The bag is not always bad : A two-step pathway for non-invasive urinary tract infection screening on the general paediatric wards

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DISCLOSURE

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OVERVIEW

- Background
- Choosing Wisely Framework
- Goal and Measures
- Intervention
- Impact
- Challenges, lessons learned, and next steps

BACKGROUND

- Fever without a source (FWS) is a common presentation in paediatrics, and is particularly challenging in the preverbal age group[1]
- About 7% of children 2-24 months of age present with FWS[2]
- Urinary tract infections (UTIs) are a common bacterial cause of paediatric fever and can cause significant morbidity if undetected (renal scarring, hypertension, end stage renal disease)
- Diagnosis of UTI requires an uncontaminated sample[3]

BACKGROUND

- AAP 2021[4]
  - Non-invasive techniques in children >22days for screening
- UK NICE Guidelines 2022[5]
  - Non-invasive techniques (clean-catch or other) in children >3months
- CPS 2020[6]
  - Screening urinalysis using a bag sample is acceptable in those >2mo
- PSPN 2015[7]
  - Any method for urinalysis is acceptable
- ISPN 2019[8]
  - Collection bag is acceptable for UA

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PROBLEM

- Obtaining urine samples from children who are not toilet trained (with urethral catheterization or suprapubic aspiration (SPA)) can be invasive, painful, time-consuming, and costly
  - Using a bag for urinalysis is simple and noninvasive, but can have a high a rate of contamination (up to 63%)[9]

Proposed Solution:

A 2-step screening approach with UA which can reduce invasive sampling

CHOOSING WISELY FRAMEWORK

5 Don’t routinely order catheterization for urinary tract infection (UTI) testing in febrile children 6-24 months of age without first considering a noninvasive technique for urine screening.

SickKids Choosing Wisely Canada

GOAL

To implement a two-step UTI screening pathway on the inpatient paediatric units for febrile children aged 6-24 months which includes a Point of Care Test (POCT) UA screen on a bag sample, followed by bladder catheterization for culture if positive, with the aim to *reduce catheterization rates by 25% over I year in those with a negative screen*

MEASURES

1

Outcome measures:

- **Number of first line bladder catheterizations completed for suspected UTIs**
- **Proportion of POCT UA completed rather than sent to the lab**

2

Process measures:

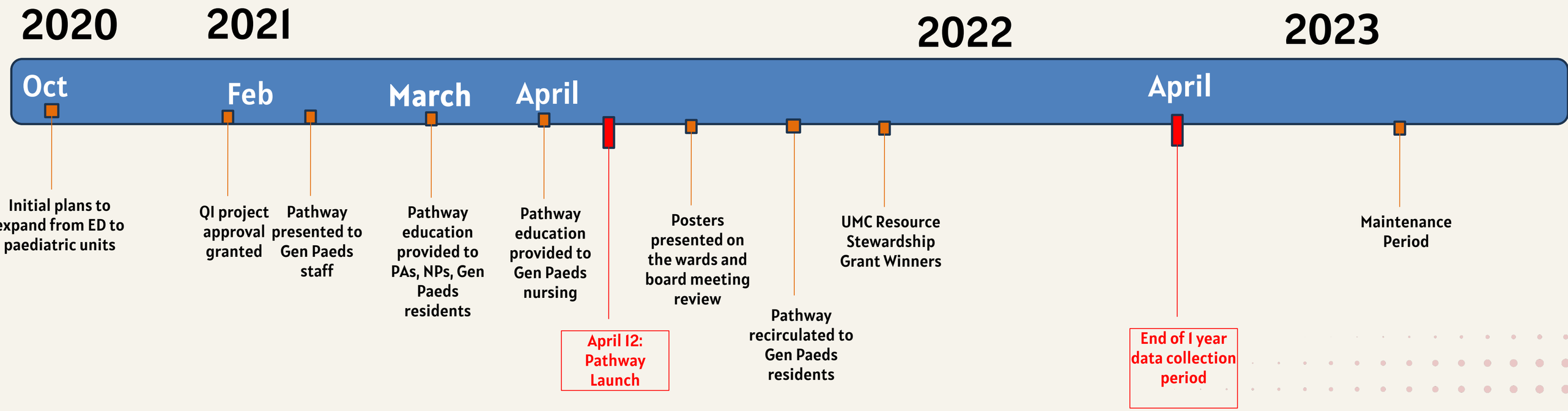
- **Proportion of POCT UA ordered**
- **Proportion of times the pathway is followed**

3

Balancing measures:

- **Number of missed UTIs**

TIMELINE AND INTERVENTION



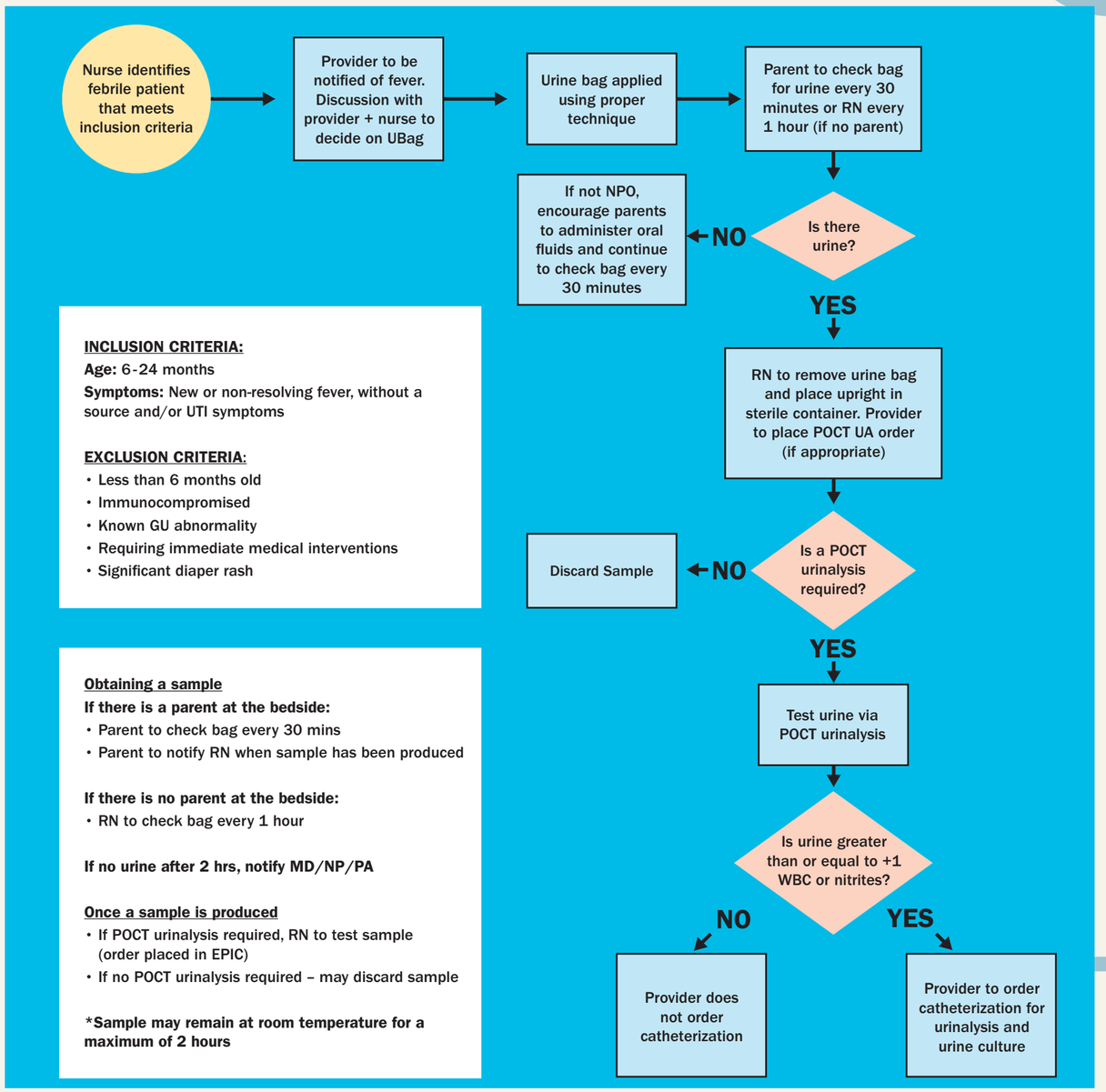
INTERVENTION

- Baseline data was obtained for the 1-year period prior to pathway launch in April 2021
- Using the Model for Improvement and PDSA cycles, the pathway was adopted to the inpatient paediatric medicine units
- Interventions focused on: education, interdisciplinary collaboration, process standardization

INTERVENTION

Paediatric Medicine

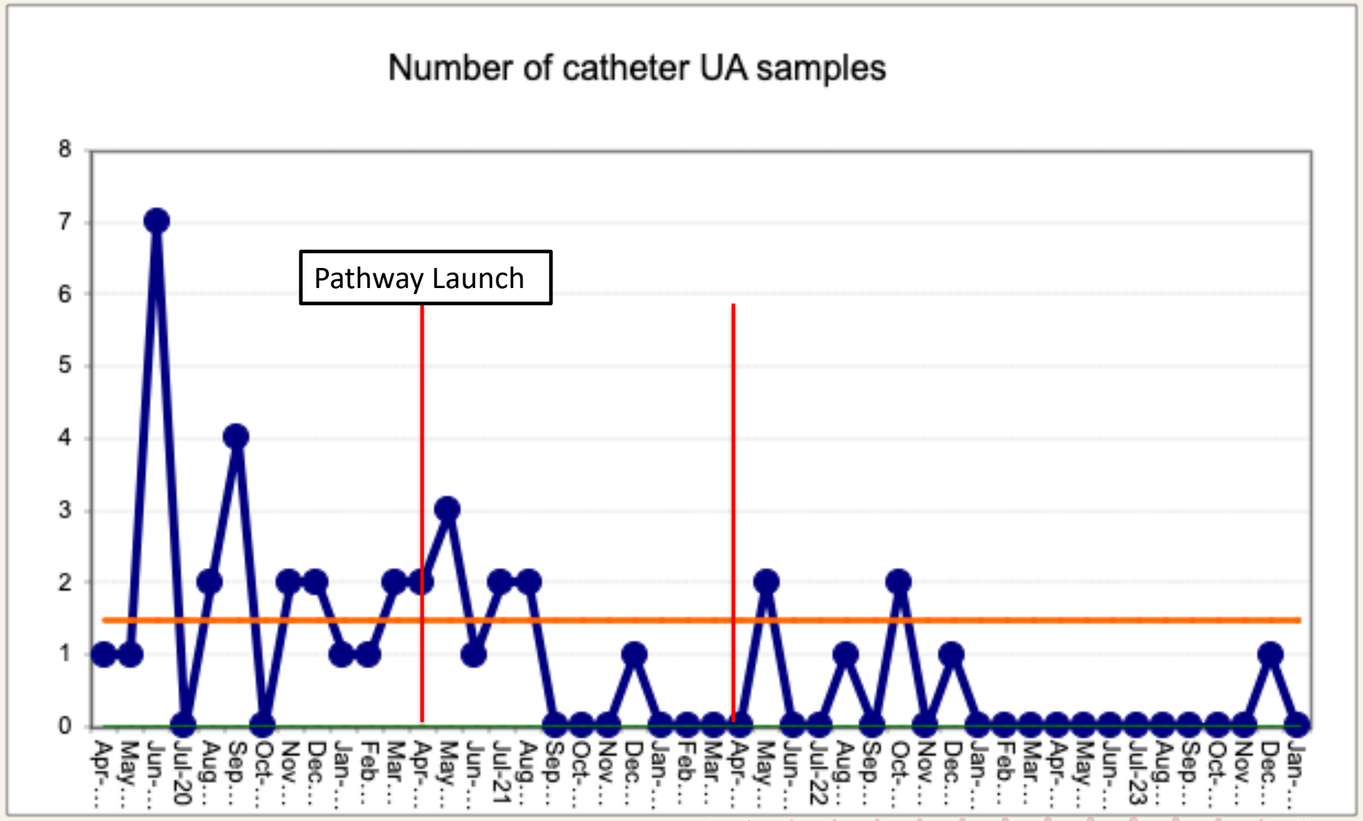
Two-Step Approach for UTI Detection in Young Children: Reducing Catheterization Rates



RESULTS

Outcome measures

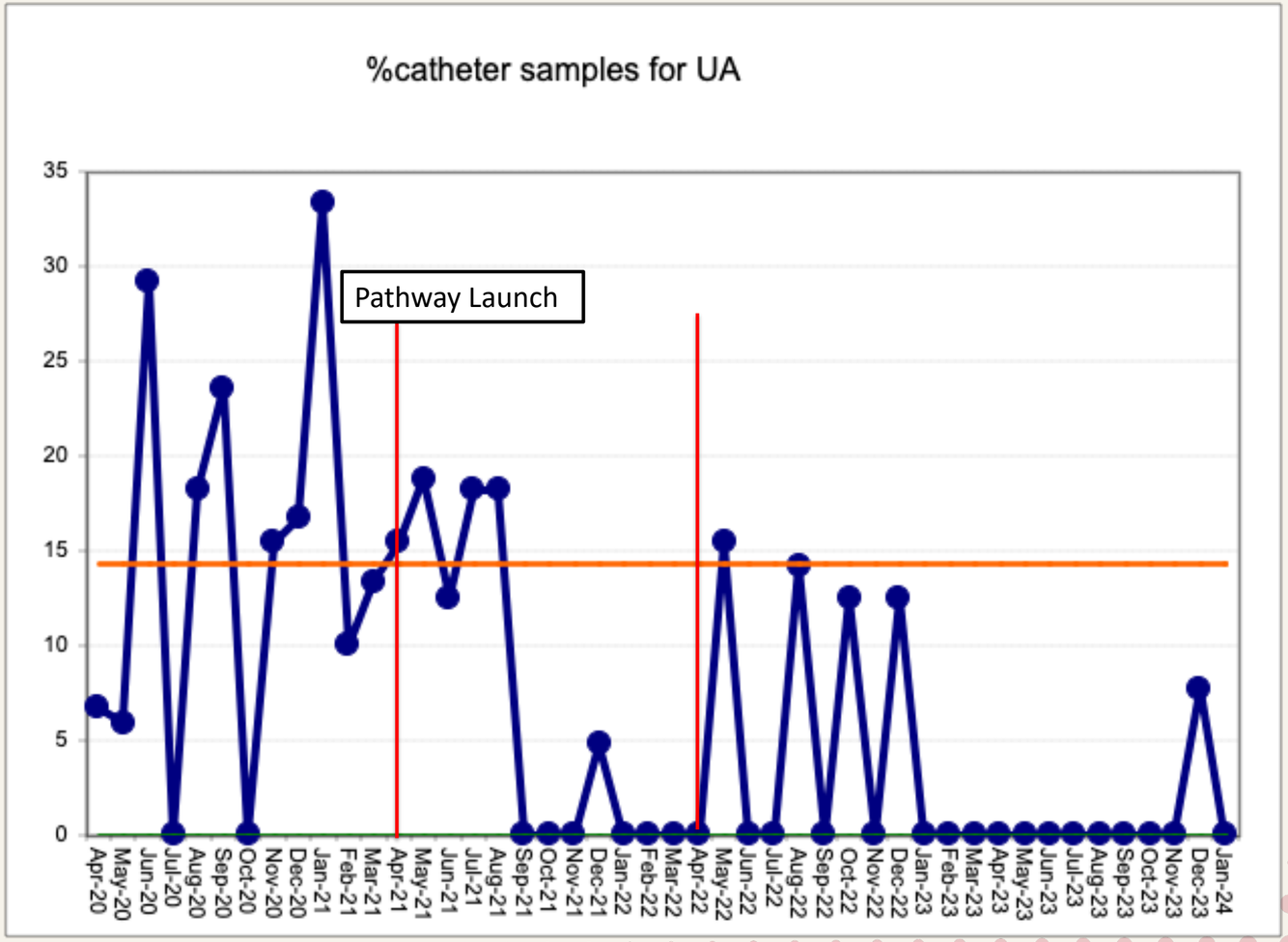
- Median number catheters per month decreased significantly with a shift of 6 or more points below the median following intervention



RESULTS

Outcome measures

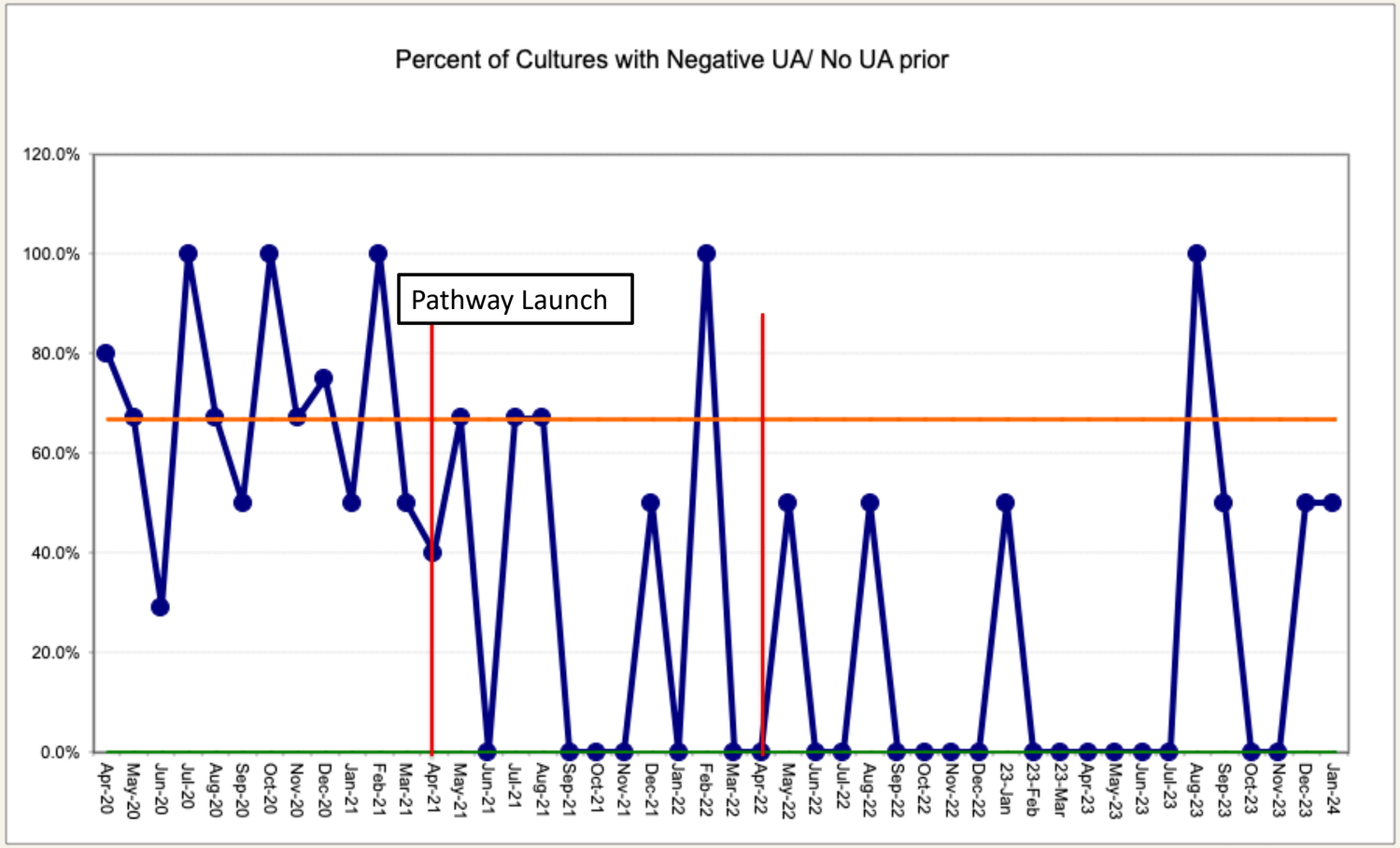
- Percentage of UA collected by catheter decreased from 14.3% to 7.3% (51% reduction)



RESULTS

Outcome measures

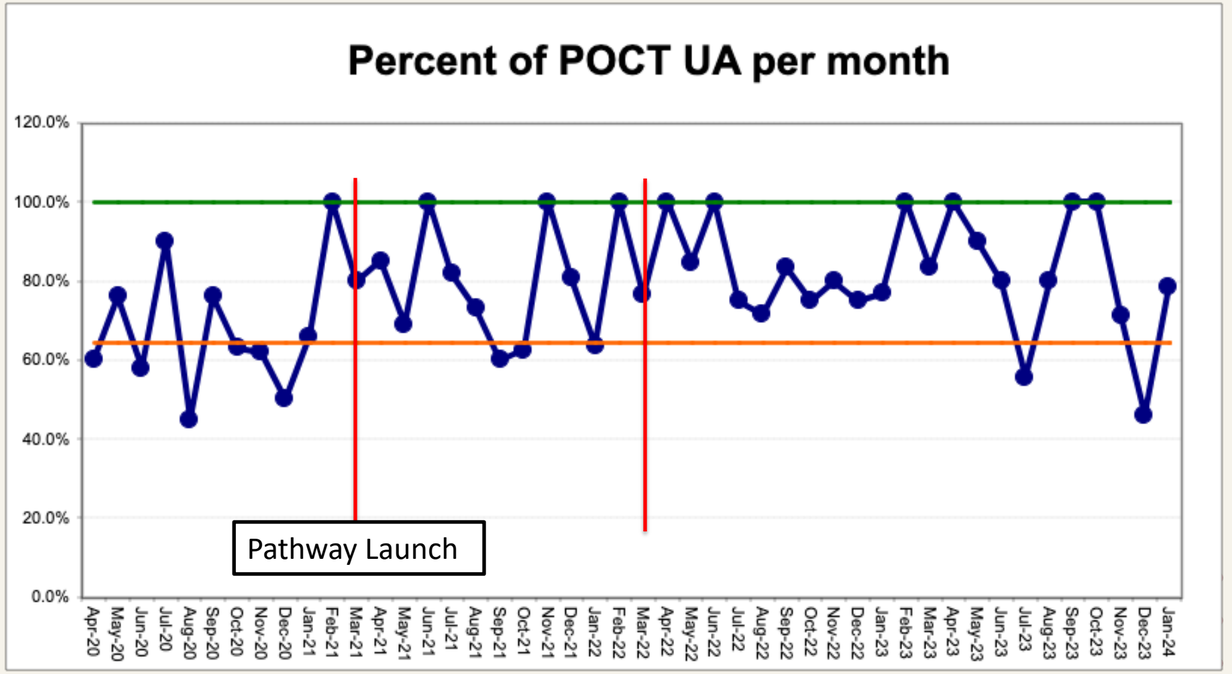
- High baseline rate of cultures despite negative or no screening UA prior (70%)
- Decrease to 33% in the year following pathway implementation



RESULTS

Process measures

- Rate of POCT UA performed increased from 69% to 79%
- Rate of UTI screening following pathway increased from 50% to 62%



RESULTS

Balancing measures

- There was no increase in the rate of “missed UTIs” in the time period following pathway implementation
- Pre-pathway average missed UTIs per month of 0.25, post-pathway value of 0.08

LESSONS LEARNED

There is variability in practice for specimen collection, contributing to ongoing unnecessary catheterizations

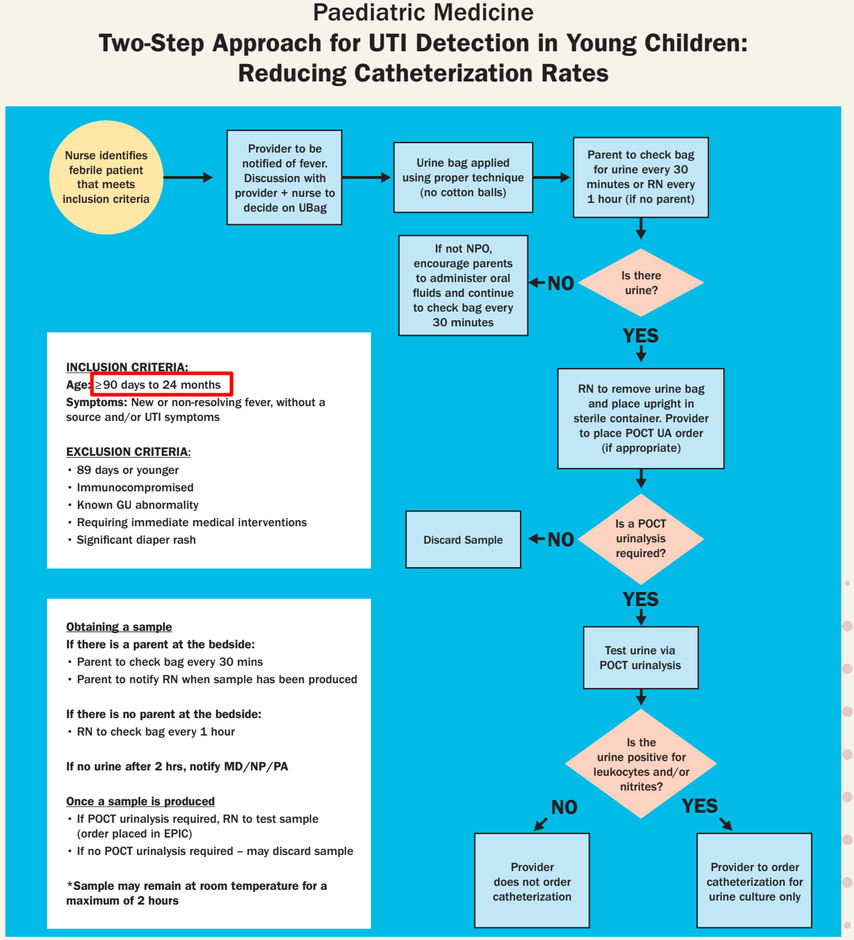
- **Use of a urine bag UA can be an effective way to screen for UTIs**

Challenges:

- **Frequent turnover of medical team requiring re-education**
- **Availability of resources for bag collection**
- **Uptake of change in practice**

FUTURE DIRECTION

- Expanded pathway in September 2023 to include age ≥ 90 days
- Ongoing education
- Consideration of expansion to other wards



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THANK YOU