P < 0.001$ ), higher SOFA scores at admission ( $8.22 \pm 3.73$  vs.  $4.81 \pm 2.89$   $P < 0.001$ ) as well as the difference between the maximum and admission scores ( $2.33 \pm 2.67$  vs.  $1.42 \pm 2.14$   $P = 0.04$ ). In addition administration of inotropes, requirement of renal replacement therapy, were predictors of mortality. However requirement of more than three antibiotics, requirement of mechanical ventilation, documented evidence of infection, postsurgical state, hospital length of stay (LOS) before ICU admission, ICU LOS, number of drugs consumed per day did not affect the outcome. **Conclusion:** High APACHE II score, high SOFA score at admission, inotrope requirement and requirement of renal replacement therapy are the factors predicting higher mortality in patients presenting to ICU. Methods should be sought to ameliorate these complications during treatment in ICU.

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### Dexmedetomidine as an adjunct in patients undergoing treatment for ethanol withdrawal in the critical care setting

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**Background:** The ideal management of ethanol withdrawal, a potential medical emergency, still eludes the practitioner. The stigmata of ethanol withdrawal have not been fully comprehended and involve the interplay of numerous neurotransmitters including  $\gamma$ -aminobutyric acid (GABA), glutamic acid and norepinephrine. The benzodiazepines have been the mainstay in treating patients withdrawing from ethanol because of their effect on GABA and glutamate receptors. The adjunctive role of dexmedetomidine, a presynaptic  $\alpha_2$ -agonist, has yet to be elucidated in managing the hyper-adrenergic state of patients undergoing ethanol withdrawal. **Methods:** All patients who presented to a tertiary care teaching hospital critical care unit with ethanol withdrawal and who received continuous intravenous infusions of dexmedetomidine as part of their pharmacologic management were studied. **Results:** Thirty nine patients fulfilled the criteria and demographic information, outcome, complications and the Richmond agitation and sedation scores were studied. Dexmedetomidine was infused for an average of 17.2 h (range 4.5-22.7 h). Transient asymptomatic bradycardia occurred in 2 patients; 1 patient developed bradycardia necessitating cessation of dexmedetomidine. **Conclusion:** Dexmedetomidine appears to be a worthwhile adjunct in the treatment of patients with ethanol withdrawal in the critical care setting.

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### Factors in predicting the need of endotracheal intubation in organophosphorus compounds poisoning victims

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**Background:** The decision when to intubate patients with organophosphorus compounds (OPC) poisoning has often been discretionary. No clear guidelines exist as to when to proceed with intubation; early indicators of subsequent progression to respiratory failure have not been established. **Aim:** To identify the clinical features that predicted the need for ventilation in patients with OPC poisoning. **Methods:** It is a prospective study done in a tertiary care teaching hospital involving 105 patients who had presented to the emergency room with history of OPC consumption over 16 months period were included. Patients who were unconscious, intubated outside the hospital were excluded. An emergency physician examined all patients. A respiratory therapist using standard techniques measured respiratory factors. Multivariate predictors of the necessity for mechanical ventilation were assessed using logistic regression analysis. **Results:** Progression to mechanical ventilation was highly likely to occur in those patients with poor neck holding ( $P < 0.0003$ ), unable to abduct the shoulders ( $P < 0.0005$ ) or dysautonomia ( $P = 0.03$ ). Factors associated with progression to respiratory failure included vital capacity of  $<20$  mL/kg ( $P < 0.001$ ), maximal inspiratory  $<30$  cm H<sub>2</sub>O ( $P < 0.001$ ), maximal expiratory pressure  $<40$  cm H<sub>2</sub>O ( $P = 0.02$ ). **Conclusions:** While inherently unpredictable, the course of patients with OPC poisoning can, to some extent, be predicted on the basis of clinical information and simple bedside tests of respiratory function. These data may be used in the decisions regarding preparation for elective intubation.

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### Impact of obesity in the critically ill trauma patient-a multicenter study

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Research Center, Trichy, Tamil Nadu, India.

**Background:** Despite geographical differences, obesity has become a major burden to healthcare systems worldwide. Although obesity is a well-recognized risk factor for a variety of diseases; however, it is uncertain whether it could influence an adverse outcome in trauma. **Aim:** To investigate the possible impact of obesity, as assessed by body mass index (BMI), on the outcome in the critically ill trauma patients. **Methods:** This is a Prospectively collected data from 789 adult patients with an injury severity score of 16 or greater who were admitted to four different multispecialty intensive care unit (ICU) between January 2012 and January 2013. The Outcomes analyzed included infection rate, hospital and ICU length of stay and mortality. Multiple logistic regression was used to evaluate outcomes between obese and non-obese patients. **Results:** Of these patients, 65.6% were of normal weight with a BMI between 18.5 and 24.9, 23.3% had BMI values between 25 and 29.9 and 11.1% were obese BMI  $\geq 30$ . Obese patients had a longer hospital length of stay, number of ventilator days and ICU length of stay. There was a higher mortality in obese patients 25.4% and also overweight patients 19.8% when compared with patients with normal BMI patients 12.6%. Obese patients showed the highest mortality on day 1 (10.2% vs. 2.8% in the normal-weight group,  $P = 0.001$ ), mostly due to persistent shock. The overall rate of infections was 10.7%. Pulmonary and wound infections were significantly more frequent in obese patients. **Conclusion:** Obesity is associated with a substantial increase in morbidity and mortality in the critically ill trauma patient.

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### The role of neutrophil gelatinase-associated lipocalin in predicting acute kidney injury in the snake bite victim

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**Introduction:** Acute kidney injury (AKI) remains a significant cause of morbidity and mortality in snake bite victim. The gold standard for early diagnosis of impaired renal function is the rise in serum creatinine concentration. The currently accepted definition for AKI is the absolute increase in serum creatinine by  $\geq 0.3$  mg/dl. However, serum creatinine is a delayed and unreliable biomarker in this scenario. Neutrophil gelatinase-associated lipocalin (NGAL), probably the most promising biomarker for AKI, has emerged as an early marker for ischemic and toxic renal injury. **Objectives:** (1) To confirm the utility of NGAL in the snake bite victims, (2) To compare the efficacy of blood NGAL against serum Creatinine in the diagnosis of the early stages of AKI. (3) To determine the appropriate cut-off values NGAL for the diagnosis of AKI among the ethnic population in India. **Methods:** This is a prospective study; involving 72 patients who had definitive history of viper snake bite presented to our emergency department were included in this study. Present with AKI (delayed), pre-existent renal disease, long standing diabetes or hypertension and exposure to nephrotoxic drugs/toxins were excluded. All the patients included in this study had baseline serum creatinine and NGAL was estimated. Hourly urine output, serial serum creatinine were monitored till the patient transferred out from intensive care unit. **Results:** The main finding was that blood NGAL had a high sensitivity (95%) for detecting AKI in snake bite victims, when it is still at the preventable stage. However the cut-off value of blood NGAL at  $\leq 60$  ngm/dl was found to have low specificity (6%). The receiver operator characteristic curve for plasma NGAL, yielded a sensitivity of 95% and specificity of 85% at the cut-off value 252 ngm/dl, which is thereby recommended as the appropriate cut-off value to substantiate the early diagnosis of AKI with reasonable accuracy. **Conclusions:** NAGAL seems to predict AKI severity earlier than serum creatinine in snake bite victims.

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### Ideal serum sodium level in management of raised intracranial pressure in children with acute central nervous system infections

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**Background:** Acute central nervous system (CNS) infections in children are associated with higher mortality and neurodisability. Most of it is attributable to raised intracranial pressure (ICP  $> 20$  mmHg). Hyponatremia ( $> 145$  mEq/L) may be related to lower ICP in patients with traumatic brain injury. But, no study is available on ideal serum sodium level in the management of children with raised ICP due to acute CNS infections. **Objective:** To determine the relationship between serum sodium values, ICP and pediatric intensive care unit (PICU) outcomes. **Method:** **Design:** Retrospective analysis of prospectively collected data in level-III PICU. Period: July 2004 to June 2013. Participants: 251 children, aged 1-12 years, with raised ICP and modified-Glasgow coma scale (GCS) score  $\leq 8$ . Interventions: ICP was monitored using intraparenchymal microtransducer (Codman<sup>®</sup>). Serum sodium was targeted  $> 145$  mEq/L to bring down ICP below 20 mmHg or fall of  $\geq 25\%$  from baseline. Based on maximum serum sodium, patients were divided into Groups I (135-145), II (146-150), III (151-155), IV (156-160) and V ( $> 160$ ). Outcomes: Primary: Relation between serum sodium, ICP and 30-days' mortality. Secondary: m-GCS score at 72-h, length of mechanical ventilation and PICU-stay. **Results:** A total of 1,714 serum sodium values (range, 118-192 mEq/l) and 17,970 ICP values (range, 0-132 mmHg) were collected. There was a positive correlation between serum sodium and maximum ICP ( $r = 0.284$ ;  $P \leq 0.001$ ). Mean ( $\pm$ standard deviation) ICP was lower in Group II ( $17 \pm 8$ ) than others ( $P \leq 0.001$ ). 30-day-mortality was lower in Group II (12.2%) than Groups I (18%), III (38.2%), IV (27.5%) and V (72%) (Log-rank  $P \leq 0.001$ ). m-GCS score was higher in Group II than others (F-stat = 16.089,  $P \leq 0.001$ ). Length of mechanical ventilation (Log-rank  $P \leq 0.001$ ) and PICU stay (Log-rank  $P \leq 0.001$ ) were lower in Group II. **Conclusion:** Serum sodium 146-150 mEq/l is ideal for management of raised ICP in children with acute CNS infections.

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### Attitudes to end of life issues and deceased organ donation amongst medical staff

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**Introduction:** A survey was conducted across junior medical staff working in Peninsula Health regarding their attitudes towards end of life care and organ and tissue donation within the context of end of life care. **Methods:** A written survey was distributed to a cross section of junior medical staff at various educational forums within Peninsula Health. Information was collected regarding their current level of responsibility in the organization and duration of experience as medical professionals. Data was collected on their regular practice with regards to exposure to patients potentially needing end of life care and experience in communicating end of life issues with patients and next of kin. Priorities in determination of decisions regarding end of life care were assessed and information was collected regarding prior training and experience in discussing organ and tissue donation in the context of end of life care. **Results:** The majority of the responders had five years or less of medical experience. Significant numbers were exposed to the acute care of critically unwell patients but rarely involved with decisions to limit care or their rationale. Significant numbers reported no previous education on end of life issues or tissue and organ transplantation.

Significant numbers failed to make the link between dying critically unwell patients and deceased donation for organ and tissue transplantation. **Conclusion:** Our survey revealed a lack of training in decision making and communication regarding end of life care issues. Participants indicated interest in education regarding end of life issues, specifically to educate them regarding organ and tissue donation as a routine aspect of end of life care discussions.

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### Successful management of postpartum central venous sinus thrombosis: A case report

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**Introduction:** Central venous sinus thrombosis (CVST), although rare, is a recognized cause of puerperium stroke with incidence of 1:10,000 to 1:20,000 deliveries during third trimester of pregnancy and immediate postpartum period. Signs and symptoms of the disease consist of headache, convulsions, uni- and bilateral paresis, and papilledema. Early diagnosis and treatment in CVST which is potentially fatal are quite important. **Case Report:** 33yr old female on 8<sup>th</sup> postpartum day following normal vaginal delivery and H/O preeclampsia presented with 2 episodes of GTCS and altered sensorium to a primary centre, where managed conservatively

and referred to our centre for further management. On arrival patient was unconscious and responding to pain stimulus, with b/l pedal oedema, crepitations in B/L basal lung fields. Neurology revealed unconsciousness responding to pain stimulus with both pupils reacting sluggishly to light, hemiplegia on left side and Babinski's sign present. Patient was intubated and shifted to ICU for mechanical ventilation. Investigations including hemogram, RFT, LFT, electrolytes and coagulation profile were normal. Fundus revealed B/L papilloedema. MRI brain revealed central venous thrombosis with right frontal lobe hemorrhagic infarct. She was managed in ICU with Low Molecular Weight Heparin (LMWH), Mannitol, Dexona, Phenytoin, Valproate, Amlodipine and invasive monitoring. Patient responded to the treatment and weaned off from ventilator completely after total of 14day with no neurological deficit. Patient was discharged with advise to avoid oral contraceptives and continue antiepileptics and oral anticoagulants. **Discussion:** Cerebral venous sinus thrombosis (CVST) is a rarely seen entity which presents diagnostic difficulties, because of the variable nature of its clinical signs and symptoms. Among important etiological factors, pregnancy, puerperium, oral contraceptive (OCS) use, coagulopathies, intracranial infections, cranial tumors, lumbar puncture, malignancy, connective tissue disorders and various drugs can be implicated. The diagnostic test of choice is MRI, The treatment of choice is anticoagulant therapy with heparin though controversial, followed by long-term treatment with antivitamin K drug.