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Increasing Pediatric Medication Dosage Safety Through Maximum Dosage Limits

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Abstract

Objective: Pediatric dosages are primarily based on a child's weight. However, patient records do not always provide weight information, electronic medical records do not differentiate between pediatric and adult patients, and hospital drug databases lack pediatric maximum dosage data.

Methods: Using a quality control circle problem-solving approach, we identified three root causes of inadequate pediatric dosage information: (1) dose-checking logic not applying to the pediatric population, (2) lack of a requirement to record pediatric patients' height and weight, and (3) lack of pediatric limit settings in the electronic drug dosage master file. To address these shortcomings, we developed the following procedures.

Results: The number of overdosage exceptions in children was 2 before improvement, and the target was reduced to 0 and 1 after improvement. Reintervention was necessary after the electronic dosage system generated false positives; this was because dosages were rounded up. To address this problem, a maximum limit of 1.1 times the adult limit was imposed on pediatric medical dosages, after which no further overdosages were reported through July 2023.

Conclusion: This study developed effective procedures for minimizing pediatric drug overdoses in hospitals that can be generalized to other clinics. However, further studies are necessary to review the procedures' effectiveness in preventing overdoses in a larger population of children and using a larger number of medications.

Keywords: pediatric medication, extreme checks, medication safety

建置小兒用藥極量檢核提升用藥安全專案

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摘要

目的：小兒族群的藥品劑量主要以mg/kg計算，然而目前病人端缺乏完整體重資訊、警示系統未區分小兒與成人、藥品檔缺乏小兒極量資料。

方法：運用品管圈問題解決型找出三項真因：劑量檢核邏輯不適用於小兒族群、未強制輸入身高體重、藥品主檔缺乏小兒極量設定，進而擬定對策。

結果：小兒劑量過高的異常件數，改善前為2件，目標降至0件，改善後為1件。再介入：主因劑量計算後有時會微調成整數可能略高極量，因此現行警示訊息皆為提示。與臨床科共識，增設極量的1.1倍設為阻擋，追蹤至2023年7月未再有異常件數。

結論：本次專案改善後成效良好推廣至體系醫院，共同提升小兒用藥安全，然而藥品品項繁多，尚需持續進行資料建檔以提供更全面的把關。

關鍵詞：小兒用藥、極量檢核、用藥安全