

# Standardizing the Evaluation and Management of Young Febrile Infants to Achieve High-Value Care

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UNC  
INSTITUTE FOR HEALTHCARE  
QUALITY IMPROVEMENT

Well-appearing 38 day old infant with a fever to 38.3°...



Usually:  
Viral infection

Sometimes (~10%):  
*Serious* bacterial infections

- UTI: 8.4%
- Bacteremia: 1.8%
- Meningitis: 0.5%

# Evolving Approaches



## Historical:

- Blood, urine, and CSF (i.e. LP)
- Antibiotics → admit to hospital
- Discharge if cultures are negative x48 hrs

## 1980s - Recently:

- Risk stratification
- Provider/system/culture-dependent
- Decisions based on limited evidence

## AAP Guidelines (2021):

- Standard initial work-up
- Algorithm-based decision support
- Evidence-based risk stratification



# Aims and Measures: Initial

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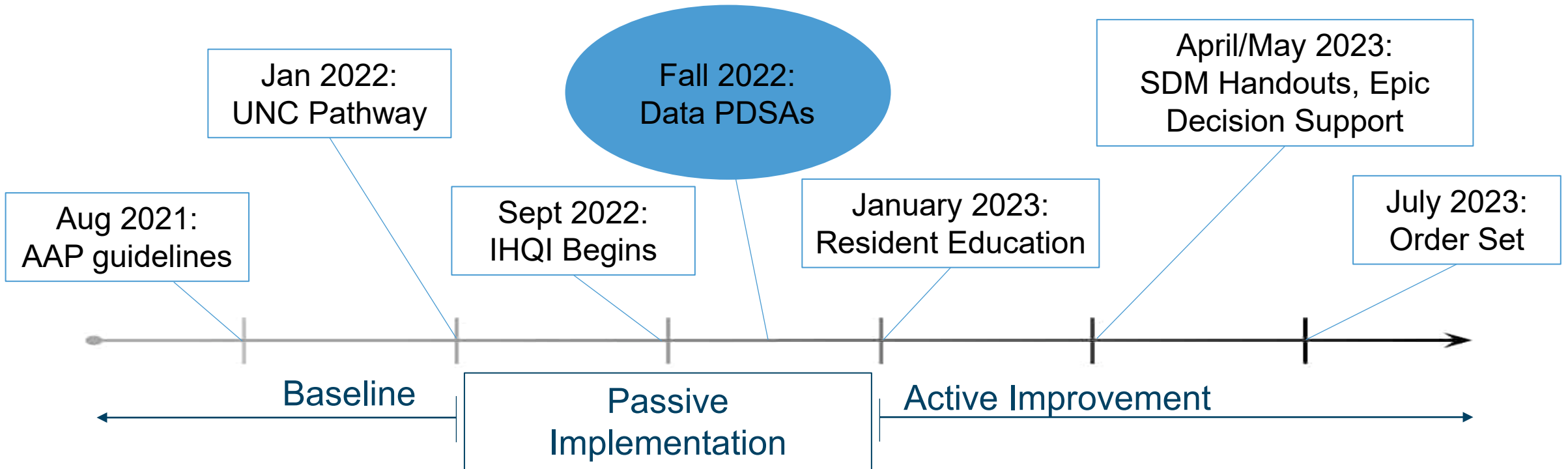
**Global:** Provide consistent, high-quality, evidence-based care for young infants (<60 days old) presenting to UNC Health with fever.

**SMART:** Reduce the lumbar puncture rate to less than 10% among well-appearing febrile infants 29-60 days old with normal inflammatory markers evaluated at UNC Children’s Hospital by August 31, 2023.

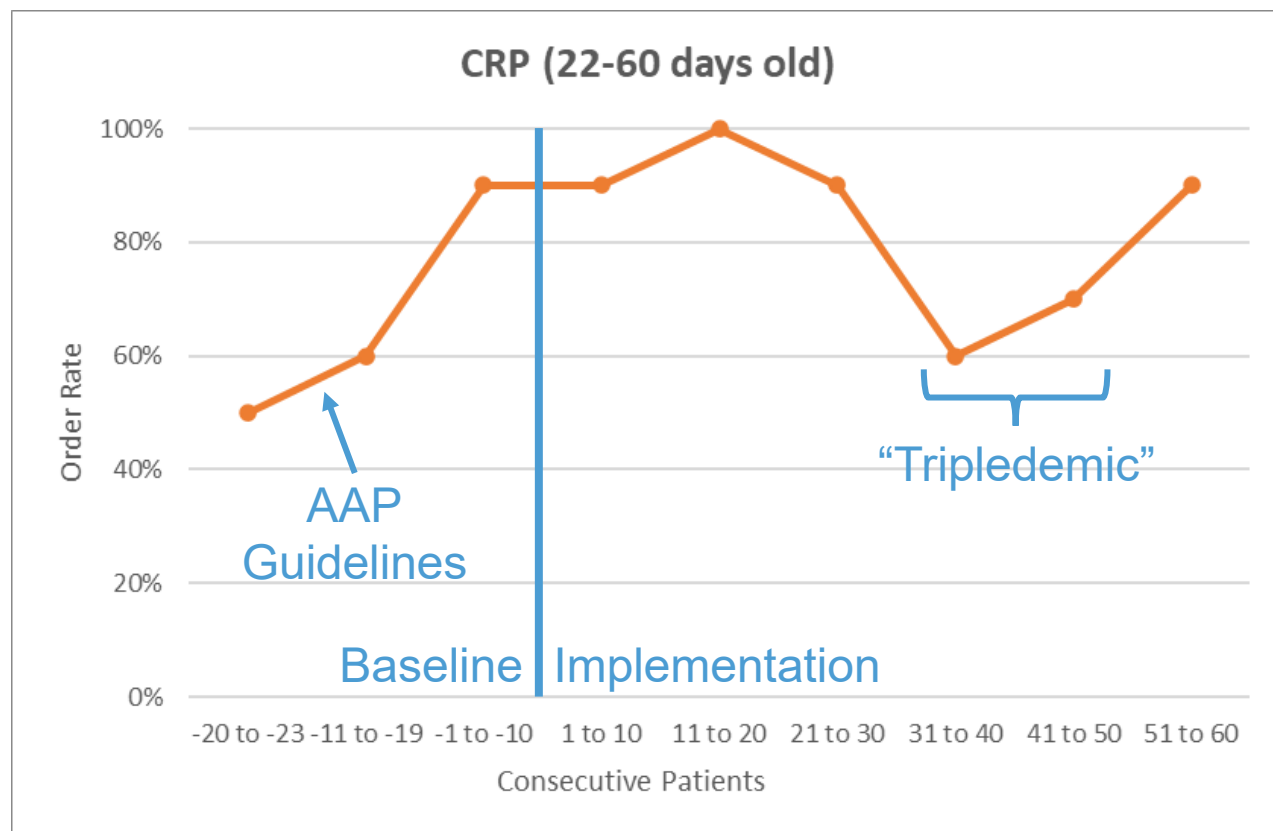
**Measures:** 9 unique | 15 total

Overuse	Underuse	Process / Balancing*
Unnecessary LP	Antibiotics rec’d and not given	Incomplete work-up
Unnecessary antibiotics	Lack of shared decision-making	Order set use
Unnecessary admission		
Prolonged LOS		*Missed diagnoses

# Project Timeline



# Measures: Process



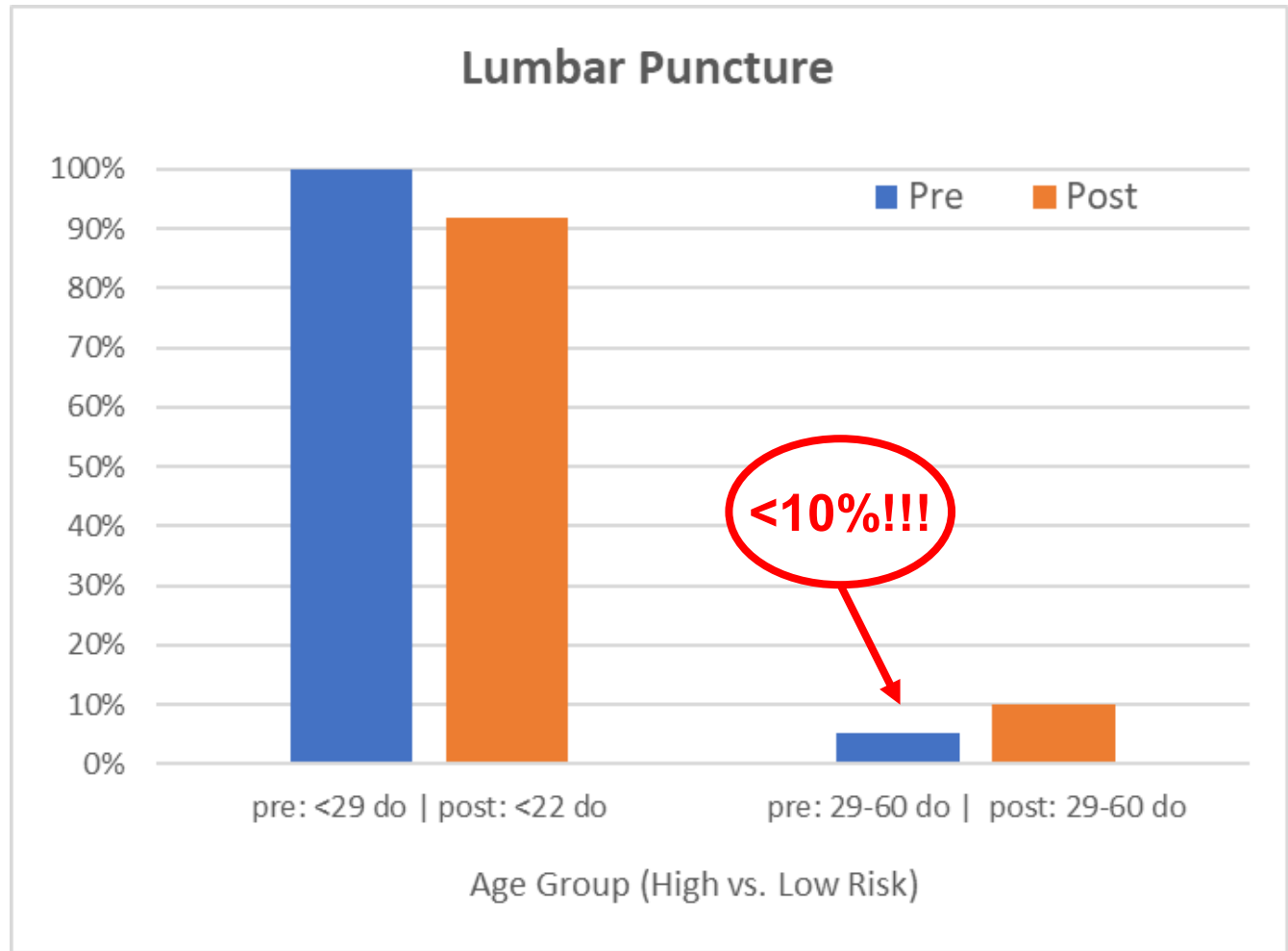
## Dotphrase (5/5/23 – 9/3/23):

- 3/15 eligible patients
- 3/7 admitted patients\*  
(3 of these were Family Medicine)

## Order Set Use (7/14/23 – 9/3/23):

- 5/6 eligible patients

# Measures: SMART aim



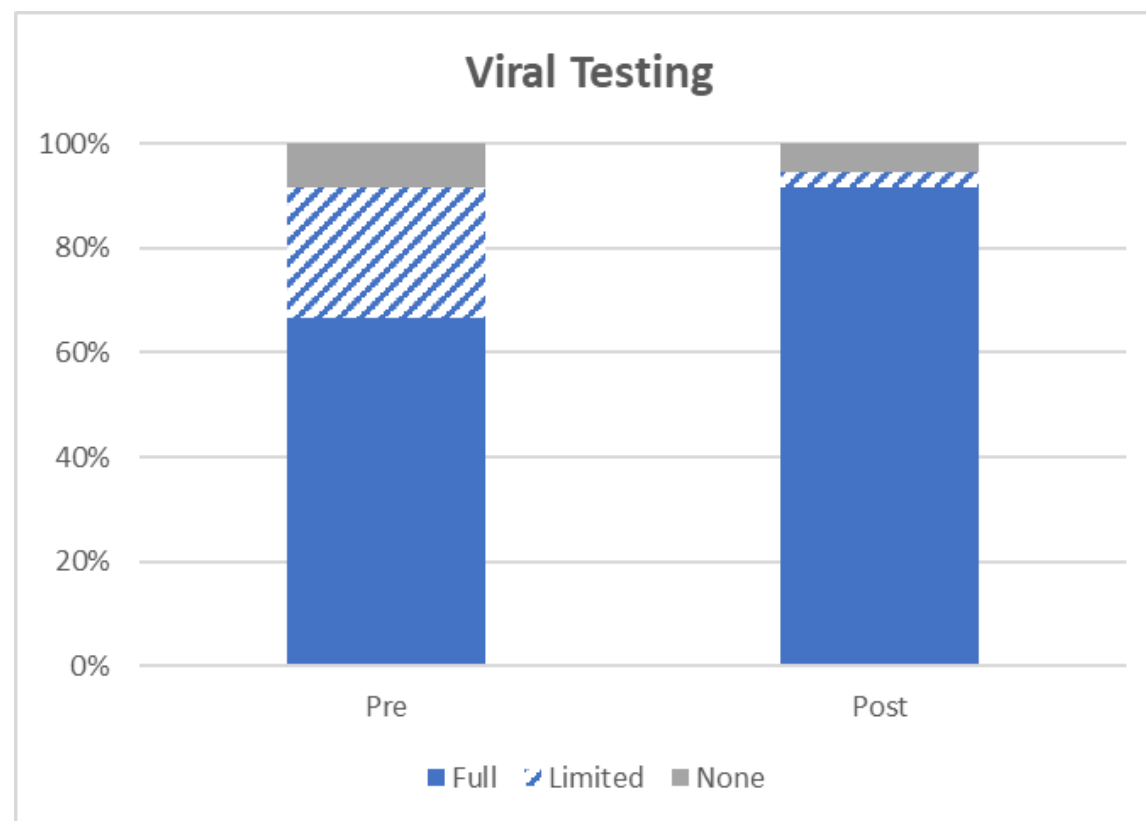
## Measures: Viral testing

### AAP Guidelines / UNC Pathway:

For infants 29-60 days old, targeted RSV and influenza testing may be considered for individualizing management.

### Testing Rates (post-implementation):

- Total: 94% (68/72)
- Unindicated: 57% (39/68)
- Results strongly predict LP decision



*“Since the pandemic, families just want to know what their kid has”*

- Pediatric ED Provider



# Why Viral Testing Matters

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## Well-appearing infant with a fever to 38.3°

- Respiratory viral panel: adenovirus & rhinovirus +
- *No urinalysis or bloodwork performed*
- Discharged home

...

## Returned 18 hours later with urosepsis

- Multiple boluses, broad-spectrum antibiotics, LP in ED
- Admitted to hospital for 3 days



# Lessons

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## Data Challenges

- K.I.S.S.

## Different Populations + Same Behavior = Common Drivers

- Address root causes

## Scale = Impact

- Febrile infants: 72 (~19 months) vs. Bronchiolitis: ~400/year

Viral Panels	Full Panel	Limited Panel
Cost	\$305.41	\$150.47
Reimbursement	\$0*	\$142.63

## Next Steps - Clinical Effectiveness Program

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**Effective care = right care + right amount + timely delivery**

### **New Branch → UNC Children's Quality, Safety and Effectiveness**

- Pathways + outcomes/data monitoring + clinical support tools
- Initial Clinical Focus
  - Bronchiolitis (viral testing and HFNC)
  - Community Acquired Pneumonia
  - Asthma
  - Hyperbilirubinemia
  - Appendicitis
- Shared excellence for UNC, community partners, and beyond

**Scaling requires support = data analytics, administrative time, etc.**

# Acknowledgements

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## Project Team

- Matt Huemmer
- Joy Martin
- Casey Olm-Shipman
- Mike Steiner
- Amanda Williams
- Miranda Ave
- Kayla Corbett
- Molly Decristo
- Anna Deprenger
- Ibrahim (Alhaji) Mohammed

## Project Partners

- Dan Park (Peds ED)
- Jamie Martin (Peds ED)
- Shiva Zargham (Peds ED)
- Zach Willis (Peds ID)
- Bill Wilson (Antimicrobial Stewardship)
- Ashley Sutton (PHM / Q&S)
- Amber Kirkley (Inpt. Nursing)