Methods Simulation of electronic prescription (10 physicians), preparation/administration (10 paediatric/8 adult intensive care nurses) of 5 drugs (midazolam, fentanyl, noradrenaline, ketamine, furosemide) for 15 fictive patients (different dosage/weight). Two-sessions study (VarC vs StdC, each 150 prescriptions/270 preparations). Issues: time (mean ± SD in seconds); precision (target deviation in%, mediane [IQR]) of drug concentration (quantitative analysis), dose and rate (calculated by nurses).
Results With StdC, prescription time was significantly longer (72 ± 36 vs 86 ± 32, $p < 0.001$) and preparation/administration time shorter (286 ± 98 vs 216 ± 93, $p < 0.0001$). Precision of drug concentration was increased (4.4% [2.0 to 11.5] vs 4.1% [1.6 to 8.4], $p = 0.004$) with a reduction of concentrations >20% (44/270 (16.3%) vs 23/270 (8.5%), $p = 0.005$). Precision of dose was decreased 4.4% [2.0 to 11.1] vs 11.8% [5.1 to 23.3], $p < 0.0001$) with an increase of dose >20% (42/270 (15.6%) vs 83/270 (30.7%), $p < 0.0001$). Precision of rate was decreased (0.0% [0 to 0] vs 6.8% [3.2 to 20.6], $p < 0.0001$). No association with age, years of experience, number of worked hours before study, paediatric or adult ICU nurses was observed on precision.
Conclusions Preparation time and drug concentration precision was strongly improved with StdC. Strategies to deal with prescription time and poor dose and rate precision should be considered before moving to StdC.

PS-133 THE CARDIAC OUTPUT (CO) MONITORING IN CHILDREN WITH ACUTE CIRCULATORY FAILURE (ACF) IN PAEDIATRIC INTENSIVE CARE UNIT (PICU): OESOPHAGEAL DOPPLER (OD) VERSUS TRANSTHORACIC ECHOCARDIOGRAPHY (TTE)

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10.1136/archdischild-2014-307384.427

Background and aims CO monitoring has an important role for management of ACF in PICU. This monitoring device tracks the changes in CO induced by volume expansion or inotropic drugs. In this way CO can be measured noninvasively using aortic blood flow (ABF), continuously at the descending thoracic aorta with OD or discontinued in ascending thoracic aorta with TTE.

The aim of this study is to compare the CO obtained by TTE and OD in the management of ACF in PICU.
Methods A prospective and comparative study conducted in PICU between march 2012 and march 2014.

We investigate 16 mechanically ventilated children less than 1 year who had tachycardia, hypotension, oliguria, delayed capillary refilling or haemodynamic instability despite vasopressor drugs, we compare the measurements of the CO and strong volume (SV) obtained by OD 'ATYS-WAKI 2' and TTE 'SCHIMADZU SDU 2200 PRO' before and after volume expansion (VE).
Results 32 paired (CO and SV) measurements were obtained: a strong correlation was found between CO obtained by OD and by TTE before and after VE (Index of Pearson: $R^2 = 0{,}983$, $R^2 = 0.977$). The same correlation between the SV obtained by OD and by TTE was observed before and after VE respectively (Index of Pearson: $R^2 = 0.982$, $R^2 = 0.983$).
Conclusion OD is an appropriated, very simple and noninvasive method to measure CO. This technique remains reliable and reproducible comparative to TTE to guide VE.

PS-134 PRISM SCORE AND NONINVASIVE VENTILATION (NIV) FOR ACUTE RESPIRATORY FAILURE

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10.1136/archdischild-2014-307384.428

Introduction PRISM score (Paediatric risk mortality) is widely used to determine the risk of mortality in children in PICU. Recent studies had found correlation between the low values of PRISM with the success of noninvasive ventilation (NIV) and the high values with failure, but without clearly defined who will be called higher or lower value of PRISM score.
Objective To evaluate the predictive value of PRISM score for NIV success in acute respiratory failure (ARF).
Methods This is a prospective study. Are included all children admitted at PICU during January–December 2011. NIV was used as the primary support for ARF. We analysed the predictive value of the PRISM score using ROC curves and the trend of success change by Chi-square trend.
Results A total of 42 patients were included. NIV success rate was 73.8%. Prism score in the success group was 9.5 ± 3.9 vs. 14.5 ± 6.6 points in the failure group ($p = 0.0184$). Max value was 27 points, min value 3 points. By ROC curves, PRISM < 10 points before NIV results significant predictive factor for NIV success with predictive positive value 87.5%. By Chi-square trend it was found a significant trend of success reduction with increasing value of PRISM. For PRISM score = 10 up to 15 points, OR = 0.3 (95% CI 0.05–2.0) $p = 0.2$. For PRISM score >15 points, OR = 0.08 (95% CI 0.01–0.5) $p = 0.01$. ($\chi^2_{\text{for linear trend}} = 7.6$, $p < 0.01$).
Conclusion PRISM score <10 points is a significant predictive factor for NIV success. For PRISM score >15 points the likelihood to have success is decreased significantly.

PS-135 CONSENSUS DEFINITIONS, LIMITING VALUES AND RECOMMENDATIONS ON INTRA-ABDOMINAL HYPERTENSION THERAPY (IAH) AND ABDOMINAL COMPARTMENT SYNDROME (ACS) IN CHILDHOOD PUBLISHED BY THE WSACS-PAEDIATRIC GUIDELINES-COMMITTEE

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10.1136/archdischild-2014-307384.429

Background and aim Hitherto, neither evidence-based definitions nor age-related recommendations existed on the diagnosis and treatment of Intra-Abdominal Hypertension (IAH) and Abdominal Compartment Syndrome (ACS) in childhood. Following their 7th World Congress 2011 in Orlando (Florida), the World Society of the Abdominal compartment ayndrome (www.WSACS.org) instructed a paediatric expert committee to develop appropriate guidelines.
Methods Based on a systematic database search relevant literature was identified related to neonatal and paediatric IAH/ACS. Using a modified Delphi methodology according to the GRADE model (A to D), all papers were checked with respect to their validity and evidence. Afterwards, paediatric consensus definitions and recommendations were framed.
Results Results were published in intensive care medicine together with the revised 2013 consensus guidelines for adults (ICM 2013; 39(7):1190–206). Besides general definitions, risk factors and critical IAP thresholds (IAP: intra-abdominal

pressure) recommendations were formulated concerning a standardised IAH and ACS monitoring as well as a rational therapeutic management (including medical, interventional and surgical therapy options). While in adults an IAP of 12 mmHg is regarded as dangerous, an IAP of at the latest 10 mmHg must be looked upon as IAH in children. The additional appearance of a new or aggravated organ dysfunction marks the transition into an ACS, whose diagnosis should result in the quickest possible abdominal decompression. If a decompressing laparotomy does not suffice for a durable IAP diminution itself, a prophylactic open-abdomen concept must be considered (syn.: laparostomy). The concept of abdominal perfusion pressure (APD = MAP - IAP) can facilitate the assessment of the pathogenetic influence of IAH in daily clinical practice.

Discussion In the context of former surveys, paediatric intensivists often justified their widespread uncertainty and restraint with respect to regular IAP measurements and timely introduction of invasive therapy options (if indicated) with the lack of age-related guidelines and definitions. This first publication of paediatric IAP limiting values and management recommendations therefore represents an essential treatment progress and a therapeutic decision support, which should submit a significant reduction in morbidity and mortality of IAH and ACS in children and adolescents.

Conclusion Since the evidence of the underlying literature has to be classified on average as low, well-designed multicenter studies are urgently needed to enable a critical reevaluation of these consensus results.

PS-136 IMPLEMENTING FLEXIBLE BRONCHOSCOPY IN A PICU – A SAFE AND USEFUL TECHNIQUE

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10.1136/archdischild-2014-307384.430

Background and aims In 2011 we started implementing flexible bronchoscopy in our PICU for management of critically ill patients and children with home ventilation. It was our goal to implement this technique as a routine diagnostic an interventional tool and to characterise possible benefits and risks.

Methods This is a prospective study performed in a 10-bed paediatric ICU of a tertiary care children's hospital. All patients who underwent a bronchoscopy in the years 2012–2013 were included in this study. Olympus and Storz bronchoscopes with 2.2 mm, 2.8 mm and 3.8 mm diameter were used and every procedure was video documented. All procedures were performed by trained paediatric intensive care specialist.

Results 151 procedures were performed in 96 patients. Indications were: Treatment of atelectasis and obstruction (78 of 151 procedures), with improvement in ventilation parameters in 61 of 78 procedures (78%); search for airways anatomic pathologies (45 of 151 procedures), with pathological findings in 26 of 45 procedures (58%); Pneumonia and undetermined lung disease in which cases BAL was preformed (29 of 151 procedures), with changed antimicrobial treatment in 17 of 29 cases (59%). We didn't observe any procedure-related mortality or serious complications.

Conclusions Flexible bronchoscopy is a very safe and useful procedure in critical ill infants and children with a variety of diseases, and significantly contributes to their management. In our opinion bronchoscopy should be a routine technique in paediatric intensive care units.

PS-137 LOW BIOCHEMICAL NUTRITIONAL INDICES PREDICT CLINICAL OUTCOMES IN CHILDREN UNDERGOING CARDIAC SURGERY

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10.1136/archdischild-2014-307384.431

Aim To determine whether biochemical nutritional indices predict clinical outcomes in children undergoing cardiac surgery.

Methods Retrospective single centre study between July 2012 and June 2013. Biochemical nutritional indices included serum albumin and total lymphocyte count (TLC) which was used to calculate Onodera's prognostic nutritional index (PNI) [10 x serum albumin (g/dL) + 0.005 x TLC (/mL)]. Severity of illness assessed using Paediatric Risk of Mortality (PRISM) III score. Surgery categorised using the risk adjusted classification for congenital heart surgery (RACHS-1) score. Outcomes included hospital mortality, paediatric intensive care unit (PICU) length of stay (LOS) and duration of mechanical ventilation (MV).

Results Total of 31 patients identified. Median age was 2.0 (0.7–41.0) months. Median PRISM III score was 8.0 (5.0–13.0). 14 (45%) underwent RACHS-1 category 2 surgery and 6 (20%) had ventricular septal defects. Median albumin and TLC were 3.2 (2.6–4.2) g/dL and 4280 (2810–5100)/uL respectively. Median PNI score was 52.7 (41.2–69.7). There was no hospital mortality. Median PICU LOS was 5.0 (3.0–8.0) days. Hypoalbuminaemia ≤3.0 g/dL associated with longer median PICU LOS (7.0 *vs.* 4.0 days, p = 0.016) and duration of MV (156 *vs.* 33 h, p = 0.007). PNI ≤ 58 associated with longer median PICU LOS (6.0 *vs.* 3.0 days, p = 0.041). Adjusting for age and RACHS-1 score, for every 1 g/dL drop in albumin, PICU LOS increased by 0.5 days (p = 0.006).

Conclusions Hypoalbuminaemia and PNI ≤ 58 were associated with adverse postoperative outcomes. Future studies to study effect of perioperative aggressive nutrition care on biochemical indices and clinical outcomes.

PS-137a A BRIEF INTERVENTION TO IMPROVE PARENT POST-TRAUMATIC STRESS SYMPTOMS FOLLOWING PAEDIATRIC CRITICAL ILLNESS: A PILOT RANDOMISED CONTROLLED TRIAL

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10.1136/archdischild-2014-307384.432

Background and aims Admission to paediatric intensive care (PIC) has been linked to subsequent post-traumatic stress symptoms (PTSS) in parents. This study aimed to obtain initial estimates regarding the effect of a brief intervention on parent PTSS and explore the mediating effect of baseline parental stress.

Methods Parents of children aged 4–16 years old were randomised to intervention versus treatment as usual (TAU). The intervention was delivered within six weeks of discharge from hospital and included a psycho-educational booklet and telephone call. Parents' baseline stress was measured using the Parental Stressor Scale: PICU. Parents were followed-up a median of 5 months post discharge from PICU and measures of PTSS were obtained using the Impact of Events Scale.