

## Management of Urinary Tract Infections by Nurse Practitioners in a Canadian Pediatric Emergency Department: A Retrospective Cohort Study

**Authors :** T. McGraw, F. N. Morin, N. Desai

**Abstract :** Background: Antimicrobial resistance is a critical issue in global health care and a significant contributor to increased patient morbidity and mortality. Suspected urinary tract infection (UTI) is a key area of inappropriate antibiotic prescription in pediatrics. Management patterns of infectious diseases have been shown to vary by provider type within a single setting. The aim of this study was to assess compliance with national UTI management guidelines by nurse practitioners in a pediatric emergency department (ED). Methods: This was a post-hoc analysis of a retrospective cohort study to review and evaluate visits to a tertiary care freestanding pediatric emergency department. Patients were included if they were 60 days to 36 months old and discharged with a diagnosis of UTI or 'rule-out UTI' between July 2015 and July 2020. Primary outcome measure was proportion of visits seen by Nurse Practitioners (NP) which were associated with national guideline compliance in the diagnosis and treatment of suspected UTI. We performed descriptive statistics and comparative analyses to determine differences in practice patterns between NPs, and physicians. Results: A total of 636 charts were reviewed, of which 402 patients met inclusion criteria. 17 patients were treated by NPs, 385 were treated by either Pediatric Emergency Medicine physicians (PEM) or non-PEM physicians. Overall, the proportion of infants receiving guideline-compliant care was 25.9% (21.8-30.4%). Of those who were prescribed antibiotics, 79.6% (74.7-83.8%) received first line guideline recommended therapy and 58.9% (53.8-63.8%) received fully compliant therapy with respect to age, dose, duration, and frequency. In patients treated by NPs, 16/17 (94%(95% CI:73.0-99.0)) required antibiotics, 15/16 (93%(95% CI: 71.7-98.9)) were treated with first line agent (cephalexin), 8/16 (50%(95% CI:28-72)) were guideline compliant of dose and duration. 5/8 (63%(95% CI:30.6-86.3)) were noncompliant for dose being too high. There was no difference in receiving guideline compliant empiric antibiotic therapy between physicians and nurse practitioners (OR: 0.837 CI: 0.302-2.69). Conclusion: In this post-hoc analysis, guideline noncompliance by nurse practitioners is common in children tested and treated for UTIs in a pediatric emergency department. Care by a Nurse Practitioner was not associated with greater rate of noncompliance than care by a Pediatric Emergency Medicine physician. Future appropriately powered studies may focus on confirming these results.

**Keywords :** antibiotic stewardship, infectious disease, nurse practitioner, urinary tract infection

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