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003. Pediatric Risk of Mortality-III (PRISM III) and Pediatric Index of Mortality (PIM3) Scores among Pediatric Poisonings

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Background: The Pediatric Risk of Mortality-III (PRISM III) and the Pediatric Index of Mortality (PIM3) scores are commonly used in pediatric critical care as a measure of severity of illness as well as risk of mortality. However, it's unclear if these scores adequately predict outcomes specifically for poisonings.

Research Question: What is the association of PRISM III and PIM3 scores with mortality and length of stay (LOS) among pediatric patients in the Pediatric Intensive Care Unit (PICU)?

Methods: Data consisted of all poisonings from the Virtual Pediatric System (VPS, LLC) from years 2019-2021. VPS is a multi-institutional database supporting comparative analysis of PICU management and outcomes. PRISM III and PIM3 probability of mortality scores were used. Multivariable logistic and log-linear regression analyses were separately conducted for each outcome (PICU mortality, PICU LOS, hospital LOS) for overall poisonings and by poisoning type (opioids, acetaminophen, antidepressants, stimulants, cardiovascular agents). Area under the curve (AUC) values were used to assess discrimination for PRISM III and PIM3.

Results: Among a sample of all poisonings (N=29,595), each additional percentage increase in PRISM III was associated with a 7% higher odds of PICU mortality (OR 1.07; 95% CI: 1.07, 1.08). Each additional percentage increase in PIM3 was also associated with a 8% higher odds of PICU mortality (OR: 1.08; 95% CI: 1.01, 1.16). The AUC was 0.876 for PIM and 0.886 for PRISM III, reflecting adequate discrimination for the two measures. Higher PRISM III and PIM3 probabilities were associated with longer PICU and hospital LOS for overall poisonings. This also held true within certain types of poisonings (opioid, acetaminophen, antidepressant, and cardiovascular), but not for stimulants.

Conclusion: Higher PRISM III and PIM3 scores are predictive of higher mortality and longer LOS among pediatric poisonings in PICUs, with the exception of stimulant poisonings.