

## Background

- Infectious diarrhea is a common cause of emergency department (ED) visits and hospital admissions
- Implementing behavior interventions and decision support to guide providers in diagnosing and treating infections have proven effective
- Polymerase chain reaction (PCR) testing allows for quick and expansive pathogen identification and earlier targeted treatment
- In 2014, Saint Luke's Health System implemented use of a gastrointestinal (GI) PCR panel
- We have taken a multi-disciplinary approach to optimizing GI PCR panel including adding templated comments with positive results, hosting a Diagnostic Stewardship Summit, and developing clinical decision support to guide appropriate test use
- Our Antimicrobial and Diagnostic Advisement Program (ADAP) has taken an active role in collaborating and leading ID diagnostic optimization
- Saint Luke's Health System includes academic, community, and critical access hospitals in the Kansas City region

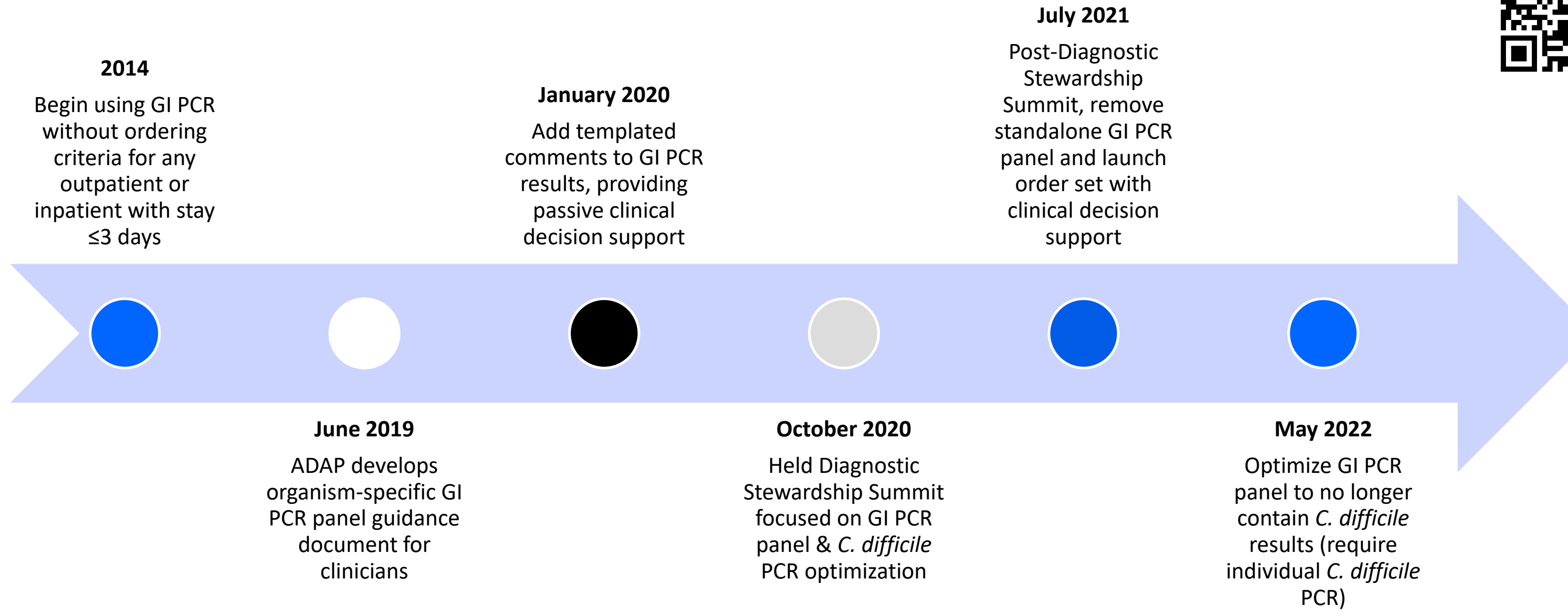
## Objective

- To characterize the evolution of improving diagnostic stewardship applications with a GI PCR panel test since implementation in 2014

## GI PCR Quality Improvement Results

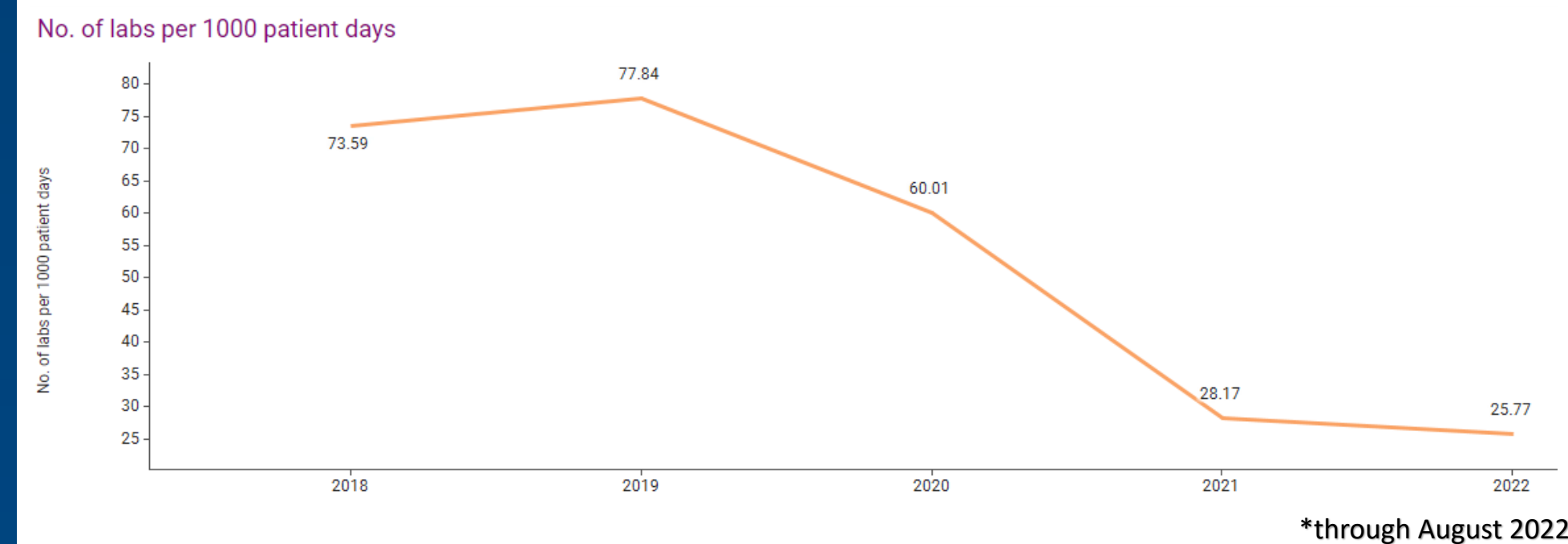
- Evaluated the pre-post effect of EMR-embedded GI PCR treatment recommendations on appropriate antimicrobial use within 24 hours of results
- Comparison groups:
  - Pre-implementation (Oct 2018-March 2019, n=258)
  - Post-implementation (Jan 2020-Feb 2020, n=119)
- Post-implementation group had higher rate of appropriate antimicrobial prescribing (77.9 vs 89.1%, p=0.01)

## Timeline of GI PCR changes



## GI PCR Trends

- Inpatient and Emergency Department orders per 1,000 days\*



- Inpatient and ED order costs

Year	Total Cost	Total Cost per Month
2020	\$261,145	\$21,762
2021	\$128,760	\$10,730
2022*	\$92,800	\$11,600

\*Implemented interactive smart set July 2021  
\*Data through August 2022

## Clinical Decision Support

- Passive guidance based on previously developed (static) guidance document
- ADAP worked with Microbiology to create succinct, automated provider-focused organism comments
- For each positive result, general, organism-specific guidance provided, but does not displace clinical decision making

Component	Ref Range & Units	Result	Interpretation
Campylobacter	Not Detected, Not Applicable	Not Detected	Negative <sup>A</sup>
Clostridium difficile toxin A/B	Not Detected, Not Applicable	Not Detected	Negative <sup>A</sup>
Comment: Detection of Clostridium difficile may reflect asymptomatic carriage or Clostridium difficile-associated diarrhea.			
Plesiomonas shigelloides	Not Detected	Not Detected	Negative <sup>A</sup>
Salmonella	Not Detected	Not Detected	Negative <sup>A</sup>
Vibrio	Not Detected	Not Detected	Negative <sup>A</sup>
Vibrio cholerae	Not Detected	Not Detected	Negative <sup>A</sup>
Yersinia enterocolitica	Not Detected	Not Detected	Negative <sup>A</sup>
Enteropathogenic E. coli (EPEC)	Not Detected	Not Detected	Negative <sup>A</sup>
Enterotoxigenic E. coli (ETEC)	Not Detected	Not Detected	Negative <sup>A</sup>
Shiga-like toxin-producing E. coli (STEC) E. coli O157	Not Detected	Not Detected	Negative <sup>A</sup>
Shigella/Enteroinvasive E. coli (EIEC)	Not Detected	Not Detected	Negative <sup>A</sup>
Cryptosporidium	Not Detected	Not Detected	Negative <sup>A</sup>
Cyclospora cayentanensis	Not Detected	Not Detected	Negative <sup>A</sup>
Entamoeba histolytica	Not Detected	Not Detected	Negative <sup>A</sup>
Giardia lamblia	Not Detected	Not Detected	Negative <sup>A</sup>
Adenovirus F 40/41	Not Detected, Not Applicable	Not Detected	Negative <sup>A</sup>
Astrovirus	Not Detected, Not Applicable	Not Detected	Negative <sup>A</sup>
Norovirus GI/GII	Not Detected	Not Detected	Negative <sup>A</sup>
Rotavirus A	Not Detected	Detected <sup>!</sup>	
Comment: Supportive care recommended.			
Sapovirus	Not Detected	Not Detected	Negative <sup>A, CM</sup>
GI Panel Stool Consistency		Liquid	

## Clinical Decision Support

- Smart order set providing interactive guidance via decision support to optimize ordering

Orders: SLC Gastrointestinal Pathogen Panel

Diagnosics: Please answer the questions in GI PCR Decision Support appropriately to guide you through the evidence based decision tree for the Gastrointestinal Pathogen panel. Note: If *C. Difficile* PCR is positive within the past 7 days OR if GI PCR has been resulted within the past 7 days, the questions/order will be suppressed.

GI PCR Decision Support:
 

- Chronic diarrhea? (> / = 2 months of persistent symptoms)
- Acute diarrhea? (< 2 months of persistent symptoms)

Override Order: *C. diff* PCR and GI PCR

Lab criteria for appropriate testing applies

Additional Orders: Override Order: *C. diff* PCR and GI PCR

## Conclusion

- Multi-disciplinary diagnostic stewardship strategies are required to support optimized use of GI PCR panel testing. Antimicrobial Stewardship Programs can lead these initiatives.
- Development of clinical decision support, both during ordering and interpretation, enhances test application
- Collaborative efforts have led to sustained reductions in GI PCR panel use, cost-effective testing, and optimization of post-result clinical decision making

## Disclosures

- The authors have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter