Emergency Medicine

Session: Emergency Medicine 6

555 - Implementation of an Inclusive Decision Support Tool for Febrile Infants Age 7-90 Days in the Emergency Department

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Background: Even with the recent publication of the American Academy of Pediatrics clinical practice guideline, the clinical approach to the febrile infant continues to evolve-providing an opportunity to test and deploy innovative tools that expand guidance and facilitate care.

Objective: Within a large integrated healthcare delivery system, we aimed to evaluate enrollments in the California Febrile Infant Risk Stratification Tool (CA FIRST) computerized decision support system (CDSS) for febrile infants.

Design/Methods: We conducted a retrospective evaluation of enrollments and outcomes for febrile infants aged 7-90 days in the CA FIRST CDSS, covering encounters from September 28, 2021, to December 31, 2024, across 21 Kaiser Permanente Northern California emergency departments (EDs). Infants were eligible if they had an ED chief complaint of fever or a measured temperature >38.0°C (100.4°F). The tool was accessed by the treating emergency and/or pediatric physician(s) and provided stepwise guidance both before and after laboratory investigation. Infants were excluded if they had a previous ED visit within 48 hours for fever evaluation or presented with signs

or symptoms of septic shock. The CA FIRST CDSS captured clinical, laboratory, and physician gestalt data about febrile infants using standardized templates and definitions. High-risk past medical history attributes (e.g., prematurity) were pulled from the Epic-based electronic health record (EHR) (Table). Descriptive data were obtained from the CDSS records and supplemented with outcome data from the EHR.

Results: A total of 1,253 infants were managed with CDSS guidance. Thirty-four (2.7%) were diagnosed with invasive bacterial infection, two of whom were discharged home after their index ED visit (Figure). Urinary tract infections (UTIs) were diagnosed in 154 infants (12.3%), including 15 with initially untreated UTIs identified on subsequent positive urine cultures.
Overall, 15.2% (n=191) of infants underwent lumbar puncture (LP), 28.4% (n=356) were hospitalized, and 23.5% (n=295) received parenteral antibiotics at their index visit. The frequencies of LPs, hospitalizations, and parenteral antibiotic administration decreased with increasing age range (Figure).

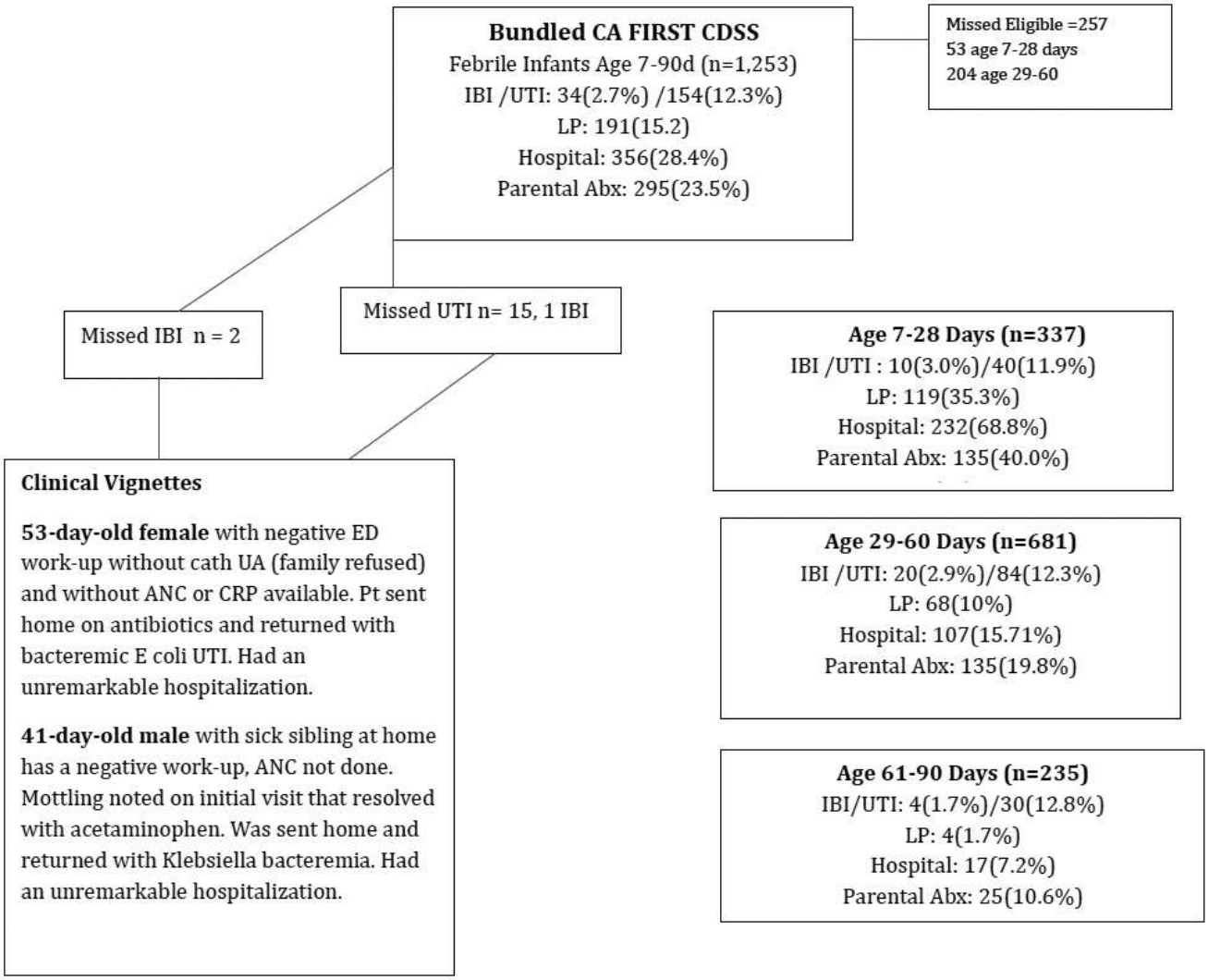
Conclusion(s): Implementation of an integrated and comprehensive CDSS for febrile infants across EDs in a large California health system resulted in safe and effective management, with rates of LP and hospitalization within or below conventional parameters.

CA FIRST CDSS

Table. Inclusion and exclusion criteria by age for CA FIRST algorithms

<table>
<tr><th rowspan="2">CA FIRST Algorithms</th><th colspan="3">Age (days)</th></tr>
<tr><th>7-21</th><th>22-28</th><th>29-60</th><th>61-90</th></tr>
<tr><td colspan="3">Melded Roseville and AAP CPG</td><td rowspan="3">N/A</td></tr>
<tr><td>Inclusion</td><td colspan="2">Well appearance</td></tr>
<tr><td>Exclusion</td><td colspan="2">Not previously well; Apparent infection
Recent immunization</td></tr>
<tr><td colspan="4">Expanded Guidance for Populations not Addressed Above</td></tr>
<tr><td>Older infants</td><td colspan="3" rowspan="3">N/A</td><td></td></tr>
<tr><td>Inclusion</td><td>Well appearance</td></tr>
<tr><td>Exclusion</td><td>Not previously well; Apparent infection; Recent immunization</td></tr>
<tr><td>High-risk infants</td><td colspan="4"></td></tr>
<tr><td>Inclusion</td><td colspan="4">Ill appearance and / or not previously well</td></tr>
<tr><td>Exclusion</td><td colspan="4">Bronchiolitis; COVID-19
Recent immunization</td></tr>
<tr><td>Infants with bronchiolitis</td><td colspan="4"></td></tr>
<tr><td>Low-risk</td><td colspan="4"></td></tr>
<tr><td>Inclusion</td><td colspan="4">Bronchiolitis; Well appearance</td></tr>
<tr><td>Exclusion</td><td colspan="4">Not previously well; Apparent infection other than bronchiolitis</td></tr>
<tr><td>High-risk</td><td rowspan="3">N/A</td><td colspan="2"></td><td rowspan="3">N/A</td></tr>
<tr><td>Inclusion</td><td colspan="2">Bronchiolitis; Well appearance; Not previously well</td></tr>
<tr><td>Exclusion</td><td colspan="2">COVID-19
Recent immunization</td></tr>
<tr><td>Recent immunizations w/in 48hrs</td><td colspan="2" rowspan="3">N/A</td><td colspan="2"></td></tr>
<tr><td>Inclusion</td><td colspan="2">Recent immunization; Well appearance</td></tr>
<tr><td>Exclusion</td><td colspan="2">Not previously well</td></tr>
</table>

Figure. CA FIRST Computerized Decision Support System (CDSS) Outcomes



Footnotes, Abbreviations and Definitions
IBI: Invasive Bacterial Infection (bacteremia and/or meningitis)
UTI = Urinary Tract Infection
LP: Lumbar Puncture
Abx: Antibiotics
Very Low Risk: Had immunization within 48 hours and/or high suspicion of bronchiolitis
Missed IBI: Infant sent home on index ED visit and IBI present
Missed UTI: Infant not initially treated for UTI at index ED visit