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Screening Children for Early-Deterioration: Using the Pediatric Observation Priority Scoring Tool

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Background & Significance

Sepsis in the pediatric population is difficult to identify in an outpatient setting. Sepsis contributes to 19% of deaths worldwide, with the highest incidence in children less than 5 years. The American Academy of Pediatrics and the Centers of Disease Control and Prevention indicate pediatric sepsis as a significant national problem for the health promotion of children. Early-deterioration assessment in the outpatient setting is crucial in preventing sepsis.

Purpose

The purpose of this project was to implement a standardized approach to recognition of early-deterioration in pediatric outpatients. The Pediatric Observation Priority Score (POPS) is a validated tool that screens children 0-12 years for signs of early deterioration. Aims included examining relationships between POPS factors and UC/ED visits within 12 hours.

Problem

Events in recent years identified early-deterioration in a healthcare system's outpatient setting as a contributing factor leading to sepsis morbidity and/or mortality. A standardized method to evaluate pediatric early-deterioration in the outpatient setting is needed.

Methods:

This project encompassed a single clinic with high patient volume where ~400 patients, were seen weekly. The time frame spanned 9 weeks. POPS scores were evaluated for factors associated with escalation to the UC/ED within 12 hours. Compliance with tool use was also measured (goal of >80%). Nursing satisfaction with the process was assessed. Research determination at the project site verified it did not meet criteria for human subjects research. IRB approval was obtained through Creighton University as quality improvement (QI).

Results:

During the pilot period (60 days), a total of 2,260 patients were seen in clinic. Average age was 3.70 years. Of these 1,013 (45%) were fully screened with the POPS tool. Scores ranged from 0 to 9 with an average score less than 1 (M=0.90, SD=1.03). "Gut Feeling" was scored as above 0 (no distress) more than any other subcategory. "Gut Feeling" was scored as "low level of concern" (score of 1) or "child looks unwell" (score of 2) for 97 children. Four of the 97 (4%) later presented to an ED/UC. In contrast, 11 of the 952 (1%) that were scored as "well" (score of 0) on "Gut Feeling" went to the ED/UC. The difference was significant, $\chi^2(1, N=1049) = 5.50, p=0.02$.

Results also indicate there was no significant difference between the hours following clinic visit to ED/UC admission of those with a "Gut Feeling" score of zero (M= 84.37, SD=52.52), and those scoring greater than zero (M=46.25, SD=65.29); one-tailed $t(13)=1.17, p=0.13$. Three nurses (43%) completed the satisfaction survey. Mean overall usefulness of the tool was 3.33 (1=not useful and 5=extremely useful), and overall satisfaction was 3.33 (1=extremely dissatisfied and 5=extremely satisfied).

Discussion/Conclusion:

Less than half of eligible children were scored with POPS. This may have been due to compiling an extra task for the nursing staff, and primitive EHR integration. The average POPS score was <1, likely due to a healthy population, POPS scores conducted in well-child visits and at the start of respiratory season. Nurse "Gut Feeling" was the component with the most variability. Clinical relevance and statistical significance related to presentation to the ED/UC, and nurse "gut feeling" reflects pediatric nursing expertise in this clinic. Statistical significance relating to nurse "Gut Feeling" and time of presentation to the ED/UC was not found. However, children with "Gut Feeling" score of 1-2 presented to the UC/ED twice as fast as those with a score of 0. This is clinically relevant. Nearly half of nursing staff completed post-pilot survey and rated its usefulness as moderate. Nursing felt the tool is cumbersome and needs optimization before fully integrating into the EHR.

Keywords: pediatric sepsis, outpatient screening, early-deterioration