

Rapid Diagnostic Testing to Improve Management of Suspected Chlamydia and Gonorrhea in Adolescents in a Pediatric Emergency Department

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BACKGROUND: Standard turnaround times for Chlamydia trachomatis (CT) and Neisseria Gonorrhoeae (GC) testing result in unnecessary antibiotic use for patients without infection and undertreatment of patients with infection(s).

OBJECTIVE: To determine the impact of rapid CT/GC testing on reducing unnecessary antibiotic use, undertreatment of CT and/or GC, and length of stay in an urban safety-net pediatric emergency department (PED).

METHODS:

- Before 2020, testing for CT/GC was performed using a batched nucleic acid amplification test with results available the following day.
- In January 2020, a rapid diagnostic test (RDT) with turnaround time between 90-120 minutes was used but competed with COVID test supplies in 2020.
- Overtreatment was defined as GC- or CT-negative patients who received antibiotic treatment in the PED.
- Undertreatment was defined as GC and/or CT positive patients who did not receive antibiotic treatment in the PED.
- Length of stay (LOS) was the balancing measure.

RESULTS:

- 758 patients were included in the pre-implementation period (2019), 612 - implementation period (2020), and 626 - post-implementation period (2021).
- Age, gender, race, ethnicity, language preference and insurance were not different between study periods.
- CT infection was more common (16-18%) than GC infection (5-8%).
- **After RDT introduction the monthly percentage of patients who were over-treated decreased from 18.4% to 8.1%.**
- There was no difference in under-treatment by time period.
- Patients tested with RDT were less likely to be undertreated than those with the standard test (9.9% v 12.7%, $p=0.05$)
- **Median LOS in minutes increased from 166 minutes (pre-implementation period) to 187 minutes (implementation period) to 202 minutes (post-implementation period), $p<0.001$.**
- Monthly use of RDT increased from 54.8% (implementation period) to 73.3% (post-implementation period).

Rapid chlamydia and gonorrhea testing substantially reduced unnecessary antibiotic use but increased length of stay (LOS). A more rapid test would likely increase appropriate antibiotic use and limit impact on LOS.



Figure 1: SPC Chart P Chart of Patient Over-Treated

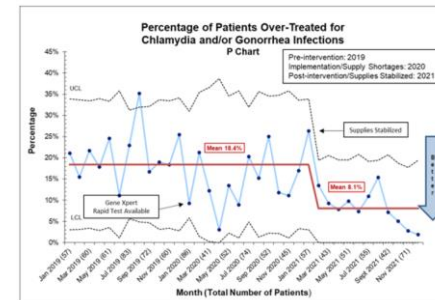


Figure 2: SPC P Chart of Patients Under-Treated

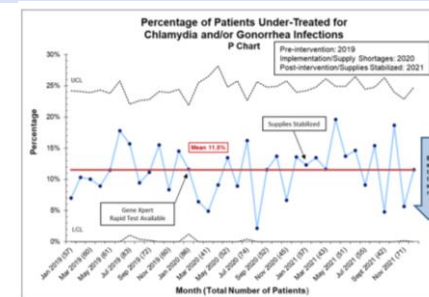


Figure 3: SPC P Chart of Use of Rapid Test

