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ASSESSMENT OF THE PEDIATRIC INDEX OF MORTALITY 2 (PIM2) SCORE WITH THE $\text{PaO}_2/\text{FiO}_2$ RATIO DERIVED FROM THE $\text{SpO}_2/\text{FiO}_2$ RATIO

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Introduction: The Pediatric Index of Mortality 2 (PIM2) score is a mortality prediction tool used in pediatric intensive care units. However, arterial blood gas sampling, that is required to calculate the $\text{PaO}_2/\text{FiO}_2$ ratio (one of the ten PIM2 variables), is often unavailable. Several authors have proposed mathematical relationships between the $\text{PaO}_2/\text{FiO}_2$ and $\text{SpO}_2/\text{FiO}_2$ ratios. The main objective of this study was to assess the validity of the PIM2 score and three modified PIM2 scores with the $\text{PaO}_2/\text{FiO}_2$ ratio calculated from the $\text{SpO}_2/\text{FiO}_2$ ratio (1).

Methods: Prospective observational study in a multidisciplinary French pediatric intensive care unit. Consecutive patients admitted during an 11-month period.

Results: The study included 509 patients, 38 of whom died (7.5%). Only seven patients had a PaO_2 measurement (1.4%), but the $\text{PaO}_2/\text{FiO}_2$ ratio could be calculated from $\text{SpO}_2/\text{FiO}_2$ ratio for 168 patients (33%) with a known FiO_2 and a $\text{SpO}_2 \leq 97\%$. Discrimination assessed by the area under the ROC curve was 0.91 (95% CI: 0.86-0.96) for the PIM2 score and 0.92, 0.91, and 0.91 for the modified PIM2 scores. Calibration across ten mortality risk intervals assessed by the Hosmer-Lemeshow goodness-of-fit test was good for the PIM2 score ($p=0.24$) and for the modified PIM2 scores ($p=0.58$, $p=0.51$, $p=0.56$).

Conclusion: The discrimination and calibration of the modified PIM2 scores are good. Thus, the $\text{SpO}_2/\text{FiO}_2$ ratio could be used in place of $\text{PaO}_2/\text{FiO}_2$ ratio for calculating the PIM2 score. These results need, nonetheless, to be confirmed by a larger prospective multicenter study.

1: Khemani R. Chest 2009; 135: 662.

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NATURE, FREQUENCY AND DETERMINANTS OF CLINICAL PHARMACY INTERVENTIONS IN ELECTRONIC MEDICATION PRESCRIPTIONS FOR PEDIATRIC INPATIENTS

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Background and aims: All electronically ordered prescriptions for pediatric patients are checked and if necessary corrected by the hospital pharmacy. This study examined the frequency, nature and determinants of electronic prescription interventions by a children's hospital pharmacy in a pediatric inpatient population.

Methods: Case-control study. All intervened electronic prescriptions (cases) were compared to a sample of non-intervened electronic prescriptions (controls) of children between 0-18 years hospitalized from 01/03/2004 - 31/12/2007. An intervention was defined as a contact of the pharmacy with the prescriber in order to clarify, correct or complete the prescription. Determinants evaluated were prescription-, patient- and medication-related.

Results: 1577 (1.1%) of 138,449 prescriptions were intervened for one or more reasons, leading to 829 (53%) prescription modifications. 45% of the corrections concerned dose discrepancies. 9% of the interventions was about technically impossible/impractical prescriptions, explained by the complexity of pediatric dispensing. The 1577 cases were compared to 1983 controls. Children from 1 month-2 years were at higher risk for an intervention than 12-18 year olds (OR 1.97 [1.63-2.38]). Free text prescriptions had a five times higher (OR 4.71 [3.61-6.13]) intervention risk than pre-standardized prescriptions. No significant differences were found between day-, evening- and night shifts. Significantly more interventions occurred in summer than spring (OR 1.34 [1.12-1.61]). The oral dosage form (OR 1.63 [1.41-1.88]) and oral administration route (OR 1.80 [1.55-2.09]) stood out.

Conclusions: Pediatric prescribing is complex, even when computerized. Prescription-related

clinical decision support in computerized prescribing can improve the quality and efficiency in drug prescribing.

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A PROSPECTIVE STUDY OF IN-HOSPITAL PEDIATRIC CARDIAC ARREST IN EUROPEAN AND LATINOAMERICAN HOSPITALS

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Background and aims: To study the characteristics of in-hospital cardiac arrest (CA) and the results of resuscitation after the 2005 recommendations of cardiopulmonary resuscitation in children.

Methods: Aprospective, international, multicentric study was performed. 124 hospitals from 16 european and latinoamerican countries participated during 24 months. CA in children between 1 month and 18 years were analysed using the Utstein template.

Results: 543 CA episodes were registered, 252 (46.5%) in 18 Latinoamerican and 290 (53.5%) in 27 European hospitals. Mean age was 44.3 months (48.2% younger than 12 months) and 56.2% males. The most common causes of CA were cardiac (30.4%), respiratory (29.2%) and sepsis (19.7%). 58.8% of the CA took place in the PICU. Sustained return of spontaneous circulation (ROSC) was attained in 68.9% of the patients. Only 33.3% survived. ROSC were higher in European 76% than in Latinoamerican hospital 60.7% ($p < 0.01$). Survival was higher in males (37.9%) than females (27.7%) ($p = 0.018$). Respiratory and cardiac CA have higher survival rates (42%) than sepsis, neurologic and traumatic causes (20.6 %) ($p < 0.01$). CA survival in urgency (20.3%) was lower than in PICU (36.5%), wards (35.3)% or surgery (50%) ($p = 0.01$) and in European (41.9%) than in Latinoamerican hospitals (22.7%) ($p < 0.01$).

Conclusions: Although 69 % of patients who suffered a CA attained ROSC only 33 % of them survived. Survival was higher amongst men. Precipitating causes and localization of CA influence survival and could partly justify differences between European and Latinoamerican hospitals.

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ARE WE PREPARED FOR LIFE-THREATENING PEDIATRIC EMERGENCIES? RESULTS OF A PRE SURVEY OF SIMULATION-BASED TRAINING IN GERMAN PICUS

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Background: Life-threatening events in children are uncommon, but are demanding on the healthcare team. The PAEDSIM working group has organized in-house simulation based trainings (SBT's) for German PICU's, emphasizing the medical aspects as well as the principles of Crisis Resource Management (CRM). In this study, questionnaires were used to evaluate the current education for pediatric emergencies.

Methods: We trained 120 pediatric healthcare providers in four hospitals. Each group, consisting of 8-10 participants, received four hours of SBT. The participants filled out questionnaires assessing their own capabilities before SBT and the education received on pediatric emergencies within their department.

Results: Participants rated themselves rather low (3.5 +/- 1,5) in their competence in managing important pediatric emergencies on a scale from 1 to 6. In particular, their competence in cardiopulmonary resuscitation (3.66 + / -1.11) and the treatment of cardiac problems (4.06 + / - 0.94) were rated negatively.

Only 36% of physicians (vs. 80% of nurses) receive cardiopulmonary resuscitation training one or more times per year, with only 9% having taken an official course from the European Resuscitation Council and 29,5% attending courses focusing on CRM. **Conclusions:** These data show clearly the divergence between training needs and training