

## Novel Prescription Calculator in Pediatric CRRT Simulation

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## Abstract

### Background:

Continuous renal replacement therapy (CRRT) is an advanced treatment frequently required to support the critically ill children. Because of the complexity of this kind of treatment, healthcare professionals frequently consume time to implement the CRRT prescription from the local guidelines and forms to the order sheet. A novel pediatric CRRT calculator is introduced by the authors to facilitate this complex calculation and implementing the treatment faster.

### Aims & Objectives:

The aim of this work is to assess the effectiveness and accuracy of the new pediatric CRRT calculator compared to the manual calculations usually conducted by the pediatric nephrology physicians in a CRRT simulation sessions.

### Methods

The pediatric CRRT simulation sessions were assessed by using the author's calculator and without the calculator (manual calculation). A child Manikin was located in PICU room with a pre-primed CRRT "Prismaflex" machines during the simulation sessions. The time taken to write the CRRT prescription in the order sheet and the total time taken to start the CRRT treatment is calculated by two different simulation specialists. Inter-professional education (IPE) domains are used to assess the harmony among the CRRT team to avoid the time bias.

### Primary Results

Up-to-date, four scenarios are assessed. The results of this study show a significant difference between the manual group and the calculator-used group to write the CRRT prescription in the order sheet. Calculator-used group is able to deliver the treatment in very short time compared to manually calculating. The accuracy of the prescription and calculation errors were assessed.

### Conclusions

The authors conclude that CRRT prescription calculator used in the simulation sessions was

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accurate and faster compared to the manual prescription calculation. The physicians are comfortable to use the calculator to avoid the complex mathematics.

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