A MULTI-COUNTRY SURVEY

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AIMS & OBJECTIVES: To describe the infrastructure and resources for pediatric acute care delivery in resource-limited settings (RLS) worldwide.

METHODS: Survey items were developed through literature review and revised following piloting. The survey was disseminated in November 2019 via e-mail directories of pediatric intensive care societies and networks and via a link disseminated using social media. Respondents were asked to self-identify as working in RLS. Results were summarized using descriptive statistics; resource availability was compared across World Bank country income groups.

RESULTS: We received 331 responses (239 hospitals, 60 countries), predominantly in Latin America and Sub-Saharan Africa (n=161, 67.4%). Hospitals were in middle-income [166 (69.5%)], low-income [28 (11.7%)] and high-income [44 (18.4%) ] countries. Across 174 pediatric or adult ICUs admitting children, there were statistically significant differences in the proportion of hospitals reporting consistent resource availability (‘often’ or ‘always’) among country income groups (p <0.05). Resources with limited availability in lower income countries included advanced ventilatory support, invasive and non-invasive monitoring, central access, renal support, advanced imaging, microbiology, biochemistry, blood products, antibiotics, parenteral nutrition and analgesic/sedative drugs. 80 ICUs (45.9%) were staffed 24/7 by a pediatric intensivist or anesthetist. The nurse-to-patient ratio was <1:4 in 95 ICUs (54.6%) and 1:4-1:6 in 42 ICUs (24.1%). There were fewer pediatric subspecialty services and training programs in lower income countries.

CONCLUSIONS: Contemporary data demonstrate disparity in the availability of essential and advanced human and material resources for the care of critically ill children in resource-limited settings.

BUILDING AND VALIDATING A PREDICTION MODEL FOR POST-DISCHARGE MORTALITY AMONG 6 TO 60-MONTH-OLD CHILDREN ADMITTED WITH A PROVEN OR SUSPECTED INFECTION IN UGANDA

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AIMS & OBJECTIVES: In low- and middle-income countries, many children die following hospitalization for infections. Data driven tools can help healthcare workers identify the most vulnerable children. Our objective was to develop and validate algorithms for post-discharge mortality.

METHODS: This was a 4-hospital prospective cohort study of 6-60 month old children in Uganda. We collected clinical, anthropometric, social and demographic indicators from consented subjects on admission with a proven or suspected infection. Children were followed up to 6 months post-discharge. Using clinical variables as predictors, we built an elastic net prediction model for post-discharge mortality. We used 10-fold cross validation to determine internal validation of the model building, and we assessed performance of the model using subsequently collected data not used in model building.

RESULTS: A total of 2635 children were enrolled and followed up at four hospitals over two time periods, March 2012 to December 2013 and July 2017 to June 2018. Of these, 127 (4.8%) died post discharge. A total of 13 out of 31 predictors were chosen for the model. Of these 13 predictors, the three most important were MUAC, weight for age z-score, and SpO2. The model had an area under the receiver operating curve (AUROC) of 0.74 and a specificity of 58% to achieve 80% sensitivity. In 1523 subsequently collected cases (June 2018 to March 2019), the model performed similarly (AUROC = 0.75, specificity = 55%, sensitivity = 87%).

CONCLUSIONS: Our model predicted post discharge mortality based on frugal information collected on admission and performs well in unseen data from similar populations.