

**Implementation and evaluation of a simulation-based shock curriculum in Manila,  
Philippines**

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## **ABSTRACT**

**Background:** Children in low- and middle-income countries are disproportionately affected by shock, resulting in high rates of mortality. Simulation has been successfully used in some low-resource settings as an educational tool for medical professionals.

**Hypotheses/Aim:** The objective of this study was to develop and evaluate a simulation-based pediatric shock curriculum for pediatric residents in Manila, Philippines. We hypothesized that implementation of this curriculum would decrease time to administration of first bolus on a simulated mannequin, in addition to improve resident comfort and knowledge with respect to shock recognition and management.

**Methods:** In this prospective pre/post cohort study, we assessed a shock curriculum consisting of a written pre/post-test and a videotaped simulation-based objective standardized clinical examination conducted before and after the intervention. The curriculum was implemented in March 2020 with 24 Filipino pediatric residents. The primary outcome was time to initiation of fluid resuscitation. Secondary outcomes included improvement in confidence, knowledge on a written assessment, and performance in simulation, which was measured with a checklist.

**Results:** The time to initiation of fluids did not change between the baseline simulation (median [interquartile range] = 71.5 seconds [52-116.5]) and the final simulation (68 seconds [52.5-89];  $P = 0.42$ ). Confidence in identifying shock, identifying malnutrition, managing hypovolemic shock, managing septic shock, and placing intraosseous access all increased ( $P < 0.01$ ) post-intervention. Written test scores showed no improvement, but the total score on the checklist improved from 10 [8.5-11] to 15 [13-16] ( $P < 0.01$ ).

**Conclusions:** In our study of a simulation-based shock education program for pediatric residents in Manila, Philippines, we showed improvement in confidence and knowledge with respect to

shock concepts. Through international collaboration, it is feasible to establish a successful simulation-based education program in a low-resource setting.