



**Weill Cornell  
Medicine**

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**Quality Improvement Academy  
and  
Division of Quality and Patient Safety**

**Annual WCM Quality Improvement  
& Patient Safety  
Poster Symposium**

**Abstracts and Posters**

15 September 2020  
Weill Cornell Medicine



**Weill Cornell  
Medicine**

September 15, 2020

This is another landmark year for the **Annual Weill Cornell Medicine Quality Improvement and Patient Safety Poster Symposium** which was streamed live online on September 15, 2020. The symposium started in 2012 under the Weill Department of Medicine (WDOM) as the first formal event at Weill Cornell to showcase projects dedicated to quality and patient safety. For the past five years, it has expanded to include projects from nursing, other clinical departments across the College and the graduating class of Quality Improvement Academy.

Despite the COVID-19 pandemic, over sixty abstracts were submitted from across NewYork-Presbyterian at Weill Cornell Medicine, NYP-Queens and Brooklyn Methodist. Co-sponsored by Quality Improvement Academy and the Physician Organization Division of Quality and Patient Safety, 37 projects were showcased during the symposium that was attended by over 100 viewers from across NewYork-Presbyterian and Weill Cornell Medicine.

We are proud to present all of the projects featured at this year's event. Posters were presented either during an open viewing session or as a live oral presentation in one of four categories: *Modifying Provider Practice, Innovations in Clinical Care, COVID-19 Care Innovations, and Optimizing Best Practice.*

Congratulations to all of our students, residents, fellows, nurses and faculty for their achievements and ongoing commitment to patient care. And most of all, we thank Dr. Augustine Choi, Stephen and Suzanne Weiss Dean and Provost for Medical Affairs, and Dr. Anthony Hollenberg, Sanford I. Weill Chair, Weill Department of Medicine, for their ongoing support of academic quality improvement initiatives and scholarship across Weill Cornell Medicine.

Jennifer I. Lee, MD  
Director  
Quality Improvement Academy

Robert J. Kim, MD  
Co-Director  
Quality Improvement Academy

Klaus Kjaer, MD  
Chief Quality and Patient Safety Officer  
Physician Organization  
Division of Quality and Patient Safety

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Department of Anesthesiology

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NYP-Nursing, NYP-WCM

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Weill Cornell Community Clinic

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Department of Emergency Medicine

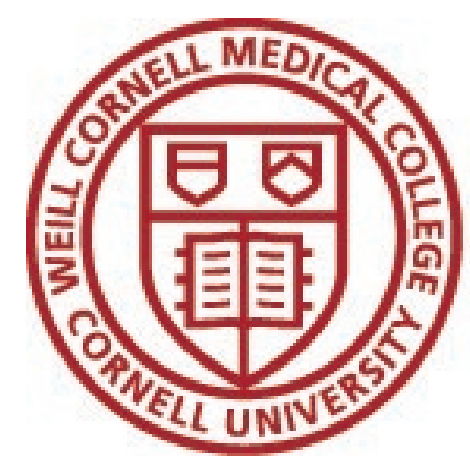
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### Statement of the Problem:

A continuous statistical increase in work related violence was discovered on 5 North, a medical-surgical unit. These events involved behaviorally challenged patients and included verbal and physical threats, with and without harm. New York Presbyterian-Weill Cornell and the 5 North Medical-Surgical Unit are committed to operational excellence, striving for a harm-free work environment in order to continuously deliver the best patient care.

### Objective/Aim of the study:

The aim of the study was to determine the effect of using a Modified Brøset Violence Checklist (mBVC) to decrease work related violence, on 5 North, from behaviorally challenged patients.

### Project Design/Methods:

The 5 North medical surgical unit conducted a quality improvement project by implementing the mBVC to assess the impact on workplace violence. The 6-item tool assessed confusion, irritability, boisterousness, verbal threats, physical threats and attacks on objects and individuals. Pre-implementation data was gathered from January to May 2019. The mBVC was implemented June 2019. Data was collected for 5 months post implementation, through November 2019. The mBVC checklist was completed by the Registered Nurse (RN) upon patient admission to the unit and each shift. Both day and night shift RNs participated. Patients were given a numeric score (0-11) based on the assessment. A moderate risk (score 1-2) or high risk assessment (score >2) resulted in the RN escalating the information to the medical team and the following plan of care was to be implemented:

Additional assessment by the provider

Electrocardiogram

Psych consult

Consideration of PRN medications

Possible 1:1 supervision

Security involvement

All moderate and high risk patients were endorsed through standardized RN-RN handoff and Charge RN handoff. Moderate and high risk patients were also discussed in unit huddles and interdisciplinary rounds. Additionally, departments such as security, physical therapy, and phlebotomy were provided with the list of moderate and high risk patients.

## Modified Brøset Violence Checklist Implementation:

### An initiative against work place violence

Annual WCM Quality Improvement & Patient Safety Poster Symposium

**Santini Ong, BSN, RN & Maureen Hayes, MS, RN-BC**

For comments/questions, please contact [sao9045@nyp.org](mailto:sao9045@nyp.org) or [mah9133@nyp.org](mailto:mah9133@nyp.org)

**5 North | September 15<sup>th</sup>, 2020**

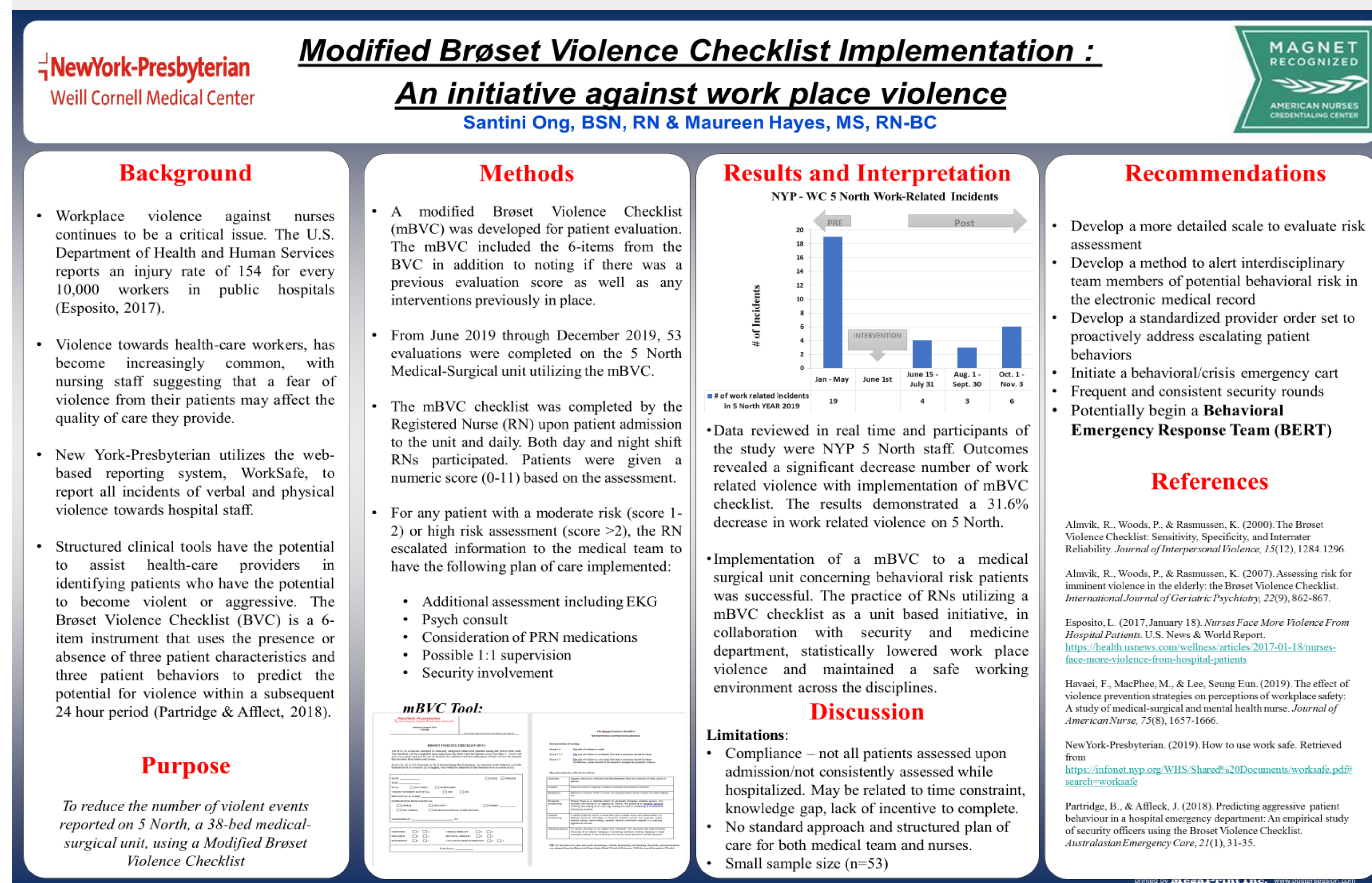
### Results:

Results showed a decrease in work related violence involving behaviorally challenged patients. In the 5 months prior to implementation of the mBVC, 19 work-related violence incidents were reported. In the 5 months after implementation, 53 evaluations were completed reporting 13 work-related violence incidents, representing a reduction of 31.6%.

### Conclusions:

Utilization of the mBVC tool and a collaborative interdisciplinary team approach helped identify potential aggressive behavior amongst the patient population of 5 North and reduce work place violence.

Poor compliance and inconsistent use of the mBVC tool proposes challenges and increases the risk of work related violence. To overcome these obstacles, it would be suggested to engage the support of unit leaders and upper management to develop and incorporate the mBVC tool into the electronic medical record. An additional recommendation is to expand to other comparable medical units to further evaluate the effectiveness of the tool. It would be advisable to continuously evaluate the educational needs of staff to assess for compliance of tool utilization. New staff, as well as non-permanent staff, will require instruction of use of tool.





# Modified Brøset Violence Checklist Implementation :

## An initiative against work place violence

Santini Ong, BSN, RN & Maureen Hayes, MS, RN-BC



### Background

- Workplace violence against nurses continues to be a critical issue. The U.S. Department of Health and Human Services reports an injury rate of 154 for every 10,000 workers in public hospitals (Esposito, 2017).
- Violence towards health-care workers, has become increasingly common, with nursing staff suggesting that a fear of violence from their patients may affect the quality of care they provide.
- New York-Presbyterian utilizes the web-based reporting system, WorkSafe, to report all incidents of verbal and physical violence towards hospital staff.
- Structured clinical tools have the potential to assist health-care providers in identifying patients who have the potential to become violent or aggressive. The Brøset Violence Checklist (BVC) is a 6-item instrument that uses the presence or absence of three patient characteristics and three patient behaviors to predict the potential for violence within a subsequent 24 hour period (Partridge & Afflect, 2018).

### Purpose

To reduce the number of violent events reported on 5 North, a 38-bed medical-surgical unit, using a Modified Brøset Violence Checklist

### Methods

- A modified Brøset Violence Checklist (mBVC) was developed for patient evaluation. The mBVC included the 6-items from the BVC in addition to noting if there was a previous evaluation score as well as any interventions previously in place.
- From June 2019 through December 2019, 53 evaluations were completed on the 5 North Medical-Surgical unit utilizing the mBVC.
- The mBVC checklist was completed by the Registered Nurse (RN) upon patient admission to the unit and daily. Both day and night shift RNs participated. Patients were given a numeric score (0-11) based on the assessment.
- For any patient with a moderate risk (score 1-2) or high risk assessment (score >2), the RN escalated information to the medical team to have the following plan of care implemented:

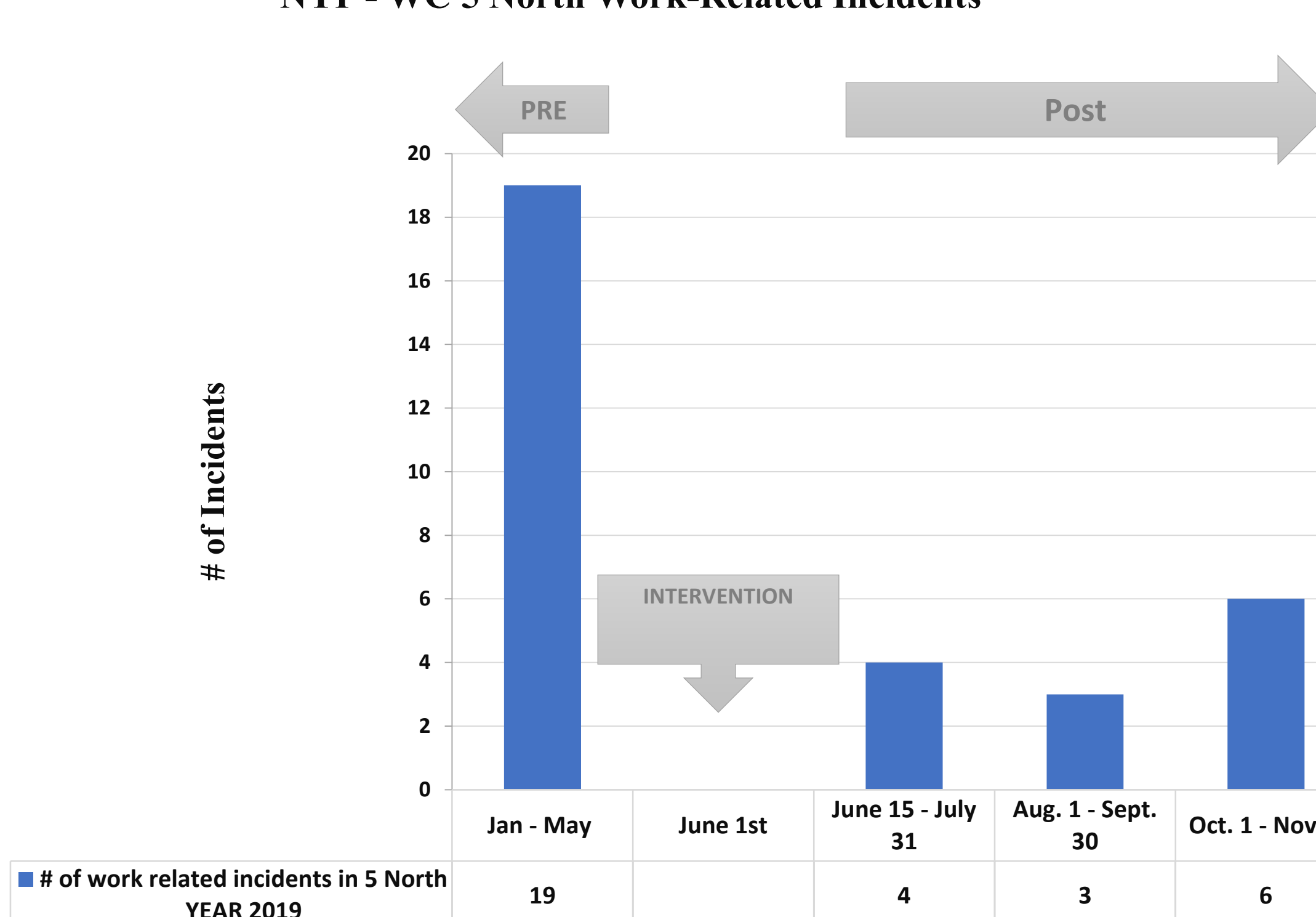
- Additional assessment including EKG
- Psych consult
- Consideration of PRN medications
- Possible 1:1 supervision
- Security involvement

#### mBVC Tool:

The form includes sections for patient information, BVC score, mBVC score, and a plan of care. The BVC section includes items like 'Is the patient a known violent person?', 'Is the patient a known aggressive person?', 'Is the patient a known violent person?', 'Is the patient a known aggressive person?', 'Is the patient a known violent person?', 'Is the patient a known aggressive person?'. The mBVC section includes items like 'Is the patient a known violent person?', 'Is the patient a known aggressive person?', 'Is the patient a known violent person?', 'Is the patient a known aggressive person?', 'Is the patient a known violent person?', 'Is the patient a known aggressive person?'. The plan of care section includes items like 'Additional assessment including EKG', 'Psych consult', 'Consideration of PRN medications', 'Possible 1:1 supervision', 'Security involvement'.

### Results and Interpretation

NYP - WC 5 North Work-Related Incidents



- Data reviewed in real time and participants of the study were NYP 5 North staff. Outcomes revealed a significant decrease number of work related violence with implementation of mBVC checklist. The results demonstrated a 31.6% decrease in work related violence on 5 North.

- Implementation of a mBVC to a medical surgical unit concerning behavioral risk patients was successful. The practice of RNs utilizing a mBVC checklist as a unit based initiative, in collaboration with security and medicine department, statistically lowered work place violence and maintained a safe working environment across the disciplines.

### Discussion

#### Limitations:

- Compliance – not all patients assessed upon admission/not consistently assessed while hospitalized. May be related to time constraint, knowledge gap, lack of incentive to complete.
- No standard approach and structured plan of care for both medical team and nurses.
- Small sample size (n=53)

### Recommendations

- Develop a more detailed scale to evaluate risk assessment
- Develop a method to alert interdisciplinary team members of potential behavioral risk in the electronic medical record
- Develop a standardized provider order set to proactively address escalating patient behaviors
- Initiate a behavioral/crisis emergency cart
- Frequent and consistent security rounds
- Potentially begin a **Behavioral Emergency Response Team (BERT)**

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## **Modified Brøset Violence Checklist Implementation: An initiative against work place violence**

**Santini Ong, BSN, RN & Maureen Hayes, MS, RN-BC**

### **Nursing - 5 North**

#### **1. Statement of the Problem :**

*A continuous statistical increase in work related violence was discovered on 5 North, a medical-surgical unit. These events involved behaviorally challenged patients and included verbal and physical threats, with and without harm. New York Presbyterian-Weill Cornell and the 5 North Medical-Surgical Unit are committed to operational excellence, striving for a harm-free work environment in order to continuously deliver the best patient care.*

#### **2. Objective/Aim of the study :**

The aim of the study was to determine the effect of using a Modified Brøset Violence Checklist (mBVC) to decrease work related violence, on 5 North, from behaviorally challenged patients.

#### **3. Project Design/Methods :**

The 5 North medical surgical unit conducted a quality improvement project by implementing the mBVC to assess the impact on workplace violence. The 6-item tool assessed confusion, irritability, boisterousness, verbal threats, physical threats and attacks on objects and individuals. Pre-implementation data was gathered from January to May 2019. The mBVC was implemented June 2019. Data was collected for 5 months post implementation, through November 2019. The mBVC checklist was completed by the Registered Nurse (RN) upon patient admission to the unit and each shift. Both day and night shift RNs participated. Patients were given a numeric score (0-11) based on the assessment. A moderate risk (score 1-2) or high risk assessment (score >2) resulted in the RN escalating the information to the medical team and the following plan of care was to be implemented:

- Additional assessment by the provider
- Electrocardiogram
- Psych consult
- Consideration of PRN medications
- Possible 1:1 supervision
- Security involvement

All moderate and high risk patients were endorsed through standardized RN-RN handoff and Charge RN handoff. Moderate and high risk patients were also discussed in unit huddles and interdisciplinary rounds. Additionally, departments such as security, physical therapy, and phlebotomy were provided with the list of moderate and high risk patients.

#### **4. Results :**

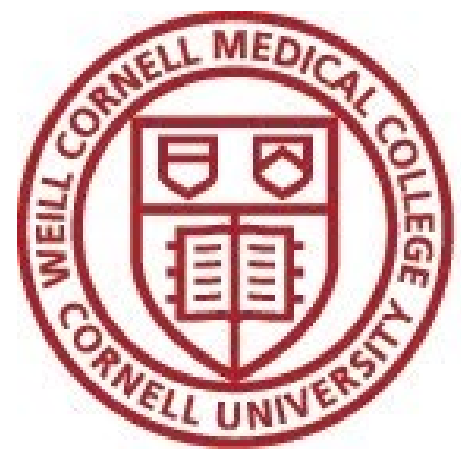
Results showed a decrease in work related violence involving behaviorally challenged patients. In the 5 months prior to implementation of the mBVC, 19 work-related violence incidents were reported. In the 5 months after implementation, 53 evaluations were completed reporting 13 work-related violence incidents, representing a reduction of 31.6%.

#### **5. Conclusions :**

Utilization of the mBVC tool and a collaborative interdisciplinary team approach helped identify potential aggressive behavior amongst the patient population of 5 North and reduce work place violence.

Poor compliance and inconsistent use of the mBVC tool proposes challenges and increases the risk of work related violence. To overcome these obstacles, it would be suggested to engage the support of unit leaders and upper management to develop and incorporate the mBVC tool into the electronic medical record. An additional recommendation is to expand to other comparable medical units to further evaluate the effectiveness of the tool. It would be advisable to continuously evaluate the educational needs of staff to assess for compliance of tool utilization. New staff, as well as non-permanent staff, will require instruction of use of tool.





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## Background

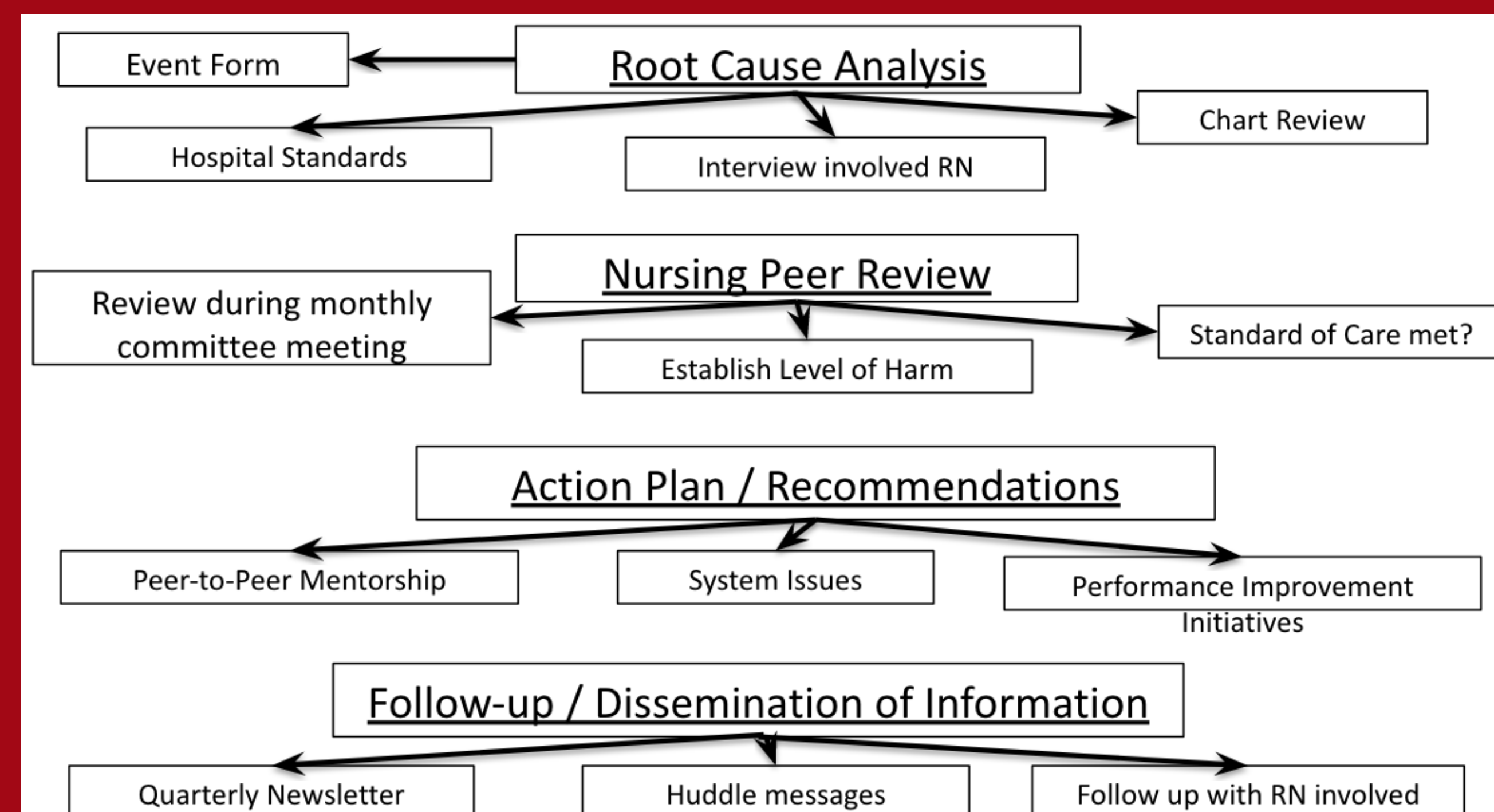
- Obstetrics are the leading reason for hospital admissions in the U.S, accounting for more than 4 million annual hospitalizations; due to obstetrics' specific nature and volume nurses play an important role in patient care.
- In order to create and foster a *Just Culture*, health care systems need to acknowledge that humans are destined to make mistakes: **no system can be designed to produce perfect results.**
- The nursing peer review process is an effective and underutilized method to identify behavior vs. systematic risk and to enhance accountability and ownership of patient care and nursing practice.
- By having a panel of unbiased nurses trained to perform incident reviews, the review process is enhanced by better understanding of the practice standards & workflow of the expected delivered care.
- However, NYP does not currently include staff nurses in the incident review process.
- According to the 2016 AHRQ hospital survey of obstetrics units of NYP Weill Cornell, employees feel that their errors are held against them, teamwork within units are poor, perception of safety is low, feedback on errors is low, and receive punitive response to errors.

## Aim of Project

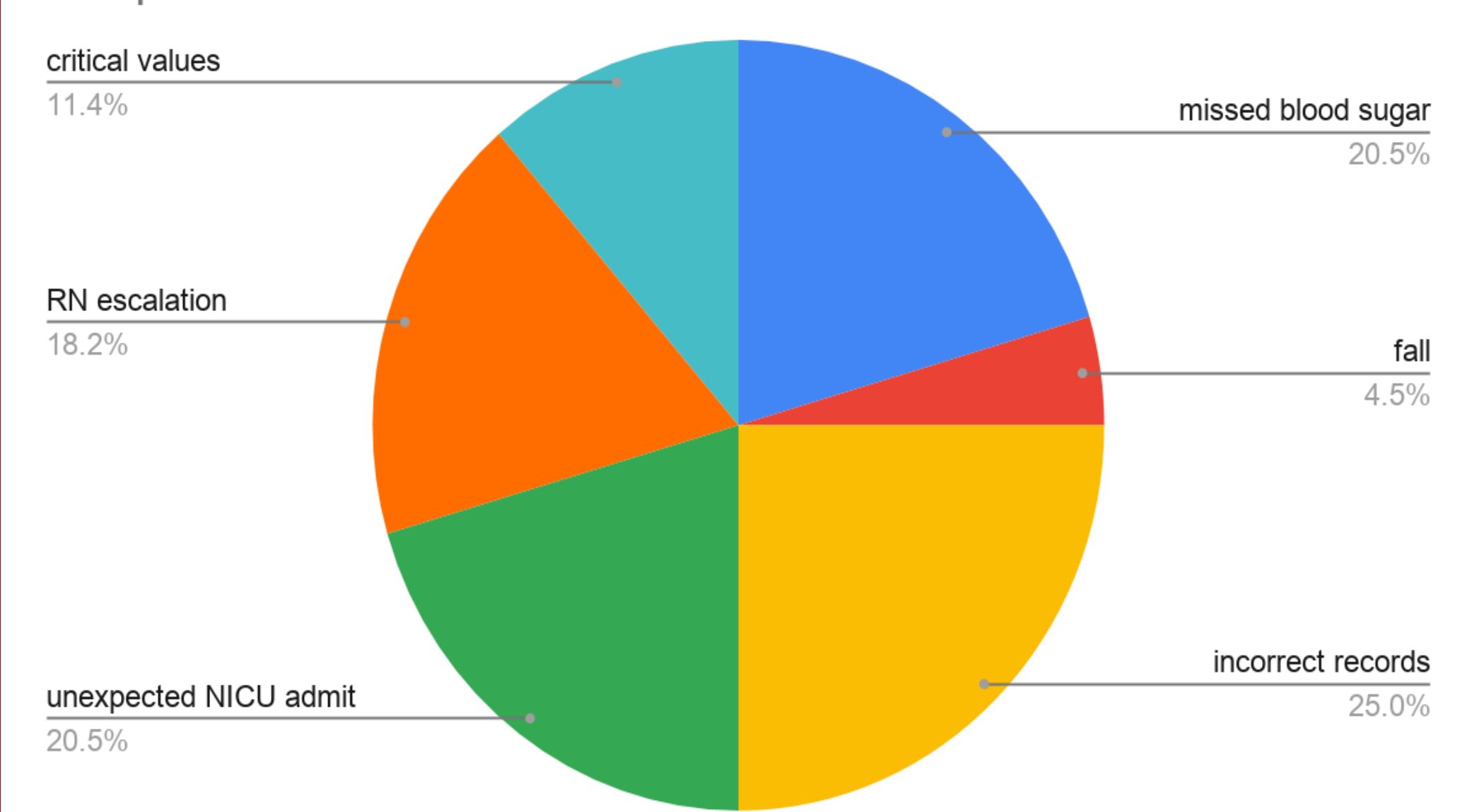
To improve obstetrics nurses' perception of working in a non-punitive environment and to foster a culture of patient safety through an Obstetrics Nursing Peer Review Committee. The Committee's goal is to review safety events to identify at risk behaviors and/or system issues to minimize adverse events and improve quality nursing care.

## Methods

### Structured Review Process



Freighted Newborn Events



Freighted Maternal Events

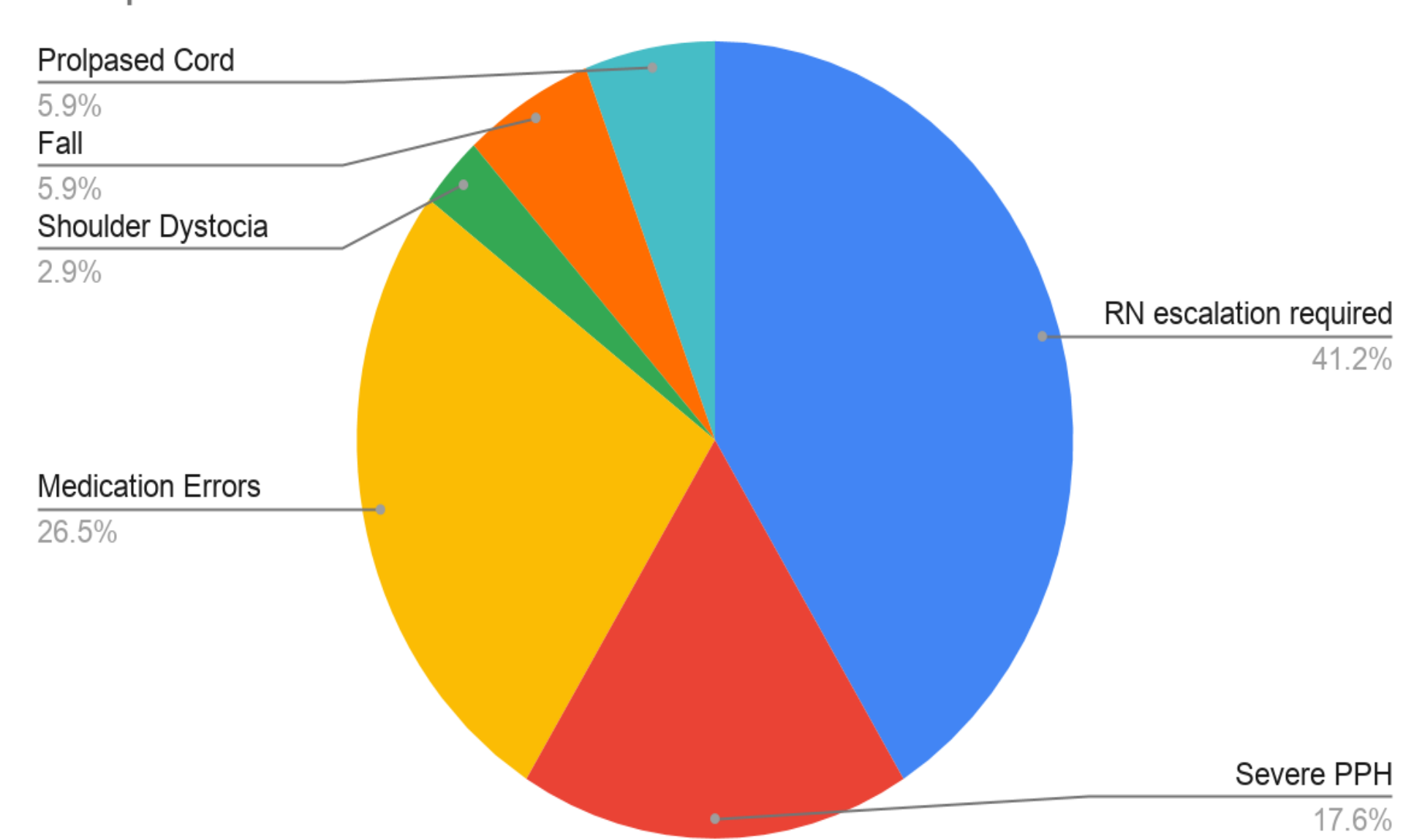


Figure 1. Percentage of frequented safety events by maternal and newborn

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# Obstetrics Nursing Peer Review Committee:

## A Nursing Quality Improvement Project

Jaclynn Chen MPH, BSN, RNC-OB, C-EFM

Annual WCM Quality Improvement Poster Symposium | September 15, 2020

For comments/questions, please contact [jsc7004@nyp.org](mailto:jsc7004@nyp.org)

## Results

### Pre-Intervention Data

	Gallup Survey				Pre-survey (n = 14)
When an event is reported, it feels like the person is being written up, not the problem.	7C (n = 29)	7N (n = 25)	7S/7W (n = 97)	All Units (Avg %)	
Strongly Disagree	4%	4%	8%	5%	0%
Disagree	25%	8%	24%	19%	36%
Neither	21%	24%	28%	24%	29%
Agree	29%	56%	24%	38%	36%
Strongly Agree	21%	8%	15%	14%	0%
Staff Feel like their mistakes are held against them					
Strongly Disagree	7%	0%	9%	5%	0%
Disagree	14%	8%	19%	14%	36%
Neither	34%	44%	39%	39%	21%
Agree	34%	40%	26%	33%	36%
Strongly Agree	21%	8%	7%	12%	7%
Staff worry that mistakes they make are kept in their personal file.					
Strongly Disagree	7%	4%	12%	8%	0%
Disagree	34%	36%	28%	33%	21%
Neither	28%	40%	29%	32%	0%
Agree	14%	16%	23%	17%	77%
Strongly Agree	17%	4%	8%	10%	0%

Table 1: Gallup employee survey vs. nurses involved in events

### Intervention Data

	Pre-survey (n = 14)	Post-survey (n = 8)
Rate your understanding of the nursing peer review process.		
Novice	57%	62.50%
Advanced Beginner	21%	0%
Competent	21%	25%
Proficient	0%	12.50%
Expert	0%	0%
Rate your comfort level related to the nursing peer review process.		
1- very uncomfortable	0%	0%
2 - somewhat uncomfortable	14%	37.50%
3 - neutral	50%	12.50%
4 - somewhat comfortable	14%	12.50%
5 - very comfortable	21%	37.50%
Rate your current comfort level to initiate a conversation with your peers related to safety events.		
1- very uncomfortable	0%	0%
2 - somewhat uncomfortable	0%	0%
3 - neutral	7%	0%
4 - somewhat comfortable	57%	25.00%
5 - very comfortable	36%	75.00%

Table 2: Survey results of involved RNs understanding & comfort level of nursing peer review process

## Discussion & Future Research

- Nurses feel similar to all employees: their mistakes are held against them - written up, and saved in their personal permanent files. Such feelings of punitive action against mistakes lead to under-reporting and overall unsafe working conditions.
- Peer-to-peer mentoring improved nurses comfort level in speaking out about safety events.
- Frequented events revealed system errors vs. human errors that contribute to safety events.
- Further work is needed to improve RNs understanding of the peer review process and to implement peer review in other specialties with interdisciplinary review.

## Acknowledgement

This project would not be possible without the guidance and support of NYP's Quality Nursing Fellowship lead by Dr. Rosanne Raso and Dr. Rhoda Redulla. Special thank you to my mentors: Rae-Jean Hemway, Neneh Kamara, and Linda Gibbons. Also thank you to my fellow Quality Nurse Fellows for your support and feedback.



## **Obstetrics Nursing Peer Review Committee: A Quality Improvement Project**

Jaclynn Chen MPH, BSN, RNC-OB, C-EFM

Women & Newborns' Nursing Department

### **1. Problem**

Obstetrics admissions is the leading reason for hospitalization in the U.S. Nurses play an important role in obstetrics due to its specific nature and patient volume. Currently, New York Presbyterian/Weill Cornell (NYP/WC) obstetrics quality and safety reviews do not include staff nurses, underutilizing a group of experts who can reflect on the unique practice standards and workflow expected to be delivered. According to the 2016 AHRQ survey of obstetrical units at NYP/WC, employees feel that their errors are held against them, teamwork within the unit is poor, perception of safety is low, feedback on errors are low, and receive punitive response to errors. By having a panel of unbiased nurses trained to perform incident reviews, the nursing peer review process can be an effective method of identifying behavior versus systematic risk to enhance accountability and ownership of nursing practice.

### **2. Aim**

The aim of this project is to improve obstetrics nurses' perception of working in a non-punitive environment and foster a culture of patient safety through an obstetrics nursing peer review committee (OB NPRC) to review safety events in order to identify at risk behaviors and/or system issues to minimize adverse events and improve quality nursing care.

### **3. Methods**

Made up of frontline nurses from antepartum, labor and delivery, and postpartum, the OB NPRC meets monthly to review incident reports through a structured review process. Based on the 2016 AHRQ survey, the review structure targets employees' perceptions of patient safety that include root cause analysis, peer review, action plan/recommendations, and follow-up/dissemination of information. Keepsafes, incident reports, are chosen based on their relevance to nursing practice. Keepsafes are assigned to committee members for review utilizing hospital standards, interviewing nurses involved, and a chart review. Keepsafes are presented by committee members and discussed together as a group to determine whether the nursing standard of care was met, level of harm found, and recommendations for improvement. Follow up letters are sent to each nurse involved informing them of the committee's decision and recommendations. A huddle message is created to summarize meeting discussions and disseminated to units. Pre and post surveys given to nurses involved were used to measure the effect of committee members mentorship on nurses perceptions on safety. Frequency of incidents are recorded to recognize systematic issues contributing to safety.

### **4. Results**

Comparing pre and post survey results of nurses involved in events, it was found that respondents had an improved comfort level related to the peer review process and initiating conversations with their peers about safety events. The majority of respondents continued to rate their understanding of the peer review process as novice. 100% of respondents felt that they were supported by committee members during the review process. The most frequented maternal events reviewed included the requirement of nurse escalation, medication errors, and severe postpartum hemorrhages. The most frequented newborn events reviewed included unexpected NICU admissions, newborn record mistakes, and incorrect monitoring of newborn blood sugar.

### **5. Conclusions**

Comparing the Gallup survey results to pre-intervention results, nurses feel that there are punitive actions against their mistakes, leading to under-reporting and unsafe working conditions. Peer to peer mentoring improved nurses comfort in speaking about safety events. Frequented events revealed systematic errors versus human errors that may contribute to safety events. Further work is needed to improve nurses' understanding of the peer review process and implementation of peer review in other nurse specialties and disciplines of health care. Targeted interventions need to be done to resolve systematic issues.



# Reducing Healthcare Disparities using Enhanced Recovery After Cesarean



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## Background

- **Racial-ethnic disparities exist in surgical healthcare.**
- Enhanced recovery after surgery was developed as a way to standardize clinical care pathways and communication across multidisciplinary teams to improve patient recovery.
- Enhanced recovery after surgery encompasses 4 main stages:
  1. Planning and preparing before surgery
  2. Reducing physical stress of the operation
  3. Managing post-operative analgesia
  4. Early feeding and ambulation
- One aim of ERAS programs is to achieve impartial surgical healthcare through the utilization of standardized protocols.

## Objective

- To compare disparities in hospital length of stay (LOS) by race-ethnicity before and after the implementation of an enhanced recovery after cesarean (ERAC) program.

## Study Design

- An ERAC program was implemented at New York Presbyterian – Weill Cornell Medical Center in October 2018.
- All patients undergoing cesarean delivery were maintained on an ERAC pathway of care, which included:
  - Pre-operative hydration
  - A standardized intra-operative protocol
  - A standardized post-operative analgesic regimen
  - Early feeding, as tolerated
  - Early urinary catheter removal
  - Early ambulation
- Using a healthcare analytics platform, we compared disparities in LOS after delivery (calculated from time of delivery to discharge) and readmission rates (any inpatient hospitalization within 30 days of cesarean delivery) based on reported race-ethnicity:
  - (1) Pre-ERAC: October 2017 – September 2018
  - (2) Post-ERAC: November 2018 – October 2019
- We excluded any outliers, defined as a LOS >25 days using the Academic Medical Center model and any patients without reported race-ethnicity when we stratified our data.
- Chi square and Student's T test were used for statistical comparison with p<0.05 considered statistically significant.
- Categorical data are expressed as n (%) and continuous data are expressed as mean +/- standard deviation.

## Results

- Pre-ERAC: 1743 total cesarean deliveries
  - 14 patients excluded for LOS >25 days
  - 209 patients with no reported race-ethnicity
  - **1520 patients** included in analysis
    - 284 (18.7%) identified as Asian
    - 124 (8.2%) identified as Black,
    - 128 (8.4%) identified as Hispanic
    - 122 (8.0%) identified as other
    - 862 (56.7%) identified as White
- Post-ERAC: 1766 total cesarean deliveries
  - 13 patients excluded for LOS >25 days
  - 231 patients with no reported race-ethnicity
  - **1522 patients** included in analysis
    - 277 (18.2%) identified as Asian
    - 97 (6.4%) identified as Black,
    - 107 (7.0%) identified as Hispanic
    - 99 (6.5%) identified as other
    - 942 (61.9%) identified as White
- Before ERAC implementation, Asian, Black, Hispanic and patients of other race-ethnicities all had a significantly longer mean LOS after cesarean delivery as compared to White patients. After ERAC implementation, this disparity was no longer seen (Table 1).
- 30-day re-admission rates were similar pre- and post-ERAC in patients of all race-ethnicities; 0.7% vs 0.7%, p=0.99 for Asians, 7.3% vs 8.2%, p=0.80 for Blacks, 3.9% vs 2.8%, p=0.64 for Hispanics, 1.6% vs 1.0%, p=0.75 for other, and 1.6% vs 1.0%, p=0.43 for Whites.

**Table 1. Length of stay after cesarean delivery pre- and post-ERAC implementation, by race-ethnicity**

	Mean LOS After Delivery (days)	p
<b>Pre-ERAC Implementation</b>		
White*	3.07 +/- 0.85	--
Asian	4.12 +/- 15.11	0.04
Black	3.54 +/- 1.33	<0.0001
Hispanic	3.29 +/- 0.93	0.007
Other	3.29 +/- 0.96	0.009
<b>Post-ERAC Implementation</b>		
White*	2.93 +/- 7.89	--
Asian	2.73 +/- 0.76	0.67
Black	3.00 +/- 0.79	0.93
Hispanic	2.75 +/- 0.84	0.81
Other	2.78 +/- 1.00	0.85

## Conclusion

- We saw a significantly reduced mean LOS after delivery post-ERAC implementation, without an effect on readmission rates.
- We no longer saw a disparity in mean post-operative LOS when stratifying by race-ethnicity.
  - We believe that consistent, standardized patient education as well as multidisciplinary, standardized guidelines and protocols contributed to this effect.
  - Although our findings show promise in addressing known healthcare disparities, one must equally practice cultural competency and patient-centered care so as to achieve truly impartial surgical healthcare.
- Future Directions include:
  - Sustainability of the ERAC program
  - Enterprise-wide ERAC implementation
  - Further investigation of readmissions

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## Contact Information

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## Background

- There is a shortage of **Child and Adolescent Psychiatric Providers in the United States**. This has led to disparities in care that disproportionately affect children from **low income/disadvantaged backgrounds**
- On HT5 Pediatrics there is an in-house psychiatric nurse practitioner, but due to **increased amount of referrals the caseload has become extremely large**. As a result, children are waiting longer for evaluations and treatment of common mental health conditions, such as ADHD

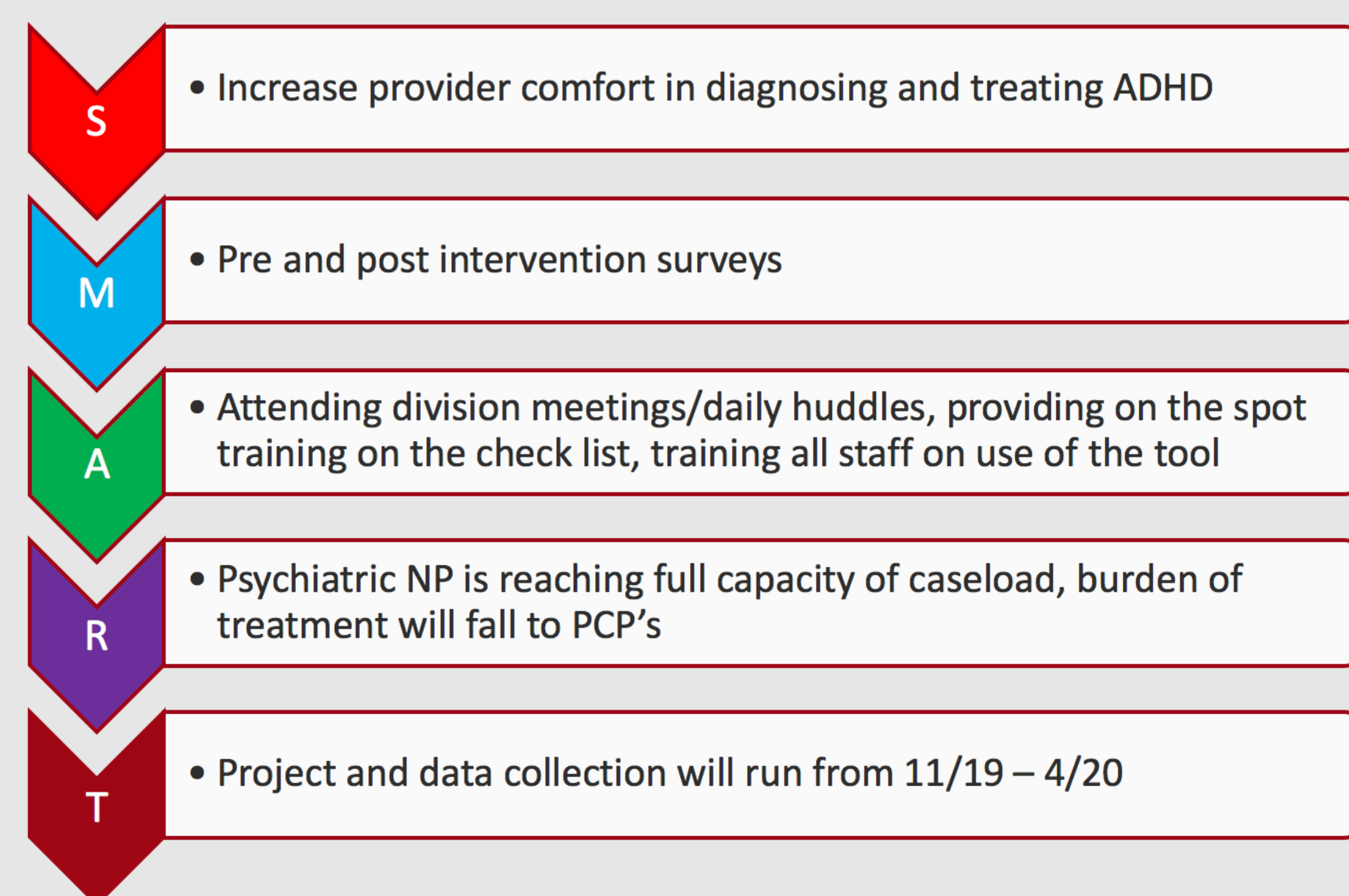
## Root Cause

- Lack of training in mental health diagnosis and treatment by primary care providers
- Lack of standardization in treatment
- Short timing of appointments
- Referral culture

## Aim Statement

By May 2020, HT5 Pediatric Primary Care Providers will feel 50% more comfortable diagnosing and treating ADHD, as measured via interventional surveys. The secondary effect of this intervention will be increase in appropriate diagnoses of ADHD, decreased time between clinic visits for follow up and decreased referrals to the psychiatric NP

### SMART Criteria



## Implementing an ADHD Checklist to Standardize Practice in a Primary Pediatrics Office

### Annual WCM Quality Improvement & Patient Safety Poster Symposium

**Matthew James Tirelli, MSN, PMHNP-C | 09/15/2020**

For comments/questions, please contact [mjt9011@nyp.org](mailto:mjt9011@nyp.org)

## Study Design

This is an action research design with multiple PSDA cycles for intervention and analyzing/implementing change from 11/2019 to 04/2020. Inclusion criteria is all children aged 4-12 who receive primary care on HT5 pediatrics

Main intervention is a two session checklist outlining all the steps needed to assess for and treat ADHD

- Providers have been asked to fill out a pre-intervention survey and a post-intervention survey
- NP has created a script for the support staff to use when handing out the universal screens given to all children at their well child visit
- “As part of every child's well visit, we are giving you these forms to check in about your child's emotional health. Would you be able to fill them out, and then ask your provider to review them with you during the appointment? Please ask the provider if you have any questions about the screening forms”

Outcome Measures	Process Measures
Provider comfort diagnosing ADHD	Number of pre intervention questionnaires completed
Referrals made to psychiatric NP	Number of post intervention questionnaires completed

## Results

- A total of 27 pre-intervention surveys completed, meaning the session one tool was used 27 times
  - Average comfort level of diagnosing ADHD pre-intervention was 3 (rated on a likert scale 1 (not at all) – 5 (extremely))
- A total of 6 post-intervention surveys completed, meaning the entire intervention was used 6 times
  - Average comfort level of diagnosing ADHD post-intervention was 3.5
  - Average rating of the usefulness of the intervention was 4
- Referrals made to psychiatric NP fell to 0, but likely due to COVID 19 pandemic and closing of clinic
- NP completed chart review on one patient that the tool was used for both session one and two checklist used, patient returned within a month, no diagnosis of ADHD given based on negative Vanderbilt forms and a referral not made to psychiatric NP due a full PCP evaluation of chief complaint of inattention

## Conclusions & Next Steps

- Based on the discrepancy between completion of the first checklist vs completion of the second check list (27 vs 6), follow up was a barrier to using the entire tool
- Pre and post intervention questionnaires suggest this tool might have increased provider comfort with diagnosing ADHD
- HT5 is moving to more telehealth appointments and psychiatric NP is off site, thus integration of this tool into the EHR might further increase and incentivize use



# **Implementing an ADHD Checklist to Standardize Practice in a Primary Pediatrics Office**

Matthew James Tirelli, MSN, PMHNP-C

Department of Nursing, Pediatrics

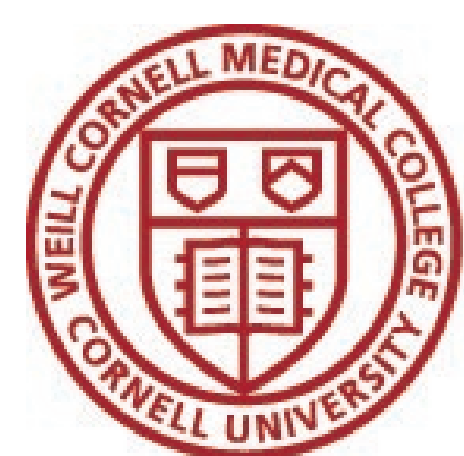
**1. Statement of the Problem:** There is a shortage of Child and Adolescent Psychiatric Providers in the United States. This has led to disparities in care that disproportionately affect children from low income/disadvantaged backgrounds. On HT5 Pediatrics there is an in-house psychiatric nurse practitioner, but due to increased amount of referrals the caseload has become extremely large. As a result, children are waiting longer for evaluations and treatment of common mental health conditions, such as ADHD.

**2. Objective/Aim of the study:** By end of QI project, HT5 Pediatric Primary Care Providers will feel 50% more comfortable diagnosing and treating ADHD, as measured via interventional surveys.

**3. Project Design/Methods:** This is an action research design with multiple PSDA cycles for intervention and analyzing/implementing change. Main intervention is a two session checklist outlining all the steps needed to assess for and treat ADHD. Inclusion criteria was all children ages 4-12 who receive primary care at HT5 Pediatrics from 11/2019 to 04/2020.

**4. Results:** In reviewing the completed pre and post intervention questionnaires, a total of 27 pre-intervention surveys were completed, meaning the session one tool was used 27 times. Based on a Likert Scale of 1 (not at all) to 5 (extremely), the average comfort level of diagnosing ADHD pre-intervention was 3. A total of 6 post-intervention surveys completed, meaning the entire intervention was used 6 times. The average comfort level of diagnosing ADHD post intervention was 3.5 and the average rating of the usefulness of the intervention was 4. As these surveys were not matched, we cannot make direct correlations, but can observe the overall change in provider answers.

**5. Conclusions:** Based on the pre and post intervention surveys, a chart review of a patient with whom the tool was used for two sessions and anecdotal conversations with the PCP's, it appears that this tool might be helpful to standardize treatment in a primary care setting for diagnosing and treating ADHD and increase provider comfort levels. More data is needed to see the impact on direct patient care and outcomes. With the transition to tele-health on a more permanent basis, further steps would be to embed this tool in the EHR so providers can easily access during telemedicine visits and while working remotely.



## Introduction

- Neonatal hypoglycemia leads to negative consequences
  - Short-term: hypotonia, tachypnea, apnea, jitteriness, poor feeding and seizures
  - Long-term: adverse neurodevelopmental outcomes
- 10% require NICU admission ~ \$2.1 billion dollars annually
- Neonatal hypoglycemia most common in certain high risk (HR) groups (ex. Late Preterm Infants; Small for gestational age, Large for gestational age and Infant of Diabetic Mothers)
- NYP Newborn Glucose Homeostasis Protocol currently in place at NYP-Cornell & NYP-Lower Manhattan Hospital (LMH)

## SMART Aims:

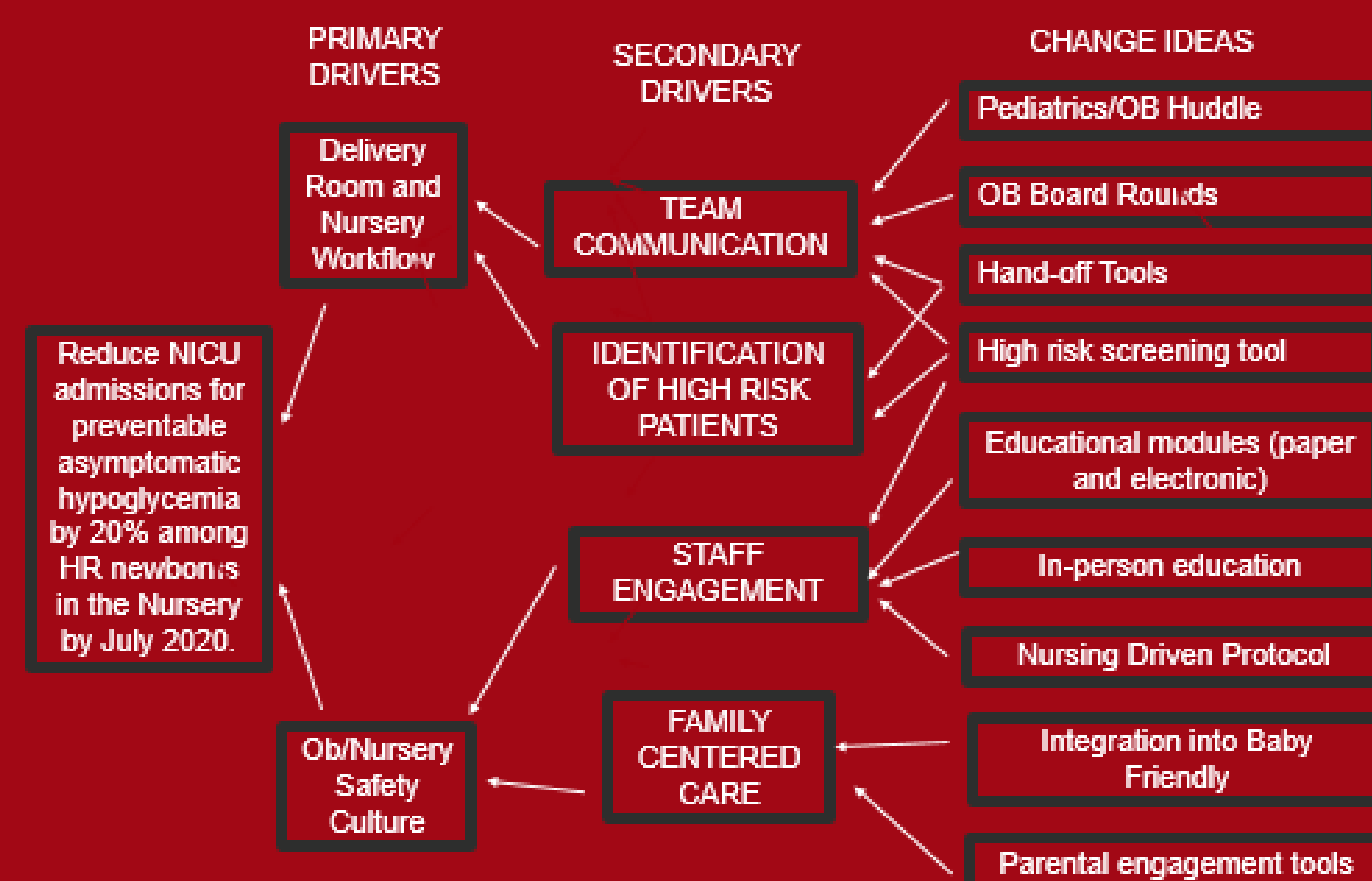
Increase adherence to NYP Glucose Homeostasis protocol

- Improve adherence to the NYP glucose homeostasis protocol by 50% by July 2020

Reduce preventable admissions

- Decrease preventable admissions for asymptomatic hypoglycemia in high-risk infants by 20% by July 2020

## Driver Diagram



## Program Design & Methods

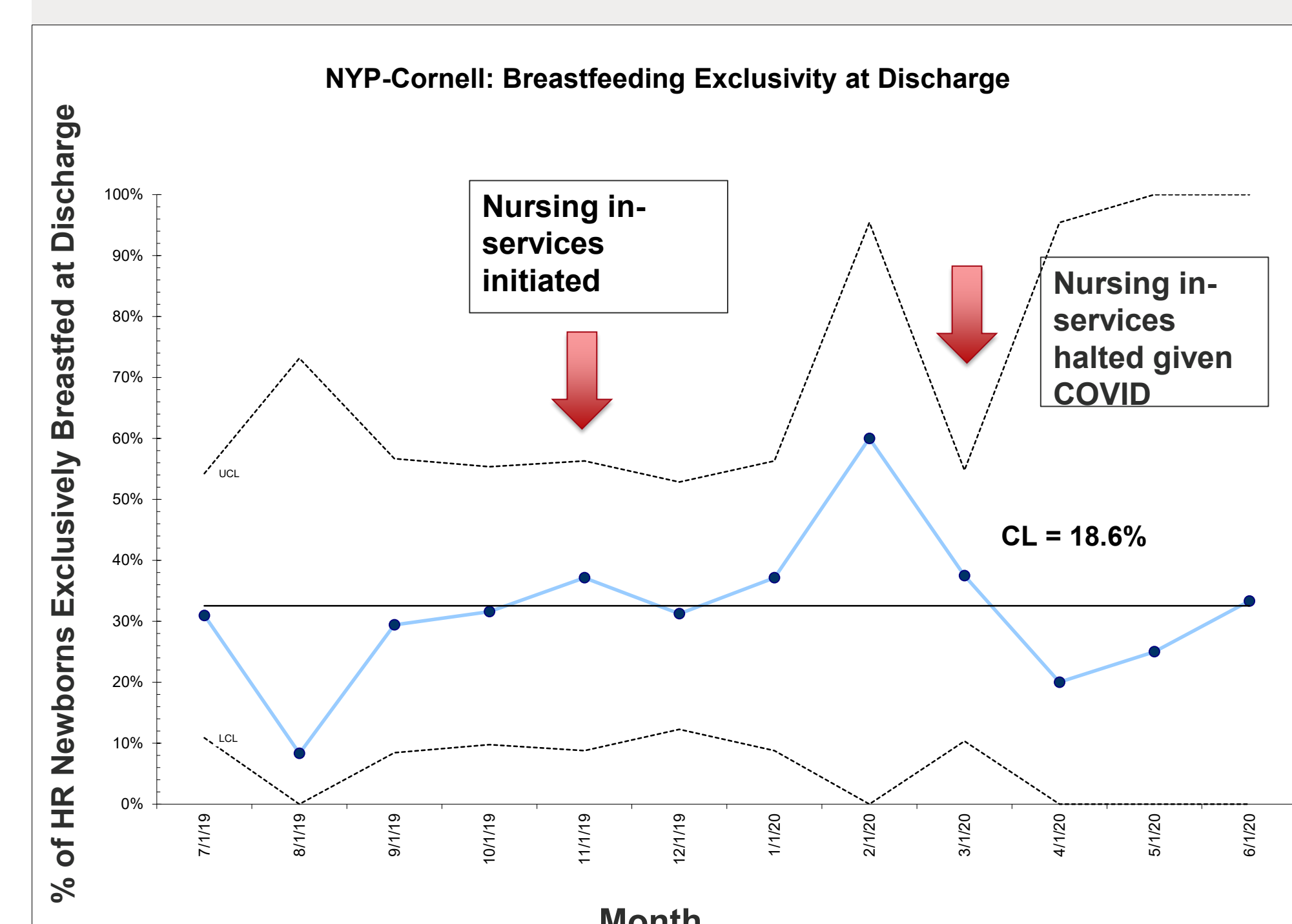
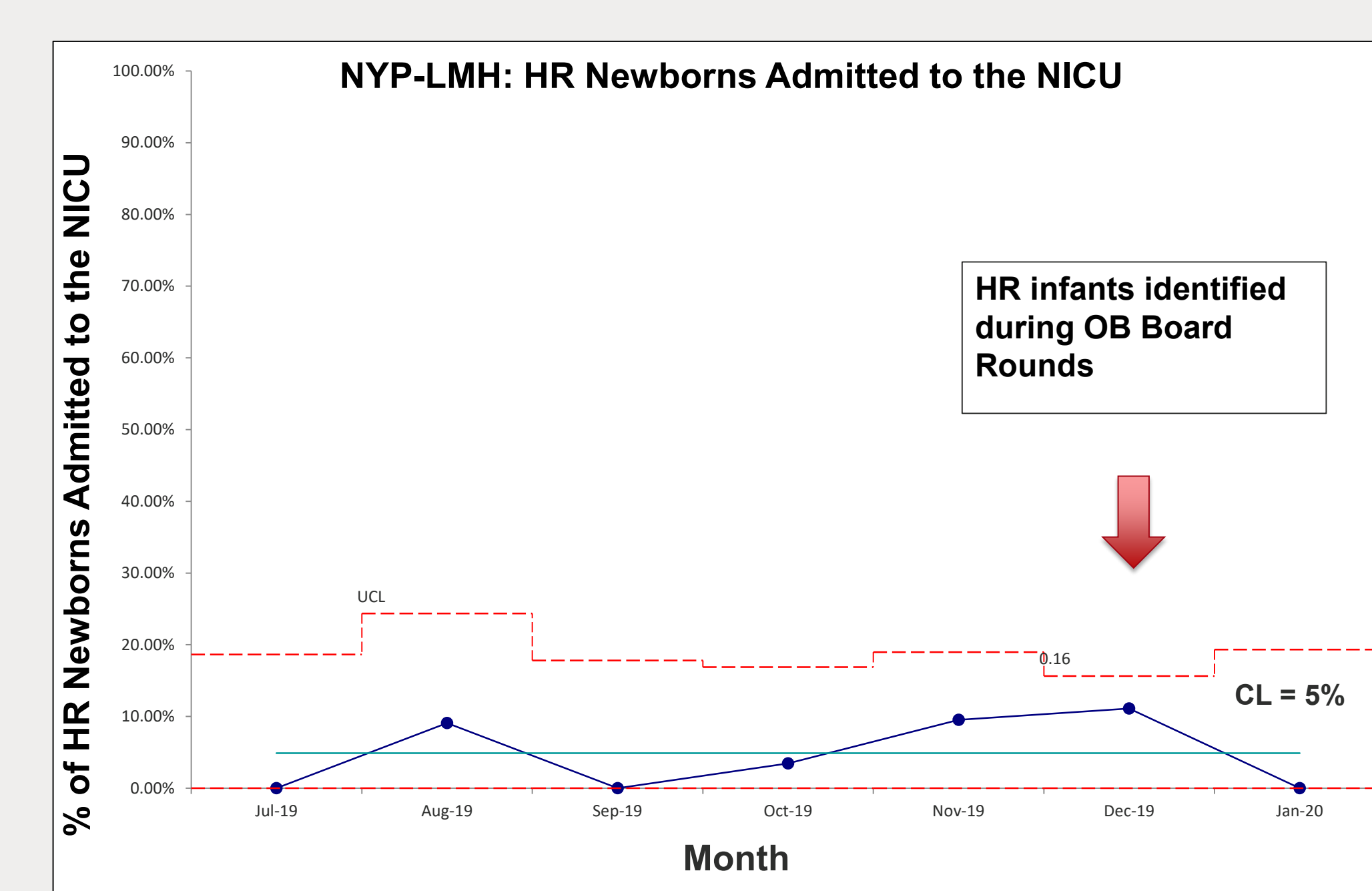
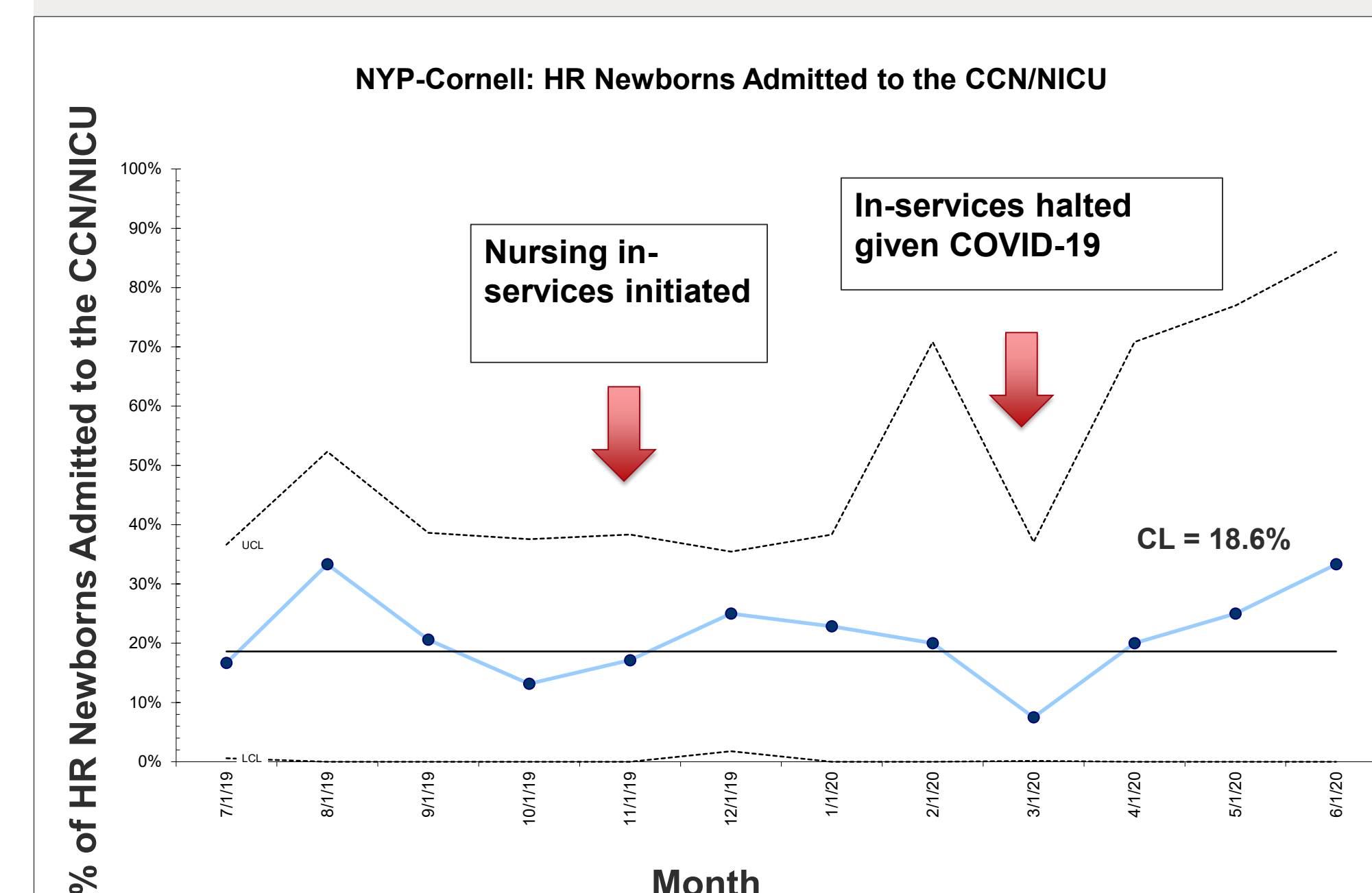
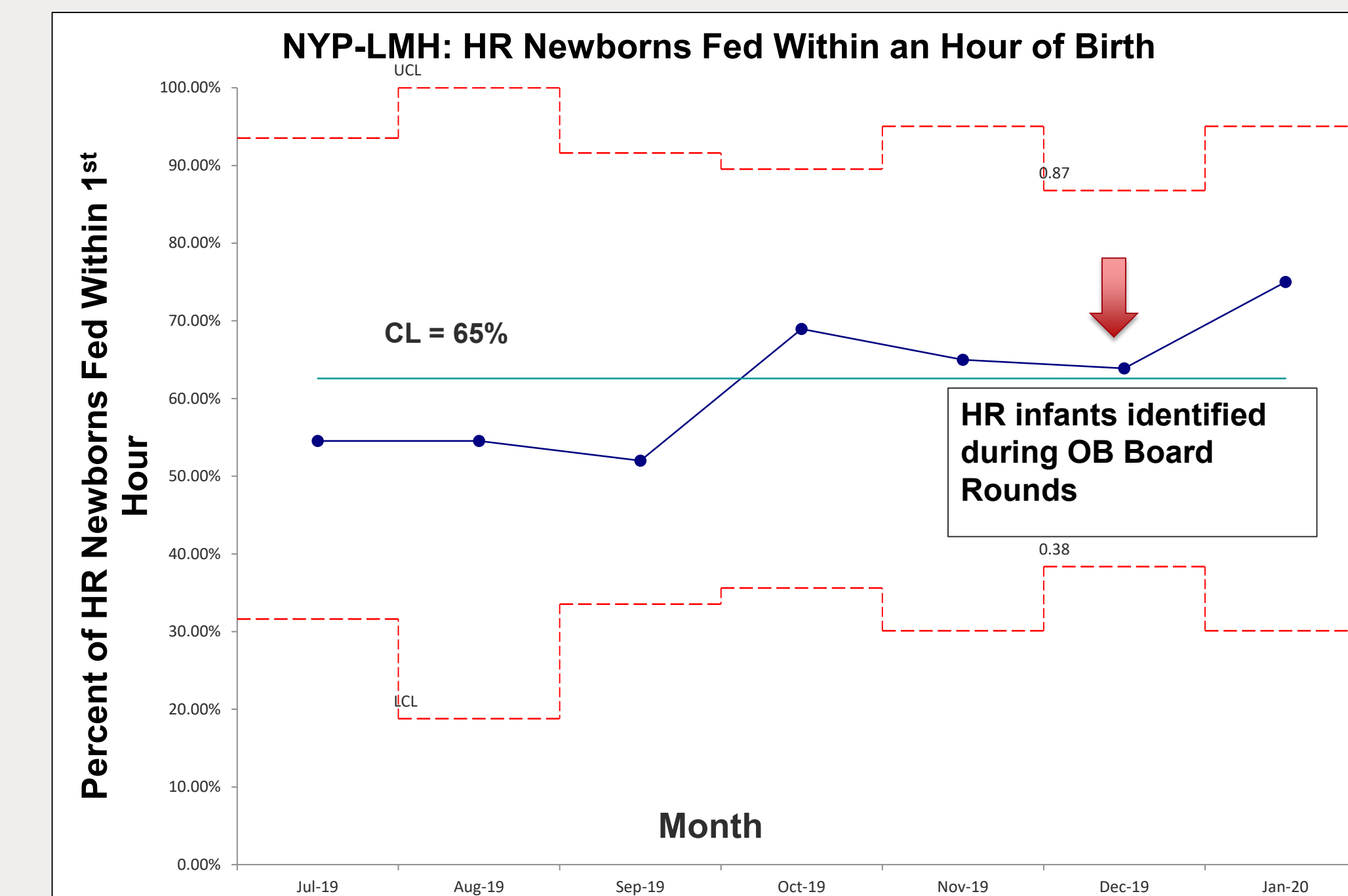
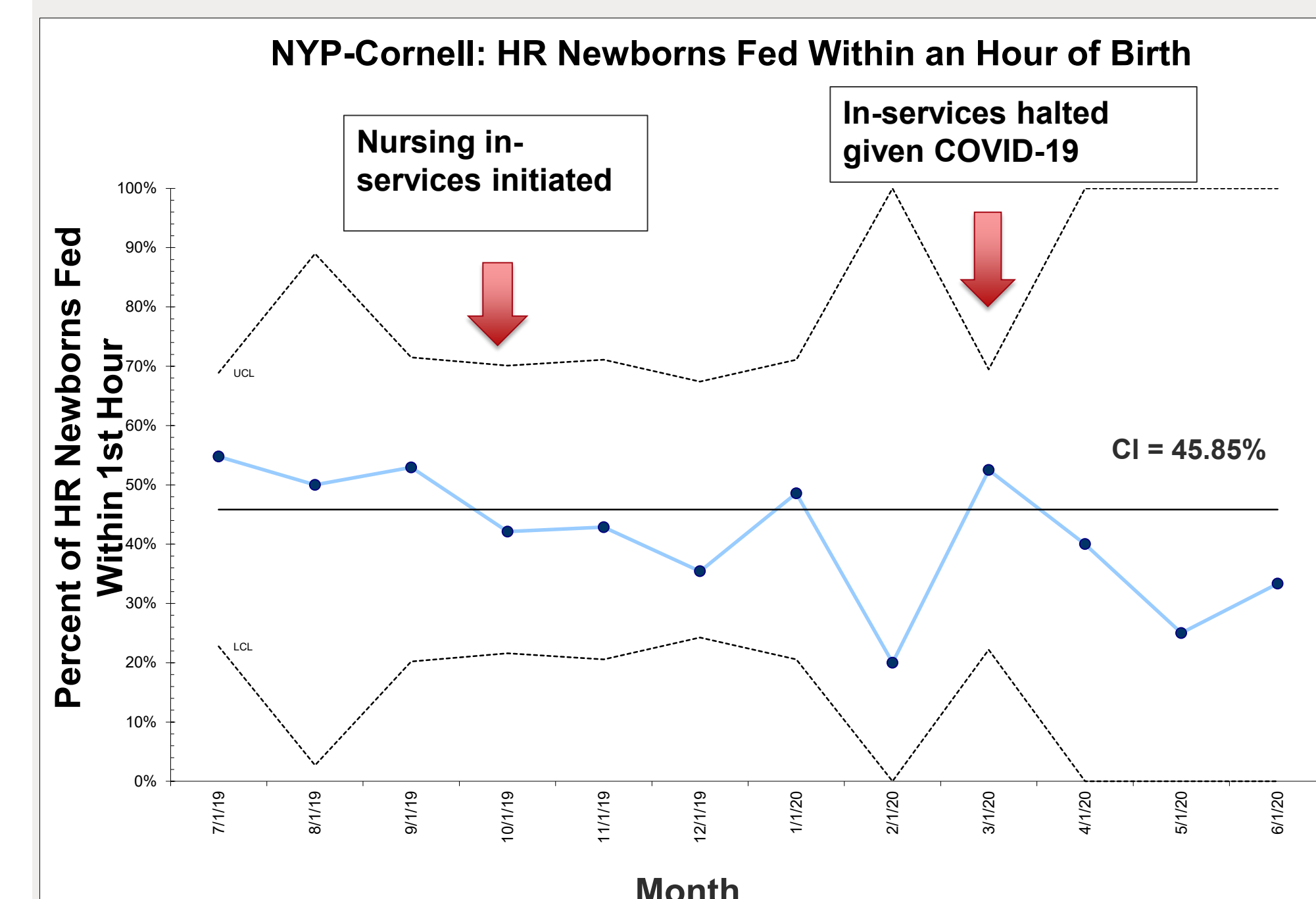
- Observational, time-series study over 6-12 months
- 143 (LMH) and 301 (Weill Cornell) charts were reviewed
- Data was displayed and analyzed using Shewhart (SPC charts)
  - P charts for attribute data
  - Xbar, S charts for continuous data

# Improving Identification and Management of Early Hypoglycemia in High Risk Neonates

Priyanka Tiwari, MD, Vargabi Ghei, MD, Julie M. Pearson, MPH, BSN, RN, Katherine Farabaugh, BSN, RN, Hannah Cottrell, MD, Erin Kelly, PA-C, Jillian Schon, PA-C, Megan Romer, PA-C, Snezana Nena Osorio, MD

## Results:

For comments/questions, please contact prt9011@med.cornell.edu



## Conclusions:

- Neonatal hypoglycemia in HR infants is a problem that requires a costly ICU stay and separates the mother-baby dyad
- Adherence to the NYP glucose homeostasis is poor
  - Educational initiatives were not sufficient to improve compliance (although they were halted secondary to the COVID-19 pandemic)
- This QI initiative has not been able to reduce admissions for IV glucose, as of yet, as adherence to the protocol has not improved thus far

## Next Steps:

- Partner with OB service to create awareness
- Standardize the current educational in-services
- Initiate standardized nursing handoff tools
- Rollout dextrose gel protocol



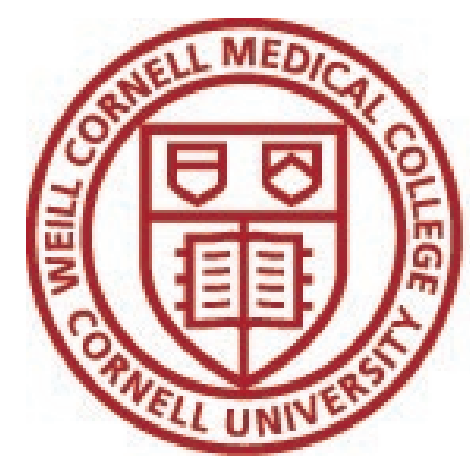
## **Improving Identification and Management of Early Hypoglycemia in High Risk Neonates**

Vargabi Ghei, MD, Priyanka Tiwari, MD, Snezana N. Osorio, MD

Department of Pediatrics, Weill Cornell College of Medicine

Hypoglycemia in the first twenty-four hours of life can lead to adverse physiologic and neurologic symptoms (such as tachypnea, apnea, jitteriness, hypotonia and seizures), as well as, adverse long-term developmental outcomes. Neonatal hypoglycemia is most common in 4 high risk groups of newborns in the nursery: late preterm infants (35-36 6/7 weeks gestation), small for gestational age (SGA) Infants (< 10% for birthweight), large for gestational age (LGA) infants (> 90% for birthweight), and infants of diabetic Mothers (IDM). The AAP provides guidance for the screening and management of hypoglycemia among these high-risk groups in the first 12 to 24 hours of life. The NYP-Newborn Glucose Homeostasis Protocol is based on the AAP guidelines and similarly is used to screen and guide management for high-risk newborns in this critical period. Our quality improvement (QI) initiative, sought to improve adherence by 50% to the NYP-Newborn Glucose Homeostasis Protocol and in turn, reduce preventable NICU and special care nursery (SCN) admission for IV dextrose among the high-risk newborns by 20%. An observational time series study was conducted at two nurseries in the NYP hospital system (Weill Cornell and Lower Manhattan Hospital) between July 2019 and July 2020. 143 (LMH) and 301 (WC) charts were reviewed. The process measures that served as a proxy for adherence to the protocol were the average time to first feed (which should be within an hour) and the percent of high-risk infants that were screened appropriately per protocol. Our outcome measure was preventable special care nursery admissions for IV dextrose. The balance measure was exclusive breastfeeding at time of discharge. Data was analyzed with statistical process control charts and API rules were used to detect special cause variation. Between July 2019 and March 2020, we completed in-person protocol education for the nursing staff in the Labor and Delivery and the Post-Partum Units at both hospitals. Overall, protocol adherence did not improve. Similarly, NICU/SCN admissions for IV dextrose did not decrease. Educational interventions alone were not sufficient to improve adherence to the Newborn Glucose Homeostasis protocol or reduce NICU/SCN hypoglycemia admissions. Of note, educational initiatives were halted in March 2020 due to the COVID-19 pandemic, which may have contributed to this result. Going forward, we propose creating a dextrose gel protocol which allows an alternative to enteral feeding during this critical period, partnering more with the obstetric service to help educate families and staff about the importance of prevention of hypoglycemia and standardizing hand-off tools for nurse to improve protocol adherence and subsequently decrease NICU/SCN admissions.

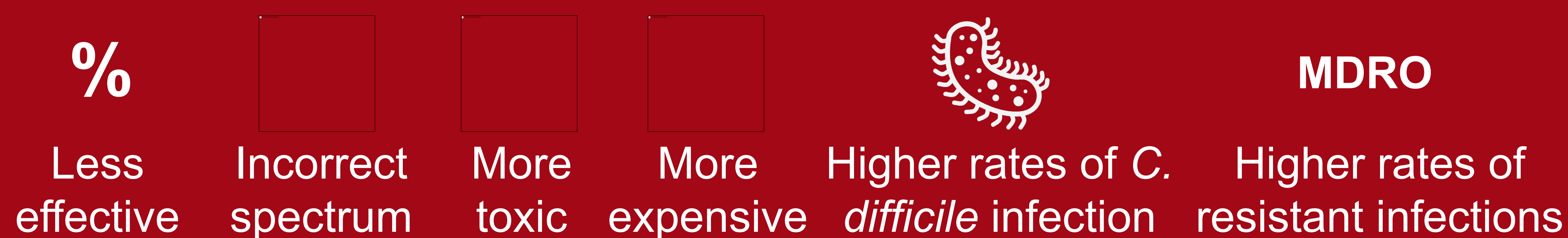




## Background:

- 10% of the population report penicillin allergy, but <1% truly allergic
- Type I IgE mediated allergy wanes over 10 years in 70-80% of patients<sup>1</sup>
- Cross reactivity among beta-lactams varies (1-16%)<sup>2</sup>

Patients with reported penicillin allergies often receive alternative antibiotics<sup>3</sup> and have worse outcomes<sup>4</sup>



- Allergy history often incomplete<sup>5</sup>
- Penicillin skin test can determine true IgE allergy, but limited access to allergy consults at NYP-WC and LMH
- Graded challenge is safe in most patients<sup>6,7</sup>

10% dose

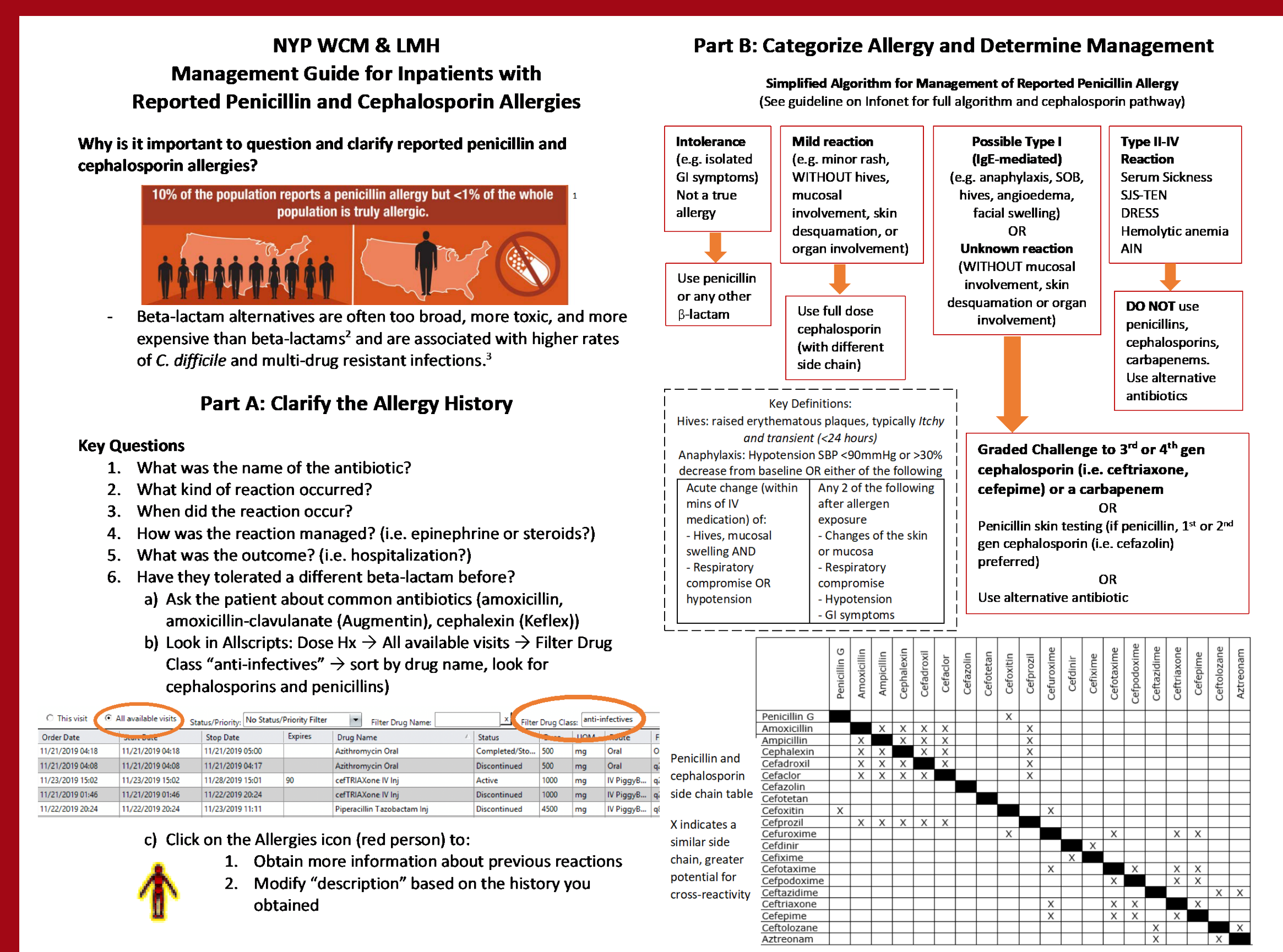
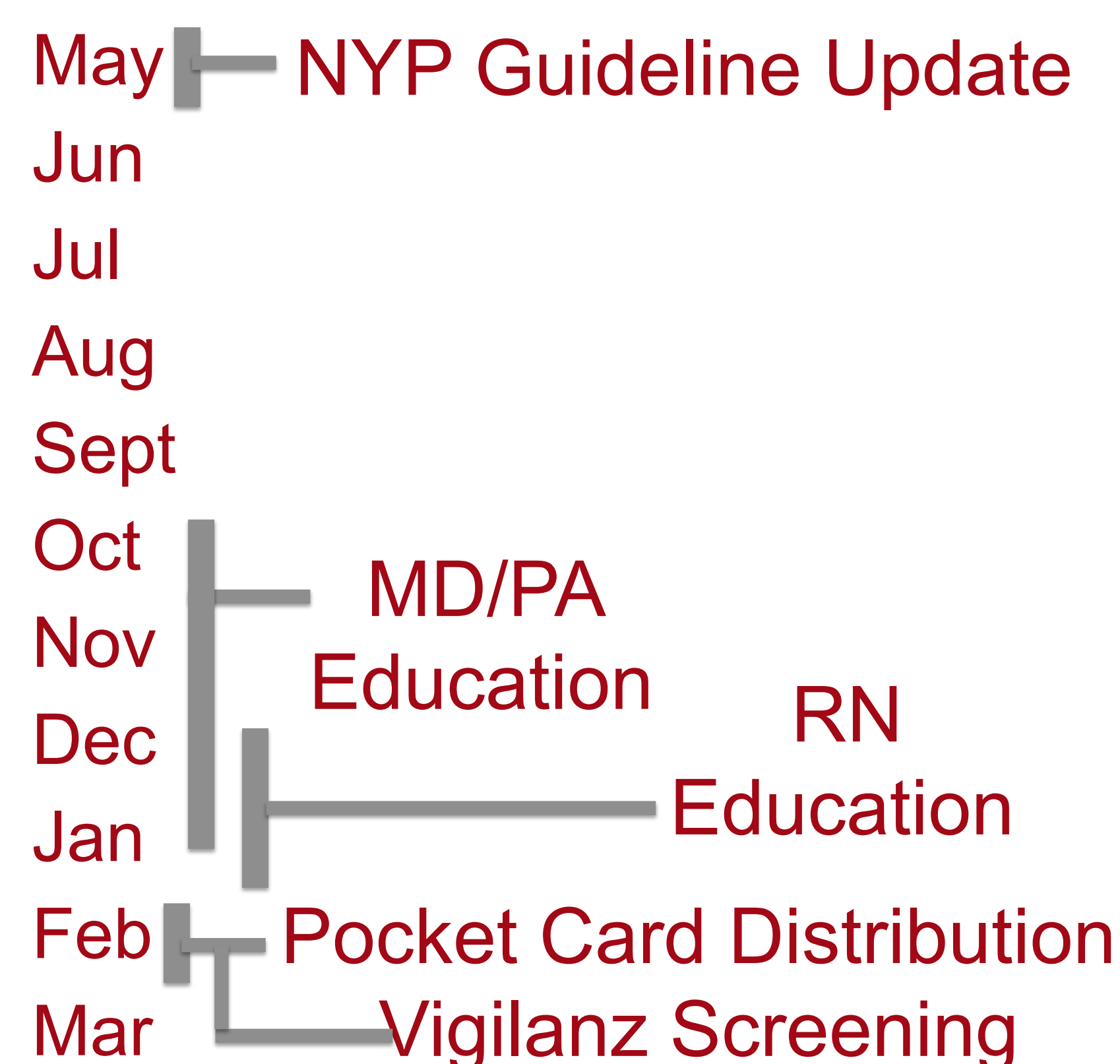
90% dose

Full dose

## Aim:

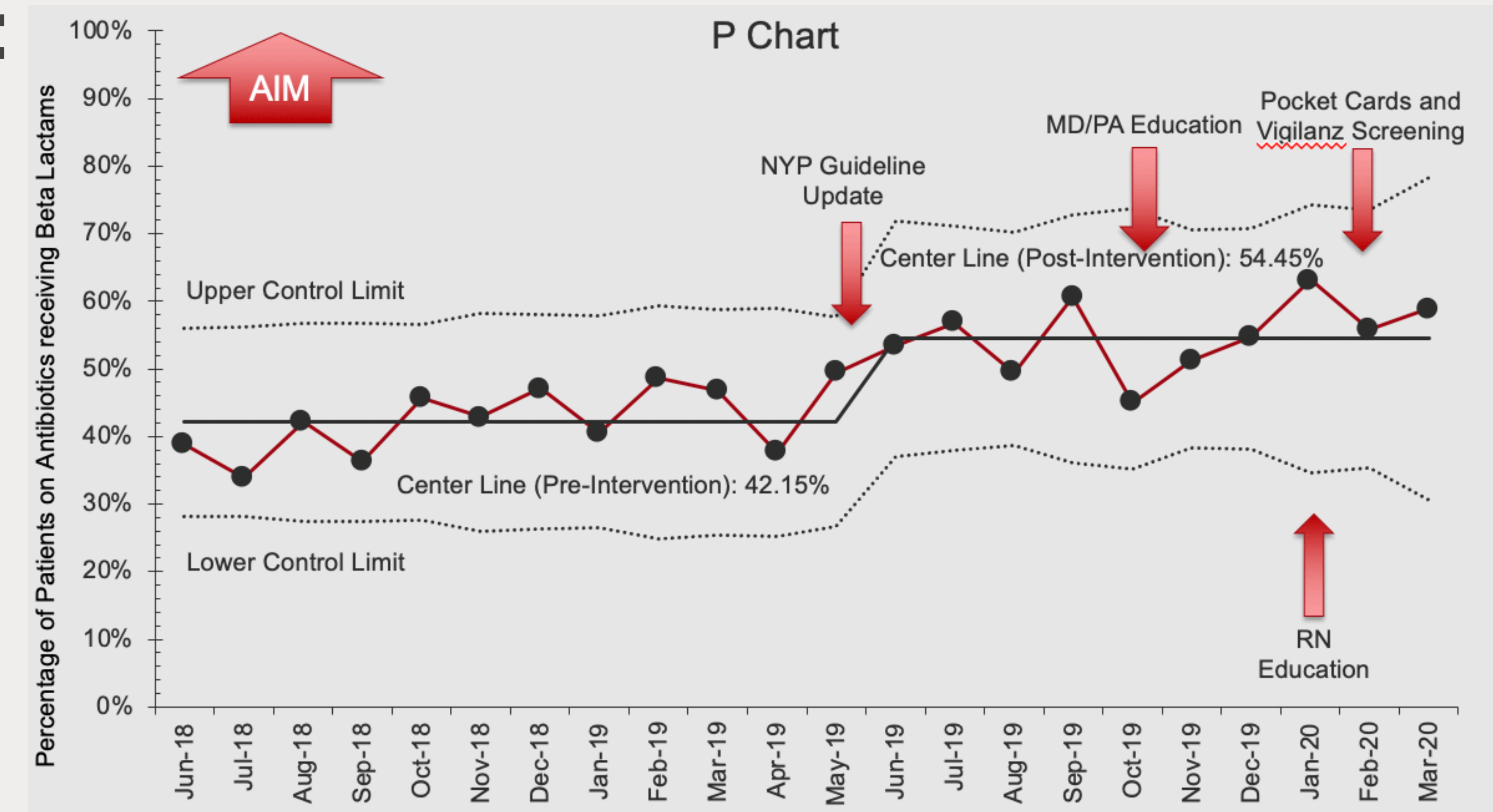
To safely increase the utilization of beta-lactam antibiotics by 25% among patients with reported beta-lactam allergy on medicine services who need antibiotics over the project period.

## Interventions:



Primary Outcome: Percentage of Patients with Allergy who received Beta-Lactam Antibiotics

## Results:



Measures	Type	Pre	Post
Days of alternative Abx use*	Secondary Outcome	470	391
# of graded challenges	Process Measure	5	36
ID Consults (% of patients)	Balancing Measure	17	19
Allergy Consults (% of patients)	Balancing Measure	0	1

\*per 1000 patient-days (Vancomycin, Aztreonam, Levofloxacin, Clindamycin, Meropenem, Ertapenem)

## Conclusions:

- Multi-pronged intervention led to 29% increase in beta-lactam use among patients with reported allergies
- No adverse events during the intervention period among patients who underwent graded challenge
- Interventions were not associated with a change in Infectious Disease or Allergy consult frequency
- Interventions focused on improving comprehensive allergy histories and identifying patients for graded challenge added impact beyond existing stewardship mechanisms

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# Opiate prescribing in ambulatory lumbar spine surgery

## Annual WCM Quality Improvement and Patient Safety Poster Symposium

H Singh, I Easthausen, K Villegas, J Basem, J Joshi | September 15, 2020  
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### Introduction

- Many patients that are prescribed opioids in the perioperative period subsequently proceed to chronic use and dependency, especially in the setting of spine surgery
- Over prescribing opioids or prescribing opioids when they may not be necessary in the postoperative period, unnecessarily places surgical patients at risk for future opiate dependency
- There are no formal multidisciplinary guidelines for postoperative pain management that are specific to common spine surgeries, including lumbar laminectomy and microdiscectomy

### Aims

- Aim 1: Determine typical opiate consumption patterns in the 6 weeks post discharge period from lumbar laminectomy and microdiscectomy
- Aim 2: Determine if prescribers over- or under- prescribe opiate medications in the post discharge period
- Aim 3: Convene a multidisciplinary panel to develop guidelines for opiate prescribing after lumbar laminectomy and microdiscectomy

### Program Design & Methods

- This prospective, observational quality improvement study assessed patients undergoing elective ambulatory spine surgery at New York Presbyterian Hospital - Weill Cornell Medical Center in New York, New York from October 2019 to March 2020
- Inclusion Criteria: 18 years of age or older, English speaking, and undergoing single or multiple level lumbar ambulatory surgery with or without admission on the day of surgery.
- Exclusion criteria: history of prior opioid use (defined a greater than 1 week of use within the month prior to surgery), lumbar fusion surgery, surgery for tumor resection, multiple staged surgeries during same admission, intraoperative complications (including major bleeding, stroke, major cardiovascular event, and death), reoperation during admission, prolonged admission due to inpatient rehabilitation, and readmission within 2 weeks.
- Of 152 patients reviewed undergoing lumbar spine surgery, 52 patients met inclusion and exclusion criteria.
- These patients were called at approximately 7-day intervals until they reported cessation of prescription opioid use.

Figure 1: Surgery Characteristics

	Overall (N=52)
<b>Laminectomy</b>	
Yes	28 (53.8%)
No	24 (46.2%)
<b>Laminotomy</b>	
Yes	2 (3.8%)
No	50 (96.2%)
<b>Microdiscectomy</b>	
Yes	23 (44.2%)
No	29 (55.8%)
<b>Disc resection</b>	
Yes	4 (7.7%)
No	48 (92.3%)
<b>Cyst resection</b>	
Yes	1 (1.9%)
No	51 (98.1%)
<b>Laterality</b>	
Bilateral	3 (5.8%)
Unilateral	27 (51.9%)
Not Applicable	22 (42.3%)
<b>Length of surgery</b>	
Mean (SD)	89.1 (61.5)
Median [Min, Max]	69.0 [28.0, 339]
Missing	1 (1.9%)
<b>Length of stay</b>	
Mean (SD)	0.615 (0.844)
Median [Min, Max]	0 [0, 4.00]
<b>Spine levels involved in surgery (continuous)</b>	
Mean (SD)	1.23 (0.581)
Median [Min, Max]	1.00 [1.00, 4.00]

Figure 2: Discharge Characteristics

	Laminectomy (N=28)	Other spinal surgery (N=24)	Overall (N=52)
<b>Oxycodone</b>			
Yes	23 (82.1%)	24 (100%)	47 (90.4%)
No	5 (17.9%)	0 (0%)	5 (9.6%)
<b>Hydromorphone</b>			
Yes	1 (3.6%)	0 (0%)	1 (1.9%)
No	27 (96.4%)	24 (100%)	51 (98.1%)
<b>Hydrocodone</b>			
Yes	1 (3.6%)	0 (0%)	1 (1.9%)
No	27 (96.4%)	24 (100%)	51 (98.1%)
<b>Percocet</b>			
Yes	1 (3.6%)	0 (0%)	1 (1.9%)
No	27 (96.4%)	24 (100%)	51 (98.1%)
<b>Total pills prescribed (5mg oxycodone equivalent pills)</b>			
Mean (SD)	27.6 (8.94)	30.2 (4.32)	28.8 (7.20)
Median [Min, Max]	30.0 [0, 42.0]	30.0 [15.0, 40.0]	30.0 [0, 42.0]
Missing	1 (3.6%)	0 (0%)	1 (1.9%)

Missing indicates no opioids were prescribed.

Figure 3: Survey Tool

Project: Opioid prescribing guidelines for common spine surgeries  
PI: Jatin Joshi, MD MPH # 12-08025978

Name: \_\_\_\_\_ Survey Date: \_\_\_\_\_ Follow-Up (wk): 1 2 3 4 5 6

**Quality Improvement Questionnaire**

**Week 1 Questions**

1. Did you fill your opioid prescription after discharge from hospital? Y N

2. What were you prescribed?  
a Opioid:  
b Number of pills:

**Weeks 1-4 Questions**

3. What opioid medications are you currently taking?

Opiate Medication	Dose (mg)	# of pills administered over last week	# of pills remaining from discharge prescription

4. Did you refill your opioid prescription? Y N

5. Are there any other non-opioid medications you are currently taking for pain control? (Please check all that apply)

Acetaminophen	NSAID	Muscle Relaxant	Cgabapentinoid	Anti-depressant

6. How would you rate your pain today?  
0 1 2 3 4 5 6 7 8 9 10

7. How do you feel about your pain control experience since your discharge from the hospital?  
Not Satisfied Satisfied Very Satisfied

8. How do you feel about the amount of opioids you were prescribed after your surgery?  
Too Little Adequate Too Much

9. If you have not been taking opioid medication, what is your described reason? (Please select all that apply)

☐ I no pain; not requiring any medications.  
☐ I non-opioid medications sufficient for pain control.  
☐ I have pain, but do not want to take opioids.  
☐ I adverse effects from opioids.

10. Are you concerned about opioid addiction? Y N

11. Is participation complete? Y N

Figure 4: Opiate Consumption

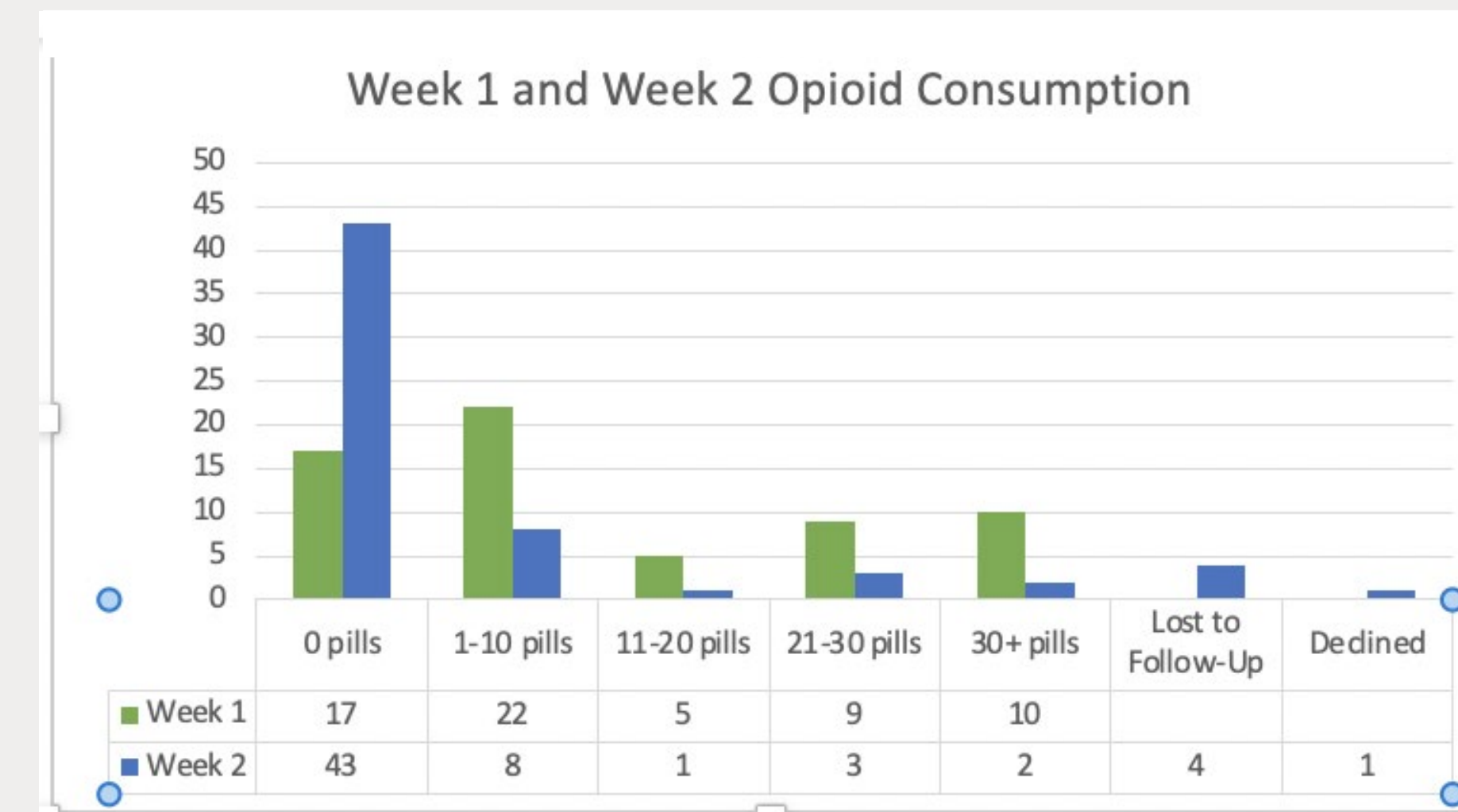


Figure 5: Pareto Chart for opiate consumption at week 2

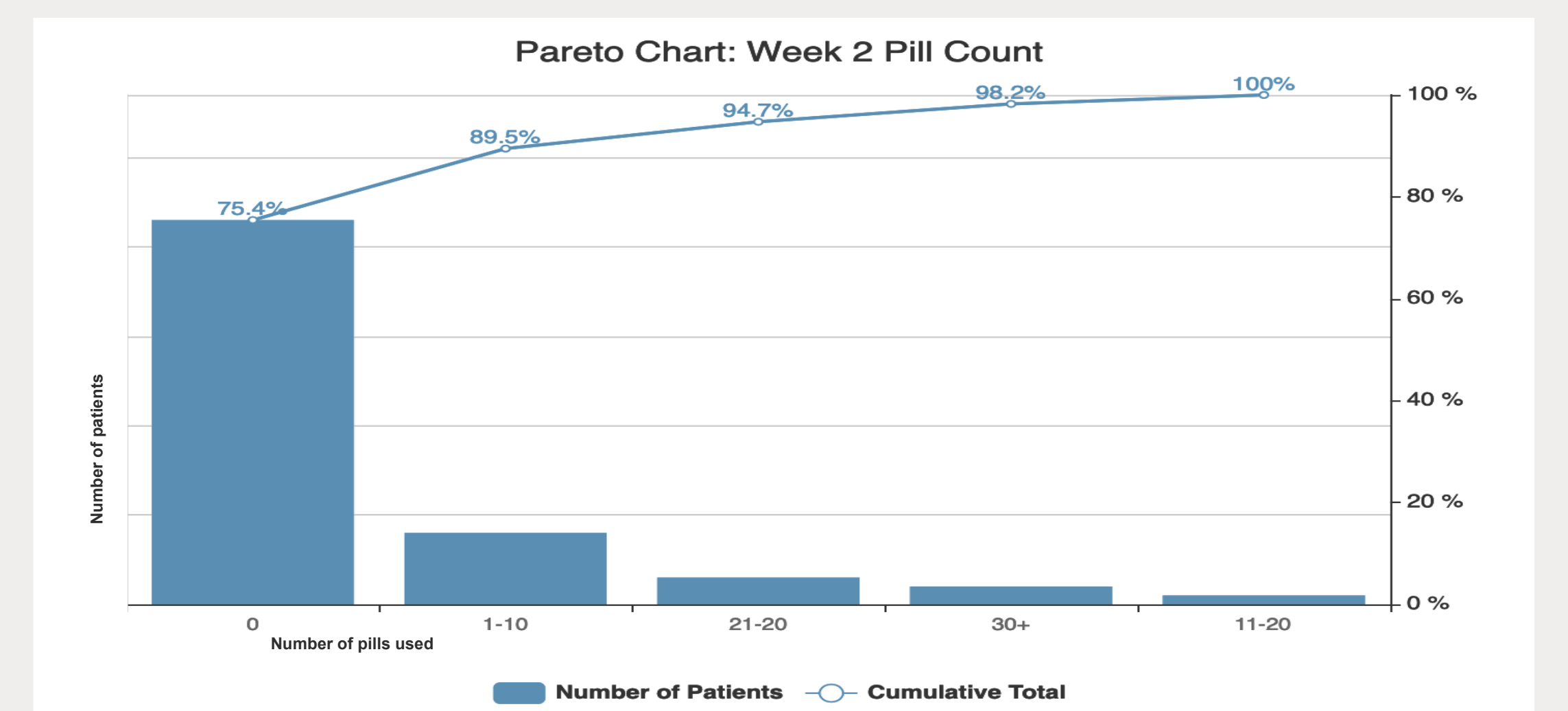


Figure 6: Home opiate administration

	Laminectomy (N=27)	Other spinal surgery (N=24)	Overall (N=51)
<b>Did you fill your opioid prescription?</b>			
Yes	26 (96.3%)	23 (95.8%)	49 (96.1%)
No	1 (3.7%)	1 (4.2%)	2 (3.9%)
<b>Did you refill your opioid prescription?</b>			
Yes	5 (18.5%)	3 (12.5%)	8 (15.7%)
No	20 (74.1%)	19 (79.2%)	39 (76.5%)
N/A	1 (3.7%)	1 (4.2%)	2 (3.9%)
Missing	1 (3.7%)	1 (4.2%)	2 (3.9%)
<b>Total number of pills self-administered</b>			
Mean (SD)	13.3 (17.5)	9.10 (12.0)	11.3 (15.2)
Median [Min, Max]	6.00 [0, 63.0]	4.50 [0, 40.0]	6.00 [0, 63.0]
<b>How would you rate your pain in the last 24 hours?</b>			
Mean (SD)	4.04 (1.83)	3.58 (2.06)	3.82 (1.94)
Median [Min, Max]	4.00 [2.00, 8.00]	3.00 [0, 9.00]	3.00 [0, 9.00]

Figure 7: Self-reported pain at one-week post discharge

	Overall (N=52)
<b>How would you rate your pain in the last 24 hours?</b>	
Mean (SD)	3.83 (1.92)
Median [Min, Max]	3.50 [0, 9.00]
<b>How do you feel about your pain control experience since your discharge from the hospital?</b>	
Very Satisfied	19 (36.5%)
Satisfied	26 (48.1%)
Not Satisfied	8 (15.4%)
<b>How do you feel about the amount of opiates you were prescribed after surgery</b>	
Too Much	26 (50.0%)
Adequate	19 (36.5%)
Too Little	6 (11.5%)
Missing	1 (1.9%)
<b>Reason for not taking medication: No pain, medication not required</b>	
Yes	5 (9.6%)
No	47 (90.4%)
<b>Reason for not taking medication: Non-opioid medication sufficient for pain control</b>	
Yes	29 (55.8%)
No	23 (44.2%)
<b>Reason for not taking medication: Have pain, but do not want to take opioids</b>	
Yes	3 (5.8%)
No	49 (94.2%)
<b>Reason for not taking medication: Adverse effects from opioids</b>	
Yes	12 (23.1%)
No	40 (76.9%)
<b>Are you concerned about opioid addiction?</b>	
Yes	20 (38.5%)
No	32 (61.5%)

### Results and Conclusions

- Of the 52 patients included in the study, there were 27 males and 25 females with a mean age of 56.8 (17.7). The sample included patients with history of previous spine surgery (25%), Hypertension (26.9%), depression/anxiety (34.6%), smoking history (66.3%), and cancer (15.4%).
- 28 patients (53.8%) underwent laminectomies and 23 patients (44.2%) underwent microdiscectomies. The mean length of surgery was 89.1 (61.5) minutes. The mean length of hospital stay was 0.615 (0.844) days.
- On average, patients were prescribed 28.4 tablets of oxycodone 5mg at discharge from the hospital. 8 patients (15%) required refills for their prescription.
- The survey data was notable for 17 patients (32%) with no (zero tablets) post discharge prescription opioid use. By week 2 of survey, 75% of patients were using 0 tablets, and up to 90% of patients were using 10 tablets or less.
- Post discharge survey data also showed that even at 1-week post discharge, the mean pain score was 3.83. Patients reported being very satisfied (36.5%), satisfied (48.1%), and not satisfied (15.4%). 26 patients (50%) stated they were prescribed too much opioids after surgery, 19 (36.5%) thought the prescription was adequate, and 6 (11.5%) felt it was too little.
- Our post discharge survey data for ambulatory lumbar spine surgery patients is notable for less than anticipated opioid prescription use. Majority of the patients surveyed required ten or fewer tablets of oxycodone 5mg for post discharge pain control, while they were prescribed an average of 28.4 tablets. Majority of these patients were satisfied with their pain control and reported low pain scores. Approximately half of the patients felt they were prescribed too much opiate medication.
- This study has limitations due to the small sample size and survey design, which relies on accurate reporting from the patients. Weekly survey data collection can also present with selection bias; although, most patients in this study stopped using opioids within the first 2 weeks. Future studies with a larger sample size can be powered to assess for any association of postoperative prescription opioid use with patient demographics, medical comorbidities, surgical history, social history, intraoperative care, or postoperative care.
- The data from this study will be used to form a collaborative, multidisciplinary team that includes specialists from Pain Management, Neurosurgery, and Internal Medicine and will formulate guidelines in opiate prescribing for ambulatory lumbar spine surgeries.



**Problem:** Increased odds ratio for outcomes of on ventilator > 48 hours above ACS NSQIP program comparison for five years leading to increased morbidity and mortality outcomes.

**Aim of initiative:** 1. Identify risk predictors, patterns and trends that contribute to the outcome of on ventilator > 48 hrs.

2. Improve the outcome of on ventilator > 48 hrs.

3. Embed the use of the EIP (Early Intubation Protocol) into the surgical culture and approach in the care of a critically ill preoperative patient in a sustainable manner.

**Project design:** A quasi-experimental design using a sample from the ACS NSQIP registry at a single site academic facility with greater than 500 beds. Review of preoperative risk variables with identification of common risk and patterns were used to develop a risk calculator to support identification of at risk patients. It was determined that a total score of 6 or greater indicated a need for preoperative early intubation. A retrospective approach was also used to validate the calculator. Education and performance feedback regarding the use of the calculator and missed opportunities was provided to the departments of surgery, anesthesia, emergency and SICU/ED nursing.

## Improving Surgical Outcomes with an Early Intubation Protocol

### Annual WCM Quality Improvement and Patient Safety Poster Symposium | September 15, 2020

Anita Volpe, DNP; Ronald Combs, PA-C; Stephen Merola, MD

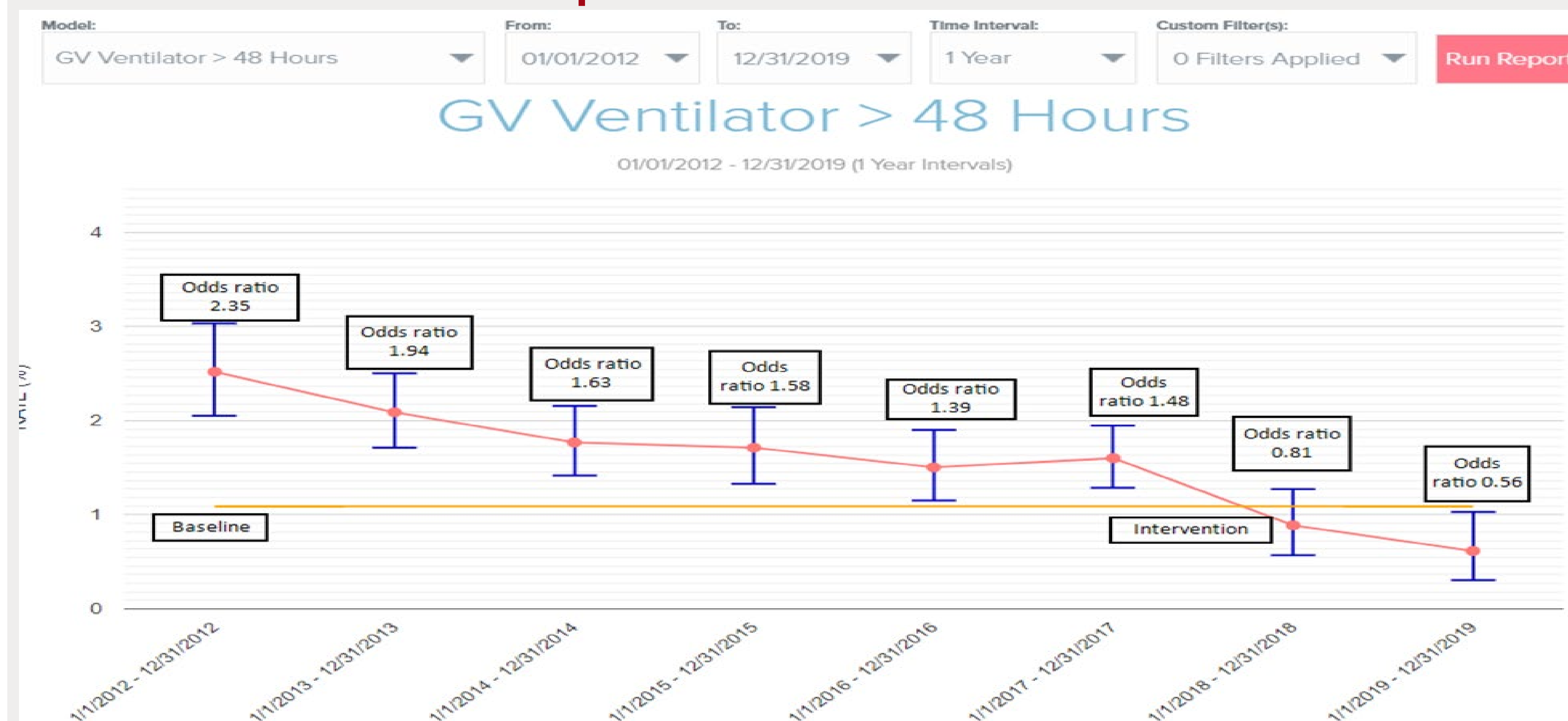
For comments/questions, please contact [aav9002@nyp.org](mailto:aav9002@nyp.org) or [stm9010@nyp.org](mailto:stm9010@nyp.org)

#### EIP Risk Calculator

Predictor (preoperative)
Age 65 ≥
ASA III
ASA IV
ASA V
Albumin ≤ 2.5
Non-elective status
Emergency
Tachypnea > 22
SIRS alone
Sepsis
Impending septic shock
Septic shock
Need for return to OR
Need for aggressive fluid resuscitation
Pain management plan
Need for prolonged ventilation
Total

**Results:** Application of the EIP over a two year period decreased the incidence of on ventilator > 48 hrs. to an odds ratio of 0.56 and an assessment of “exemplary”. Corresponding episodes of pneumonia and sepsis/septic shock have also decreased. This outcome has been sustained for two years demonstrating integration within the culture and part of the care delivery for critically ill patients. **Conclusion:** Future steps should include embedding the EIP calculator within the EMR to support sustainability within the practice setting. A larger study involving more sites would be beneficial. This study should serve as a model for other surgical departments to guide early identification, recognition and rescue of the critically ill surgical patient and supports decreasing on ventilator >48 hrs. in postoperative patients

#### ACS NSQIP Smoothed report over time General/Vascular





## **Title: Improving Surgical Outcomes with an Early Intubation Protocol**

**Statement of problem:** NYP Queens has participated in the ACS NSQIP since 2006. In July of 2012, the outcome occurrence of on ventilator > 48 hours (on vent 48) was above national comparison through the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) program. This outcome contributes to increased morbidity and mortality and higher costs of care. In 2010, the SAR (semi-annual report, risk adjusted) demonstrated on ventilator > 48 hours performance at an odds ratio of 1.73 and received a rating comment of “high”. By 2012, the odds ratio had risen to 2.35 with performance in the 10<sup>th</sup> decile and assessment of “high outlier needs improvement”. Over time performance remained with an odds ratio of greater than 1.5 until 2016.

### **Objective/Aim of the study:**

1. Identify risk predictors, patterns and trends that contributed to the outcome of on ventilator greater than 48 hours.
2. Improve the outcome of on ventilator greater than 48 hours.
3. Embed the use of the EIP into the surgical culture and approach in the care of a critically ill preoperative patient in a sustainable manner.

**Project Design/Methods:** This study utilized a quasi-experimental design to develop a critical pathway to provide aggressive resuscitation of the critically ill surgical patient at a single site academic teaching facility with greater than 500 beds. The subject sample included patients who had a surgical procedure at our site and were in the ACS NSQIP. Preoperative risk variable data, lab values and postoperative outcomes were collected through the ACS NSQIP and followed program definitions. A sub-set of the participant group had the outcome occurrence of on vent 48. Drill down identified contributing risk predictors, patterns/trends and opportunities for improvement. A predictive risk calculator was developed to support a clinical protocol in determining the need for early intubation in the critically ill preoperative surgical patient. Leadership and provider groups within the departments of surgery, anesthesia, emergency, and SICU were provided education prior to implementation followed by performance feedback after implementation. A retrospective approach in applying the EIP and determining the score threshold for intubation was conducted on 33 patients. . Based upon this information, it was determined that a risk score of six or greater was an indication for early intubation

**Results:** Baseline performance demonstrated an odds ratio of 2.35 (2012) as assessed by the ACS NSQIP. Current performance demonstrated an odds ratio of 0.81 for 2018 and an even lower odds ratio for 2019 at 0.56. The current semi-annual report for the time interval of July 1, 2018 to June 30, 2019 confirms the sustainability of the EIP with an odds ratio of 0.71 and the assessment of “exemplary”. .

**Conclusions:** The use of the EIP has positively affected the outcome occurrence of on ventilator greater than 48 hours and provided support of the critically ill surgical patient through the delivery of aggressive resuscitation. Future steps should include the embedding of the EIP calculator within the EMR to better support sustainability within the practice culture. A larger study involving more sites would be beneficial to further validate the use of the risk predictor. It would be interesting to research the impact of earlier resolution of sepsis and decreased length of stay within the surgical intensive care unit. This study should serve as a model for other surgical departments to guide early identification, recognition and rescue of the critically ill surgical patient. While resources within different facilities vary, the use of the calculator as an identification predictor for at risk patients for the outcome occurrence of “on ventilator greater than 48 hours” can be applied with success.



## Problem Statement:

- Acute exacerbations of chronic obstructive pulmonary disease (AECOPD) are associated with increased mortality, reduced quality of life, lung function decline, and increased resource utilization
- Patients hospitalized with AECOPD inconsistently receive interventions to reduce recurrent exacerbations and improve quality of life

## Objective/ Aim Statement:

- Over a 6 month period 95% of patients admitted with AECOPD
  - Will be discharged on guideline recommended pharmacologic therapy
  - Will receive treatment ground in best practices including medication use education, referral for pulmonary rehabilitation, short term follow up

## Design/ Methods:

- Single center, non-randomized intervention pilot study comparing pre-intervention (50 patients) to post-intervention outcomes.
- Study period June 19, 2019- November 19, 2019
- Eligible: inpatients >40 years old admitted to a medical service with a diagnosis of AECOPD
- Excluded- Never smokers, history of asthma or interstitial lung disease
- Provider targeted intervention
  - On-demand, just in time teaching reviewing GOLD staging criteria, appropriate medications, importance of pulmonary rehabilitation
- Patient targeted intervention
  - Face to face education including discussion about COPD, written materials, inhaler training and teach-back, discussion of importance of pulmonary rehabilitation

## On Demand Teaching to Improve Care Transitions in AECOPD

Mark Sonnick\*, Maya Viavant\*, Jamuna Krishnan, Lorenzo Bean, Deanna Jannat-Khah, Jennifer Lee, Jessica Snead, Maria Spinelli, Xian Wu, Meredith Turetz | September 15, 2020

For comments/questions please contact me at [mlt9001@med.cornell.edu](mailto:mlt9001@med.cornell.edu)

## Results:

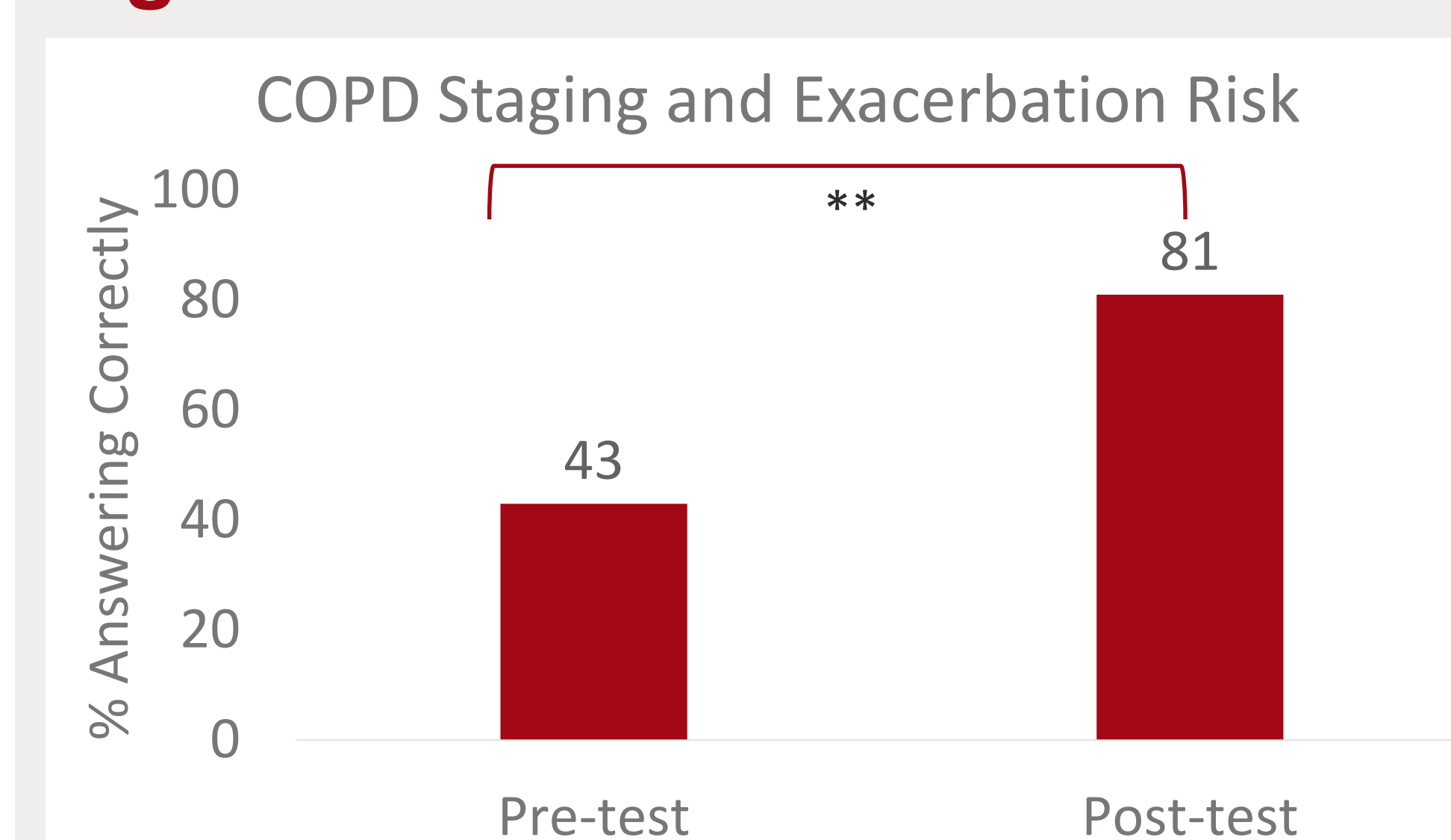
**Table 1a.**

Outcome	Pre-intervention controls (n=50)	Intervention patients (n=44)	P-value
Discharged on long acting inhaler, No. (%)	45 (90)	40 (90)	0.88
Referred for outpatient pulmonary rehab, No. (%)	3 (6)	22 (50)	<0.001

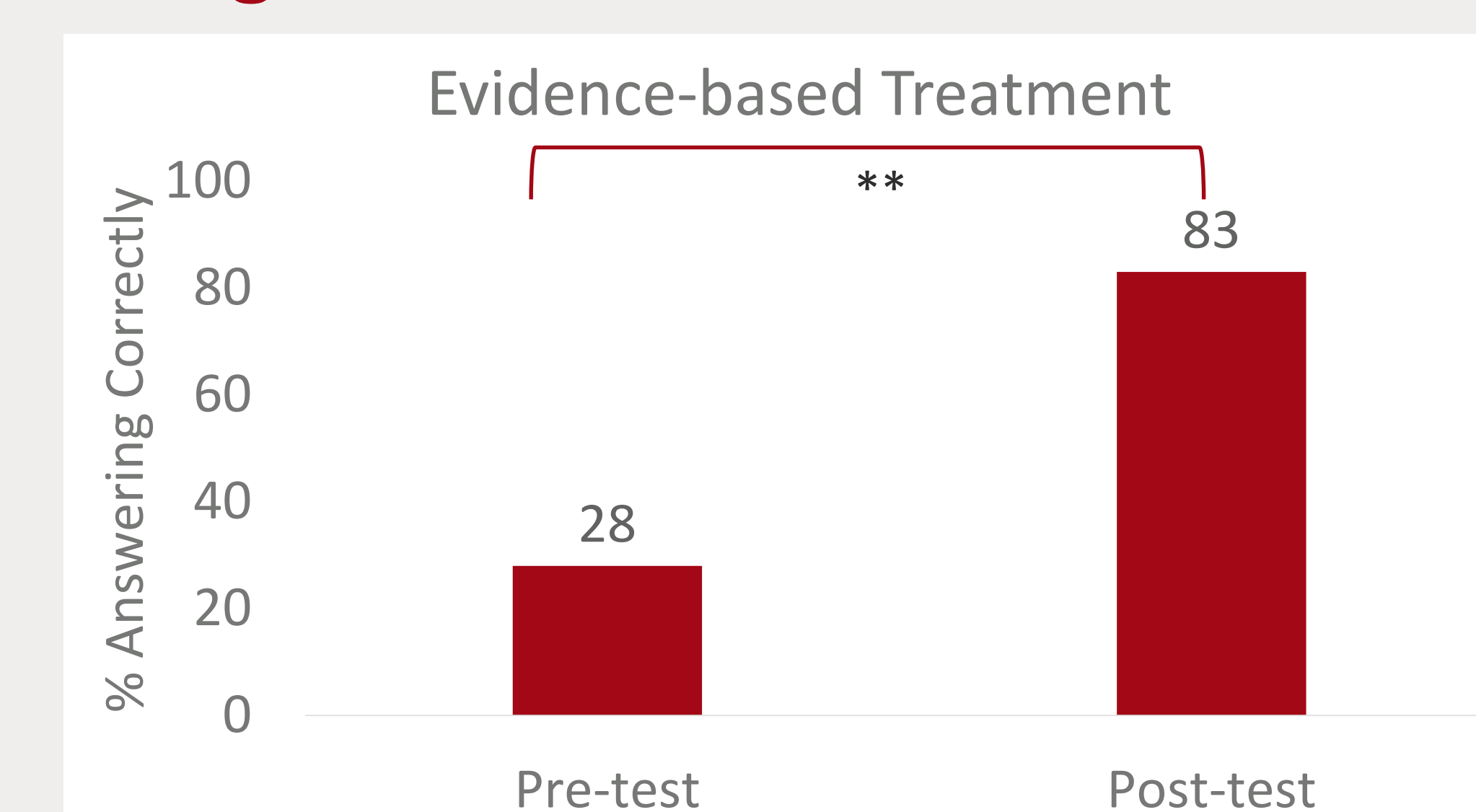
**Table 1b.**

	Intervention patients (n=44)
Measure 1: Long-acting inhalers continued	34/35 (97%)
Measure 2: Step-up in therapy (if not on triple therapy already)	11/25 (44%)

**Figure 1**



**Figure 2**



## Conclusions:

In an intervention that combined on-demand teaching of providers with patient education, referral for pulmonary rehabilitation increased for patients admitted with AECOPD. Many patients received appropriate step-up therapy and 90% were discharged on a long-acting inhaler. Providers expressed improved knowledge and confidence regarding AECOPD management.

Future directions can include investigating whether these interventions have any impact on length of stay or re-admission. On-demand teaching should be considered as an effective teaching method for chronic medical conditions to contextualize teaching with real-world clinical experience.

## **Title: On Demand Teaching To Improve Care Transitions in Acute Exacerbations of COPD**

Mark Sonnick\*, Maya Viavant\*, Jamuna Krishnan, Lorenzo Bean, Deanna Jannat-Khah, Jennifer Lee, Jessica Snead, Maria Spinelli, Xian Wu, Meredith Turetz (\*Co-first authors, equal contribution)

Department of Medicine and Department of Population Health Sciences

### **1. Statement of the Problem:**

Acute exacerbations of chronic obstructive pulmonary disease (AECOPD) are associated with increased mortality, reduced quality of life, lung function decline, and increased resource utilization. Patients hospitalized with AECOPD inconsistently receive interventions to reduce recurrent exacerbations and improve quality of life.

### **2. Objective/Aim of the study:**

The objective was to improve transitions of care for AECOPD. Over a 6 month period, our goal was for 95% of patients admitted with AECOPD to be discharged on guideline-recommended pharmacologic therapy and receive best-practice care including medication instruction, referral for pulmonary rehabilitation, and short term follow-up.

### **3. Project Design/Methods:**

A single center, non-randomized, intervention study ran from June 19, 2019 to November 19, 2019 and included inpatients >40 years old admitted to a medical service with a diagnosis of AECOPD (ICD codes J44.0, J44.1, or J44.9). Never smokers and those with asthma or interstitial lung disease were excluded. Patient outcomes were compared to a group of 50 control patients admitted with AECOPD prior to the intervention period.

Novel, on-demand teaching sessions were conducted for healthcare providers who were directly caring for patients admitted with an AECOPD. Pulmonary specialists and house-staff trained in COPD care transitions delivered brief practical education sessions reviewing GOLD staging criteria for COPD, medication selection based on stage, and the importance of pulmonary rehabilitation. This interaction allowed care teams to receive “just-in-time” guidance and feedback centered on a real-world patient scenario. To gauge improvement in provider knowledge, questionnaires were collected before and after the teaching intervention.

The patient targeted intervention consisted of face-to-face education provided by either a clinical pharmacist or nurse practitioner. Education included a discussion about COPD and the importance of pulmonary rehabilitation, written materials (NIH COPD booklet), inhaler training and teach-back, and facilitation of short-term provider follow-up.

### **4. Results:**

In terms of patient related outcome measures, 90% of patients were discharged on any long-acting inhaler, similar to the pre-intervention controls. Pulmonary rehabilitation referrals were made for 50% of patients compared to 6% of pre-intervention controls ( $P<0.001$ ). Of patients not



already on triple therapy, 44% received an appropriate “step up” in therapy and were discharged on an additional medication compared to admission.

In terms of the education intervention and outcome measures, on demand team-based education was presented to 71 providers. After education, providers showed improved knowledge on questions regarding COPD staging and exacerbation risk (81% correct vs. 43% on pre-test,  $P<0.001$ ) and evidence-based treatment (83% correct vs. 28% on pre-test,  $P<0.001$ ).

In terms of process measures, 96% felt that knowledge in treating patients with AECOPD improved and 97% felt that their comfort level in managing transitions of care in patients with AECOPD improved.

## **5. Conclusions:**

In an intervention that combined on-demand teaching of providers with patient education, referral for pulmonary rehabilitation increased for patients admitted with AECOPD. Many patients received appropriate step-up therapy and 90% were discharged on a long-acting inhaler. Providers expressed improved knowledge and confidence regarding AECOPD management.

Future directions can include investigating whether these interventions have any impact on length of stay or re-admission. On-demand teaching should be considered as an effective teaching method for chronic medical conditions to contextualize teaching with real-world clinical experience.



## Problem Statement

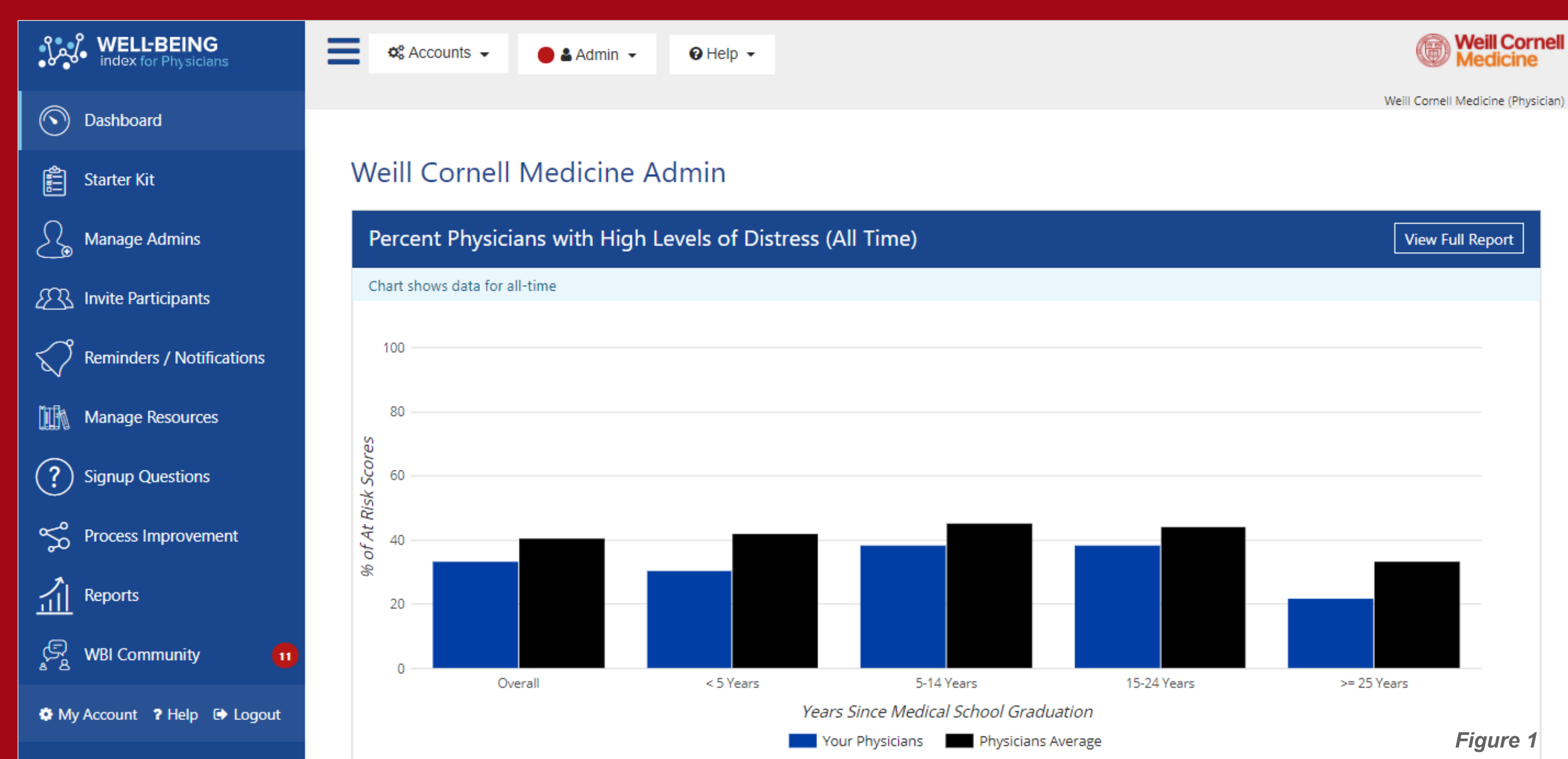
- “If burnout in health care were described in clinical or public health terms, it might well be called an epidemic.”
- Specifically, physician burnout has been shown to influence the quality of care, patient safety, physician turnover, and patient satisfaction.
- Physicians with symptoms of burnout are more likely to report having made a medical error and receive lower patient satisfaction scores.

## Objective/Aim

- In 2017, WCM conducted an annual AAMC Faculty Engagement Survey in which only 49% of respondents agreed that the workplace culture at WCM “cultivates faculty wellness.”
- Given these results and the national crisis of burnout in medicine, WCM leadership committed to procuring a validated tool for the first organization-wide wellness assessment.
- The initial goal was to achieve an organizational response rate of  $\geq 60\%$  for this baseline measure. Results would be used to inform decision-making and developing focused wellness interventions for improvement.

## Project Design/Methods

- After a formal vendor selection process, the Physician Well-Being Index® (PWBI), a validated, web-based assessment tool created by Mayo Clinic, was made available to all WCM-employed, New York-based, full-time physician faculty, N = 1,300.
- The formal 4-week assessment period was April 16 through May 15, 2019.



# Physician Well-Being at Weill Cornell Medicine: A Quality and Patient Safety Imperative

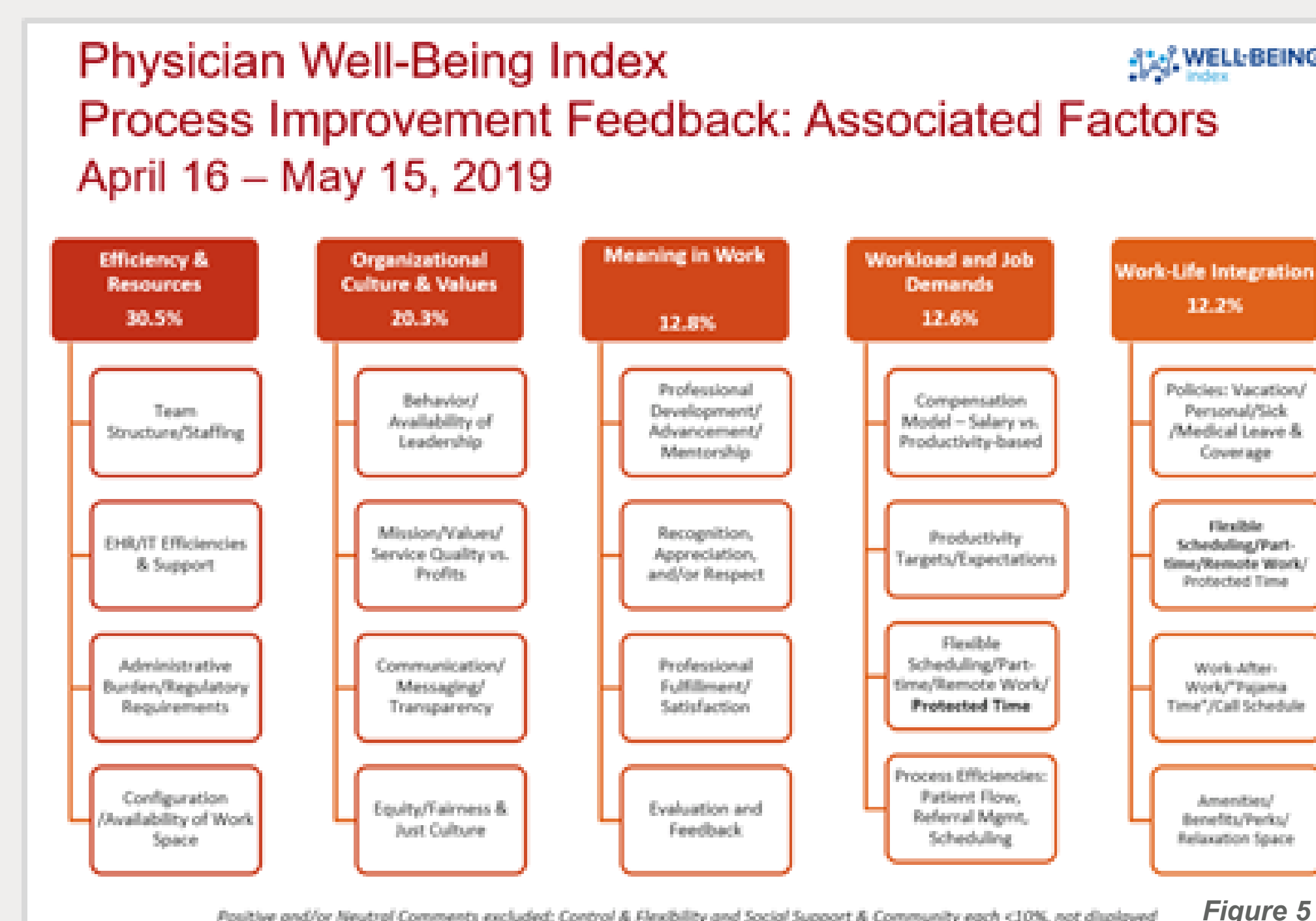
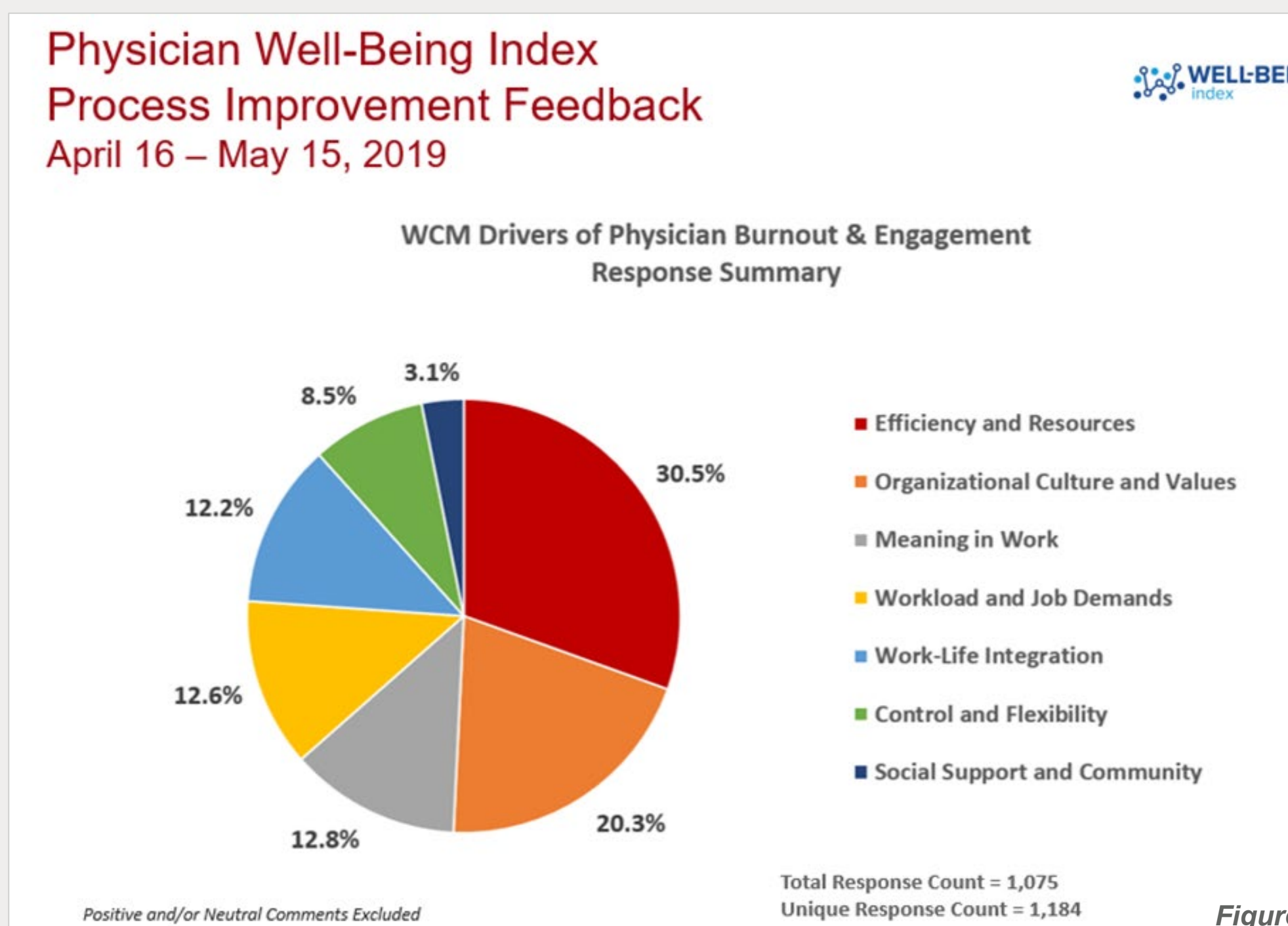
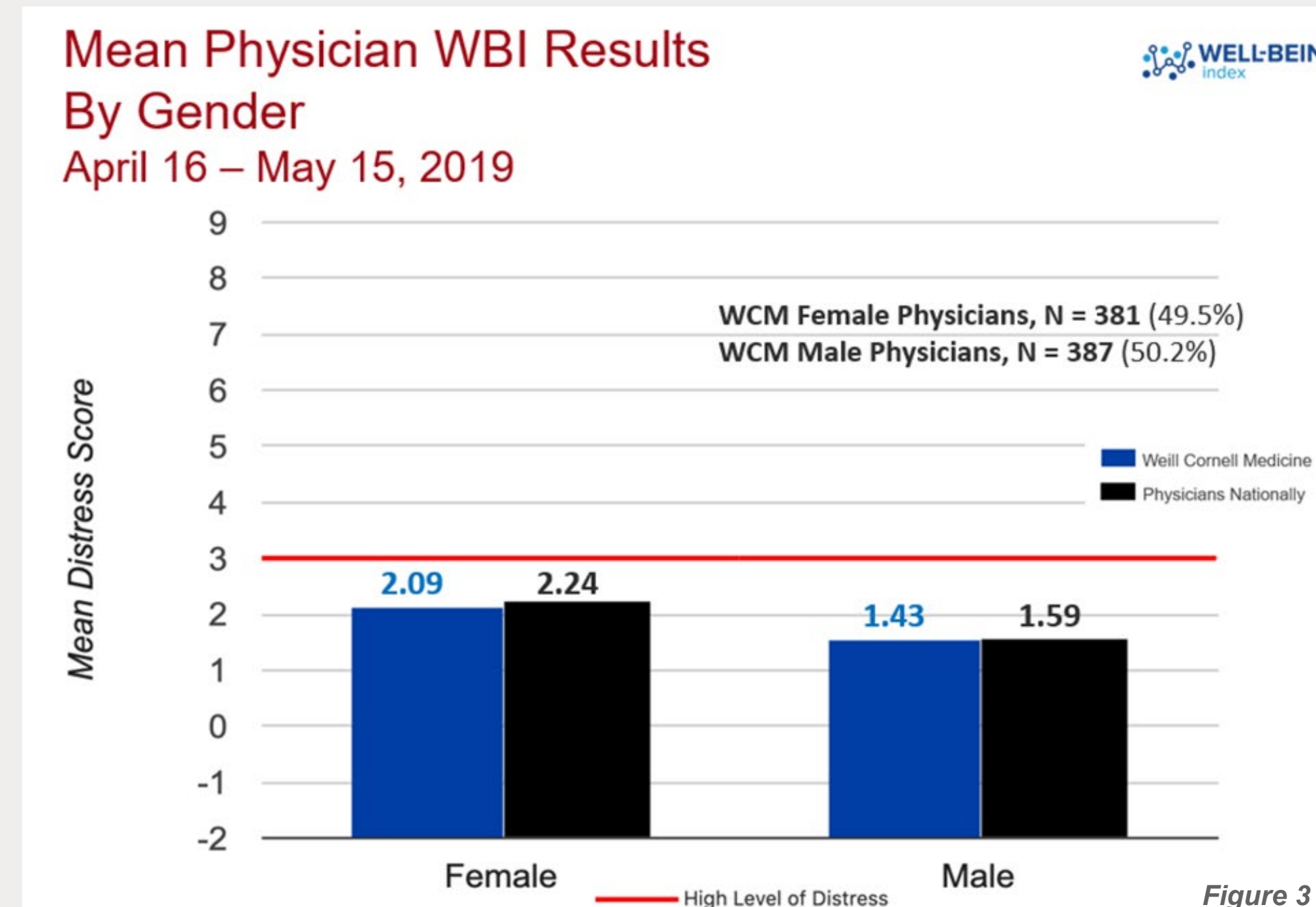
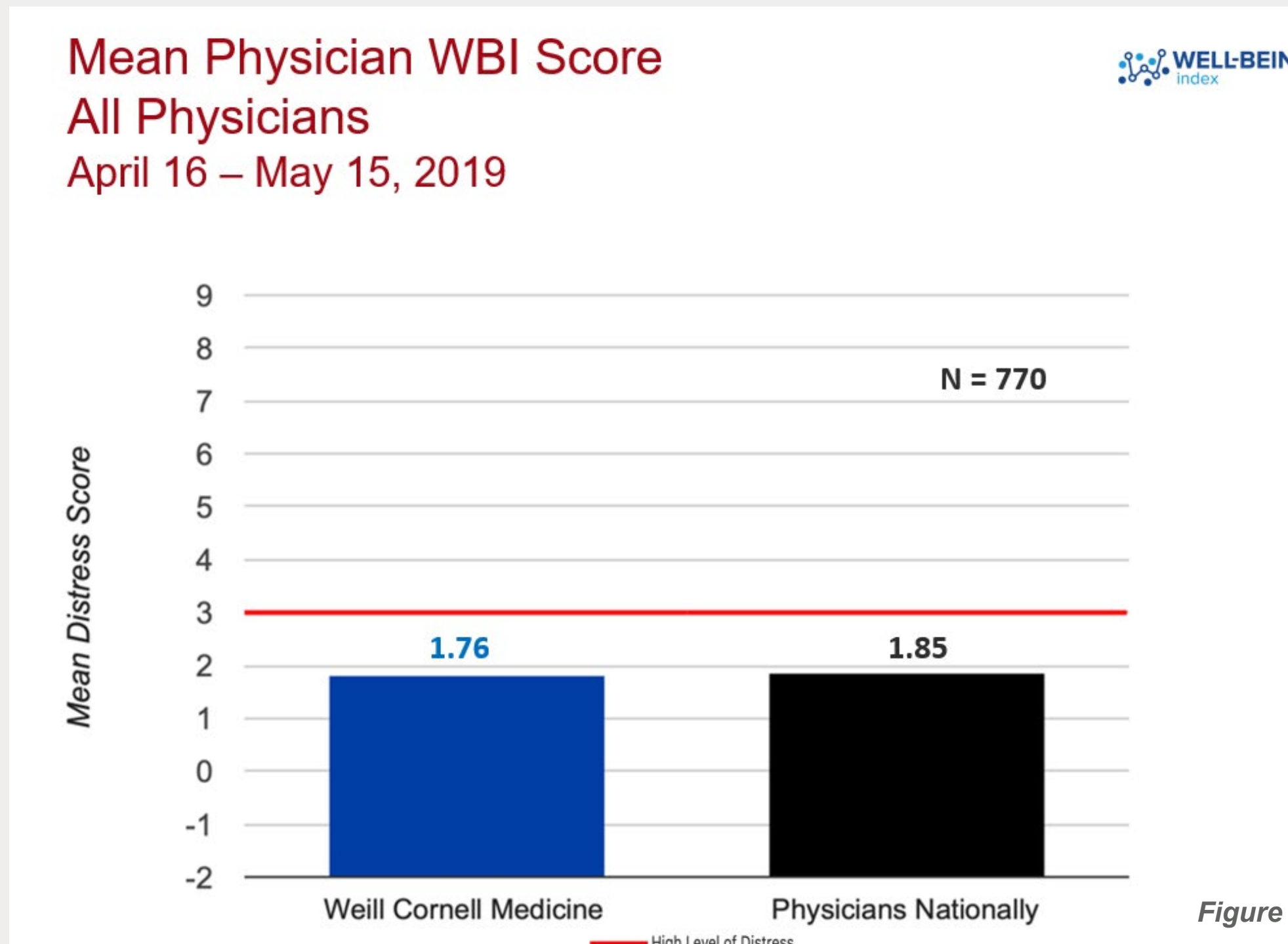
## Annual Weill Cornell Medicine Quality Improvement & Patient Safety Poster Symposium

Megan Downes, MSN, RN-BC, OCN®, CPPS | September 15, 2020

Contact E-mail: [med9064@med.cornell.edu](mailto:med9064@med.cornell.edu)

## Results

- Overall 58.7% of WCM physicians (N = 770) completed the PWBI; nearly meeting our 60% response rate target.



## Conclusions

- Although WCM’s overall PWBI distress score was below the national average, further analysis reveals specific physician groups with higher distress scores (compared to internal peers) including, female physicians.
- The qualitative data served as a powerful compliment to the PWBI tool, elucidating the complex interplay of factors driving physicians’ distress at WCM while facilitating identification of important themes to prioritize targeted interventions.
- Technical limitations of the WBI tool required the project team to manually review and code unstructured data for categorization and analysis; a highly time-consuming and imprecise process. Natural Language Processing tools may offer a solution in future efforts.



# **Title: Physician Well-Being at Weill Cornell Medicine: A Quality and Patient Safety Imperative**

**Authors:** Megan Downes, MSN, RN-BC, CPPS, Klaus Kjaer, MD, MBA

**Contributors:** Samyukta Mullangi, MD MBA, Craig Ariano, CHFP

**Department:** Weill Cornell Medicine Physician Organization | Quality and Patient Safety

- 1. Problem Statement:** Professional burnout is characterized by loss of enthusiasm for work, feelings of cynicism, and a low sense of personal accomplishment. Specifically, physician burnout has been shown to influence quality of care, patient safety, physician turnover, and patient satisfaction. Physicians with symptoms of burnout are more likely to report having made an error and receive lower patient-satisfaction scores.
- 2. Objective/Aim:** In 2017, WCM conducted an annual AAMC Faculty Engagement Survey in which only 49% of respondents agreed that the workplace culture at WCM “cultivates faculty wellness.” Given these results and the national crisis of burnout in medicine, WCM leadership committed to procuring a validated tool for the first organization-wide wellness assessment of faculty, students, and post-doctoral scholars. The initial goal was to achieve an organizational response rate of  $\geq 60\%$  for this baseline measure. Results would inform decision-making and facilitate development of focused interventions. The following summary will focus on the analysis and findings from the physician well-being assessment.
- 3. Project Design/Methods:** The PO-Quality and Patient Safety team developed and distributed a Request for Information to four vendors in late August 2018. After a review of responses, key stakeholders selected the web-based Well-Being Index<sup>®</sup> (WBI), created by Mayo Clinic, as WCM’s assessment tool. A valid and reliable instrument, the WBI can be utilized to predict risk for distress across several dimensions of well-being, including burnout, stress, and work-life balance. The Physician WBI (PWBI) was made available to all WCM-employed, New York-based, full-time physician faculty (N = 1,300) during a 4-week assessment period, April 16 – May 15, 2019.
- 4. Results:** 58.7% of WCM physicians (N = 770) completed the PWBI; nearly meeting our 60% response rate target. WCM’s overall PWBI mean distress score was 1.76 (SD = 2.74), slightly lower than physicians nationally at 1.85 (SD = 2.67). Two custom process improvement questions at the end of the PWBI solicited open-ended feedback resulting in over 1,000 rows of unstructured data entered by respondents sharing their experience at WCM.
- 5. Conclusion:** While WCM’s overall PWBI distress score was below the national physician average (higher well-being), deeper analysis reveals specific physician groups with higher distress scores (compared with internal peers), including female physicians, junior faculty, as well as select clinical specialties. The qualitative data from the process improvement questions served as a powerful compliment to the PWBI results, elucidating a complex interplay of factors driving physician distress. Technical limitations of the WBI tool required the project team to manually review and code unstructured data for categorization and analysis; a highly time-consuming and imprecise process. Natural Language Processing tools may offer a more efficient and reliable solution in future efforts. Finally, a targeted organizational approach to improving well-being may be to prioritize efforts and engage those departments and/or high-risk physician cohort groups scoring at/or above PWBI benchmarks (national or internal). Mobilization of resources to engage physicians in the development of targeted wellness interventions will be key in sustained improvement, ultimately, facilitating safer patient care delivery at WCM.



# When Do Medical Students Become Jaded? Tracking Interprofessional Exposure between Medical and Pharmacy Students at the Weill Cornell Community Clinic



**Weill Cornell  
Medicine**

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## BACKGROUND AND OBJECTIVES

- The Weill Cornell Community Clinic (WCCC) is a student-run free clinic, which provides medical students with early interprofessional exposure (IPE) to pharmacy students, nutrition interns, nurses, and social workers during precepted patient care visits. IPE prior to clinical practice has been shown to lead to improvements in care, reduced cost, and improved population health.<sup>1</sup>
- The goal of this study is to evaluate the effect of IPE on medical students during their primary care clerkship.

## METHODS

- Population:** 55 third year medical students working at the WCCC during their Primary Care clerkship.
- Tool:** Validated Student Perceptions of Interprofessional Clinical Education Instrument (SPICE-R2), which consists of three domains: teamwork, roles, and outcomes
- Timing:** The survey was administered to medical students at the start of their WCCC rotation, and re-administered six weeks later

**Analysis:** Pre- and post-intervention data was analyzed using 1-way ANOVA with Bonferroni multiple comparison correction across categories and two-tailed paired t-tests within three categories based on SPICE-R2 designations

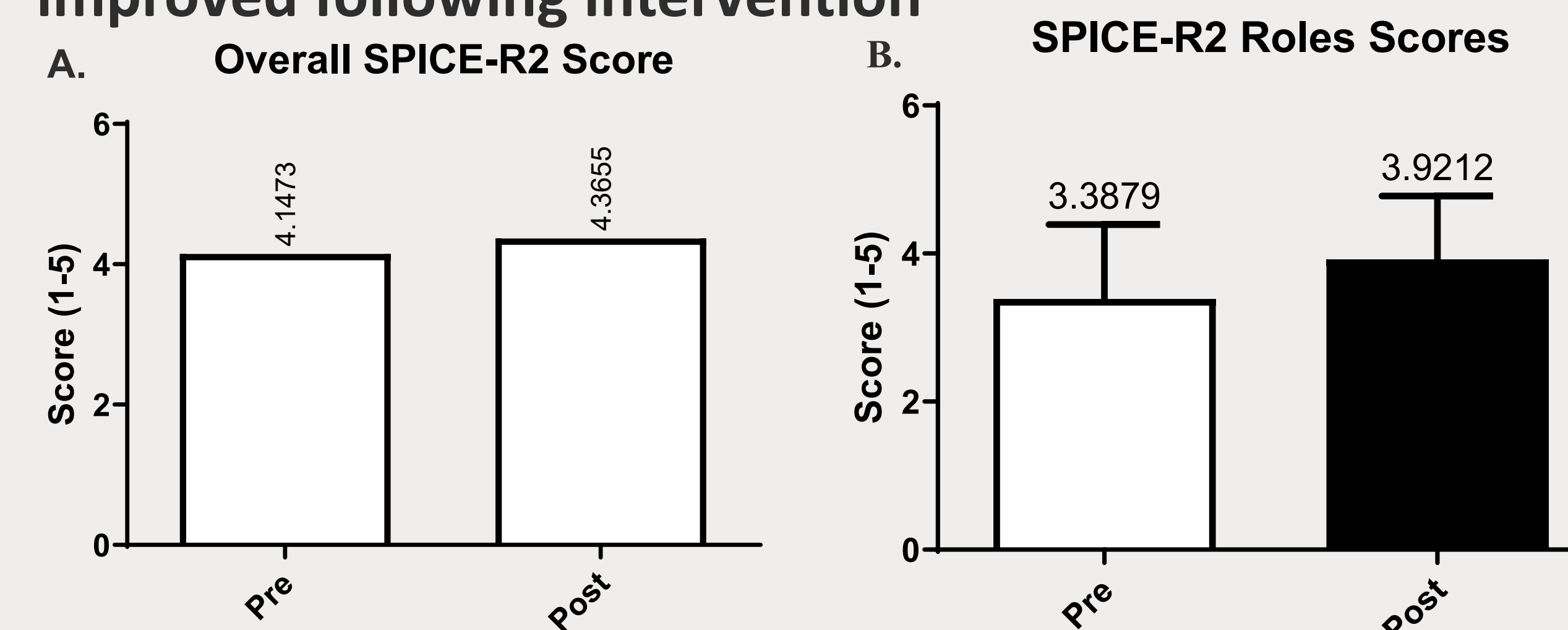
INSTRUCTIONS:		<i>Strongly Disagree (1)</i>	<i>Disagree (2)</i>	<i>Neutral (3)</i>	<i>Agree (4)</i>	<i>Strongly Agree (5)</i>
Please be candid as you indicate the extent of your disagreement/agreement with each of the following statements related to interprofessional teams and the team approach to care.						
1. [T]	Working with students from different disciplines enhances my education	1	2	3	4	5
2. [R]	My role within an interprofessional team is clearly defined	1	2	3	4	5
3. [O]	Patient/client satisfaction is improved when care is delivered by an interprofessional team	1	2	3	4	5
4. [T]	Participating in educational experiences with students from different disciplines enhances my ability to work on an interprofessional team	1	2	3	4	5
5. [R]	I have an understanding of the courses taken by, and training requirements of, other health professionals	1	2	3	4	5
6. [O]	Healthcare costs are reduced when patients/clients are treated by an interprofessional team	1	2	3	4	5
7. [T]	Health professional students from different disciplines should be educated to establish collaborative relationships with one another	1	2	3	4	5
8. [R]	I understand the roles of other health professionals within an interprofessional team	1	2	3	4	5
9. [O]	Patient/client-centeredness increases when care is delivered by an interprofessional team	1	2	3	4	5
10. [T]	During their education, health professional students should be involved in teamwork with students from different disciplines in order to understand their respective roles	1	2	3	4	5

Factors:  
T = Interprofessional Teamwork and Team-based Practice  
R = Roles/responsibilities for Collaborative Practice  
O = Patient Outcomes from Collaborative Practice

**Figure 1: Student Perceptions of Interprofessional Clinical Education Instrument (SPICE-R2)**

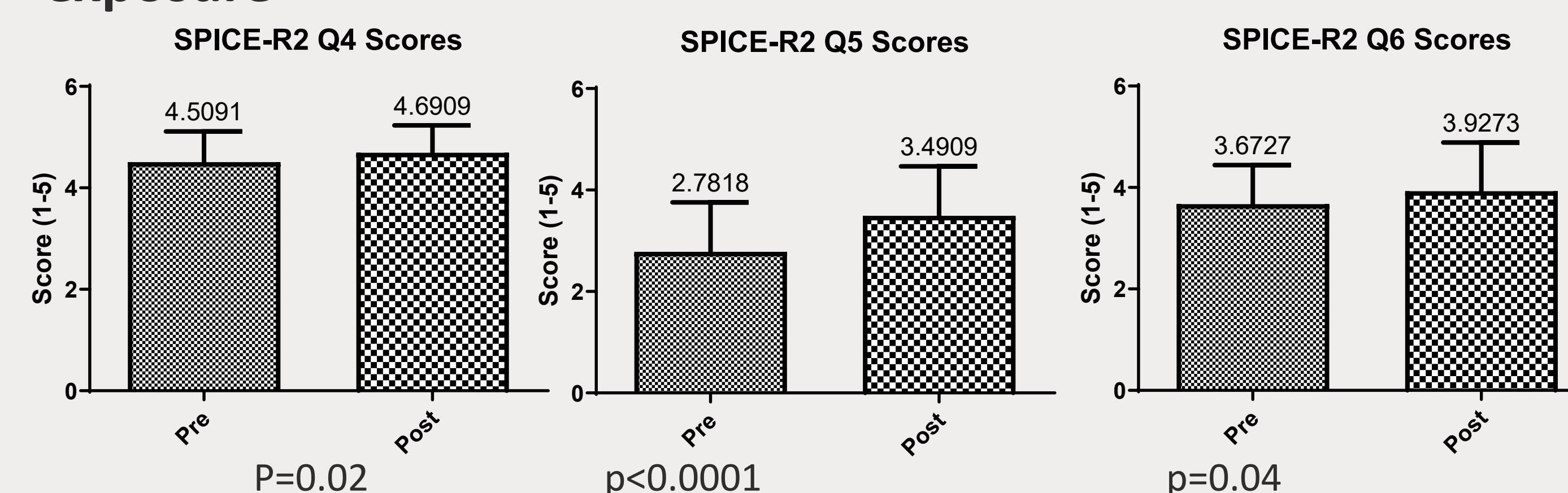
## RESULTS

**Figure 2: Overall SPICE-R2 and category breakdown scores improved following intervention**



**Figure 2: A)** Overall SPICE-R2 scores increased from 4.15 to 4.37 with  $p=0.011$  (two-tailed paired t-test,  $n=55$ ). **B)** Initial assessments demonstrated significant differences in reported knowledge about roles within the team, relative to the other two categories (1-way ANOVA, \*\*\*  $p<0.0001$ )

**Figure 3: Medical students had a better understanding of their and pharmacy's role within a team after interdisciplinary exposure**



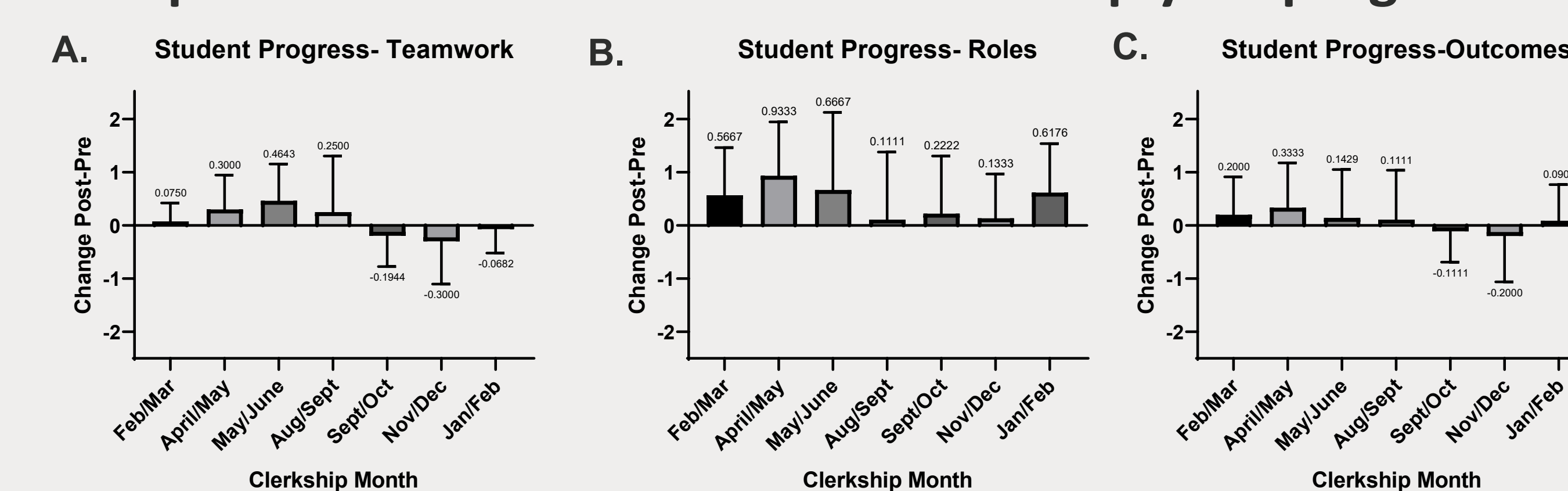
**Figure 3: Questions 4-6 showed significant improvement**

**Q4:** Participating in educational experiences with students from different disciplines enhances my ability to work on an interprofessional team

**Q5:** I have an understanding of the courses taken by, and training requirements of, other health professionals

**Q6:** Healthcare costs are reduced when patients/clients are treated by an interprofessional team

**Figure 4: Medical students had a decreasing attitude towards interprofessional attitudes as the clerkship year progressed**



**Figure 4:**

**A)** First four blocks: +0.27, Last three blocks: -0.19

**B)** First four blocks: +0.57, Last three blocks: +0.32

**C)** First four blocks: +0.20, Last three blocks: -0.07

## RESULTS

•Overall SPICE-R2 score improved from 4.15 to 4.37 (5.3% increase) ( $p=0.001$ ).

•Largest improvement of any category: Overall roles and responsibilities section improved from 3.39 to 3.92 (15.6% increase) ( $p<0.0001$ ).

•Overall teamwork scores and overall outcome scores did increase, although not significantly.

•Largest improvement of any question: Understanding of the courses taken by and training requirements of other health professionals improved by 25.5% ( $p<0.0001$ ).

•Overall, teamwork, roles, and outcomes scores all decreased as the clinical year progressed (Figure 4)

## CONCLUSIONS and FUTURE STUDIES

Interprofessional exposure is important in developing understanding between medical, social work and pharmacy students, nutrition interns, and nurses. It helps prepare to work on interdisciplinary teams for the remainder of their career, which help improve patient satisfaction while committing fewer hospital errors.<sup>2,3</sup> Moreover, medical students continue to lag behind their non-medical student counterparts in valuing IPE and patient-centered care.<sup>4</sup> Early exposure with other professional students demonstrates improved teamwork and a better understanding of the roles, responsibilities, trainings, and courses taken by other professions. In our study we show the earlier the exposure, the better the results, with some categories having negative effects the further that IPE is introduced. Future studies will include students before and after their clinical rotations who did not rotate through the WCCC. To our knowledge this is the first time the SPICE-R2 tool has been used to quantify the impact of IPE between medical and pharmacy students.

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# **Title: When Do Medical Students Become Jaded? Tracking Interprofessional Exposure between Medical and Pharmacy Students at the Weill Cornell Community Clinic**

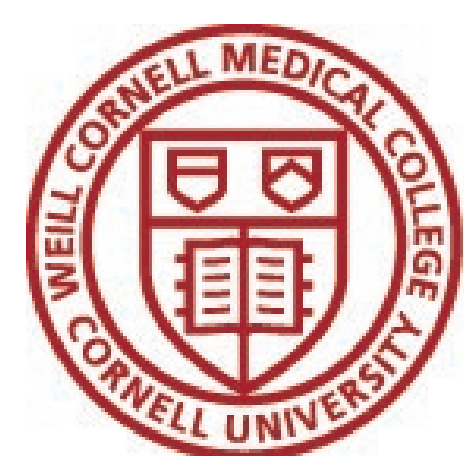
**Authors:** Mark Alshak<sup>1</sup>, Jason Harris<sup>1</sup>, Alexandra Miller<sup>1</sup>, Amanda Su<sup>2</sup>, Ashita S. Batavia<sup>3</sup>, Pamela Charney<sup>3</sup>

## **Department:**

1. Weill Cornell Medical College, Weill Cornell Medicine, New York, NY, 10065
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- 1. Statement of the Problem:** Interprofessional exposure (IPE) is associated with evidence-based improvements in care, population health, and reduced cost. IPE is required by the Liaison Committee on Medical Education, though it is given limited time in medical school curricula. The Weill Cornell Community Clinic (WCCC) is a medical student-run interdisciplinary free clinic. IPE to pharmacy students and their supervisors has been offered since 2016.
- 2. Objective/Aim of the study:** To evaluate the effect of IPE on medical students in a student run free clinic.
- 3. Project Design/Methods:** At the WCCC, pharmacy students work with medical students on medication reconciliation and counseling. The validated 10- item Student Perceptions of Physician-Pharmacist Interprofessional Clinical Education Instrument (SPICE-R2) survey was used to assess attitudes towards IPE among medical students across three categories on a 1-5 scale: teamwork, roles/responsibilities, and patient outcomes. SPICE-R2 was administered to 55/58 eligible medical students at the beginning and end of their 6-week WCCC rotation from September 2018 to December 2019. Data was analyzed using 1-way ANOVA within categories and two-tailed t-tests across categories.
- 4. Results:** Overall, IPE improved students' attitudes toward interprofessional education and collaboration by 5.3% (average score improved from 4.15 to 4.37; p-value=0.0013). Understanding of the roles/ responsibilities of pharmacy students improved 15.7% (3.39 to 3.92, p<0.001) after the WCCC rotation. There was no significant change in attitudes toward teamwork or patient outcomes. All three categories saw improvements in medical student attitudes in the first half of the clerkship year. Only attitudes in the roles/responsibilities category continued to show improvement in the second half of the clerkship year. Over the study period, the effect of IPE diminished — this was most pronounced in the teamwork category. Relative to the first half of the academic year, students reported an alarming 69% decrease in their appreciation for teamwork. This longitudinal trend was less pronounced in the other SPICE-R2 categories: roles/ responsibilities (-47.3%) and patient outcomes (-35.5%).
- 5. Conclusions:** In our study, IPE led to diminishing and ultimately negative attitudes toward interdisciplinary teamwork. This has not been previously reported, and underlying drivers need further study. Overall, IPE yielded modest gains in attitudes toward interprofessional collaborative practice. Regardless of prior clerkship exposure, IPE improved medical students' understanding of the roles and responsibilities of pharmacy students on an interdisciplinary team. This suggests student-run free clinics provide a unique and valuable IPE opportunity to understand interdisciplinary roles and responsibilities.



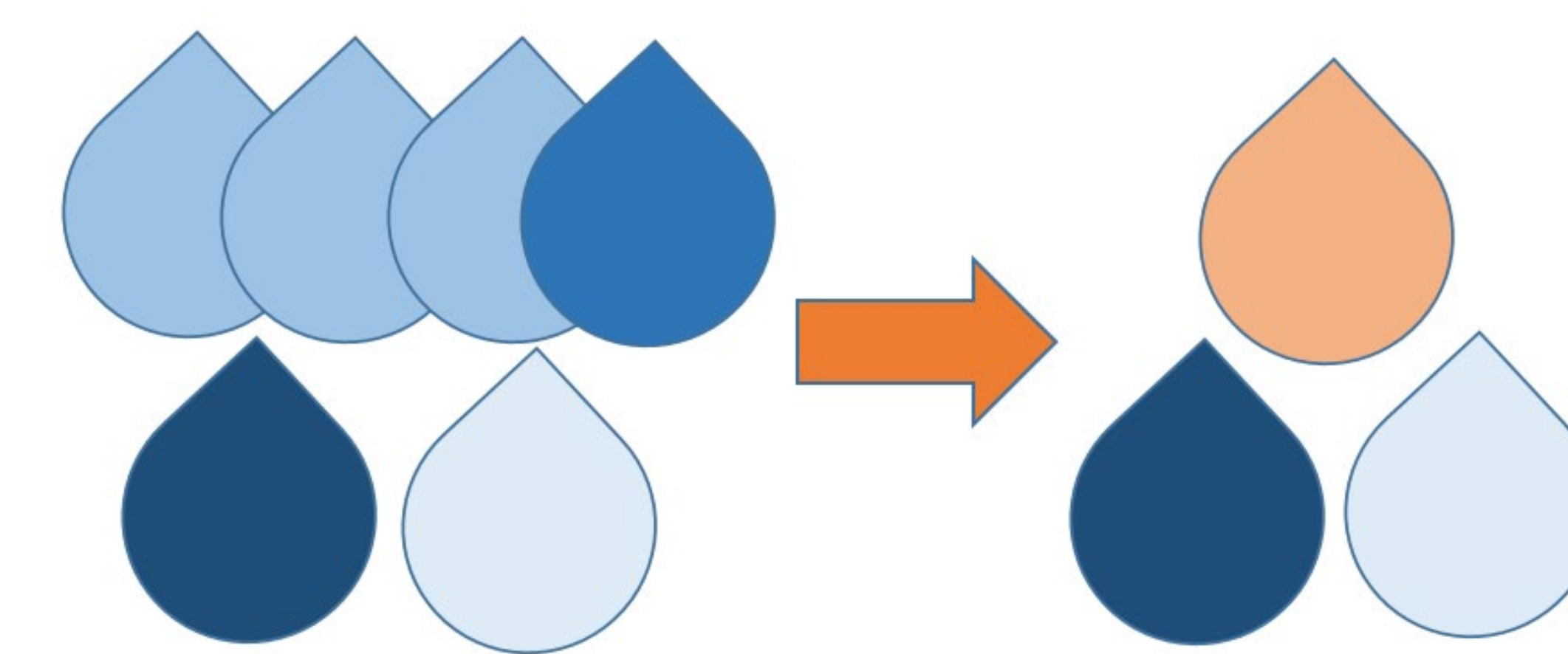


# "Four Eyes!" - How Compounded Eye Drops Saves Money and Time!

Annual WCM Quality Improvement & Patient Safety

Poster Symposium | September 15, 2020

Nicole Perez, PA-C; Nicole DellaPorta, PA-C; Edward Lai, MD; Sarah Van Tassel, MD;  
Binh Diep, Pharm.D., BCOP; Peter Stoffan, MPA, BSN, RN, CCRN, NEA-BC



Nicole Perez nid9059@nyp.org

## Statement of the Problem

- Adequate pupillary dilation is an essential first step of nearly every ophthalmic surgery as the dilated pupil provides better visualization and a larger operative field while performing the procedure.
- Inadequate pupillary dilation makes surgery more technically challenging, increases procedure length, and increases the risk of complications.
- Prior to implementation of this initiative, the manner in which patients were pharmacologically dilated at New York-Presbyterian/Weill Cornell Medical Center was inefficient.
- Eye drop instillation caused patient dissatisfaction due to associated discomfort and length of time needed to administer six different medications (three dilation drops, an antibiotic drop, an anesthetic drop and a topical NSAID).

## Objective/Aim of Project

*How can we dilate patients comfortably, efficiently, and cost-effectively all while reducing waste?*

- This initiative will transition all NYP surgical dilating drops into a polypharmacy compound that decreases time and waste, reduces cost and improves the patient and team experience.



Members of the Interdisciplinary David H. Koch Ambulatory Surgery Team

## Project Design/Methods

- An interdisciplinary task force identified the ideal state for pre-operative ophthalmic preparation.
- An external pharmacy was contracted to create and deliver the compounded eye drop.
- Prior to use at NYP, multiple trials occurred in ophthalmology clinics to test the efficacy of the compounded eye drop.
- After unanimous positive feedback from the ophthalmology surgeons, nurses, and PAs was achieved, the compounded eye drops were integrated into the day of surgery workflow.
- Pre-operative medications were reduced from six to three drops.
  - » Antibiotic drop: Moxifloxacin or Polymixin B
  - » Anesthetic drop: Tetracaine or Proparacaine
  - » The combination drop: Phenylephrine, Cyclopentolate, Tropicamide and Ketorolac

## Results

- ✓ *The introduction of this new product and the resulting improved workflow achieved a reduction of more than 20 minutes in the pre-operative phase.*
- ✓ *There is a significant cost savings of at least \$96 per case.*
- ✓ *From May to December 2019, medication cost savings were estimated at \$108,000.*
- ✓ *Patient satisfaction also improved from the 80th to the 90th percentile as measured by an internal patient satisfaction survey and the Outpatient and Ambulatory Surgery CAHPS metrics for pre-operative care.*

## Conclusion

- Use of the new compounded eye drops provided remarkable time and cost savings, and an improved patient and staff experience.
- Due to the time saved, we can increase patient capacity in the Ambulatory Surgery suite.
- Interdisciplinary collaboration is paramount when making decisions in any care setting.



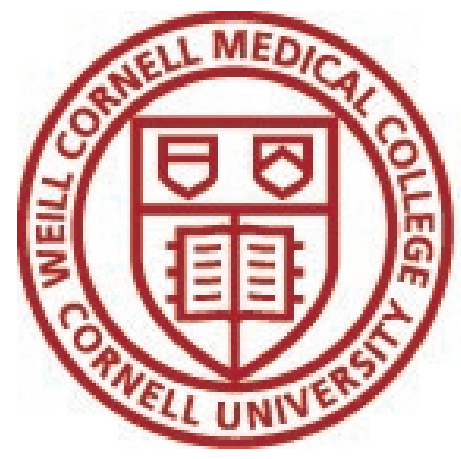
## **"Four Eyes!" - How Compounded Eye Drops Saves Money and Time!**

**Team Leaders:** Nicole Perez, PA-C; Nicole DellaPorta, PA-C; Peter Stoffan, MPA, BSN, RN, CCRN, NEA-BC; Sarah Van Tassel, MD; Edward Lai, MD; Binh Diep, Pharm.D., BCOP

**New York-Presbyterian/Weill Cornell Medical Center, New York, NY  
David H. Koch Center Ambulatory Surgery**

- 1. Statement of the Problem:** Adequate pupillary dilation is an essential first step of nearly every ophthalmic surgery because the view into the eye to see structures including a cataract or the retina is insufficient if the pupil is not dilated. Inadequate pupillary dilation makes surgery technically more challenging and increases the risk of vision threatening complications of surgery. Prior to implementation of this initiative, the manner in which patients were pharmacologically dilated at New York-Presbyterian/Weill Cornell Medical Center (NYP) was inefficient.
- 2. Objective/Aim of the study:** How can we dilate patients quickly, efficiently, comfortably, and cost-effectively all while reducing waste? The objective of this initiative is to transition all NYP surgical dilating drops into a polypharmacy compound that decreases time and waste while improving the patient experience.
- 3. Project Design/Methods:** An ideal state for pre-operative ophthalmic preparation was identified by an interdisciplinary taskforce through lean methodology and value stream mapping. An external pharmacy was contracted to create and deliver the compounded eye drop. Multiple trials to test the efficacy of a polypharmacy compounded eye drop occurred in ophthalmology clinics prior to use at NYP. After unanimous positive feedback from the ophthalmology surgeons and physician assistants was achieved, the compounded eye drops were added to the day of surgery workflow. PDSA cycles are ongoing to ensure continuous improvement occurs through reexamination of opportunities to eliminate waste.
- 4. Results:** The previous protocol for most ophthalmic surgery patients included a total of six eye drop vials: three dilation drops, an antibiotic, an anesthetic drop and a topical NSAID. The drops caused patient dissatisfaction due to the multiple drops and the staggered instillation times. Post-implementation, three different eye drop vials are utilized. There was a saving of over twenty minutes in the pre-operative phase and a major reduction in the cost of the medications purchased. Patient satisfaction improved from the 80<sup>th</sup> to the 90<sup>th</sup> percentile as measured by an internal patient satisfaction survey and the OASCAHPS metrics for pre-operative care.
- 5. Conclusions:** As a result of the collaboration with this initiative, time and overall cost for the pre-operative eye drops was saved and the patient and staff experience significantly improved. Further opportunities for streamlining processes will be identified through appreciative inquiry and lean methodology as perioperative volume will increase within the same operating structures. Interdisciplinary collaboration is paramount when making decisions in any care setting.





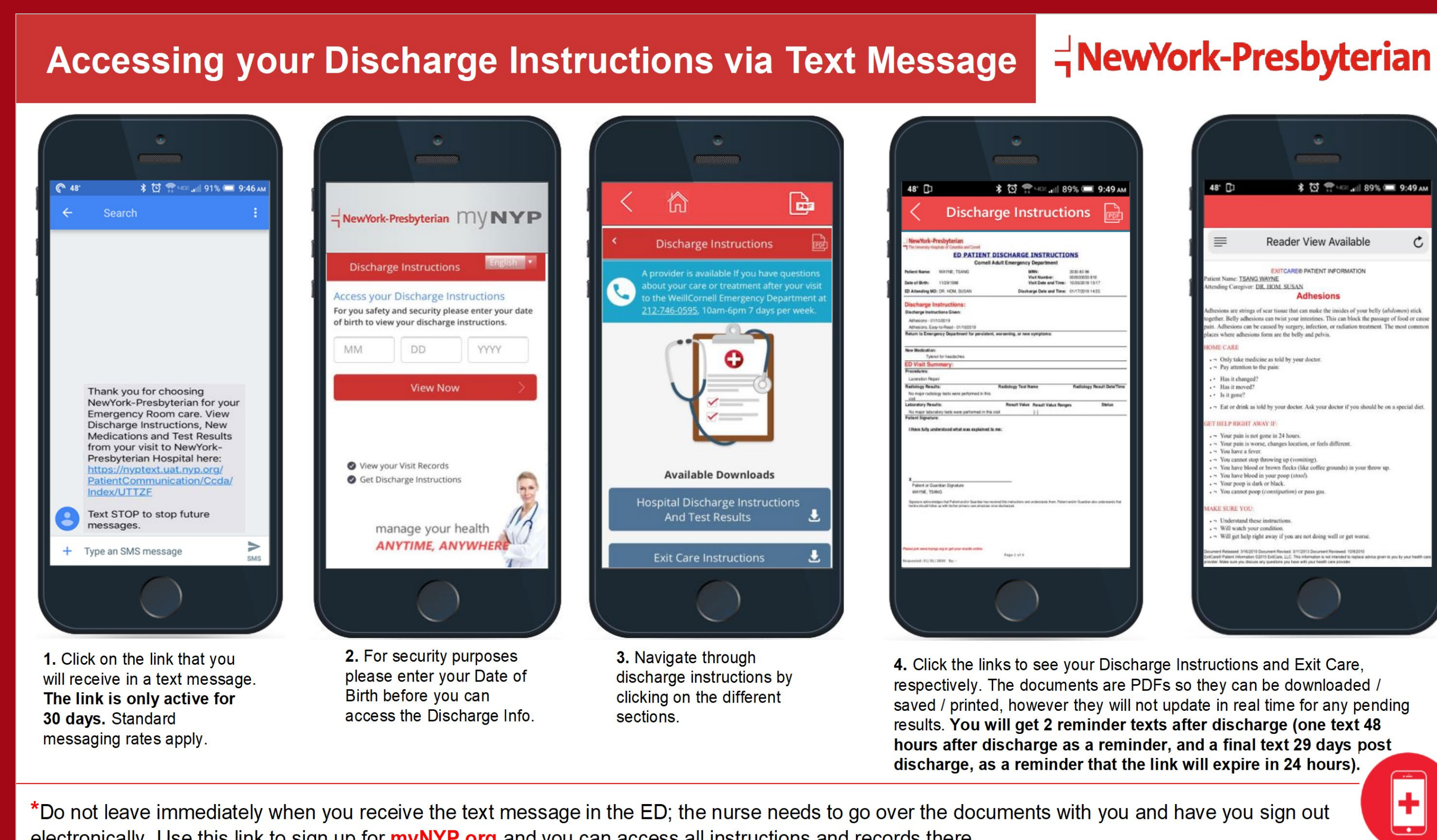
## Background

Emergency Department (ED) encounters frequently involve diagnostic testing, treatments, consultations, new diagnoses, new medications, changes to medication regimens and post-discharge scheduling for further care. From a patient perspective, the ED discharge process is the end of an often physically and emotionally demanding health care encounter - a time when new and complex healthcare information comprehension and retention could be limited. These factors risk miscommunication of and poor compliance with the post-ED care plan, as well as avoidable healthcare utilization downstream. Research shows ED patients demonstrate poor comprehension regarding their care, low compliance with post-ED care plans and this uncertainty drives return ED visits. Despite the critical importance of care transitions, there has been relatively little technological innovation in ED discharge process.

## Intervention Overview

**MyEDCare** consists of sending *Intelli-texts* to patients' smart phone at time of discharge, containing a hyperlink to a HIPAA-secure website, containing the following patient-specific information:

1. Comprehensive post-ED care plan instructions, including therapeutics, information on new medications, outpatient care scheduling and return precautions, including *ExitCare*.
2. Results of laboratory and radiological diagnostic testing performed in the ED - can be saved to and sent from the patient's smart phone in PDF format.



The following cohorts were excluded from **MyEDCare**, receiving standard paper-format discharge instructions: patients without smartphones / smartphones not compatible with **MyEDCare**; patient being discharged to skilled care facilities; patients' employers request discharge paperwork; patients at the discretion of the ED care team

- Patient receive the *Intelli-texts* while still in the ED. ED nurses educate patients on the product, helping them access the online platform in real-time to conclude a paperless ED discharge process.
- The text is re-sent to the patient 48 hours after ED discharge and again at 29 days, encouraging engagement with the post-ED care plan.

## MyEDCare - Assessing Feasibility and Impact of an Innovative, Smartphone-based Emergency Department Discharge Process

### Annual WCM Quality Improvement and Patient Safety Poster Symposium

Peter Steel, MD; Brenna Farmer, MD; Robert Tanouye, MD; Amos Shemesh, MD; David Bodnar, MD; Jane Torres, MPH; Dona Bou Eid, MHA; Andrew Jacobowitz, PA; Maryellen Bonito, PA; Sandra Pomerantz, MBA | September 15<sup>th</sup>, 2020  
For comments/questions, please contact [pes9027@med.cornell.edu](mailto:pes9027@med.cornell.edu)

## Results

### OPERATIONAL IMPACT :

- During the 9 month pilot a total of 28,390 patients were discharged from NYP-WC & NYP-LM EDs using **MyEDCare** (43% of all treat and release patients).
- 73.5% of the hyperlink texts sent were successfully used to access patients' **MyEDCare** online content, accessed on average 2 times per patient (1.965)

### STAFF-FOCUSED QPS IMPACT :

- ED provider and RN feedback included improved efficiency of discharge process, reduction of paper discharge related patient safety and HIPPA errors (e.g.: patients discharged with incorrect patients' paper documents)
- Patient Navigators and non-NYP outpatient providers reported ED information and test results were more readily available on the patient's smartphone, facilitating transitions of care

### ED UTILIZATION IMPACT:

- Patients discharged via **MyEDCare** returned to the ED slightly more frequently at 72 hours (4.2% vs 3.6%) compared with patients discharged via conventional paper workflows (p=0.00)
- No statistically significant findings were seen in 30 day return ED visits

### PATIENT-FOCUSED QPS IMPACT:

- ED-CAHPS patient satisfaction scores for **MyEDCare** patients demonstrated higher than average scores in multiple domains including the following questions:
  - *Rate and Recommend ER*
  - *RN & MD staff listen carefully to you*
  - *RN & MD staff explain in a way you understand*
  - *Left ED understanding symptoms*

## Conclusions

- Many ED patients from the diverse communities of New York were receptive to a personal smartphone based ED discharge workflow.
- The **MyEDCare** experience may have a positive impact on ED patient satisfaction and may encourage patients to return to the ED with worsening symptoms.
- Project limitations were predominantly technological including variability of smartphone utilization, smartphone software, cell carrier service in the ED, and cell carrier text delays.
- Future opportunities include utilizing EPIC's MyChart to develop a smartphone viable interactive ED discharge tool including messaging capabilities for ED NPs and Patient Navigators to facilitate transitions of care.



## **Title: MyEDCare - Assessing Feasibility and Impact of an Innovative, Smartphone-based Emergency Department Discharge Process**

Authors: Peter Steel, MD; Brenna Farmer, MD, MBA; Robert Tanouye, MD, MBA; Amos Shemesh, MD; David Bodnar, MD; Jane Torres, MPH; Dona Bou Eid, MHA; Andrew Jacobowitz, PA-C; Maryellen Bonito, MS, PA-C; Sandra Pomerantz, MBA

### **1. Statement of the Problem:**

Emergency Department (ED) encounters frequently involve diagnostic testing, treatments, consultations, new diagnoses, new medications, changes to medication regimens and post-discharge scheduling for further care. From a patient perspective, the ED discharge process is the end of an often physically and emotionally demanding health care encounter. Research shows ED patients demonstrate poor comprehension regarding their care, low compliance with post-ED care plans and this uncertainty drives return ED visits. Despite the critical importance of care transitions, there has been relatively little technological innovation in ED discharge process.

### **2. Objective/Aim of the study:**

Evaluate the feasibility of utilizing patient smartphones as a mobile platform for an electronic ED discharge process and evaluate the impact on staff and patient satisfaction.

### **3. Project Design/Methods:**

*MyEDCare* consists of sending Intelli-texts to patients' smartphone at time of discharge, containing a hyperlink to a HIPAA-secure website, containing the following patient-specific information: i) Comprehensive post-ED care plan instructions, including therapeutics, information on new medications, outpatient care scheduling and return precautions, including ExitCare. ii) Results of laboratory and radiological diagnostic testing performed in the ED - can be saved to and sent from the patient's smart phone in PDF format. ED nurses educate patients on the product, helping them access the online platform in real-time to conclude a paperless ED discharge process. The text is re-sent to the patient 48 hours after ED discharge and again at 29 days, encouraging engagement with the post-ED care plan.

### **4. Results:**

During the 9 month pilot 28,390 patients were discharged from NYP-WCMC & NYP-LMH EDs using *MyEDCare* (43% of all treat and release patients). 73.5% of the hyperlink texts sent were successfully used to access patients' *MyEDCare* online content, accessed on average 2 times per patient (1.965). Staff feedback included improved efficiency of discharge process, reduction of paper discharge related patient safety and HIPPA errors (e.g.: patients discharged with incorrect patients' paper documents). Patient Navigators and non-NYP outpatient providers reported ED information and test results were more readily available on the patient's smartphone, facilitating transitions of care. Patients discharged via *MyEDCare* returned to the ED slightly more frequently at 72 hours (4.2% vs 3.6%) compared with patients discharged via conventional paper workflows ( $p=0.00$ ). No statistically significant findings were seen in 30-day return ED visits. ED-CAHPS patient satisfaction scores for *MyEDCare* patients demonstrated higher than average scores in multiple domains including the following 7 questions: Rate and Recommend ER; RN & MD staff

listen carefully to you; RN & MD staff explain in a way you understand; Left ED understanding symptoms.

## **5. Conclusions:**

Many ED patients from the diverse communities of New York were receptive to a personal smartphone-based ED discharge workflow. The *MyEDCare* experience may have a positive impact on ED staff and patient satisfaction. Project limitations were predominantly technological including variability of smartphone utilization, smartphone software, cell carrier service in the ED, and cell carrier text delays. Future opportunities include utilizing EPIC's MyChart to develop a smartphone viable interactive ED discharge tool to facilitate transitions of care.



# “TIMEOUT” Before PEG Placement: A Policy Approach to Align Medical Decisions and Goals of Care through Palliative Intervention

## Annual WCM Quality Improvement and Patient Safety Poster Symposium

Brigit C Palathra, MD, FACP, Hoda Abdelaziz, FNP, Cynthia X Pan, MD, FACP, AGSF, Elizabeth Lee, MD, Jenny Yip, MS, Calvin Hwang, MD, MPH, FCCP, Robert Crupi, MD | September 15, 2020

For comments/questions, please contact brp9054@nyp.org

## PROBLEM

*Choosing Wisely®* advocates:

- High Value Care
- Shared decision making (SDM) between patients and clinicians
- Advancing a “national dialogue on avoiding unnecessary medical tests, treatments and procedures”.

*Choosing Wisely®* recommends not offering percutaneous feeding tubes (PEGs) in patients with advanced dementia because they do not prolong life, improve nutritional status, heal pressure ulcers, or prevent aspiration.

Many patients, families, caregivers, clinicians, and nursing homes are not aware that careful hand-feeding is an option and request PEGs instead.

A retrospective review of 235 inpatients with PEG insertion in 2018 found:

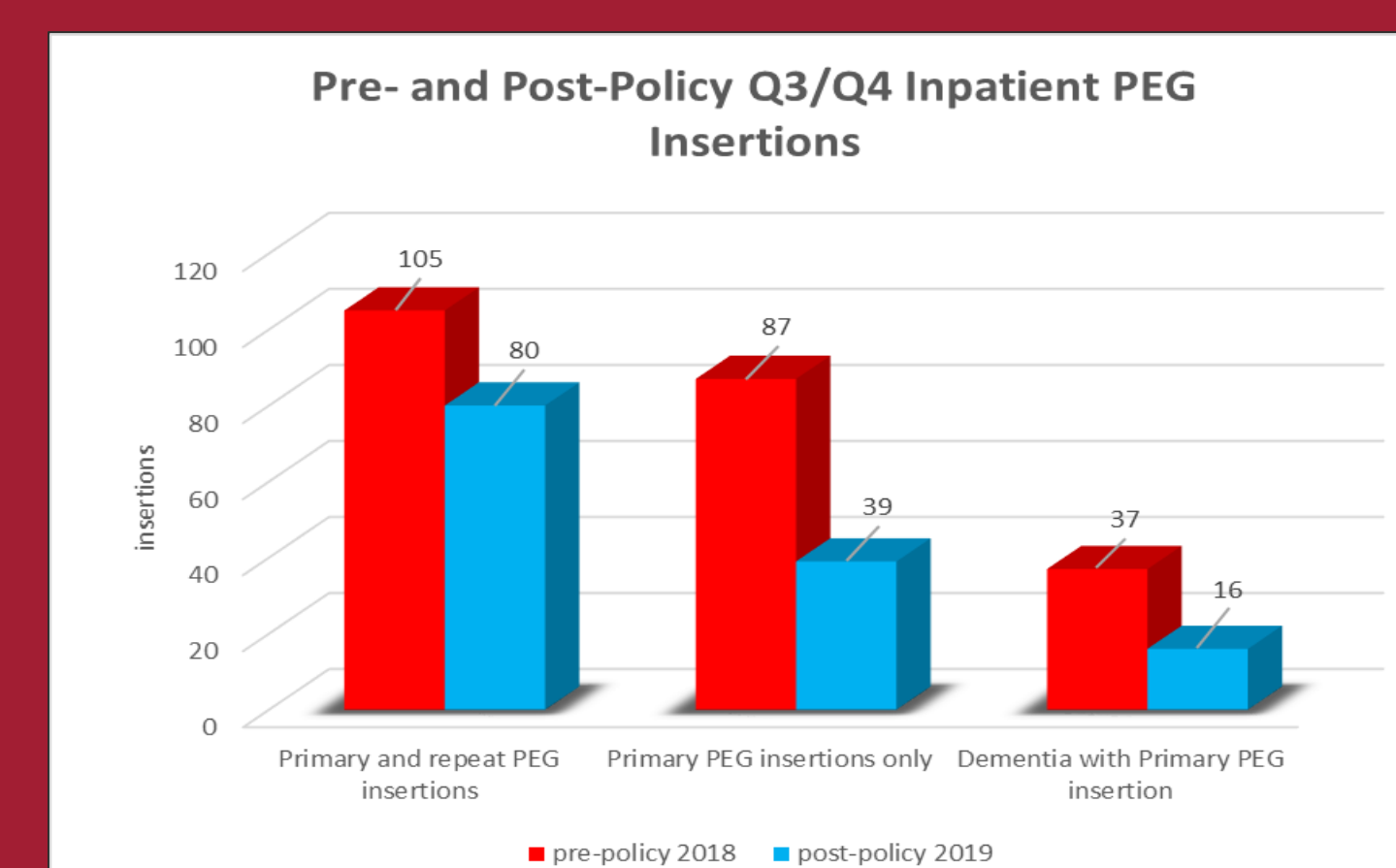
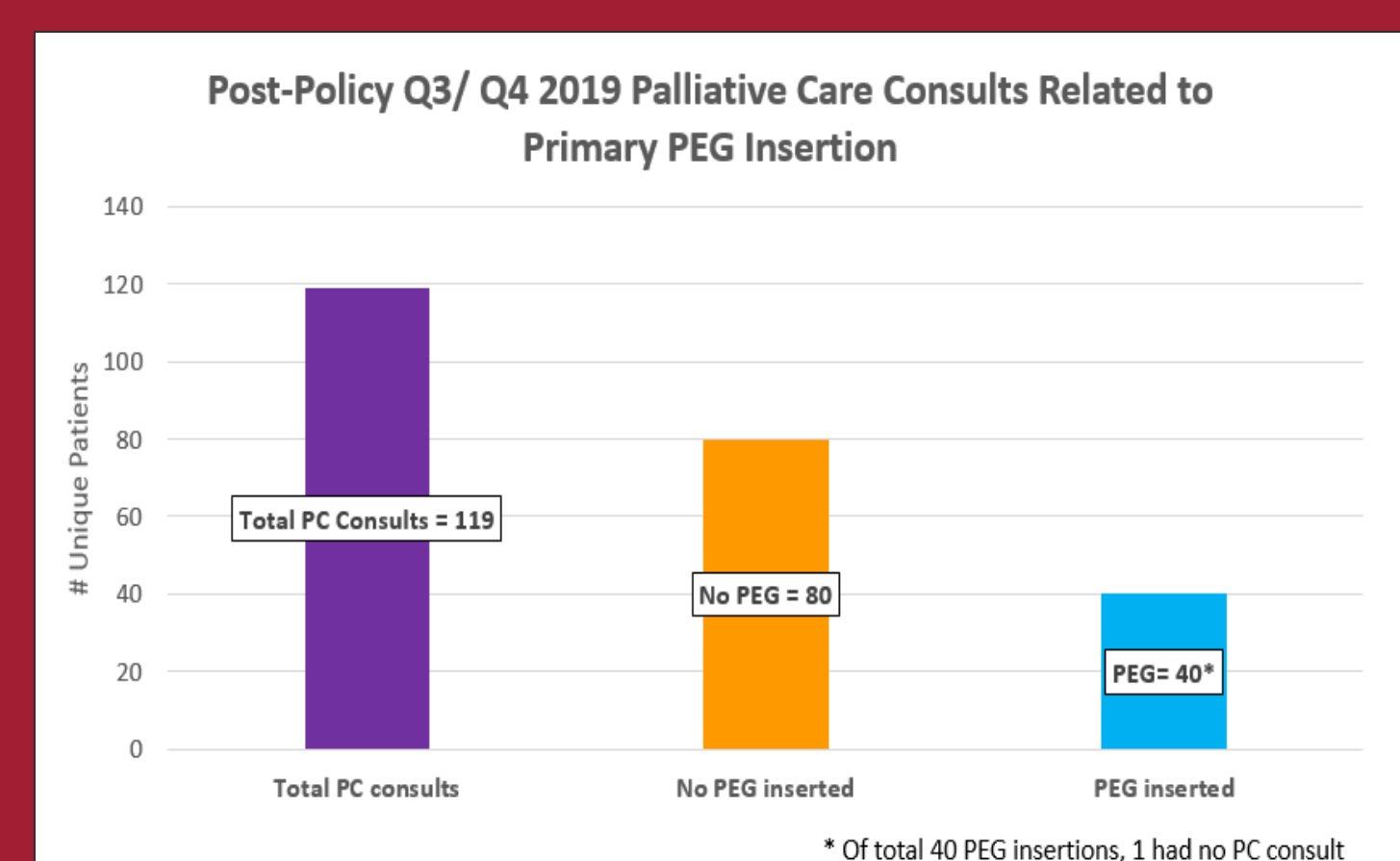
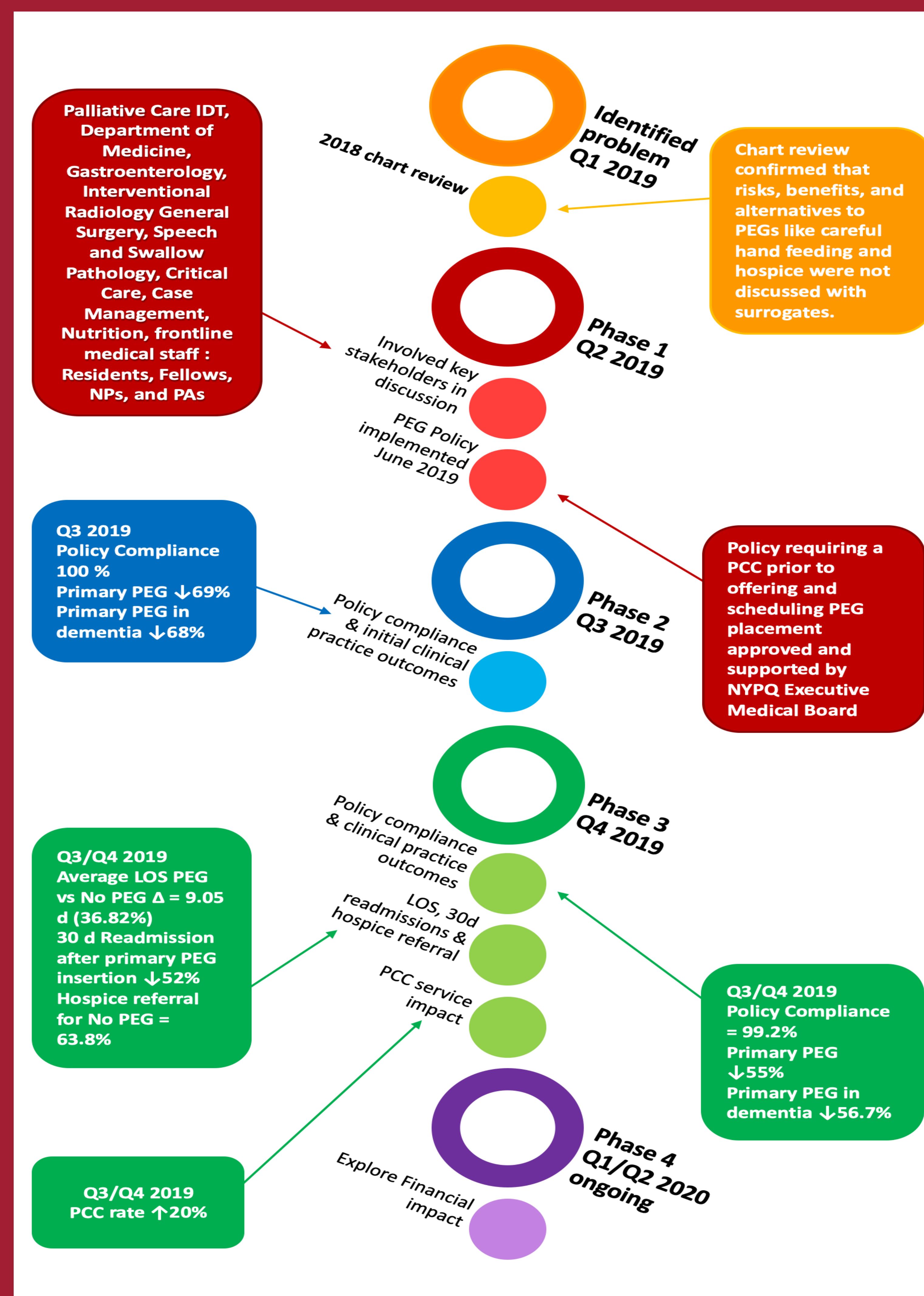
- 42% had dementia
- 4% of dementia patients had goals of care (GOC) documented
- 10% of dementia patients had palliative care consultation (PCC).
- This confirmed that risks, benefits, and alternatives to PEGs like careful hand feeding and hospice were not discussed with surrogates. NYPQ implemented a hospital policy in June 2019 requiring a PCC prior to offering and scheduling PEG placement.

## OBJECTIVE

“Timeout” to improve shared decision making (SDM), GOC documentation, and PCC access to patients being considered for PEGs.

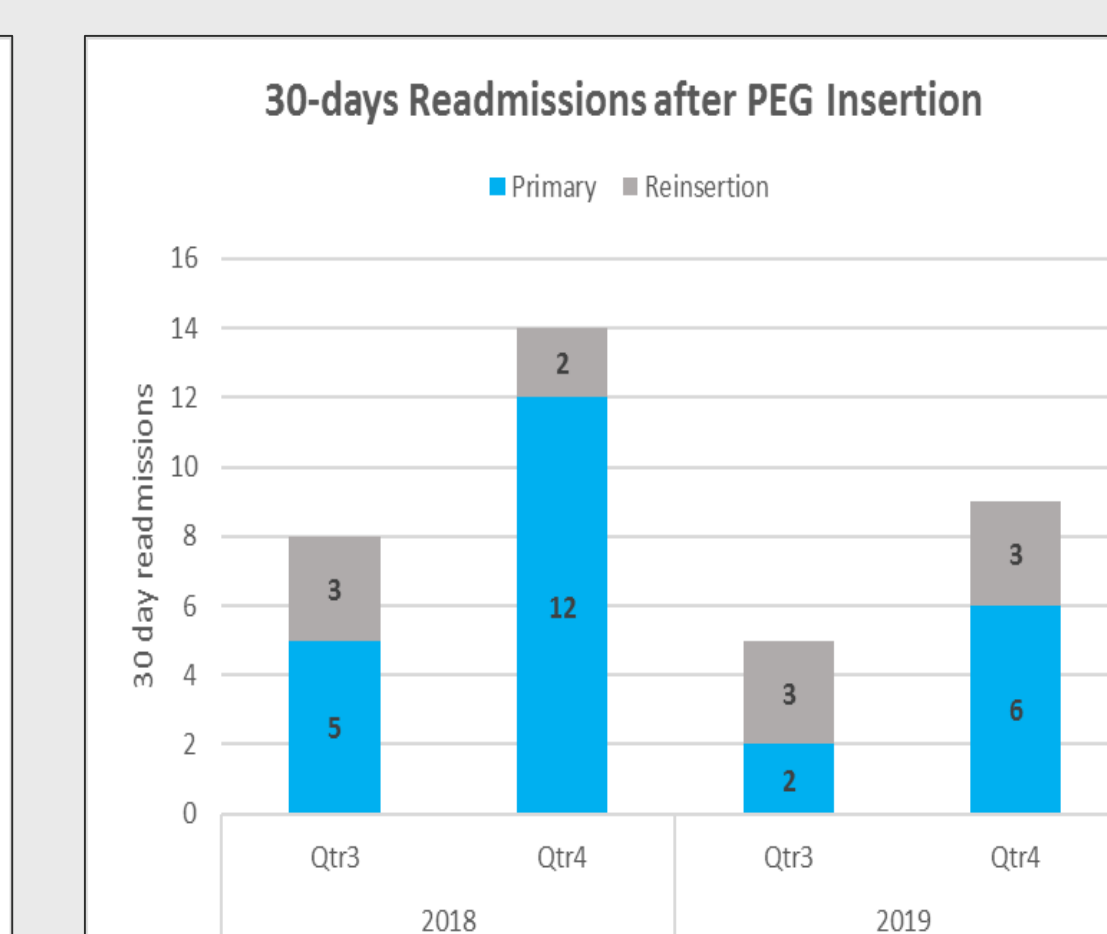
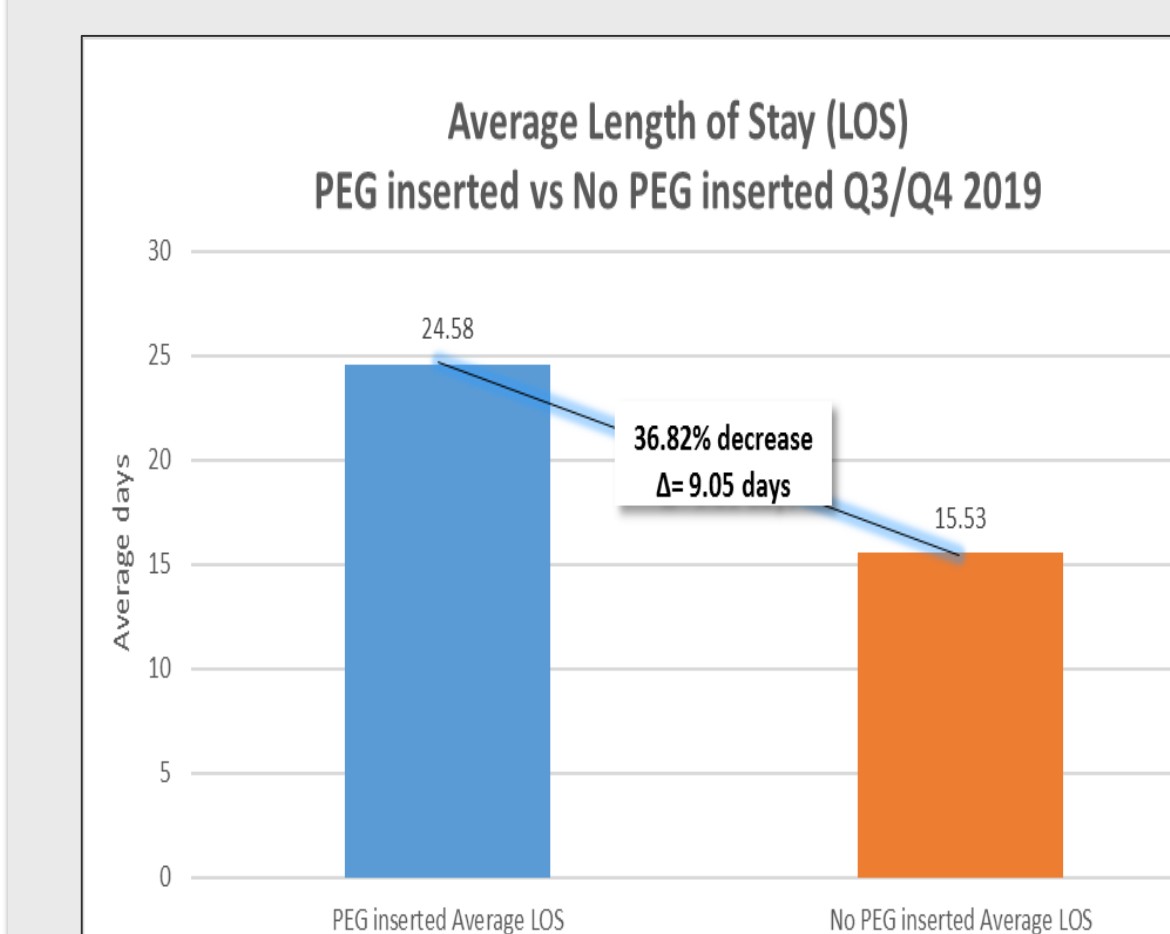
- Assess policy adherence after implementation and the impact on PCC service.
- Measure policy impact on High Value Care
  - Primary PEG insertions in dementia
  - LOS, 30d readmissions, hospice referrals

## PROJECT DESIGN



## RESULTS

- Q3/Q4 2019- 120 patients considered for primary PEG insertion
  - no PEG n=80
  - PEG n=40.
- Policy compliance 99.2% (119/120 had PCC).
- Primary PEG insertions reduced by 55% (pre-policy=87 vs post-policy=39)
- Primary PEG insertion in dementia reduced by 56.7% (pre-policy=37 versus post-policy=16).
- Average LOS reduction in PEG (24.6 d) versus no PEG (15.5d) was 9d.
- 30d Readmission after primary PEG insertion reduced by 52% (pre-policy=17 vs post-policy=8).
- Hospice referral for no PEG 64% (51/ 80) .
- Overall PCC rate increased by 20%,16% was attributable to the policy



## CONCLUSIONS AND IMPLICATIONS

- The Joint Commission advocates SDM and recommends a “timeout” before proceeding with any procedure “until all questions and concerns are resolved”.
- PCC promotes *Choosing Wisely®* and SDM by aligning GOC with medical decision-making and offers an alternative clinical pathway to PEG.
- The NYPQ policy demonstrated how institutional support promotes palliative care access and links it to High Value Care:
  - An associated reduction of primary PEG insertions and 30d readmissions in these patients
  - An associated decreased average LOS in no PEG insertions



## **“TIMEOUT” Before PEG Placement: A Policy Approach to Align Medical Decisions and Goals of Care through Palliative Intervention.**

Brigit C Palathra, MD, Hoda Abdelaziz, FNP, Cynthia X Pan, MD, Elizabeth Lee, MD, Jenny Yip, MS, Calvin Hwang, MD, Robert Crupi, MD

Department of Medicine, NewYork-Presbyterian Queens, Flushing, NY.

**Statement of Problem:** *Choosing Wisely®* promotes shared decision-making (SDM) and recommends not offering percutaneous feeding tubes (PEGs) in advanced dementia. PEGs can potentially increase medical complications and suffering near end-of-life. Many patients, families, caregivers, nursing homes and clinicians may not be aware of these recommendations.

**Objective and Aim of Study:** To ensure that risks, benefits, and alternatives to PEGs like careful hand feeding and hospice are discussed with surrogates, NewYork-Presbyterian Queens (NYPQ) implemented a hospital policy requiring a Palliative Care consultation (PCC) prior to offering PEG placement. This “timeout” intends to improve SDM and PCC access to patients considered for PEGs. We also sought to measure this policy’s impact on high value care (HVC).

**Project Design and Methods:** We utilized a Plan-Do-Study-Act approach to performance improvement. *Problem Identification (Q1 2019):* We reviewed all PEGs inserted (primary and reinsertions) in 2018 and identified 235 patients. Of these, 42% (99/235) had a dementia ICD. For dementia patients (n=99), only 4% (4) had GOC documentation by the primary team and 10% (10) had PCC prior to PEG. *Phase 1-Policy Implementation (Q2 2019):* Using stakeholder mapping, we created hospital policy requiring PCC prior to offering and scheduling PEGs to ensure GOC were addressed and documented. Administrative and multidisciplinary collaboration was integral in creating and implementing policy. NYPQ’s Medical Board supported and approved the policy in June 2019. *Phase 2-Examining Practice Trends (Q3 2019):* We compared patients undergoing primary PEGs in Q3 2018 (pre-policy) and Q3 2019 (post-policy). We identified the number of primary PEG insertions with associated PCCs and dementia ICD codes. *Phase 3-HVC and PCC Impact (Q4 2019):* We measured number of PCCs triggered by the policy then subdivided patients proceeding with PEG versus no PEG. We measured length of stay (LOS), 30d readmissions, hospice utilization, and overall PCC rate change.

**Results:** During Q3/Q4 2019, we identified 120 patients considered for primary PEG insertion. Of these, no PEG n=80 and PEG n=40. Policy adherence was 99.2% (119/120 had PCC). Primary PEG insertions reduced by 54%: (pre-policy=87 vs post-policy=40). Primary PEG insertion for dementia patients reduced by 56.7% (pre-policy=37 vs post-policy=16). Average LOS reduction in PEG (24.6 d) versus no PEG (15.5d) was 9d. Primary PEG insertion 30d readmissions reduced by 52% (pre-policy=17 vs post-policy=8). Hospice was utilized by 64% (51/ 80) for no PEG. During Q3/Q4 2019, overall PCC rate increased by 20%, 16% was attributable to the policy.

**Conclusions and Implications:** *The Joint Commission’s* ‘Universal Protocol for Preventing Wrong Site, Wrong Procedure and Wrong Person Surgery’ promotes SDM by recommending not proceeding with any procedure “until all questions and concerns are resolved”. PCC also promotes SDM by aligning GOC with medical decision-making. When an alternative clinical pathway to PEGs was offered, there was an associated reduction in primary PEG insertions and average LOS. This policy demonstrated how institutional support promotes palliative care access and links it to HVC.



## Introduction

In the burn population, systematic inflammatory response syndrome (SIRS) and sepsis characteristics often overlap, and delayed sepsis detection can be detrimental to patient outcomes. According to Surviving Sepsis Campaign, other institutions have formulated protocol based sepsis criteria, however diagnosis and presence of SIRS in the Burn population has limited the development of a burn sepsis screening, thus no evidence of a current tool exists. The Burn ICU at New York Presbyterian Hospital appreciated a need for burn sepsis screening for earlier diagnosis and potential prevention of burn sepsis.

Identification of specific clinical assessment characteristics associated to burn sepsis will facilitate the development of a pre-sepsis evaluation tool and may improve patient outcomes and decrease episodes of burn sepsis.

## Methods

In this study, we created a clinical rounding tool to be used during Burn Intensive Care Unit (BICU) rounds for methodical measurement of 10 clinical assessment points. Through literature review, the Burn team agreed on inclusion and exclusion criteria for temperature, neurologic changes, pulmonary, cardiovascular, gastrointestinal, renal, WBC, platelets and insulin requirement to compare to sepsis diagnosis. The information from the BSST was input into a secure web database for data capture.

In total, 33 patients were assessed with the Burn Sepsis Screening Tool (BSST); 12 patients were diagnosed with sepsis.

### BSST Definition

<b>Temperature</b>	Temperature ≤36.0 or °C≥39°; <b>N/A if Zoll regulated temperature</b>
<b>Neuro</b>	Change from Neurologic baseline
<b>Pulmonary</b>	Non-Vented- Sustained Tachypnea ( > 20 bpm); New O2 requirement ; Worsening P:F ratio ; Elevated Mean Airway Pressure
<b>CV</b>	MAP <60 with proper resuscitation; HR >20% from baseline; Pressors; Increasing Lactate; Decreasing BiCarb
<b>GI</b>	Inability to continue enteral feedings within 24 hours (Abdominal distension, vomiting, Enteral feeding intolerance (2x feeds),Uncontrollable diarrhea (≥2500 ml/d for adults)) ; <b>N/A if open abdomen</b>
<b>GU</b>	Increasing Creatinine; oliguria; <b>N/A if on dialysis</b>
<b>WBC/ diff</b>	WBC count <4,000 or >12,000; Bands ( > 20%)
<b>Plt</b>	Decrease of 20% from baseline OR ≤100,000/mcl; <b>N/A if POD1</b>
<b>Insulin/ Glucose</b>	Significant resistance to insulin (≥25% increase in insulin requirements over 24 hours)

# Development and Utilization of a Burn Sepsis Screening Tool (BSST)

## QIA Fellowship

### Annual WCM Quality Improvement & Patient Safety Poster Symposium

Kaitlyn M. Libraro | September 15, 2020

KML9006@nyp.org

## Results

The burn team analyzed parameters most often and least often assessed in the early burn sepsis patient. 33 patients were screened with the BSST at least once throughout their hospitalization. Fisher's exact tests were utilized to assess the association between each of the sepsis screen tool elements and sepsis status; a 5% level of significance was utilized, and all analyses were performed in R v3.5.3.

12 patients (36%) screened positive for sepsis, at least once throughout their hospitalization. Of these 12 patients, three parameters were positive in 50% of patients. Temperature (75%), pulmonary (83%), and cardiovascular (58%) changes were noted to be most often associated with early sepsis diagnosis in the burn patient. Of note, zero patients with sepsis diagnosis remained neurologically intact or without deviation from baseline; 42% were positive for a change from neurological baseline while 58% were unable to be assessed.

Characteristic <sup>1</sup>	Patients With Sepsis , N = 12	Patients Without Sepsis, N = 21	p-value <sup>2</sup>
Age during admission	68 (53, 75)	53 (40, 66)	0.039
Gender			0.5
Female	6 (50%)	7 (33%)	
Male	6 (50%)	14 (67%)	
Temperature			0.002
Positive	9 (75%)	3 (14%)	
NA	0 (0%)	1 (4.8%)	
Negative	3 (25%)	17 (81%)	
Neurologic			0.002
Positive	5 (42%)	2 (10%)	
NA	7 (58%)	7 (35%)	
Negative	0 (0%)	11 (55%)	
Pulmonary			<0.001
Positive	10 (83%)	4 (19%)	
NA	0 (0%)	1 (4.8%)	
Negative	2 (17%)	16 (76%)	
Cardiovascular			0.001
Positive	7 (58%)	1 (4.8%)	
NA	0 (0%)	1 (4.8%)	
Negative	5 (42%)	19 (90%)	
Gastrointestinal			0.048
Positive	2 (17%)	0 (0%)	
NA	1 (8.3%)	8 (38%)	
Negative	9 (75%)	13 (62%)	
Genitourinary			0.3
Positive	3 (25%)	8 (38%)	
NA	3 (25%)	1 (4.8%)	
Negative	6 (50%)	12 (57%)	
WBC / Differential			0.08
Positive	6 (50%)	3 (14%)	
NA	1 (8.3%)	3 (14%)	
Negative	5 (42%)	15 (71%)	
Platelets			0.14
Positive	4 (33%)	1 (5.0%)	
NA	1 (8.3%)	4 (20%)	
Negative	7 (58%)	15 (75%)	
Insulin / Glucose			0.8
Positive	2 (17%)	2 (9.5%)	
NA	1 (8.3%)	1 (4.8%)	
Negative	9 (75%)	18 (86%)	

## Conclusion

Through this study, we examined both the utilization of a methodical, standardized and evidenced based ICU Rounding Tool and the effectiveness of this tool in pinpointing septic episodes in the burn ICU patient. In addition to the findings above, the burn unit staff anecdotally agreed that the use of the BSST increased communication of patient disposition between providers and nursing staff, creating a clear, multidisciplinary plan for each patient on ICU rounds. Further statistical analysis will be conducted to retrospectively review each septic patient and analyze pre-septic clinical assessment points for characteristics of patients with Burn Sepsis.



# Improving Quality Improvement: The Use of Process Improvement (PI) Tools in the Development of Enhanced Recovery After Surgery (ERAS) Protocols

Annual WCM Quality Improvement and Patient Safety Poster Symposium

Shao Ping Yu, MPH, Kerry Donohue, BA, Roniel Weinberg, MD, Vinod Malhotra, MD, FACA, Patricia Fogarty Mack, MD, FASA

Department of Anesthesiology, Weill Cornell Medicine, September 15, 2020

For comments/questions, please contact shy7002@med.cornell.edu

## Background

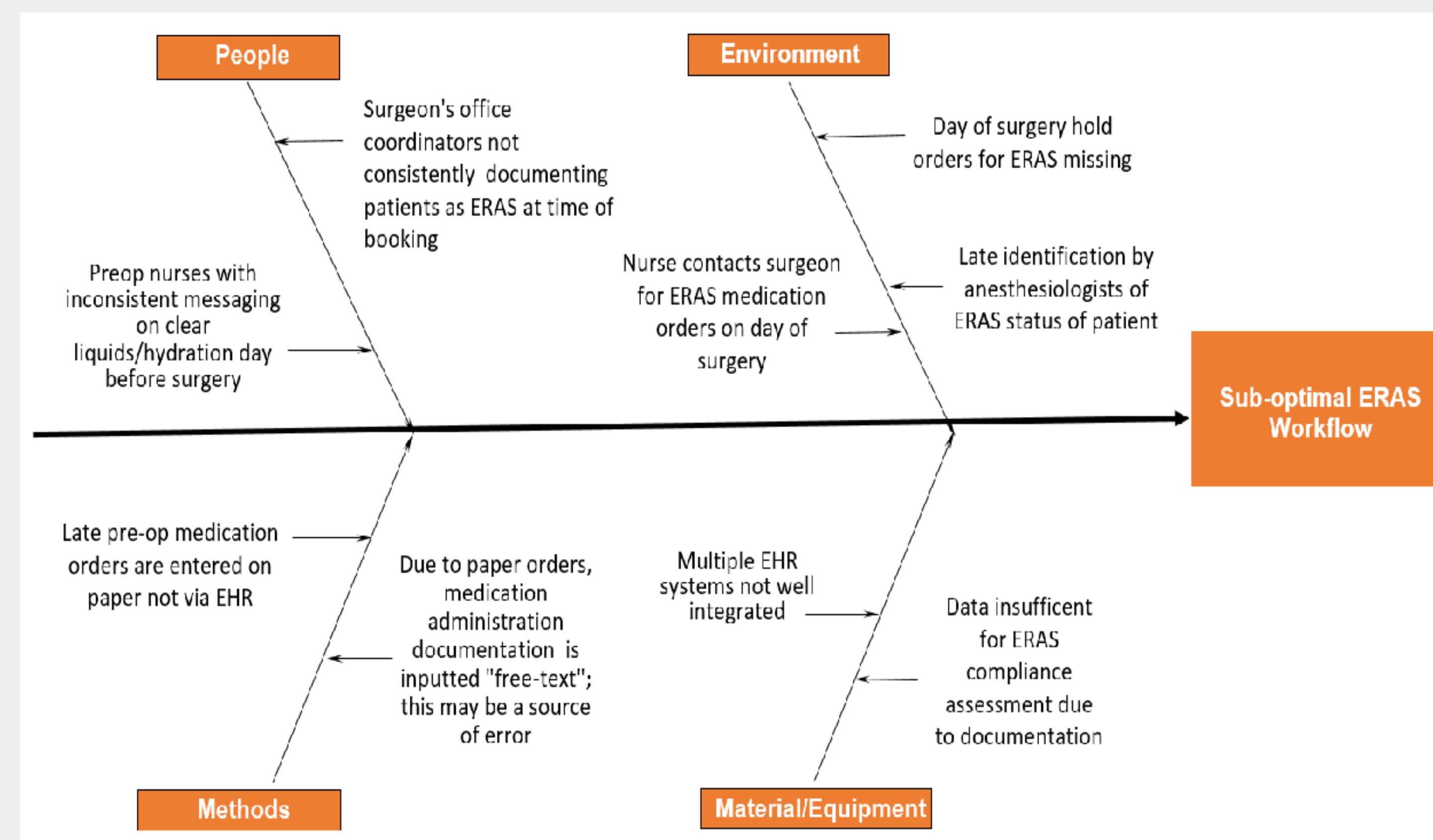
- Enhanced Recovery After Surgery (ERAS) protocols have proliferated in the last decade. A recent survey found among 88 hospitals surveyed, 95.4% had ERAS programs, ranging from 2.2 to 6.4 programs per institution.<sup>1</sup>
- Given the benefits of ERAS including reduction in opioid use, improved clinical outcomes, decreased length of stay and cost savings, hospitals are looking to expand their ERAS programs to multiple surgical specialties.
- Barriers to successful implementation of ERAS programs include education of physicians and nurses as to who are responsible for different aspects of an ERAS protocol. Additionally, surgeons, anesthesiologists and nurses may focus primarily on their areas of responsibility and be less aware of the complete program.
- Applying process improvement (PI) strategies may aid in disseminating information regarding clinician responsibilities and potential workflow barriers, thus allowing more facile and successful implementation of ERAS protocols in perioperative care.

## Methods

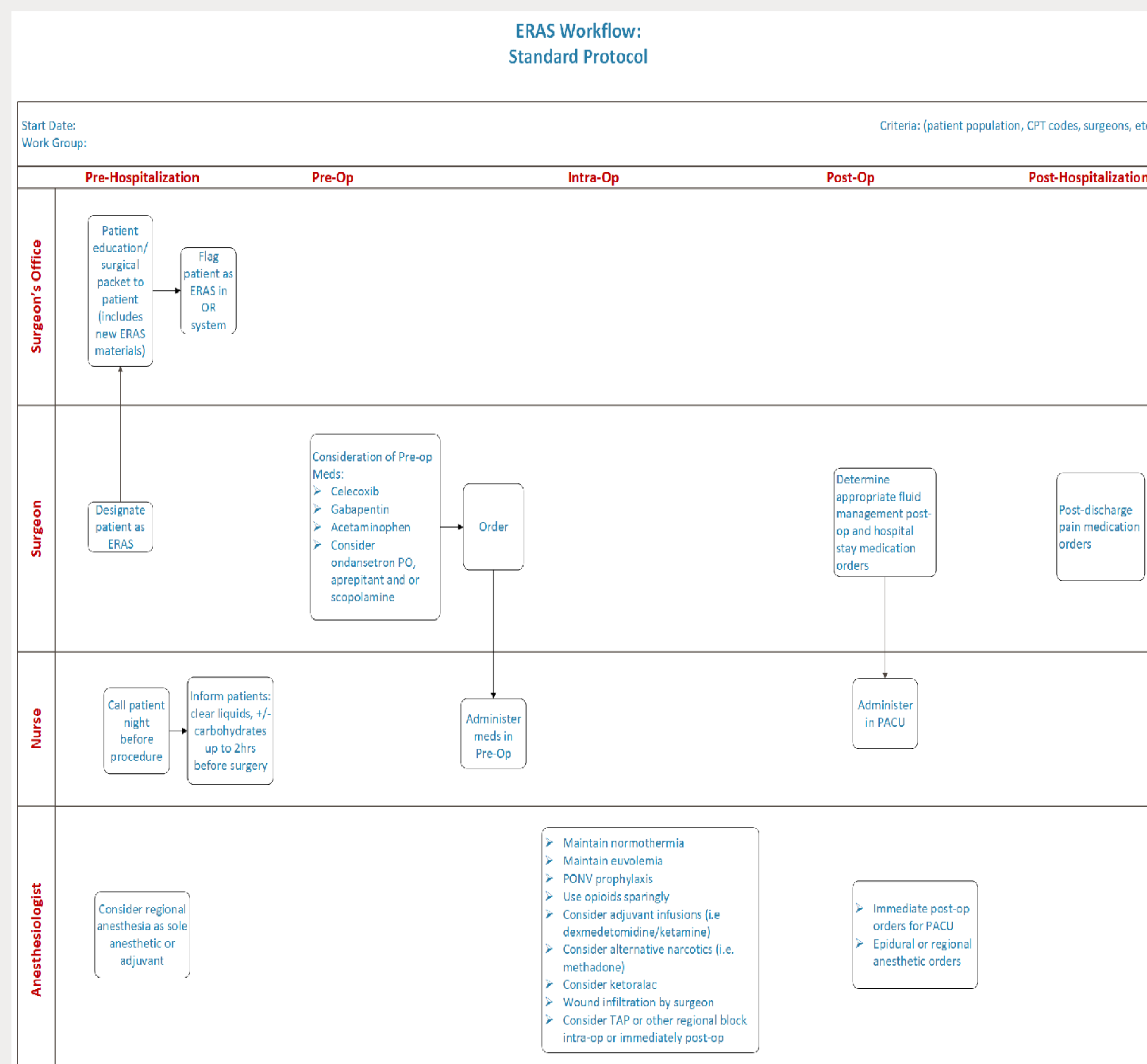
- Physicians and nurses involved in current ERAS protocols were interviewed and current state analyses were performed.
- Quality improvement techniques, including process mapping utilizing Fishbone Diagram (cause and effect analysis) and Swimlane Diagram (workflow assessment) were utilized to determine barriers to implementation and applied to develop a new standard ERAS protocol.
- These techniques could be generalized to ERAS protocols in multiple subspecialties.<sup>2,3,4</sup>

For questions/comments, please contact:  
Shao Ping Yu, MPH  
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**Figure 1. Fishbone Diagram: Barriers in Current Workflow**



**Figure 2. Swimlane Diagram: Workflow for a Standard ERAS Protocol**



## Results

- Process mapping resulted in improved understanding of the current state workflows involving the various disciplines (e.g., nursing, surgery and anesthesiology).
- A Fishbone Diagram (Figure 1) identified the barriers that existed in current ERAS protocols, including inadequate education to patients prior to surgery and delayed orders for pre-op medications.
- A Swimlane Diagram (Figure 2) was used to elucidate workflows and demonstrate ownership and responsibility for various elements of the new ERAS protocol. This would be helpful in educating all clinical parties involved, including surgical and anesthesiology residents, to facilitate adherence to all protocol components.
- These quality improvement techniques were instrumental in planning a more improved implementation of a new ERAS protocol through the continuum of perioperative care (pre-hospitalization, pre-op, intra-op, post-op and post-hospitalization).

## Conclusion

- Applying established process improvement methodologies is useful in developing ERAS protocols, thus contributing to a smooth and efficient implementation process in a perioperative setting.
- This will benefit all future launches among the different surgical specialties that will implement an ERAS protocol, with the potential for services to achieve results such as reduced opioid use, improved clinical outcomes, decreased length of stay and cost savings.

## References

- ERAS Protocols, Although Challenging, Proliferate at U.S. Hospitals. *Anesthesiology News*. July 2019. 45 (7): 1, 13.
- Institute for Healthcare Improvement, website, accessed November 15, 2019. <http://www.ihp.org/resources/Pages/Tools/Quality-Improvement-Essentials-Toolkit.aspx>
- Lau C. Quality Improvement Tools and Processes. *Neurosurg Clin N Am*. 2015 Apr;26(2):177-87.
- Nathan A, Kaplan, H. Tools and methods for quality improvement and patient safety in perinatal care. *Semin Perinatol*. 2017 Apr;41(3):142-150



# **Improving Quality Improvement: The Use of Process Improvement (PI) Tools in the Development of Enhanced Recovery After Surgery (ERAS) Protocols**

Shao Ping Yu, MPH, Kerry Donohue, BA, Roniel Weinberg, MD, Vinod Malhotra, MD, FACA, Patricia Fogarty Mack, MD, FASA

Department of Anesthesiology  
Weill Cornell Medicine  
New York, NY

## **Statement of the Problem:**

Enhanced Recovery After Surgery (ERAS) protocols have proliferated in the last decade. A recent survey found among 88 hospitals surveyed, 95.4% had ERAS programs, ranging from 2.2 to 6.4 programs per institution.<sup>1</sup> Given the benefits of ERAS including reduction in opioid use, improved clinical outcomes, decreased length of stay and cost savings, hospitals are looking to expand their ERAS programs to multiple surgical specialties. Barriers to successful implementation of ERAS programs include education of physicians and nurse as to who is responsible for different aspects of an ERAS protocol. Additionally, surgeons, anesthesiologists and nurses may focus primarily on their areas of responsibility and be less aware of the complete program. Applying process improvement (PI) strategies may aid in disseminating information regarding clinician responsibilities and potential barriers, thus allowing more facile and successful implementation.

**Objective/Aim:** To apply process improvement (PI) strategies to facilitate communication regarding clinician responsibilities and potential workflow barriers, thus allowing more facile and successful implementation of ERAS protocols in perioperative care.

## **Project Design/Methods:**

Physicians and nurses involved in current ERAS protocols were interviewed and current state analyses were performed. Quality improvement techniques, including process mapping utilizing Fishbone Diagram (cause and effect analysis) and Swimlane Diagram (workflow assessment) were utilized to determine barriers to implementation and applied to develop a new standard ERAS protocol. These techniques could be generalized to ERAS protocols in multiple subspecialties.<sup>2,3,4</sup>

## **Results:**

Process mapping resulted in improved understanding of the current state workflows involving the various disciplines (e.g., nursing, surgery and anesthesiology). A Fishbone Diagram (Fig. 1) identified the barriers that existed in current ERAS protocols, including inadequate education to patients prior to surgery and delayed orders for pre-op medications. Finally, a Swimlane Diagram (Fig. 2) was used to elucidate workflows and demonstrate ownership and responsibility for various elements of the new ERAS protocol. This would be helpful in educating all clinical parties involved, including surgical and anesthesiology residents, to facilitate adherence to all protocol components. These quality improvement techniques were instrumental in planning a more improved implementation of a new ERAS protocol through the continuum of perioperative care (pre-hospitalization, pre-op, intra-op, post-op and post-hospitalization).

## Conclusion:

Applying established process improvement methodologies is useful in developing ERAS protocols, thus contributing to a smooth and efficient implementation process in a perioperative setting. This will benefit all future launches among the different surgical specialties that will implement an ERAS protocol, with the potential for services to achieve results such as reduced opioid use, improved clinical outcomes, decreased length of stay and cost savings.

## References:

1. ERAS Protocols, Although Challenging, Proliferate at U.S. Hospitals. *Anesthesiology News*. July 2019. 45 (7): 1, 13.
2. Institute for Healthcare Improvement website, accessed November 15, 2019. <http://www.ihl.org/resources/Pages/Tools/Quality-Improvement-Essentials-Toolkit.aspx>
3. Lau C. Quality Improvement Tools and Processes. *Neurosurg Clin N Am*. 2015 Apr;26(2):177-87.
4. Nathan A, Kaplan, H. Tools and methods for quality improvement and patient safety in perinatal care. *Semin Perinatol*. 2017 Apr;41(3):142-150

Figure 1: Fishbone Diagram: Barriers in Current Workflow

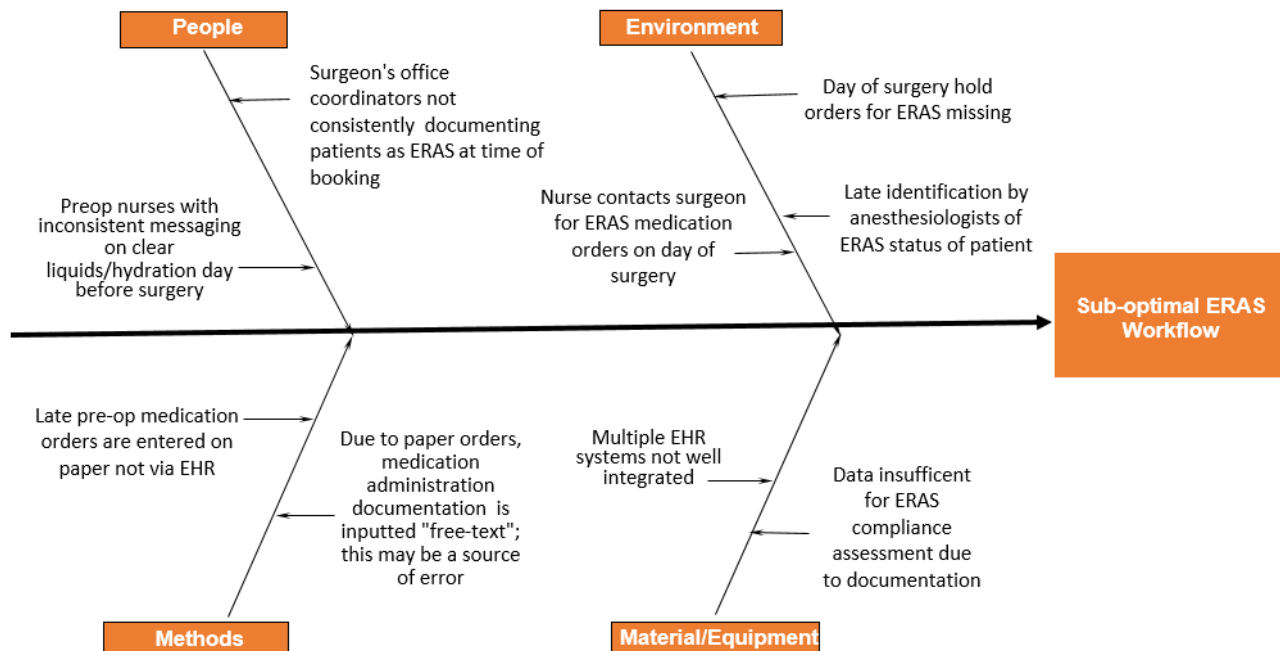
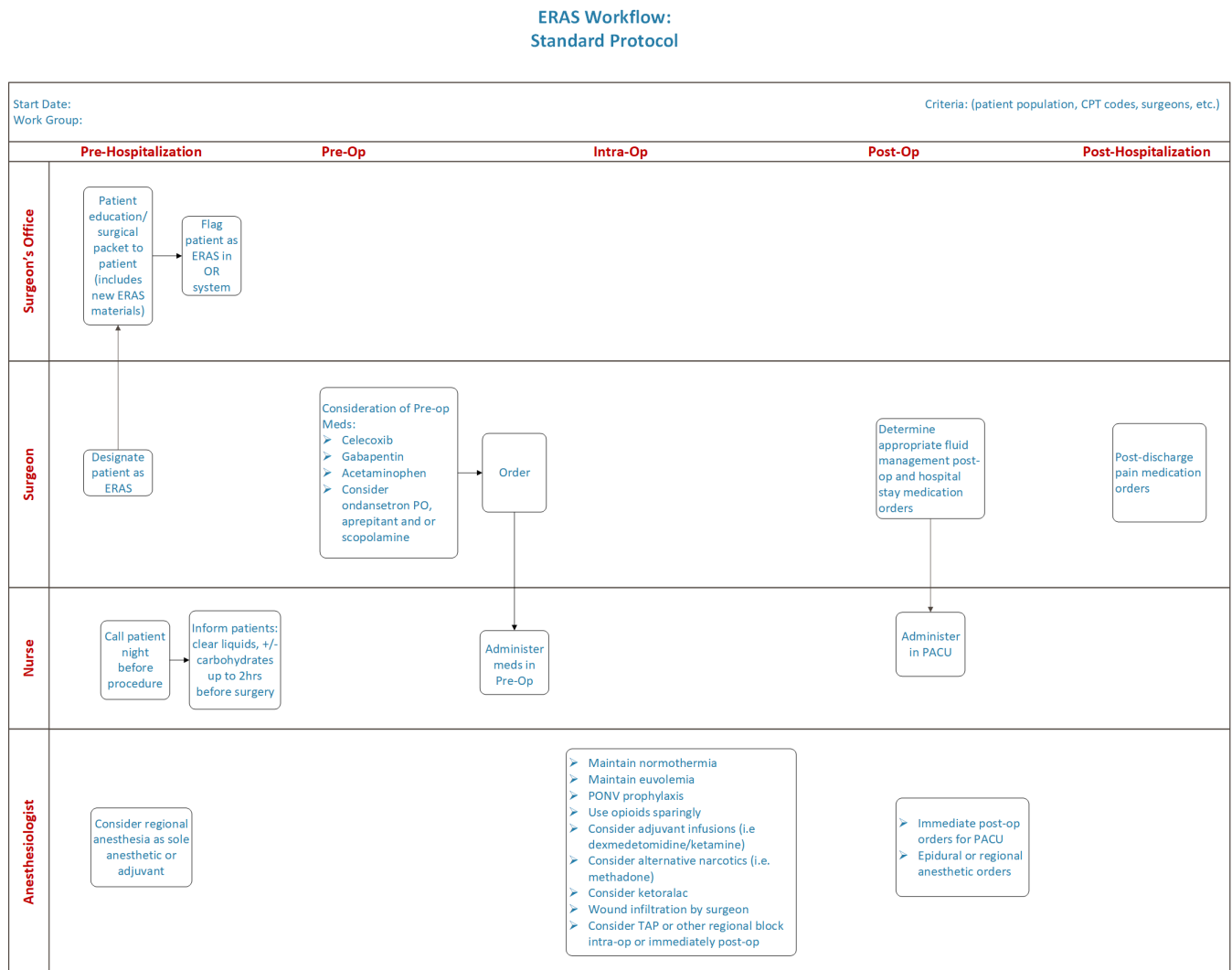




Figure 2: Swimlane Diagram: Workflow for a Standard ERAS Protocol



## Problem

- Brachial plexus injury/Erb's palsy can be caused by stress placed on the nerves in the neck and the shoulder of the newborn, often associated with vaginal deliveries complicated by shoulder dystocia.
- In the United States, prevalence of brachial plexus injury is 1.5 per 1000 births (Gherman et al, 2014)
- Research shows that simulation training is an optimal strategy to improve teamwork and communication skills that are vital to patient safety.

## Objective/Aim of the Study

- This study aimed to reduce the rate of brachial plexus injury by implementing an interdisciplinary shoulder dystocia program, consisting of didactic and simulation-based training.

## Project Design

- The program consisted of didactic and simulation-based training.
- The didactic portion included a review of risk factors, maneuvers to resolve shoulder dystocia, and guidelines for debriefing and documentation following the event.
- The simulation portion included use of a birthing simulator, which measured the force applied to the infant's head and neck.
- 1-on-1 training was conducted with obstetricians and midwives. Team training was then conducted in situ and included nurses, anesthesiologists, physicians assistants and ancillary staff.

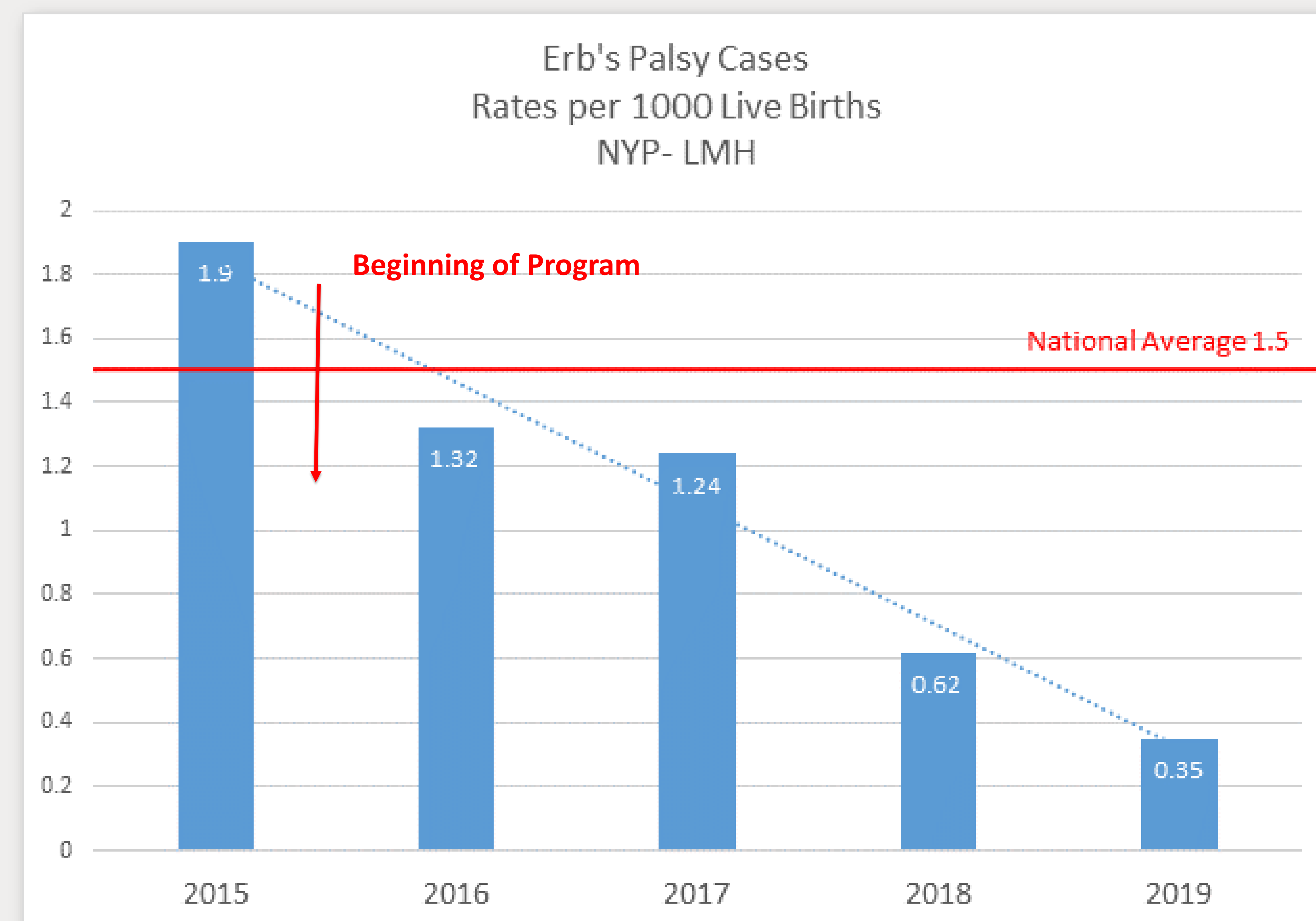
For additional information: Jon Snyder, MD, FACOG: [Jos2074@med.cornell.edu](mailto:Jos2074@med.cornell.edu);  
Johanna Schisler, MSN, RNC-OB: [jos9271@nyp.org](mailto:jos9271@nyp.org)

## Interprofessional Simulations to Reduce Rate of Erb's Palsy

Annual WCM Quality Improvement and Patient Safety Poster Symposium  
Jon Snyder, M.D., FACOG & Johanna Schisler, MSN, RNC-OB | September 15, 2020

## Results

- Two rounds of simulation training were conducted over 24 months, including all nurses, obstetricians, and midwives who assist with deliveries.
- In 2016, prior to implementation of the shoulder dystocia program, the rate of Erb's palsy was 1.32 cases/1000 births at this institution. In 2017, the first round of training was conducted. In this year, there were 1.24 cases/1000 births. The following year, the rate of Erb's palsy was 0.62 cases/1000 births.
- In 2019, the rate of Erb's palsy had fallen to 0.35 cases/1000 births.



## Conclusions

- An active, interdisciplinary simulation program is an effective strategy for reducing the rate of Erb's palsy injury in cases of vaginal deliveries complicated by shoulder dystocia.



## Statement of the Problem

- Incidental pulmonary nodules are frequently found on chest radiograph (CXR) and computed tomography (CT) scans performed through the Emergency Department (ED). These imaging studies are interpreted by both radiologists specialized in thoracic imaging and by radiologists with non-thoracic imaging specializations.
- While evidence-based guidelines for nodule follow-up exist, published literature has shown that follow up rates are low and adherence to established guidelines is variable.

## Objectives

- The aim of this study was to assess whether review of all nodule recommendations by thoracic radiologists would lead to a change in initial management recommendations made by non-thoracic imagers.

## Project Design/Methods

- CXRs and CTs scans performed through the adult ED from September 2018 through July 2020 indicating the presence of a pulmonary nodule were identified by our Radiology Consultation Services (RCS). For all studies initially read by a non-thoracic radiologist, the RCS contacted the patients in order to assess their risk factors for lung malignancy and the CT images were re-reviewed by a thoracic radiologist.
- We then assessed the rates of recommendation disagreement and whether change in management resulted in more or less imaging utilization.
- A reduction in imaging utilization was defined as an elimination of follow up, follow up at a greater time interval or a recommendation of CXR rather than CT follow up. An increase in imaging utilization was defined as adding follow up, follow up at a short time interval, or recommending CT instead of CXR.

## Management of Incidental Pulmonary Nodules: Improving Patient Care Through Specialized Imaging Review

### Annual Weill Cornell Medicine Quality Improvement and Patient Safety Poster Symposium

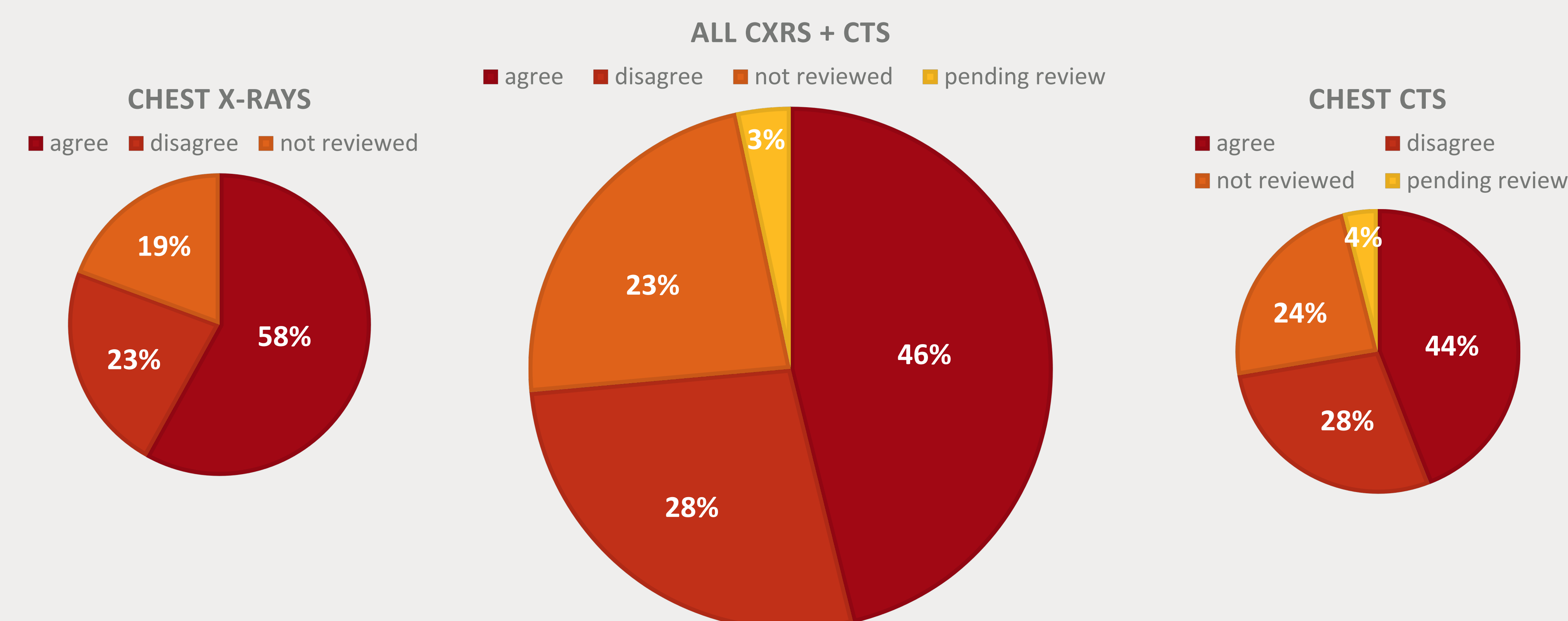
Joanna G. Escalon MD, Deirdre Sullivan MHS/RRA/RT, James F. Gruden MD | Sept 2020  
For comments/questions, please contact jgb9001@med.cornell.edu

## Results

- 402 imaging studies reporting a pulmonary nodule were identified (81 CXRs and 321 CTs). 48% (194/402) were read by thoracic radiologists and 52% (208/402) were read by non-thoracic radiologists. The thoracic radiologist disagreed with the initial read in 27% (57/208) of cases and agreed in 46% (96/208) of cases. 23% (48/208) of cases were not reviewed due to an inability to reach the patient for risk factor assessment or because the patient was already followed by a pulmonologist or oncologist. 3% (7/208) are pending review at the time of data presentation.
- All discordant cases resulted in a change in management by the thoracic radiologist with approximately half (46%, 26/57) decreasing imaging utilization and half (53%, 30/57) increasing imaging utilization. For one patient (2%, 1/57), pulmonary consultation, rather than further imaging, was advised.

## Conclusions

- Our study illustrates the value of imaging review by specialized radiologists. These efforts improve health care quality by increasing standardization of patient care and reducing unnecessary radiation exposure.
- Continued research is needed to determine whether the efforts of our RCS has increased patient adherence to nodule follow up recommendations and whether this has resulted in increased lung cancer detection.



Charts illustrating follow up agreement between thoracic and non-thoracic trained radiologists.



## **Title: Management of Incidental Pulmonary Nodules – Improving Patient Care Through Specialized Imaging Review**

**Authors:** Joanna G. Escalon MD, Deirdre Sullivan MHS RRA RT, James F. Gruden MD

**Department:** Radiology

**Statement of the Problem:** Incidental pulmonary nodules are frequently found on chest radiograph (CXR) and computed tomography (CT) scans performed through the Emergency Department (ED). These imaging studies are interpreted by both radiologists specialized in thoracic imaging and by radiologists with non-thoracic imaging specializations. While evidence-based guidelines for nodule follow-up exist, published literature has shown that follow up rates are low and adherence to established guidelines is variable.

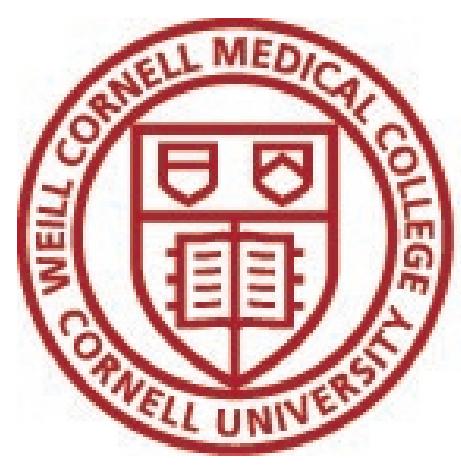
**Objective/Aim of the study:** The aim of this study was to assess whether review of all nodule recommendations by thoracic radiologists would lead to a change in initial management recommendations made by non-thoracic imagers.

**Project Design/Methods:** CXRs and CTs scans performed through the adult ED from September 2018 through July 2020 indicating the presence of a pulmonary nodule were identified by our Radiology Consultation Services (RCS). For all studies initially read by a non-thoracic radiologist, the RCS contacted the patients in order to assess their risk factors for lung malignancy and the CT images were re-reviewed by a thoracic radiologist. We then assessed the rates of recommendation disagreement and whether change in management resulted in more or less imaging utilization. A reduction in imaging utilization was defined as an elimination of follow up, follow up at a greater time interval or a recommendation of CXR rather than CT follow up. An increase in imaging utilization was defined as adding follow up, follow up at a short time interval, or recommending CT instead of CXR.

**Results:** 402 imaging studies reporting a pulmonary nodule were identified (81 CXRs and 321 CTs). 48% (194/402) were read by thoracic radiologists and 52% (208/402) were read by non-thoracic radiologists. The thoracic radiologist disagreed with the initial read in 27% (57/208) of cases and agreed in 46% (96/208) of cases. 23% (48/208) of cases were not reviewed due to an inability to reach the patient for risk factor assessment or because the patient was already followed by a pulmonologist or oncologist. 3% (7/208) are pending review at the time of data presentation. All discordant cases resulted in a change in management by the thoracic radiologist with approximately half (46%, 26/57) decreasing imaging utilization and half (53%, 30/57) increasing imaging utilization. For one patient (2%, 1/57), pulmonary consultation, rather than further imaging, was advised.

**Conclusions:** Our study illustrates the value of imaging review by specialized radiologists. A significant change in management was recommended in almost one-third of patients. These efforts improve health care quality by increasing standardization of patient care and reducing unnecessary radiation exposure. Continued research is needed to determine whether the efforts of our RCS has increased patient adherence to nodule follow up recommendations and whether this has resulted in increased lung cancer detection.





### Introduction

- Congestive heart failure (CHF) is a major healthcare strain which culminates in high numbers of hospital readmissions
- Preventing CHF readmissions has been a popular focus for researchers and policy makers, as they are viewed as preventable and avoidable.
- NYP currently has approximately 370 patients enrolled in PERS intervention, whom NYP is actively monitoring for hospital readmission.
- our intervention involved standardizing education for PERS usage as related to WCMC Internal Medicine Department patients diagnosed with CHF.
- The WCMC Internal Medicine care coordination team identified medicine CHF readmissions to be 17.89%. This percentage value reflected January 2018 through May 2019, at the WCMC medicine units (5 Central, 5 North, 5 West, Medicine Gold Service, 11 South A, 11 South B).

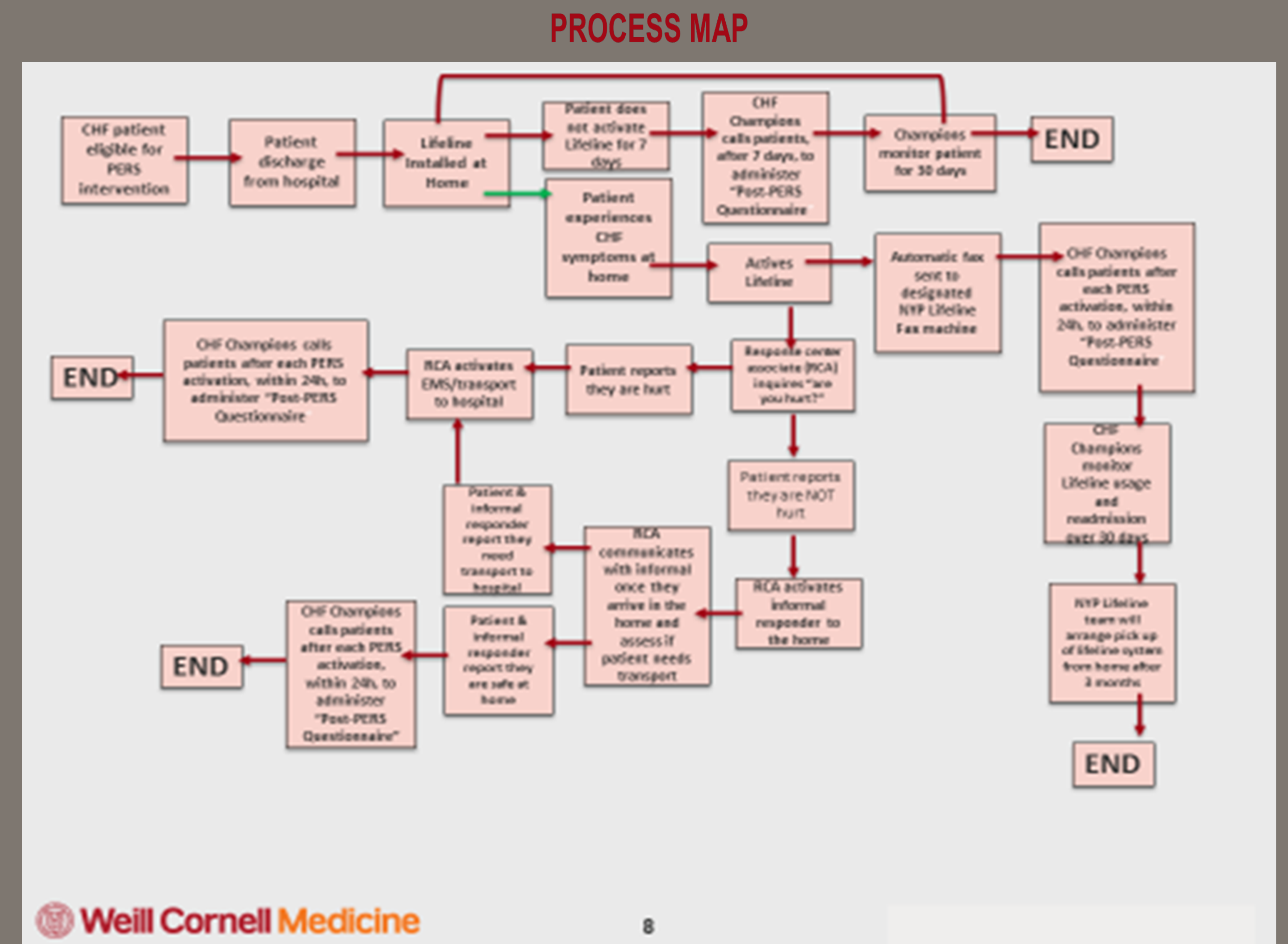
### Objective of the Program

- The overall objective of the study was to better understand the value of PERS in the management of CHF patients in the community once discharged from the hospital.
- The study's secondary objective was to reduce inpatient medicine CHF readmissions by 10%, with a goal of 16.101%. The overall NYP cross-campus goal for CHF readmission reduction is 10%. During the study, CHF champions tracked 30-day readmissions of identified CHF patients on internal medicine units who were offered the PERS intervention.

### Program Design & Methods

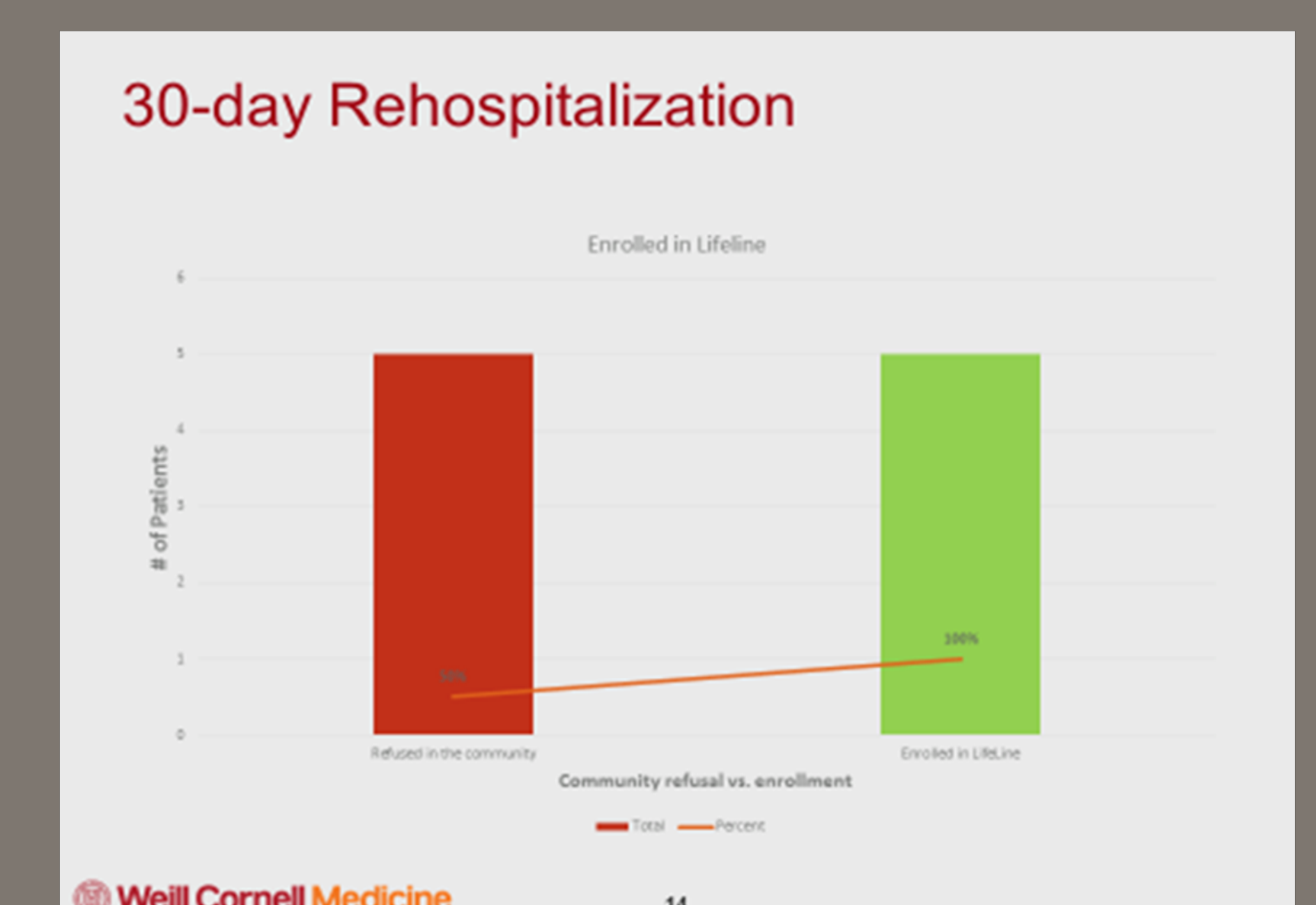
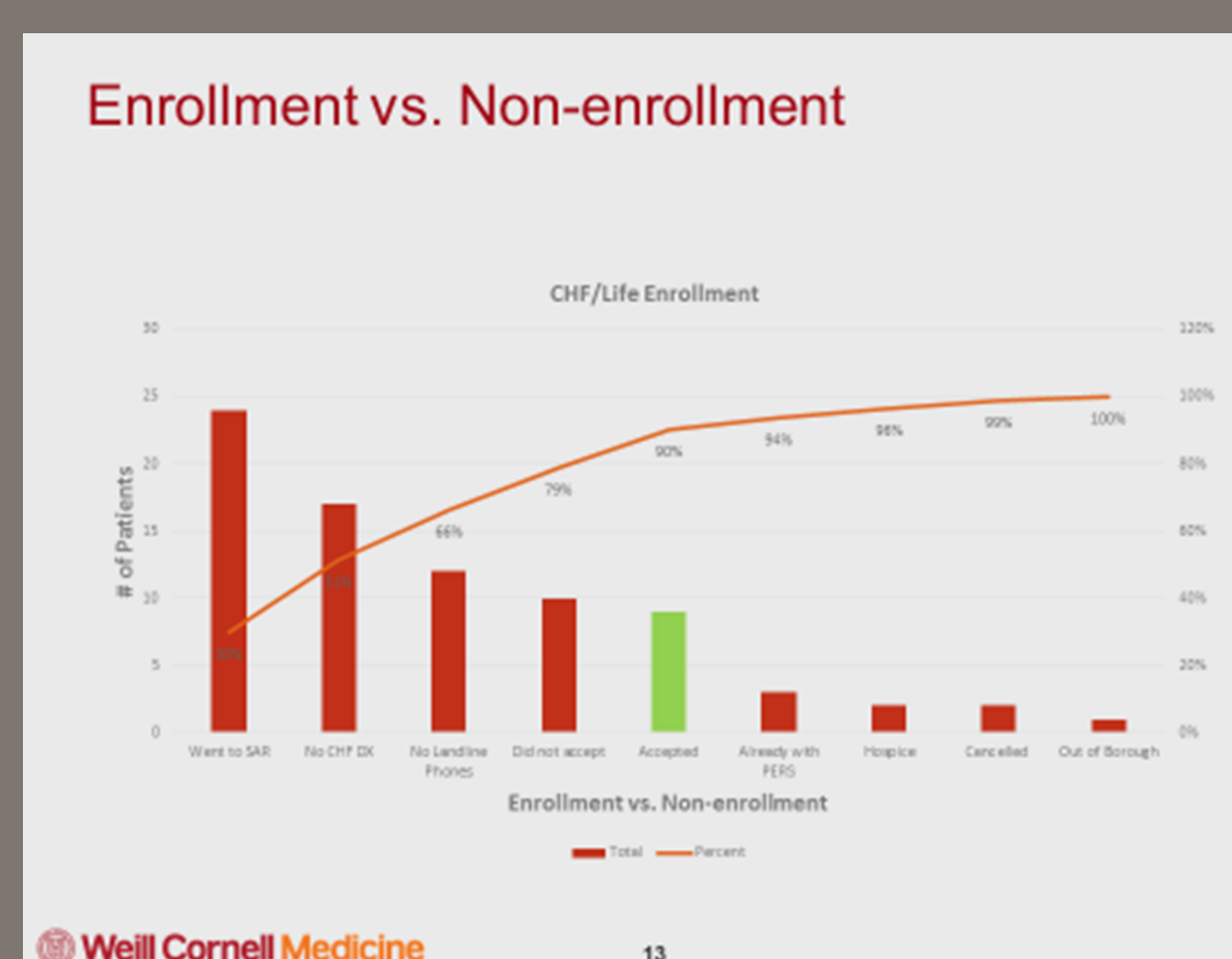
- The investigators utilized an experimental study design, with control and intervention groups
- The experimental study design allowed for historical data to be used for control group analysis, and for inclusion of active CHF patients as the intervention group. Research team members from each internal medicine unit recruited potential PERS recipients throughout the specified time period from October 2019 through March 1, 2020.
- Post-intervention analysis was performed to evaluate the effectiveness of intervention. Descriptive statistics were utilized to describe the study population (N). Fischer's exact tests were used to identify differences between PERS and non-PERS users.

Outcome Measures	Process Measures
<ul style="list-style-type: none"><li>• Decrease length of stay</li></ul>	<ul style="list-style-type: none"><li>• Length of stay monitored through Qventus</li></ul>
<ul style="list-style-type: none"><li>• Measure the number of actionable barriers noted in Qventus</li></ul>	<ul style="list-style-type: none"><li>• Number of escalations notes in Qventus</li></ul>
<ul style="list-style-type: none"><li>• Monkey survey to capture staff's perception of new escalation process</li></ul>	<ul style="list-style-type: none"><li>• Number of escalations documented to be actionable</li></ul>



### Results

- The results of the study show there is evidence that PERS use in CHF management could prove to be beneficial. However, more research is needed to determine ultimate evidence of positive outcomes. The main barrier to achieving study objectives was the small amount of PERS recipients.
- Only five patients received the intervention. However, all five verbalized they felt it was beneficial in management of CHF even if they did not press the button.
- With a larger sample group of recipients, more data could be collected on CHF readmission rates of those with PERS in the home.
- Three groups of patients were most notably unable to receive PERS intervention: those without landlines (33%), those with cognitive barriers (17.5%) and those already in possession of PERS (11.2%).
- The parameters of the study prevented the inclusion of persons without a landline, which was the most statistically significant barrier ( $\alpha=.074$ ).
- Patients who did not go home after hospitalization were disqualified, such as those who went to a subacute care facility (30%).



### Conclusions & Next Steps

- With a larger group of PERS recipients, more data could possibly be collected in future studies on CHF readmission rates of those with PERS in the home setting. The parameters of this study prevented the inclusion of persons without a landline, which was the most statistically significant barrier ( $\alpha=.074$ ). Another disqualifier was the presence of PERS already in the home. The inclusion of patients who utilize a cellular phone or who already have PERS would have allowed for a larger intervention group. Ultimately this would allow for a more conclusive study.



## **Personal Emergency Response (PERS) Utilization in CHF Medicine Patients at Home**

### *Introduction/Background*

Congestive heart failure (CHF) is a healthcare strain that culminates in high numbers of hospital readmissions. In response, the WCMC Care Coordination CHF champions (investigators) offered PERS at no cost to CHF medicine patients to determine if it would reduce CHF hospital readmissions. The investigators' intervention involved PERS usage as related to CHF. The overall objective of the study was to better understand the value of PERS in the management of CHF patients in the community once discharged from the hospital.

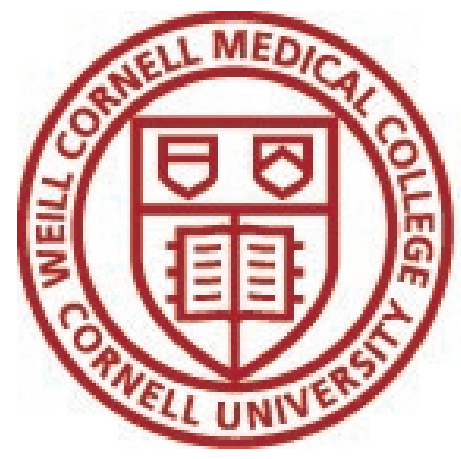
### *Data and Methods*

The investigators utilized an experimental study design, where research team members from each internal medicine unit recruited potential PERS recipients throughout the specified time period from October 2019 through March 1, 2020. Of those in the overall sample group of 80 patients, 75 were not eligible or declined PERS intervention for various reasons. Five actual PERS recipients were recruited.

### *Results/Conclusions*

The results of the study show there is evidence that PERS use in CHF management could prove to be beneficial. The main barrier to achieving study objectives was the limited number of PERS recipients, with only five patients receiving the intervention. The parameters of the study prevented the inclusion of persons without a landline, which was the most statistically significant barrier ( $\alpha=.074$ ). Another disqualifier was the presence of PERS already in the home. The inclusion of patients who utilize a cellular phone or who already have PERS would have allowed for a larger intervention group, which would benefit future studies.





**Weill Cornell  
Medicine**



**Statement of the Problem:** The review of glucose data in the outpatient setting can be inefficient and ineffective. Cloud-based glucose management platforms can streamline glucose data review and generate a standardized glucose download report. At the Weill Cornell Endocrine Faculty Practice, there were multiple modalities of glucose review including patient self-report, patient glucose logs, and clinician manual review of glucose meter, each with their unique challenges. Less than 20% of glucose review was via glucose cloud-based download platforms.

**Objective/Aim Statement:** To assess the feasibility of implementing a streamlined method of obtaining and reviewing blood glucose and sensor data whereby at least 50% of patients with diabetes mellitus at the Endocrine Faculty Practice will have their glucose data downloaded onto a cloud-based platform.

## Design/Methods:

PDSA Methodology was employed:

**PLAN:** Develop a diabetes clinical workflow whereby glucose review via cloud-based platform could be completed in an effective and efficient manner

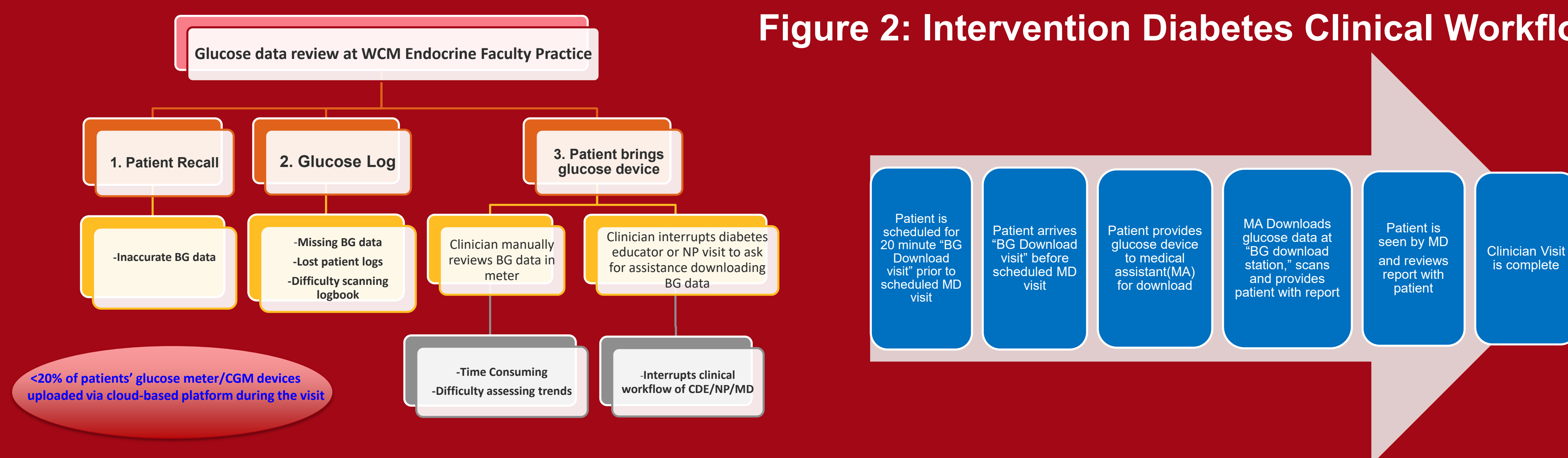
**DO:**

- Identify non-pregnant patients with diabetes mellitus being managed by the Endocrine Faculty Practice
- Establish a “glucose download station” within the Faculty Practice office
- Train medical assistants on downloading glucose data at the “glucose download station”
- Train scheduling team(call center, medical secretary, front desk staff) to schedule patients for 20 minute “glucose download visit” prior to their scheduled Clinician visit
- Patient awareness campaign via flyers in waiting room
- Update faculty on new clinical workflow

**STUDY:** Feasibility longitudinal study in non-pregnant patients ages 18-89 with diabetes mellitus, managed at the Endocrine Faculty Practice. Study period was initially from end of January 2020-June 2020, however was interrupted in mid-March 2020 due to COVID19. 540 distinct patients were included, 26 of the patients had multiple visits during this period, therefore total of 569 diabetes visits were included in the study.

**ACT:** Optimize the clinical workflow and continue to adapt to changes in the clinical environment

**Figure 2: Intervention Diabetes Clinical Workflow**



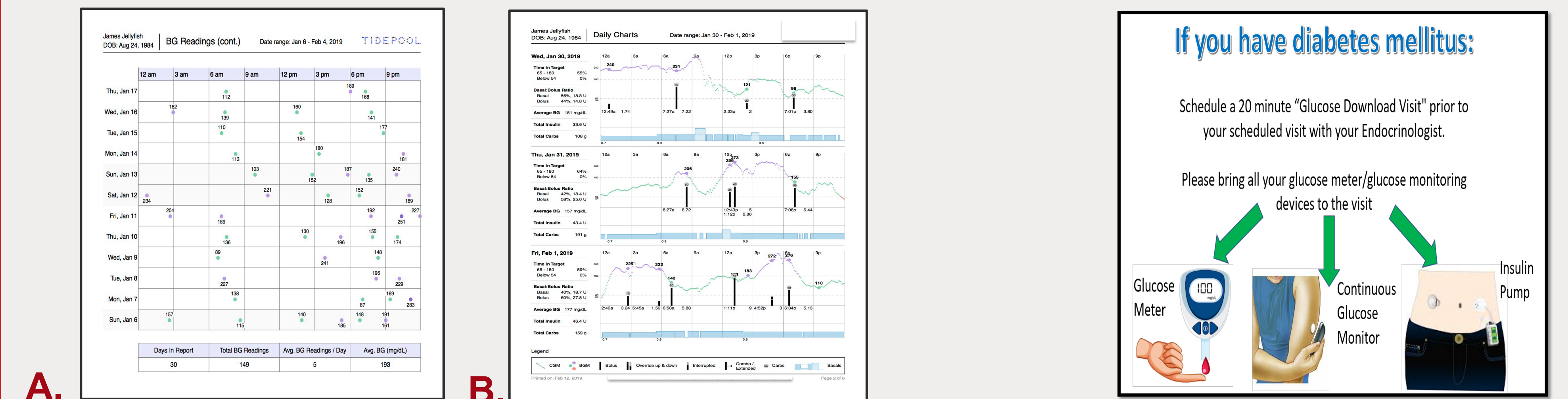
**Figure 1: Pre-Intervention Glucose Data Review**

# The FEASIBILITY of Using a Cloud-based Glucose Management Platform in an Outpatient Setting

Annual WCM Quality Improvement & Patient Safety Poster Symposium

Anyanate Gwendolyne Jack MD MPH<sup>1</sup>, Jane Jeffrie Seley DNP MPH<sup>2</sup>, Gulce Askin MPH<sup>1</sup>

<sup>1</sup> Weill Cornell Medicine, <sup>2</sup>New York Presbyterian Hospital/Cornell gwj9003@med.cornell.edu



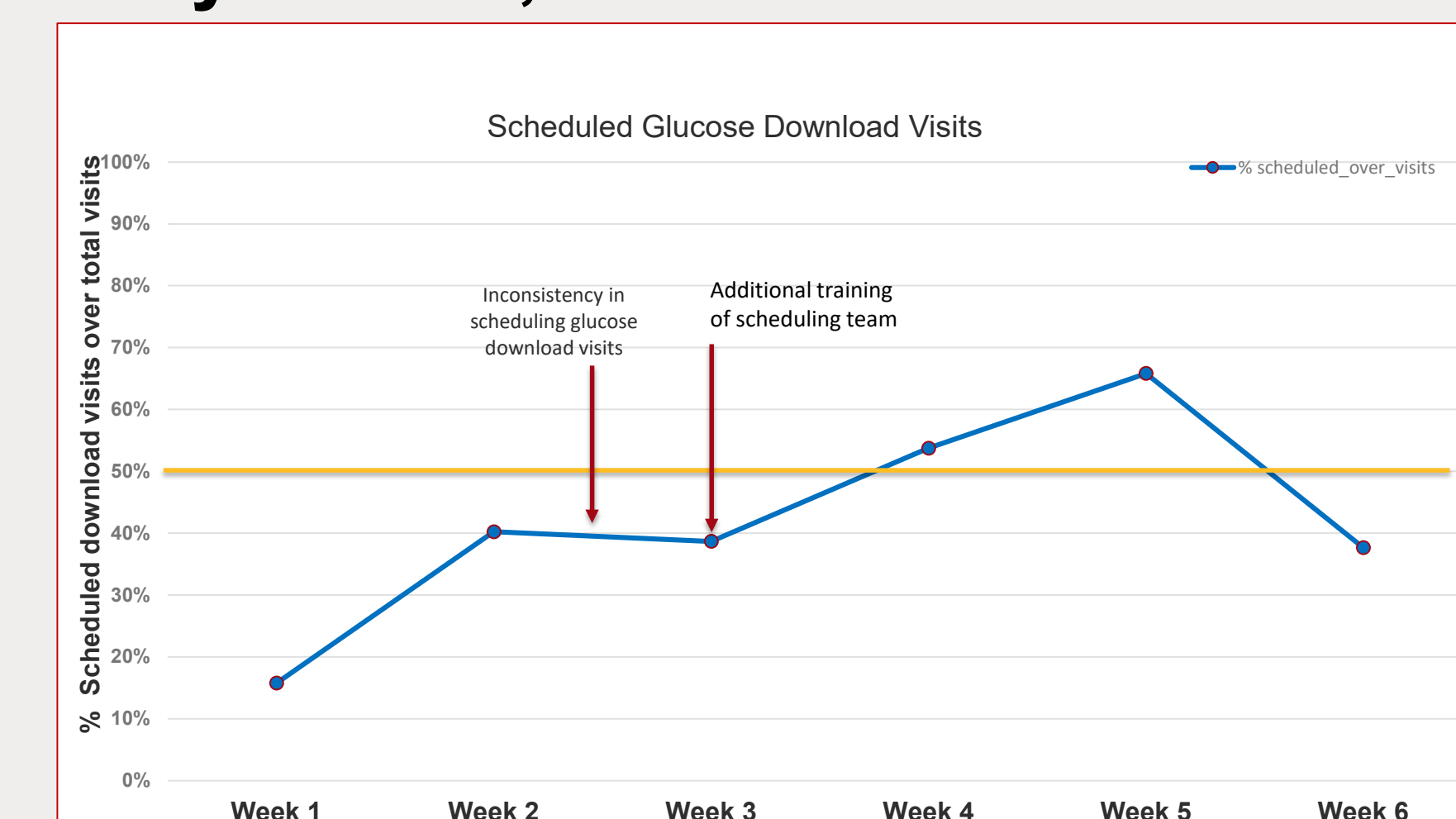
**Figure 3A. Sample Download Report from Glucose Meter**

**Figure 4: Patient Awareness Campaign**

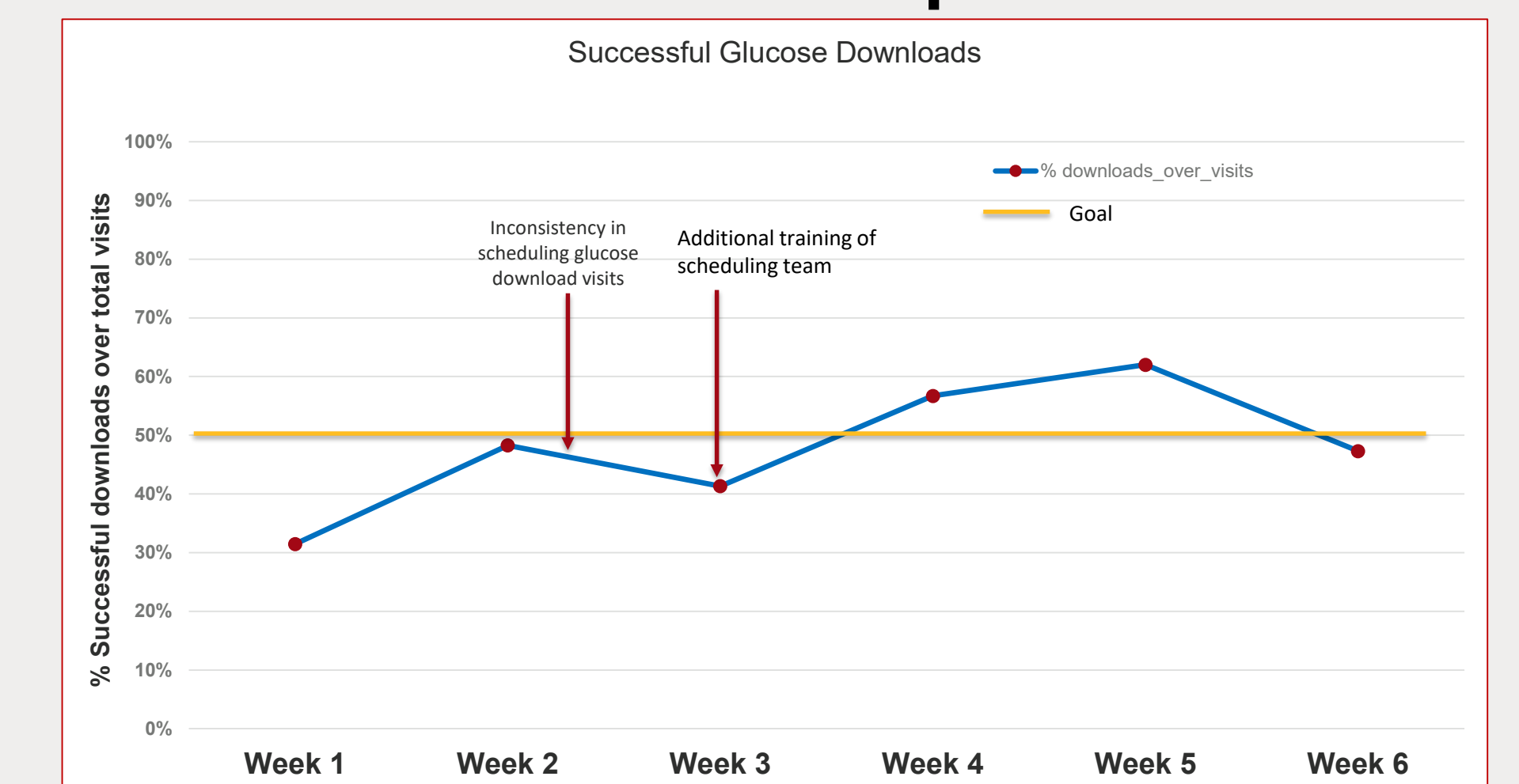
**Figure 3B: Sample download report from insulin pump/continuous glucose monitor**

## Results:

- Glucose Device Used by Patients(n=569): 58% with SMBG use, (35%) with CGM use, 7.2% without use of glucose device
- Method of Glucose Review: in 335 visits where glucose review method was documented: 76% were via cloud-based platform, 10% were self-report, 6.7% patient glucose log
- By week 5, 66% of diabetes visits included 20 minute Glucose download visit
- By week 5, 62% of diabetes visits included data review via cloud-based platform



**Figure 5: Percentage of Glucose Download Visits**



**Figure 6: Percentage Cloud Based Glucose Download**

## Conclusions:

It is feasible to incorporate cloud-based platforms for review of glucose data in an outpatient Endocrine Practice. Of the visits where method of glucose review was documented, the majority of glucose data review was via cloud-based platforms. The number of glucose download visits and cloud-based glucose data review increased initially, however slightly decreased between weeks 2-3 due to inconsistencies in scheduling patients for download visits. After additional training of the scheduling team, the percentage of glucose download visits and cloud-based glucose downloads increased after week 3 and ultimately surpassed the goal and peaked to above 60% by week 5. Due to COVID19 pandemic in March 2020, there was a sharp decline by week 6, and the study was interrupted. The increased awareness and utilization of cloud-based platforms by patients, staff, faculty due to the intervention, will prove to be useful as we adapt the intervention to the new clinic hybrid model incorporating in-person and telemedicine in the post-COVID19 era.

Selected References:

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- Mullen DM, Bergental R, Criego A, Arnold KC, Goland R, Richter S. Time Savings Using a Standardized Glucose Reporting System and Ambulatory Glucose Profile. *J Diabetes Sci Technol.* 2018;12(3):614-21.



# **Title: The FEASIBILITY of Using a Cloud-based Glucose Management Platform in an Outpatient Setting**

Authors: Anyanate Gwendolyne Jack MD, MPH<sup>1</sup>; Jane Jeffrie Seley DNP MPH<sup>2</sup>, Gulce Askin MPH<sup>1</sup>

<sup>1</sup> Weill Cornell Medicine, New York Presbyterian Hospital/Cornell

**1. Statement of the Problem:** The review of glucose data in the outpatient setting can be inefficient and ineffective. Cloud-based glucose management platforms can streamline glucose data review and generate a standardized glucose download report. At the Weill Cornell Endocrine Faculty Practice, there were multiple modalities of glucose review including patient self-report, patient glucose logs, and clinician manual review of glucose meter, each with their unique challenges. Less than 20% of glucose review was via glucose cloud-based download platforms.

**2. Objective/Aim of the study:** To assess the feasibility of implementing a streamlined method of obtaining and reviewing BG/SG data whereby at least 50% of patients with diabetes mellitus at the Endocrine Faculty Practice will have their glucose data downloaded onto a cloud-based platform.

### **3. Project Design/Methods:**

PDSA Methodology was employed:

**Plan:** Develop a diabetes clinical workflow whereby glucose review via cloud-based platform could be completed in an effective and efficient manner

#### **Do:**

- a. Identify non-pregnant patients with diabetes mellitus being managed by the Endocrine Faculty Practice
- b. Establish a “glucose download station” within the Faculty Practice office
- c. Train medical assistants on downloading glucose data at the “glucose download station”
- d. Train scheduling team(call center, medical secretary, front desk staff) to schedule patients for 20 minute “glucose download visit” prior to their scheduled Clinician visit and bring their glucose measuring devices to the visit
- e. Patient awareness campaign via flyers in waiting room
- f. Update faculty on new clinical workflow

**Study:** Feasibility longitudinal study in non-pregnant patients ages 18-89 with diabetes mellitus, managed at the Endocrine Faculty Practice. Study period was initially from end of January 2020-June 2020, however was interrupted in mid-March 2020 due to COVID19 pandemic. During this 6 week study period, 540 distinct patients were included, 26 of the patients had multiple visits during this period, therefore total of 569 diabetes visits were included in the study.

**Act:** Optimize the clinical workflow and continue to adapt to changes in the clinical environment

### **4. Results:**

- a. Glucose Device Used by Patients(n=569): 58% with SMBG use, (35%) with CGM use, 7.2% without use of glucose device
- b. Method of Glucose Review: in 335 visits where glucose review method was documented: 76% were via cloud-based platform, 10% were self-report, 6.7% patient glucose log



- c. By week 5, 66% of diabetes visits included 20 minute Glucose download visit
- d. By week 5, 62% of diabetes visits included data review via cloud-based platform

## **5. Conclusions:**

It is feasible to incorporate cloud-based platforms for review of glucose data in an outpatient Endocrine Practice. Of the visits where method of glucose review was documented, the majority of glucose data review was via cloud-based platforms. The number of glucose download visits and cloud-based glucose data review increased initially, however slightly decreased between weeks 2-3 due to inconsistencies in scheduling patients for download visits. After additional training of the scheduling team, the percentage of glucose download visits and cloud-based glucose review increased after week 3 and ultimately surpassed the goal and peaked to above 60% by week 5. Due to COVID19 pandemic in March 2020, there was a sharp decline by week 6, and the study was interrupted. The increased awareness and utilization of cloud-based platforms by patients, staff, faculty due to the intervention, will prove to be useful as we adapt the intervention to the new clinic hybrid model incorporating in-person and telemedicine in the post-COVID19 era.





**Weill Cornell  
Medicine**

**NewYork-  
Presbyterian**

## The Weekend Add-Ons Quality Improvement Initiative

### The New York Academy of Medicine, Anesthesiology Residents' Night Annual WCM Quality Improvement & Patient Safety Poster Symposium

Olga Rozental, MD, PhD; Joel Ehrenfeld, MD, DPT; Margo Hoyler, MD; Michael Kim, MD; Jyun-You Liou, MD, PhD; Vanessa Ng, MD; Patricia Fogarty Mack, MD; Rohan Panchamia, MD | September 15, 2020

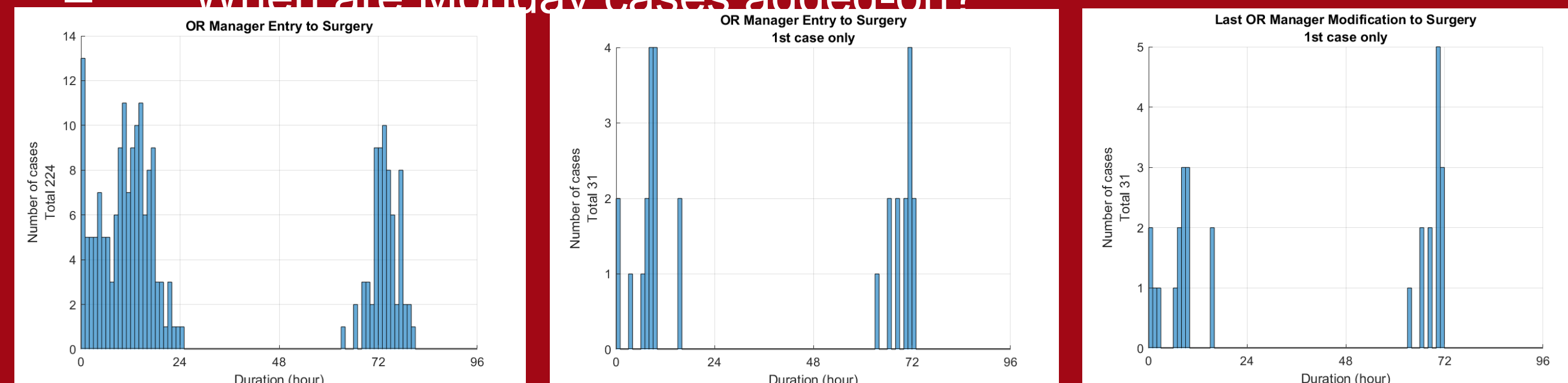
For comments/questions, please contact [mam9508@nyp.org](mailto:mam9508@nyp.org)

## Introduction

Pre-operative assessments are an essential component of anesthesia care, which are mandated by the American Board of Anesthesiology and the Joint Commission. A thorough evaluation can reduce the risk of patient harm, while a last-minute evaluation may be less comprehensive and contribute to OR delays. The goal of this initiative was to promote timely evaluations for patients "added-on" for Monday morning surgery.

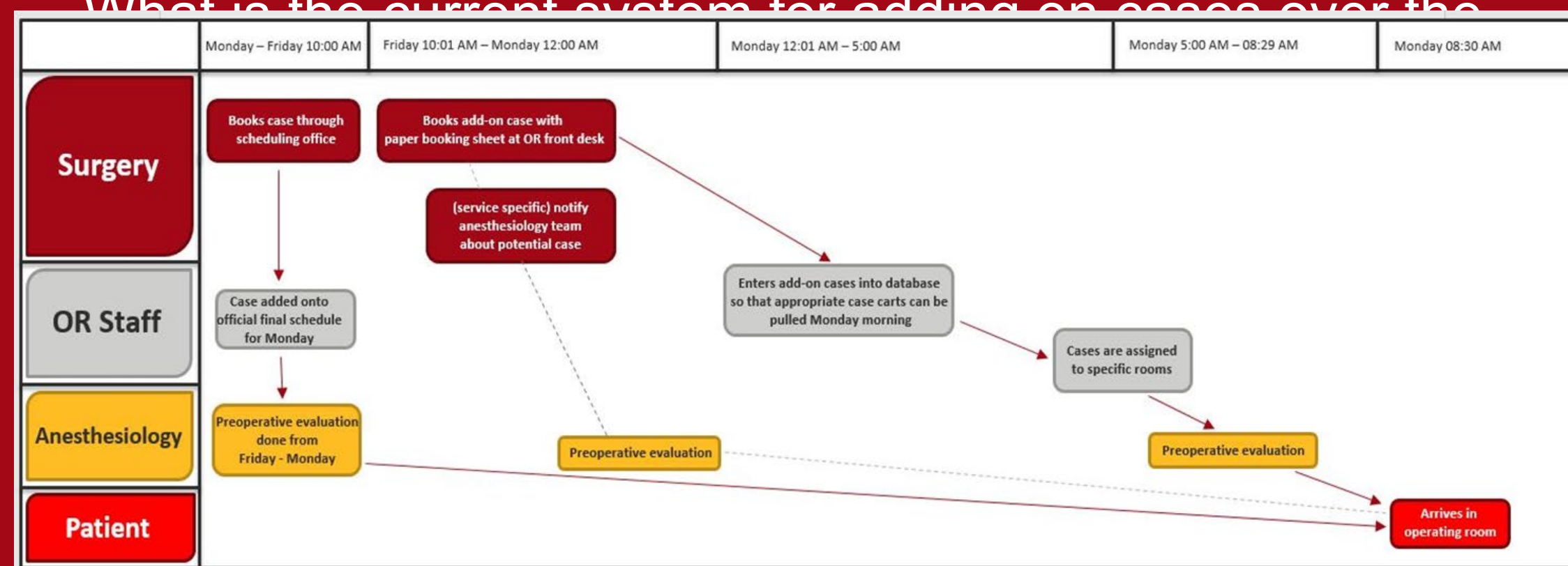
## Current state and system

### When are Monday cases added-on?



- 224 add-on cases from September – November 2018 (7 weeks); 31 cases were scheduled as first start cases (8:30 AM)
- Entered in OR manager after schedule for Monday was finalized on Friday (after 10 AM) or on Monday morning
- Weekly average first case bookings = 5

### What is the current system for adding on cases over the weekend?



### Is the current system perceived as problematic by providers?

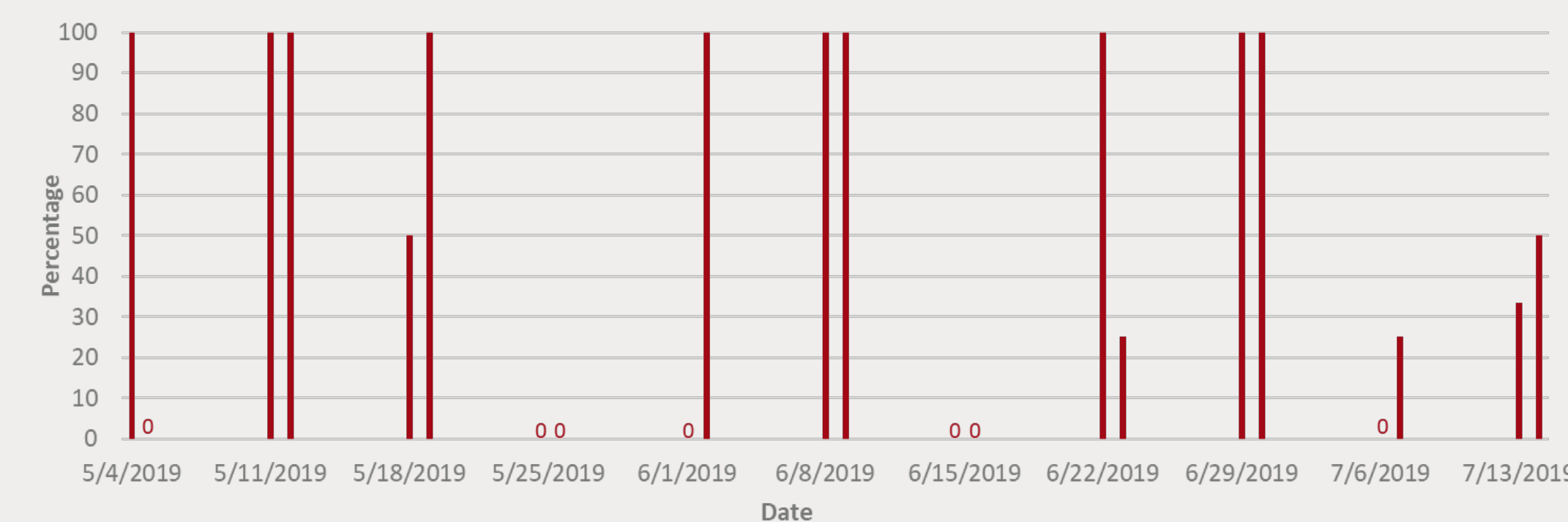
How satisfied are you with the current system, whereby add-on patients are evaluated on the morning of surgery by the anesthesia provider assigned to the case?	Residents (n = 18)	CRNAs (n = 4)	Attending (n = 18)
Very Satisfied	17%	0%	11%
Somewhat Satisfied	17%	25%	33%
Neutral	28%	0%	22%
Somewhat Dissatisfied	33%	25%	17%
Very Dissatisfied	6%	50%	17%

## Intervention

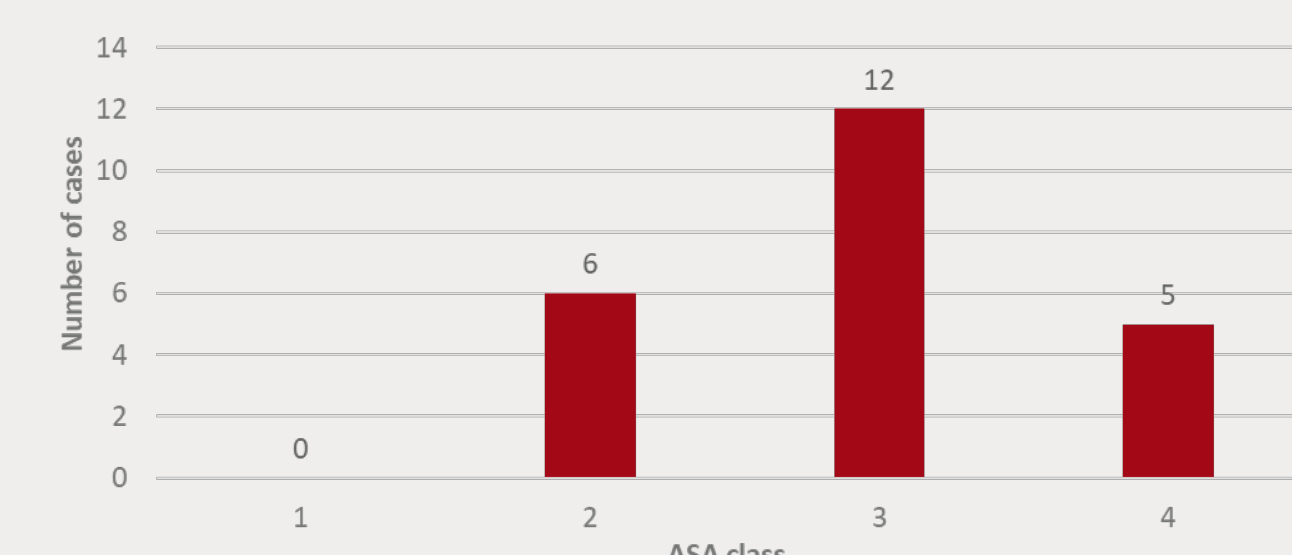
- The current system does not allow for generation of automated notifications to the department due to limited OR desk staffing and education regarding timely entry of add-on cases for future days.
- We implemented a novel notification system whereby on-call PACU residents identified and evaluated patients who had been added-on for Monday morning surgery on Saturday and Sunday by 4 PM.

## Results

- Notification rate gauged by percentage of add-on cases with completed pre-operative evaluations from May – July 2019



- 23 patients evaluated over 11 weekends
- Estimated completion rate: 46%
- Frequency of 100% completion rate: 31.8%
- Frequency of 0% completion rate: 31.8%



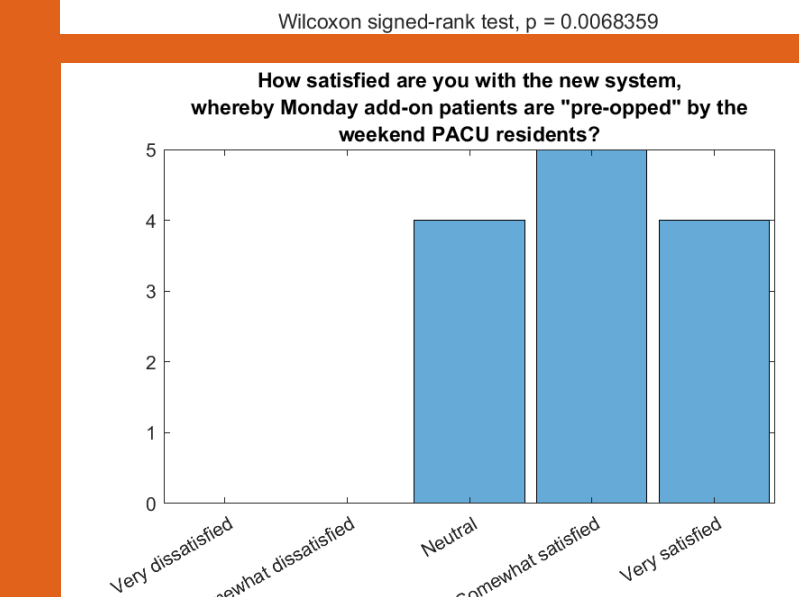
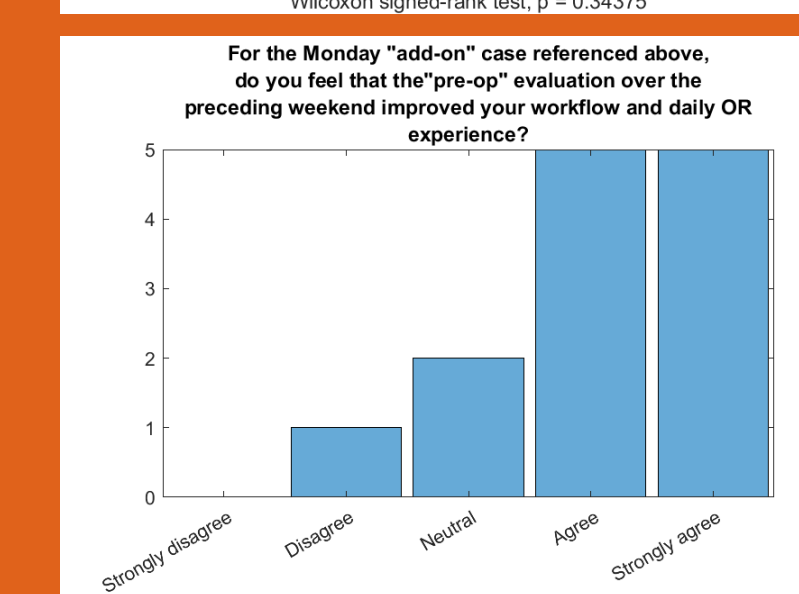
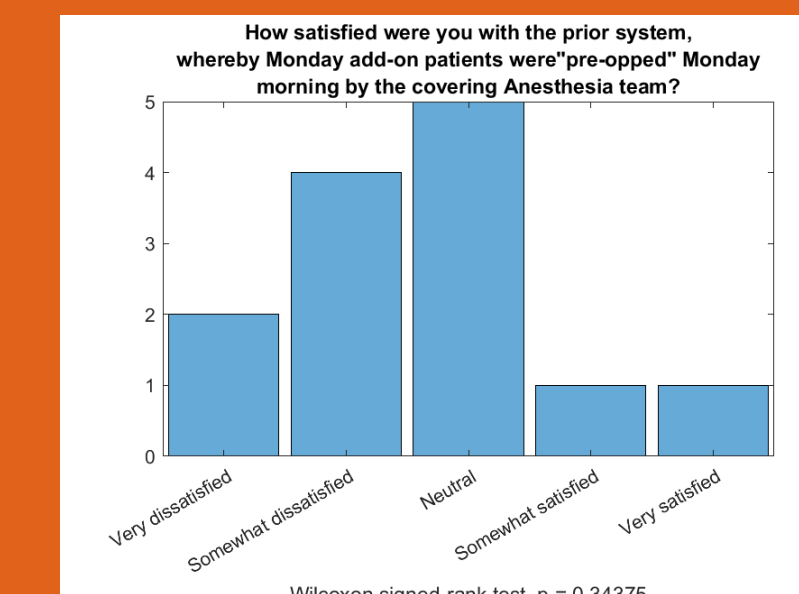
ASA 1: 0%  
ASA 2: 26%  
ASA 3: 52%  
ASA 4: 22%

- Case volume and distribution (captured before 4 PM)
- Average number of Saturday add-ons: 2.3
- Average number of Sunday add-ons: 3
- Daily average number of weekend add-ons: 2.67 (range 1-6)
- Average time spent on pre-operative evaluations: 43 minutes (range 15-90)
- Percentage of cases that were first start: 13%
- Percentage of cases that went on Monday: 61%

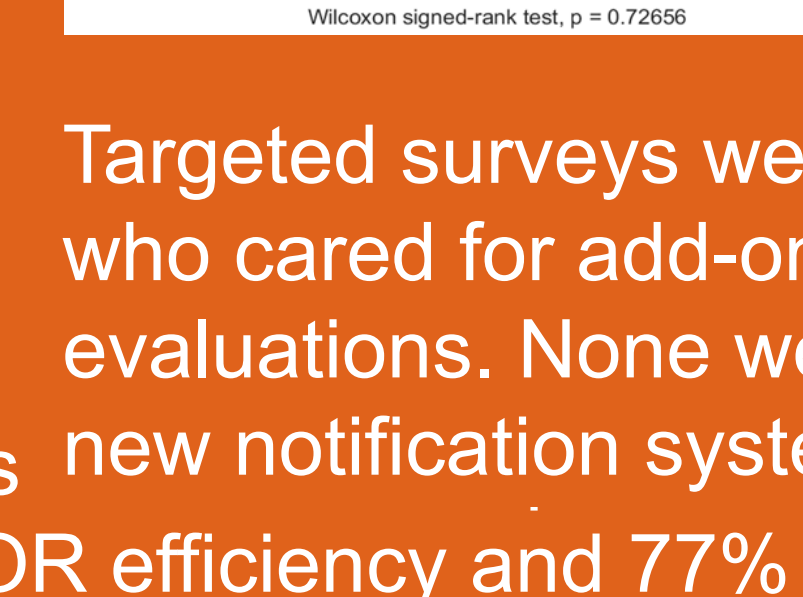
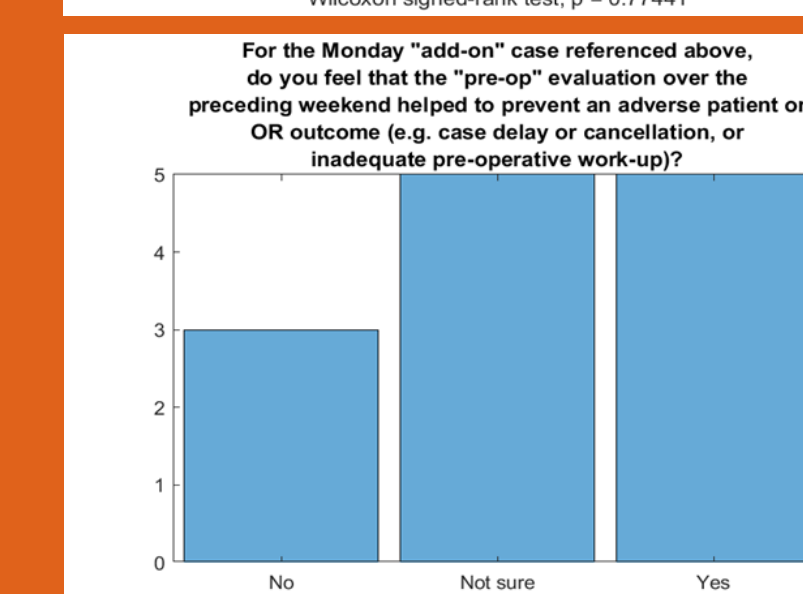
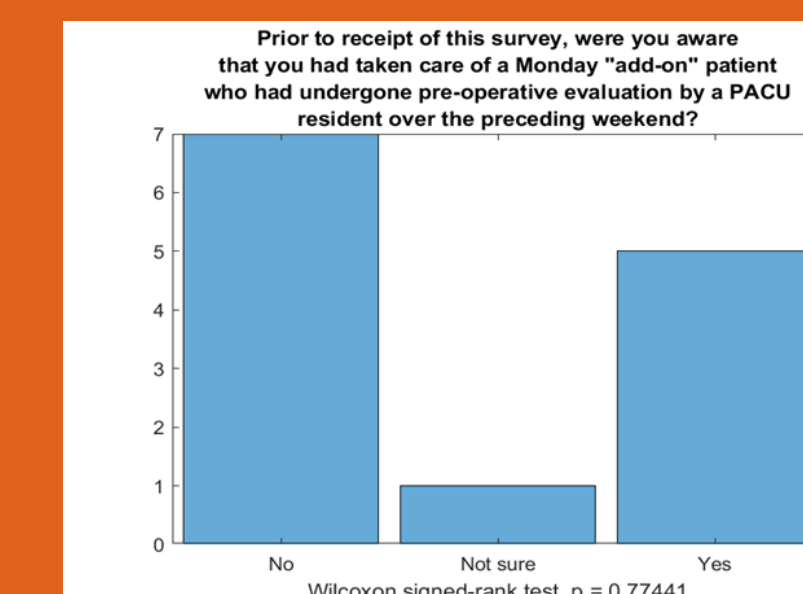
## Results (continued)

- Pre-operative clinical recommendations resulted from 13% of evaluations, which included cessation of ACE inhibitors and performance of EBUS in the general OR rather than the bronchoscopy suite for a patient with cardiac comorbidities.
- Post-intervention satisfaction among anesthesiology providers

### Non-targeted survey



### Targeted survey



Targeted surveys were distributed to providers who cared for add-on patients with completed evaluations. None were dissatisfied with the new notification system.

77% felt that the "pre-op" evaluation over the preceding weekend significantly improved patient care?

77% felt that the "pre-op" evaluation over the preceding weekend significantly improved OR efficiency and 77% felt that workflow improved

- Residents were more dissatisfied with the new system than attendings or CRNAs

## Conclusions

- The new notification system alerted anesthesiology providers of 46% of cases added-on over the weekend for Monday by 4:00 PM on Sunday.
- Many weekend add-on cases are not first start cases and do not happen on Monday.
- Limitations of this study include small case load, short intervention period, limited survey participation, and a lack of standardization for the evaluation process.



### Statement of the Problem:

The Coronavirus Disease 2019 (COVID-19) reached extraordinary numbers in New York City leading to overcrowding in hospitals and critically ill patients in need of intensive care beds fighting for their lives. To support the critical care needs of these patients, pediatric intensive care units transitioned to adult intensive care units in a matter of days. In response to this transition, several interventions were designed to prepare pediatric nurses to care for critically ill adult patients. One of the clinical manifestations of COVID-19 in these critically ill patients was Acute Kidney Injury (AKI) requiring hemodialysis (HD) or continuous renal replacement therapy (CRRT). These factors, coupled with limited supplies and skilled nurses led to the formation of a Peritoneal Dialysis (PD) Team consisting of pediatric nurses with expertise in PD.

### Objective/Aim of the Study:

The COVID-19 crisis challenged nursing to manage the unexpected, leading to an innovative approach to thinking and utilization of all resources to provide the highest level of care to critically ill patients with AKI. This objective was met with the creation of the PD Team consisting of pediatric nurses managing the PD needs of critically ill adult COVID-19 patients with AKI requiring renal replacement therapy (RRT).

### Project/Design Methods:

**PLAN:** An interdisciplinary team of pediatric nurses with expertise in PD, nephrologists, pharmacists, adult critical care nurses, IT and the supply chain team developed a plan to manage patients with AKI. The PD Team worked in groups of two initiating, troubleshooting, and taking down the PD.

**DO:** The PD team was notified when a diagnosis of AKI was made, or when the need for PD was identified (See Figure 1). This consistent approach supported teamwork, collaboration and an opportunity for the pediatric nurses to provide exceptional PD care. In collaboration with IT, a Mobile Heartbeat dynamic role was created for direct communication between the teams.

**STUDY:** Data was collected on patient outcomes including duration of PD, functionality of PD catheters, disease recovery and transfer to home or a higher level of care.

**ACT:** The Pediatric PD team was able to provide PD for AKI at NewYork Presbyterian Hospital – Weill Cornell Medical Center and was indispensable in caring for adult COVID-19 patients.

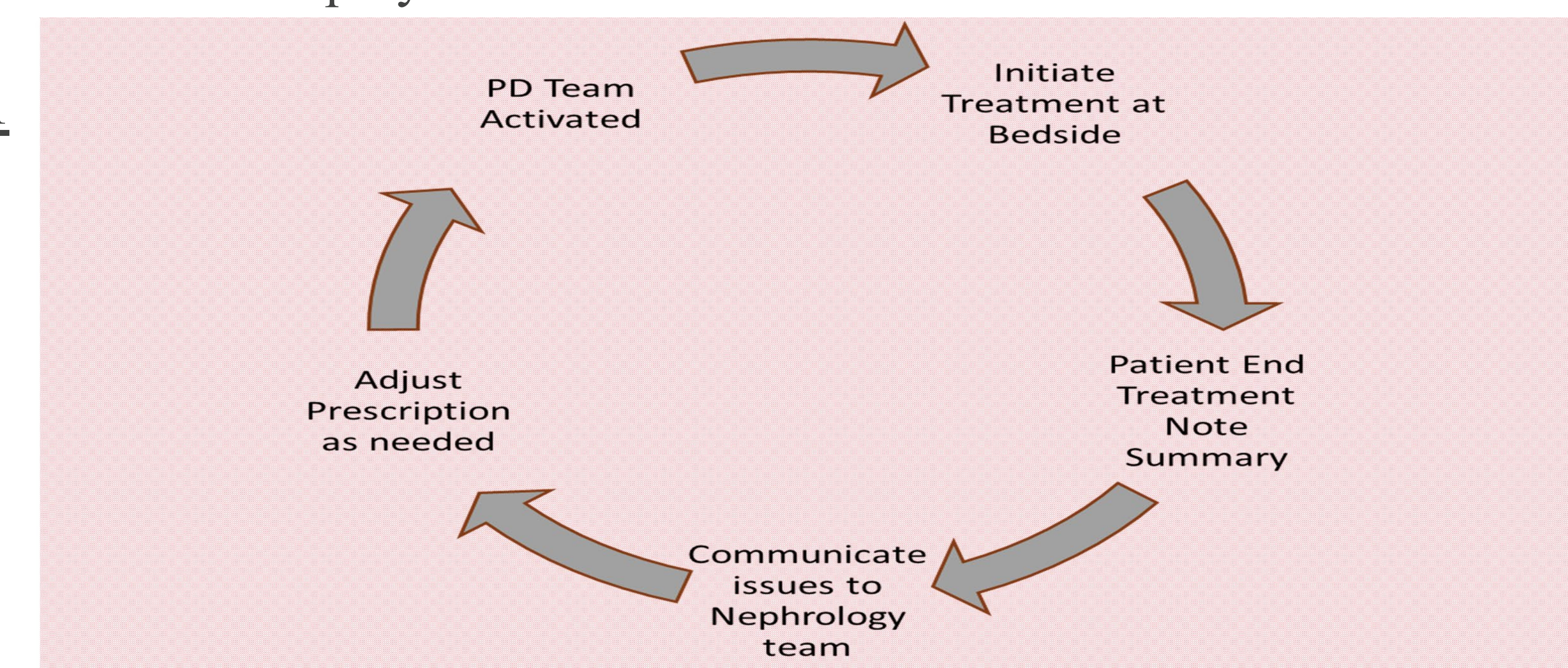
### Results:

- Eleven patients were treated with PD for AKI during the peak of the COVID-19 pandemic, four patients expired, one patient was discharged home on HD, and six patients recovered their renal function prior to discharge and had their PD catheters removed.
- Six patients (54%) survived their acute critical illness with renal recovery, and were subsequently discharged home with a median duration hospital stay of 35 days. Four patients died of multiple organ failure, and one patient was discharged on HD.
- Regarding PD catheter outcomes, patients were treated with PD for a median duration of 14 days (IQR: 10–20). Ten catheters (91%) remained functional during the duration of treatment. One patient was switched to CRRT due to primary PD catheter malfunction; this patient had a body mass index greater than 35 kg/m2 and a history of appendectomy. There was one episode of leak that was resolved with temporary reduction of dwell volume and the patient was able to continue PD. There were no episodes of peritonitis.
- One patient was switched to HD prior to discharge to a skilled nursing facility that did not have PD available. One patient was converted to CRRT before death at the discretion of the intensivist, although the PD catheter was functional. Two patients required CRRT/HD supplementation for variable ultrafiltration and active gastrointestinal bleeding but were able to return to PD before renal recovery.

### Conclusion:

A collaborative approach for providing PD for AKI utilizing pediatric nurses with PD experience, allowed for all dialysis resources to be utilized at a time of multiple resource constraints during the peak of the COVID-19 pandemic. This ensured that all patients who required RRT could receive it. Rapid deployment of a pediatric PD team (1-2 days) working with adult providers underscores their ability to be effective despite working out of their comfort zone caring for adult patients. The process of creating this team is now established should redeployment occur in a second COVID-19 wave.

**Figure 1**





## **A Collaborative Approach Utilizing Pediatric Nurses to Care for Patients with COVID-19 on Peritoneal Dialysis for Acute Kidney Injury**

### **Annual WCM Quality Improvement & Patient Safety Poster Symposium - September 15, 2020**

Hemway, R.J., Alleyne, F., Deosaran, Thalmann, R., Enriquez, U., G., Alvarez, M., Brachfeld, A., Brettholz, A., Cabrera, M., Dittrich, D., Dudas, M., Fahey, K., Fedele, K., Hess, B., Johnsons, K., Lerner, J., Marsh, C., McNulty, K., Mendez, K., Merritt, D., Pizzuto, D., Russo, A., Silakowski, K., Singh, V., Zupnick, C., Srivatana, V.

**Statement of the Problem:** The Coronavirus Disease 2019 (COVID-19) reached extraordinary numbers in New York City leading to overcrowding in hospitals and critically ill patients in need of intensive care beds fighting for their lives. To support the critical care needs of these patients, pediatric intensive care units transitioned to adult intensive care units in a matter of days. In response to this transition, several interventions were designed to prepare pediatric nurses to care for critically ill adult patients. One of the clinical manifestations of COVID-19 in these critically ill patients was Acute Kidney Injury (AKI) requiring hemodialysis (HD) or continuous renal replacement therapy (CRRT). These factors, coupled with limited supplies and skilled nurses led to the formation of a PD Team consisting of pediatric nurses with expertise in PD.

**Objective/Aim of the Study:** The COVID-19 crisis challenged nursing to manage the unexpected, leading to an innovative approach to thinking and utilization of all resources to provide the highest level of care to critically ill patients with AKI. This objective was met with the creation of the PD Team consisting of pediatric nurses managing the PD needs of critically ill adult COVID-19 patients with AKI requiring renal replacement therapy (RRT).

### **Project/Design Methods:**

**PLAN:** An interdisciplinary team of pediatric nurses with expertise in PD, nephrologists, pharmacists, adult critical care nurses, IT and the supply chain team developed a plan to manage patients with AKI. The PD Team worked in groups of two initiating, troubleshooting, and taking down the PD.

**DO:** The PD team was notified when a diagnosis of AKI was made, or when the need for PD was identified (See Figure 1). This consistent approach supported teamwork, collaboration and an opportunity for the pediatric nurses to provide exceptional PD care. In collaboration with IT, a Mobile Heartbeat dynamic role was created for direct communication between the teams. **STUDY:** Data was collected on patient outcomes including duration of PD, functionality of PD catheters, disease recovery and transfer to home or a higher level of care.

**ACT:** The Pediatric PD team was able to provide PD for AKI at NewYork Presbyterian Hospital – Weill Cornell Medical Center and was indispensable in caring for adult COVID-19 patients.

**Results:** Eleven patients were treated with PD for AKI during the peak of the COVID-19 pandemic, four patients expired, one patient was discharged home on HD, and six patients recovered their renal function prior to discharge and had their PD catheters removed. Six patients (54%) survived their acute critical illness with renal recovery, and subsequently discharged home with a median duration hospital stay of 35 days. Four patients died of multiple organ failure, and one patient was discharged on HD. Regarding PD catheter outcomes, patients were treated with



PD for a median duration of 14 days (IQR: 10–20). Ten catheters (91%) remained functional during the duration of treatment. One patient was switched to CRRT due to primary PD catheter malfunction; this patient had a body mass index greater than 35 kg/m<sup>2</sup> and a history of appendectomy. There was one episode of leak, which resolved with temporary reduction of dwell volume allowing the patient to continue PD. There were no episodes of peritonitis. One patient was switched to HD prior to discharge to a skilled nursing facility that did not have PD available. One patient was converted to CRRT before death at the discretion of the intensivist, although the PD catheter was functional. Two patients required CRRT/HD supplementation for variable ultrafiltration and active gastrointestinal bleeding but were able to return to PD before renal recovery.

### **Conclusion:**

A collaborative approach for providing PD for AKI utilizing pediatric nurses with PD experience, allowed all dialysis resources to be utilized at a time of multiple resource constraints during the peak of the COVID-19 pandemic. This ensured that all patients who required RRT could receive it. Rapid deployment of a pediatric PD team (1-2 days) working with adult providers underscores their ability to be effective, despite working out of their comfort zone caring for adult patients. The process of creating this team is now established should redeployment occur in a second COVID-19 wave.



# Cough Cold and Fever Clinic: A model for the safe management of COVID-19 in the primary care setting

Laura Gingras MD, Fred Pelzman MD, Armyl Marquez RN-BC ACRN NE-BC, Diego Arias MS, Judy Tung, MD

Annual WCM Quality Improvement and Patient Safety Poster Symposium | September 15, 2020

## Problem Statement

In March and April of 2020, cases of COVID-19 in New York City rapidly escalated. In order to prevent the ED from becoming overwhelmed and to provide a pathway for care for patients not sick enough to require hospitalization, there was an urgent need to establish protocols to triage and care for outpatients with symptoms of COVID-19. This had to be done while preventing spread of the virus within the outpatient practice, and while conserving scarce testing supplies and personal protective equipment.

## Objective

To describe the creation of a dedicated ambulatory program to rapidly evaluate, triage, and treat patients with symptoms of COVID-19.

## Design/Methods

- Multidisciplinary work group: physicians, nurses, medical technicians
- Online handbook to communicate protocols, frequently updated
- Real-time tracking of several metrics on a daily basis (see results section).
- Rapid-cycle PDSA methodology, with each day's clinic experience and end-of-day huddle serving as an opportunity to assess barriers & challenges, evaluate protocols, and make changes.

## Results

- 620 patients were seen in the CCF clinic between 3/13 and 6/19/2020.
- 47 patients (8%) were transferred to the ED from the CCF clinic.
- Of patients discharged home, 15 (3%) were later admitted to a hospital.
- Twelve (2%) of the patients seen in CCF clinic died.
  - Of these, seven had been transferred to the ED from the CCF clinic.
  - Five had been discharged home from clinic. Two of these were later admitted to a hospital. Two died at home, one with home hospice.
- 347 patients (56%) were tested for SARS-CoV-2, and 119 (34%) tested positive
  - In month 1, we tested only 38% of patients and 63% of these were positive.
- Telemedicine follow-up for  $\geq 1$  week was achieved for 500 (81%) patients.
- Modifications through our PDSA cycles:
  - The "telephone HPI" – decrease provider exposure time, allow thorough interview & counseling
  - Testing for exertional hypoxia with a one minute walk-in-place test
  - Increased use of labs and portable chest xray based on inpatient data

## Conclusion

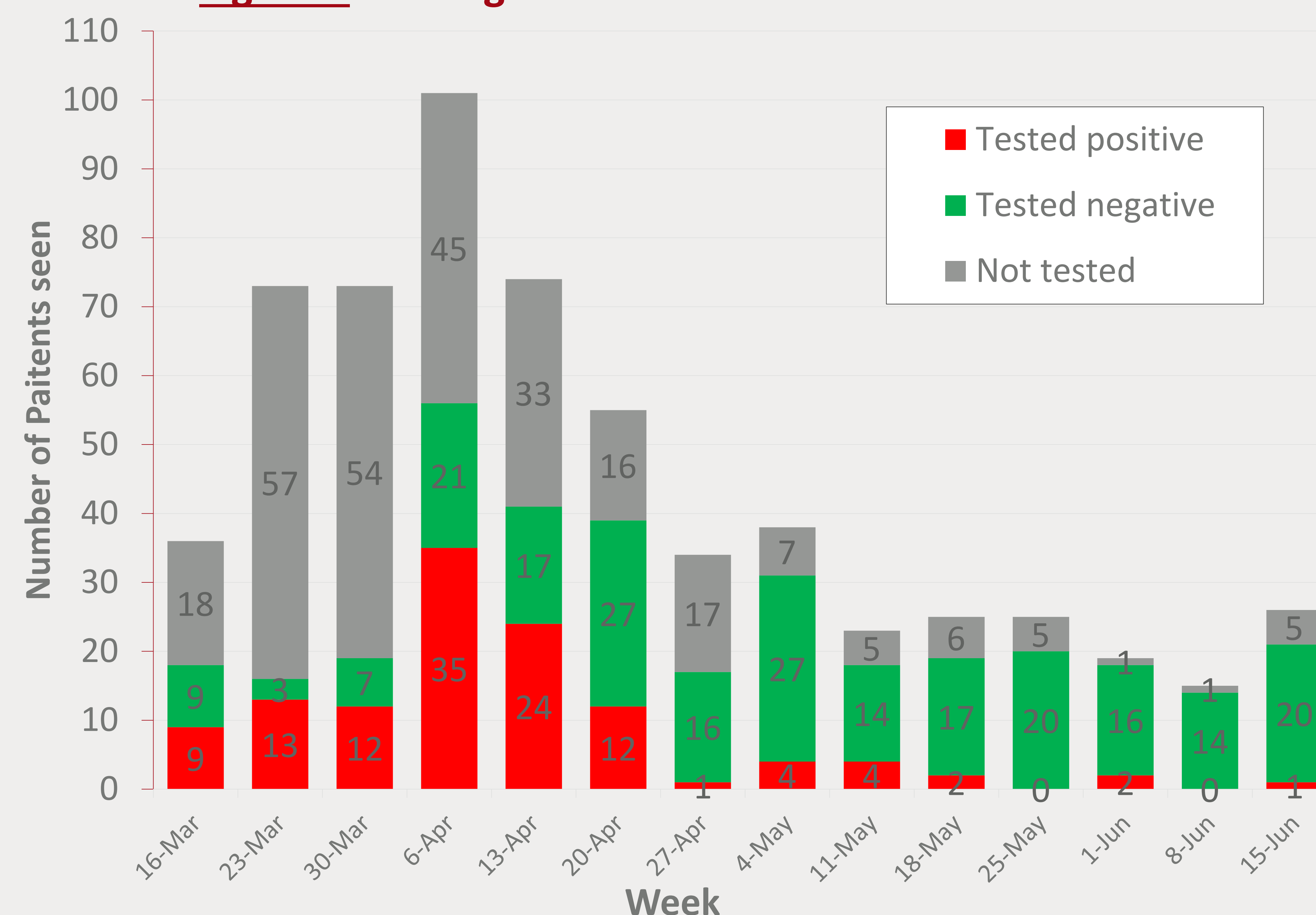
We learned how to safely manage COVID-19 patients in an ambulatory setting. Thoughtful use of space, equipment, and workflow was critical to minimizing infectious risk while conserving resources. Equally important was the ability to rapidly respond and adapt. Follow-up is achievable with telemedicine.

For comments/questions, please contact [lf9003@med.cornell.edu](mailto:lf9003@med.cornell.edu)

**Table 1:  
Cough Cold  
and Fever  
Clinic  
Metrics**

Patients (3/13/20 – 6/19/20)	No. (%)
Total seen	620
Tested for SARS-CoV-2 PCR	347 (56%)
Positive for SARS-CoV-2 PCR	119 (34%)
Chest x-ray performed	189 (30%)
Abnormal	64 (34%)
Bilateral infiltrates	48 (75%)
Sent to the ED	47 (8%)
Hospitalized	42 (89%)
Discharged home	573 (92%)
Later hospitalized	15 (3%)
Total hospitalized	57 (9%)
Expired	12 (2%)
In the hospital	9 (75%)
At home (one with hospice)	2 (17%)
Unknown	1 (18%)
Telemedicine follow-up	500 (81%)

**Figure 1: Testing Status & Test Results Over Time**





**Title: Cough Cold and Fever Clinic: A model for the safe management of COVID-19 in the primary care setting**

**Authors:** Laura Gingras MD, Fred Pelzman MD, Armyl Marquez RN-BC ACRN NE-BC, Diego Arias MS, Judy Tung MD

**Department:** Department of Medicine, Division of Ambulatory Internal Medicine

- 1. Statement of the Problem:** Beginning in March of 2020, cases of COVID-19 in New York City rapidly escalated. In order to prevent the ED from becoming overwhelmed and to provide a care pathway for patients not requiring hospitalization, we needed to establish protocols to triage and care for outpatients with symptoms of COVID-19, while preventing spread of the virus within the practice and conserving scarce testing supplies and personal protective equipment.
- 2. Objective/Aim of the study:** To describe the creation of an ambulatory program to rapidly triage and treat patients with symptoms of COVID-19.
- 3. Project Design/Methods:** A multidisciplinary group including physicians, nurses, and medical technicians created the protocols for the “Cough Cold and Fever Clinic” (CCF). We created an online handbook, which was frequently updated. We tracked several metrics on a daily basis (see results). We utilized rapid-cycle PDSA methodology, with each day’s clinic experience and end-of-day huddle serving as an opportunity to discuss barriers and challenges, and to make changes.
- 4. Results:** 620 patients were seen in CCF clinic between 3/13 and 6/19/2020. We tested 347 (56%) of patients for SARS-CoV-2 with 119 (34%) testing positive. In our first month, when testing was most limited, we tested only 38% of patients and 63% of these were positive. Liberalization of testing corresponded with a drop in test positivity with less than 10% testing positive in June. Chest radiographs were performed in 189 (30%) of patients. Of these, 64 (34%) were abnormal. Of the 620 patients seen, 47 (8%) were transferred to the ED. Of the patients discharged home, 15 (3%) were later admitted to a hospital. Twelve (2%) of the patients seen in CCF clinic died. Of these, seven had been sent to the ED from the clinic, while five had been discharged home from the clinic. Two of these five were later admitted to a hospital prior to their deaths. Two died at home, one with home hospice. Telemedicine follow-up for  $\geq 1$  week was achieved for 500 (81%) patients. Many aspects of the workflow were modified through our PDSA cycles. For example, after we recognized the difficulty of performing a thorough interview while wearing PPE, we instituted the “telephone HPI.” The provider called the patient from outside the room, conducted an unhurried, thoughtful interview, unhindered by the discomfort of PPE or the pressure to minimize physical contact time, before entering the room, and conducting a focused physical exam. After understanding the insidious nature of hypoxia in COVID-19, we began measuring exertional pulse oximetry, utilizing a one minute walk-in-place test. When evidence emerged demonstrating an association between



poor outcomes and certain lab and xray characteristics, we began utilizing laboratory and radiographic information more frequently, arranging for a portable x-ray machine on premise.

5. **Conclusions:** We learned how to safely manage patients in an ambulatory setting with symptoms of COVID-19. We found that thoughtful use of space, equipment, and workflow was critical, as was the ability to rapidly respond and adapt. Follow-up is achievable with telemedicine.



**Statement of the Problem:** To protect frontline health care workers, New York Presbyterian/Weill Cornell Medicine had to rapidly create an employee COVID-19 testing strategy that matched testing needs with testing capacity.

**Objective/Aim of the study:** Offer SARS-CoV-2 PCR and serology testing to employees at risk of or with suspected COVID-19 infection.

**Project Design/Methods:** Because testing capacity was constrained early in the pandemic, we had to roll SARs CoV-2 testing out in three phases, creating distinct workflows for each.

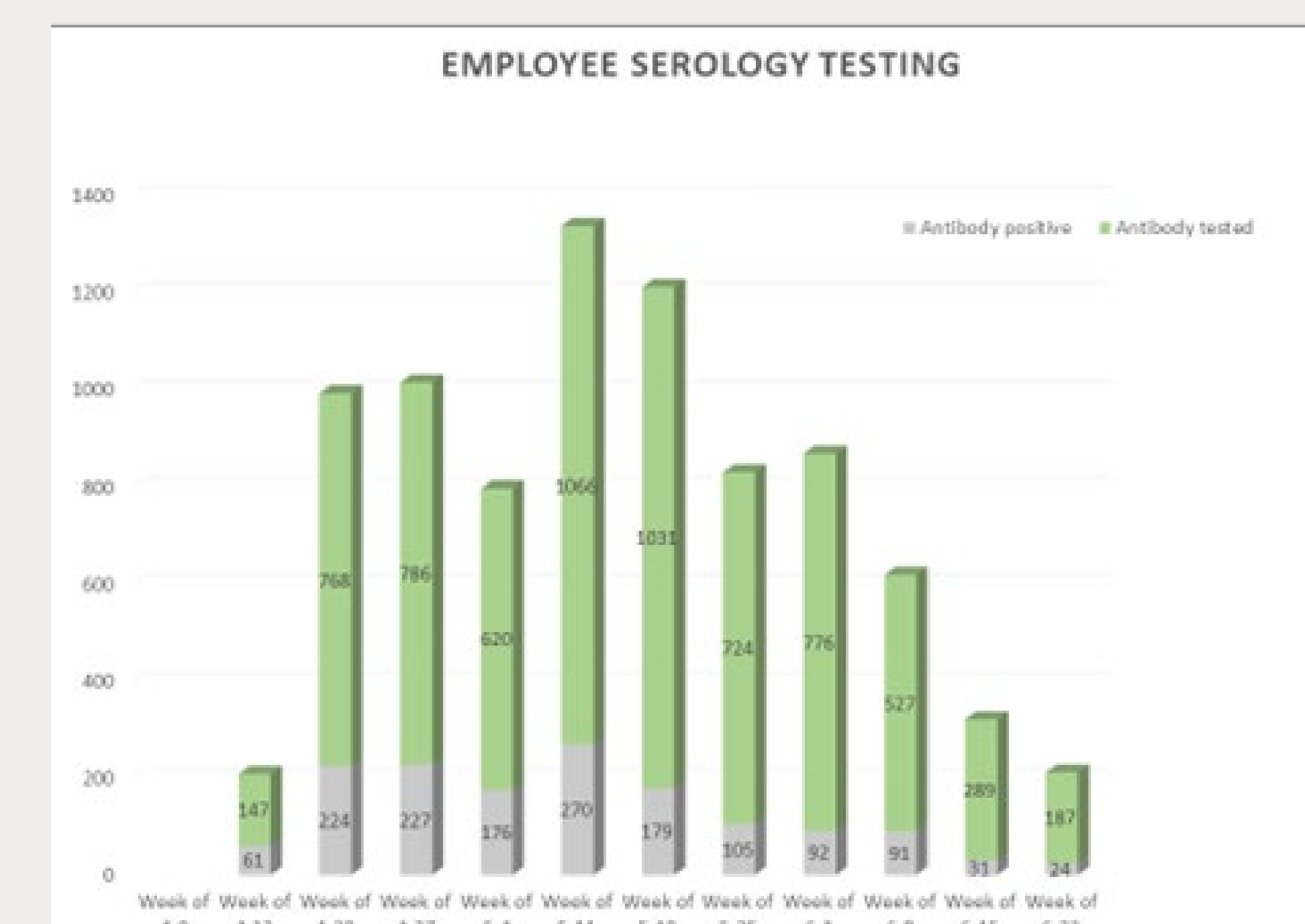
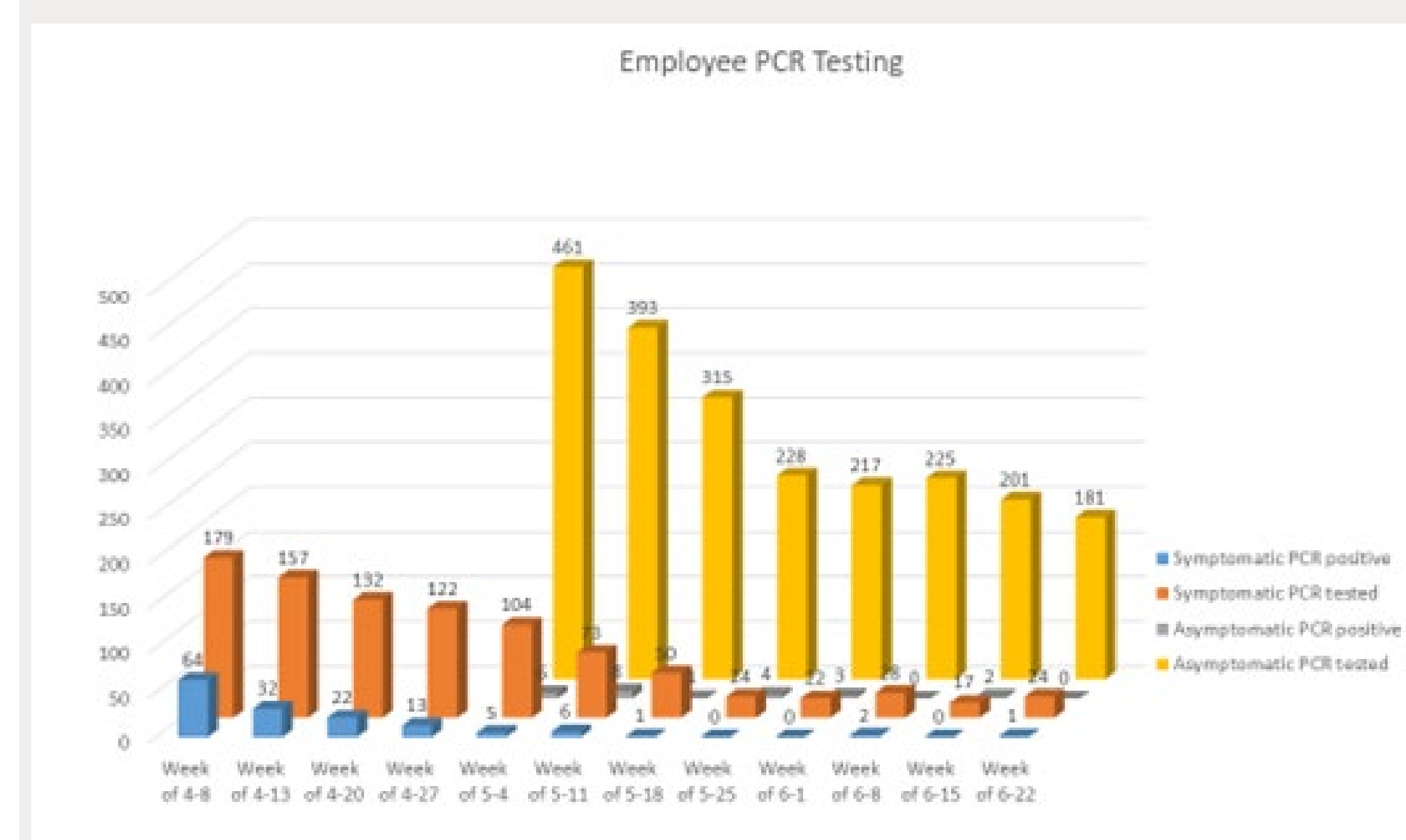
**Phase One** targeted PCR nasopharyngeal testing for symptomatic employees. These individuals were all scheduled first for Video Visit (to minimize in-person contact) medical assessment with a provider. If during the encounter, an in-person visit was deemed necessary, employees were scheduled for examination in the Cough Cold and Fever clinic. If stable, employees were referred for nasopharyngeal swabbing at a newly established testing tent. Recognizing that ground floor, outside space reduced risk of congestion and viral exposure, we deployed a tent outside the Weill Cornell and Lower Manhattan hospitals to rapidly cycle employees through swabbing. Employees arrived at the tent and moved to the testing area, where providers in full PPE performed the nasal swab. To conserve PPE this was a “no touch” encounter developed in consultation with IP&C. In collaboration with IT, we created order sets and appointment types in Epic that allowed WFH&S to track and provide follow up for test results.

As testing capacity ramped up and as we gained confidence in our workflows, we launched **Phase Two**, adding PCR testing for asymptomatic but at risk employees. These employees did not require a pre-testing medical screen and were scheduled directly into the testing tent. Initially symptomatic and asymptomatic employee were separated by AM and PM session; later we utilized two distinct locations.

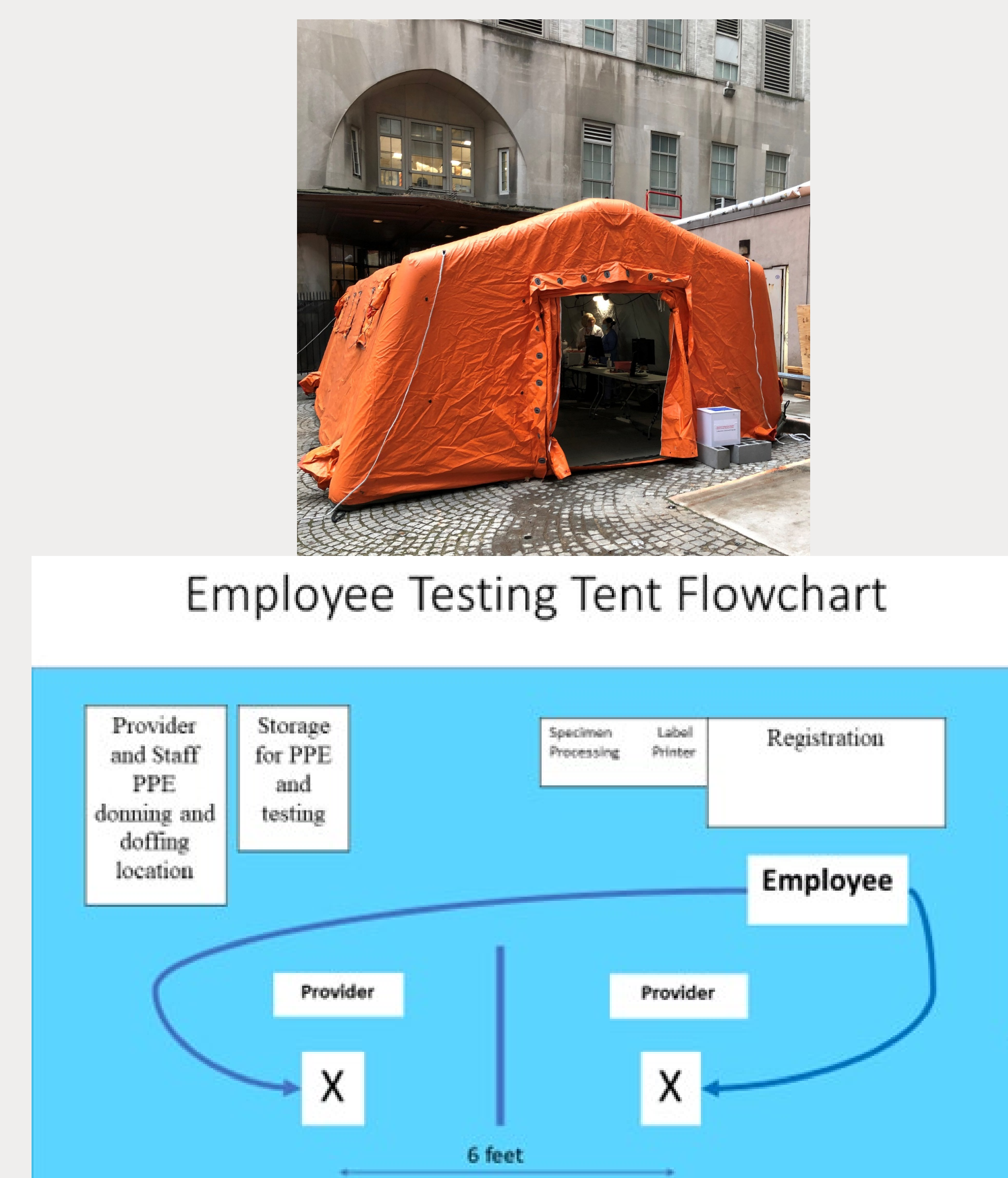
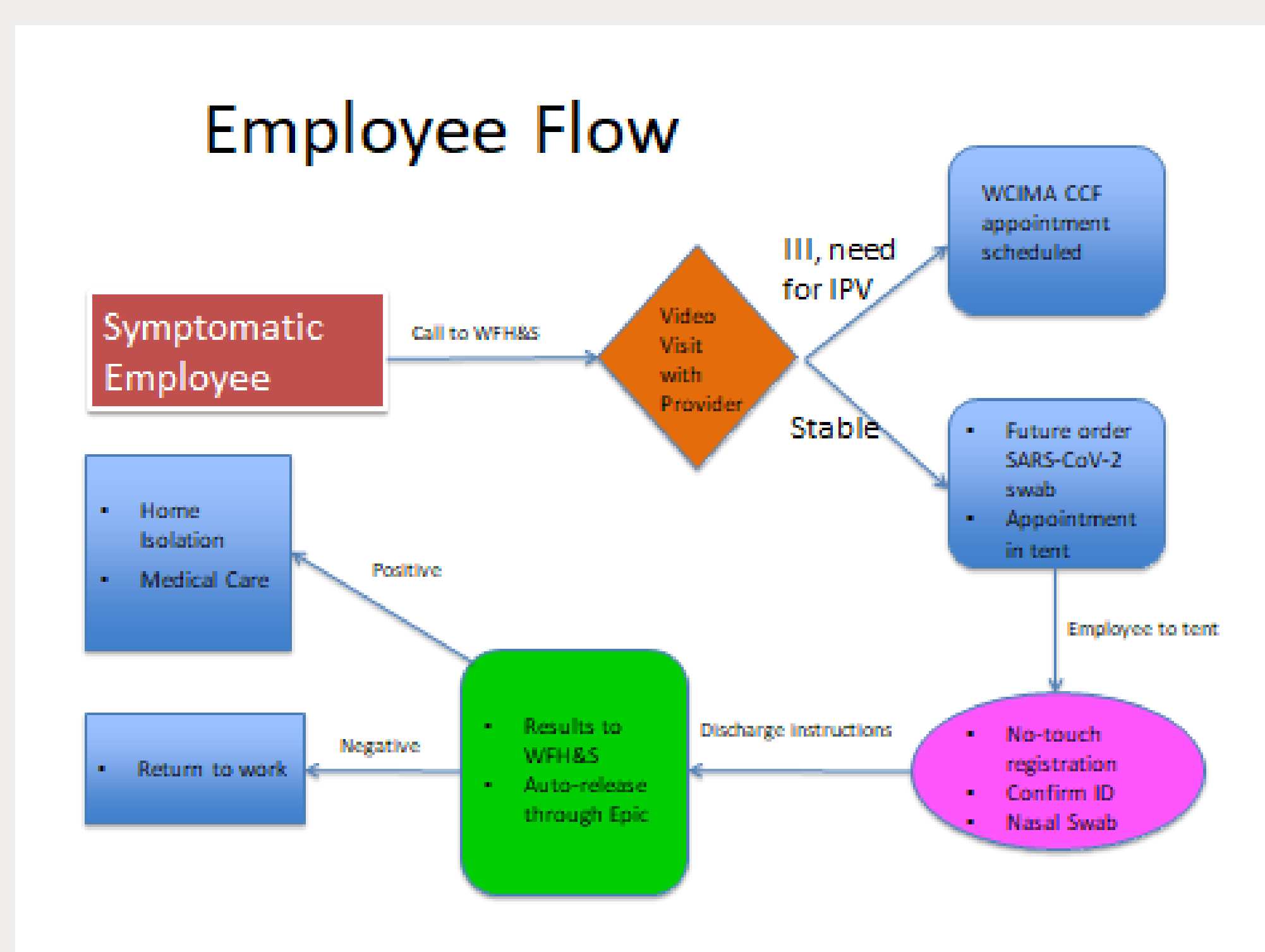
**Phase Three** included serologic antibody testing for employees who suspected they had recovered from COVID-19. Phlebotomy was performed using usual care pathways since infectious risk for this group was minimal. Aftercare for these last two groups of employees was provided by WFH&S.

Special thanks to Pamela Sutton Wallace, Diego Arias, Armyl Marquez, the Epic team, WFH&S, and all the staff and providers who staffed the tents during the height of the pandemic

**Results:** Between 4/8/20 and 6/28/20, we provided testing for a total of 10,074 employees at the Weill Cornell and Lower Manhattan campuses of New York Presbyterian. This included nasopharyngeal SARS-CoV-2 swabs on 932 symptomatic employees (overall positivity rate of 15.7%), and 2,221 asymptomatic employees (overall positivity rate of 1.0%). We performed phlebotomy for serology on 6,921 employees (overall positivity rate of 21.4%).



**Conclusions:** Working collaboratively with multiple partners we were able to rapidly develop, deploy, and refine multiple workflows to safely evaluate and test NYP/WCM employees who were symptomatic with possible COVID-19, asymptomatic but potentially exposed, and in need of serology testing. The systems we created will serve us well in future pandemic crisis situations to be able to respond to the needs of our frontline workers.





# Beyond ABCs- An Interdisciplinary Approach to Preventing Tracheostomy Related Pressure Injuries

Annual Weill Cornell Medicine Quality Improvement and Patient Safety Poster Symposium

Diana Brickman BSN, RN, CCRN-K; Diana Chacko RRT; Niamh Daly BSN, RN; Mallory Milligan BSN, RN; Andrea Murphy RRT; & Lisa Torreri MSN, RN, FNP, CWON

For comments/questions, please contact dik9014@nyp.org

## Background:

- Prevention of skin breakdown from airway devices is a shared nursing and respiratory therapist responsibility.
- Application of a foam dressing under tracheostomies & suture removal 7 days after placement prevents pressure and moisture related breakdown (Maydick-Youngberg et al., 2020).
- During the height of the COVID-19 pandemic, there was a rapid increase of patients requiring tracheostomies. There were challenges with timely suture removal and management of moisture from secretions which led to skin breakdown.

## Study Population:

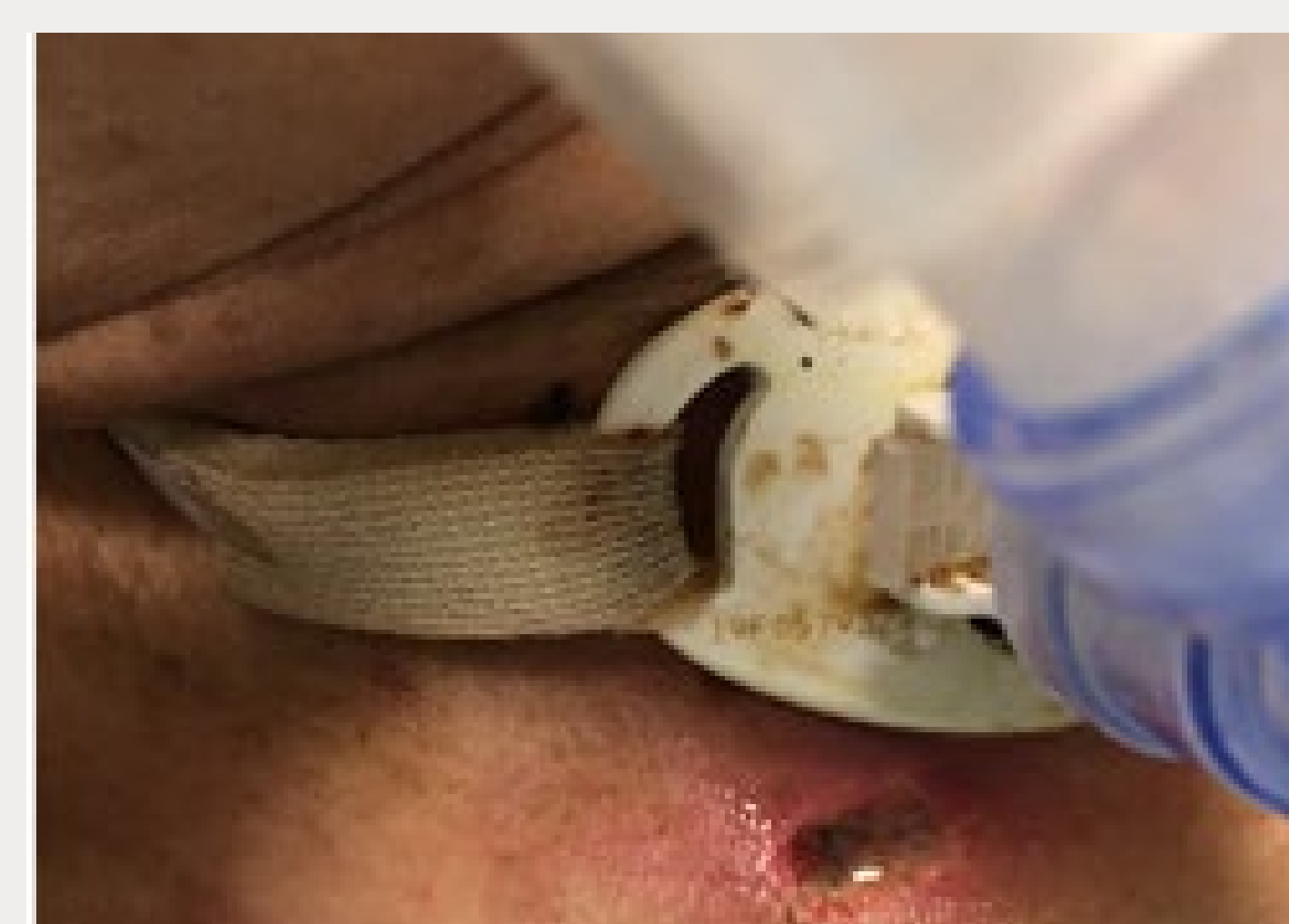
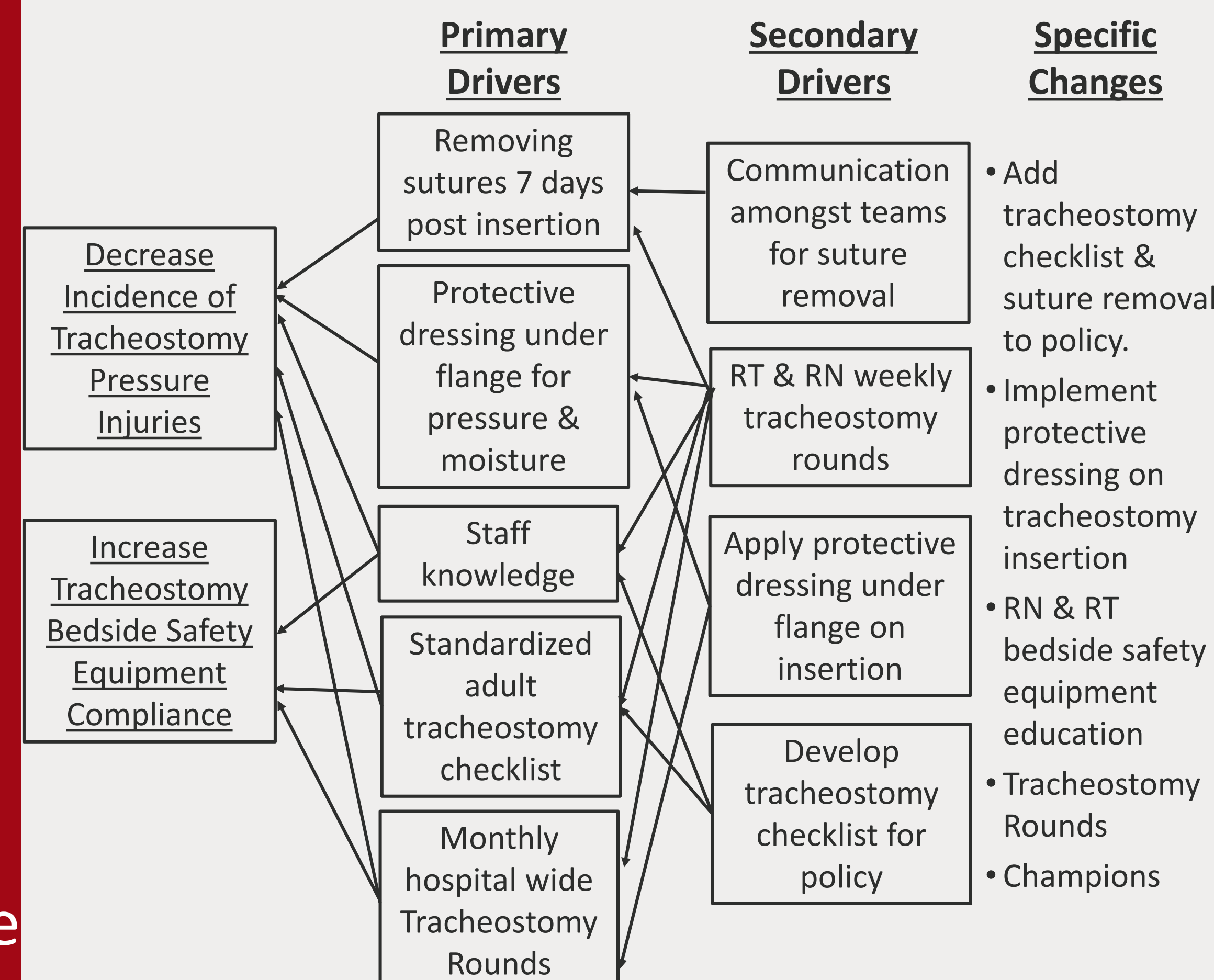
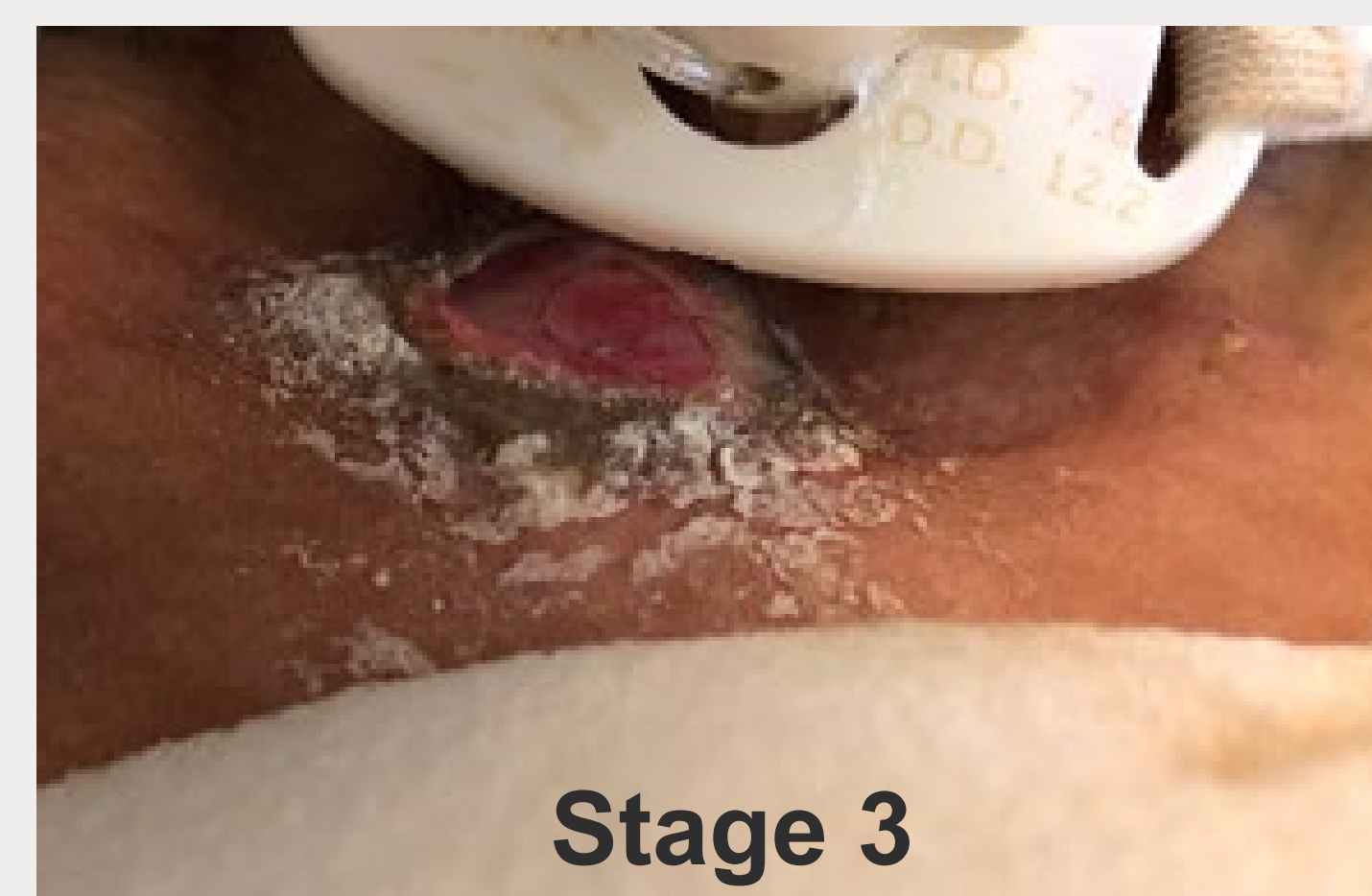
- 366 tracheostomy adult patients at NewYork Presbyterian Weill Cornell Medical Center.

## Problem Statement:

- For adult patients with a tracheostomy, does implementing interdisciplinary weekly rounds and creation of a bedside checklist improve the presence of tracheostomy safety equipment at bedside and decrease the incidence of tracheostomy pressure injuries (TPIs) from June through August 2020?

## Method:

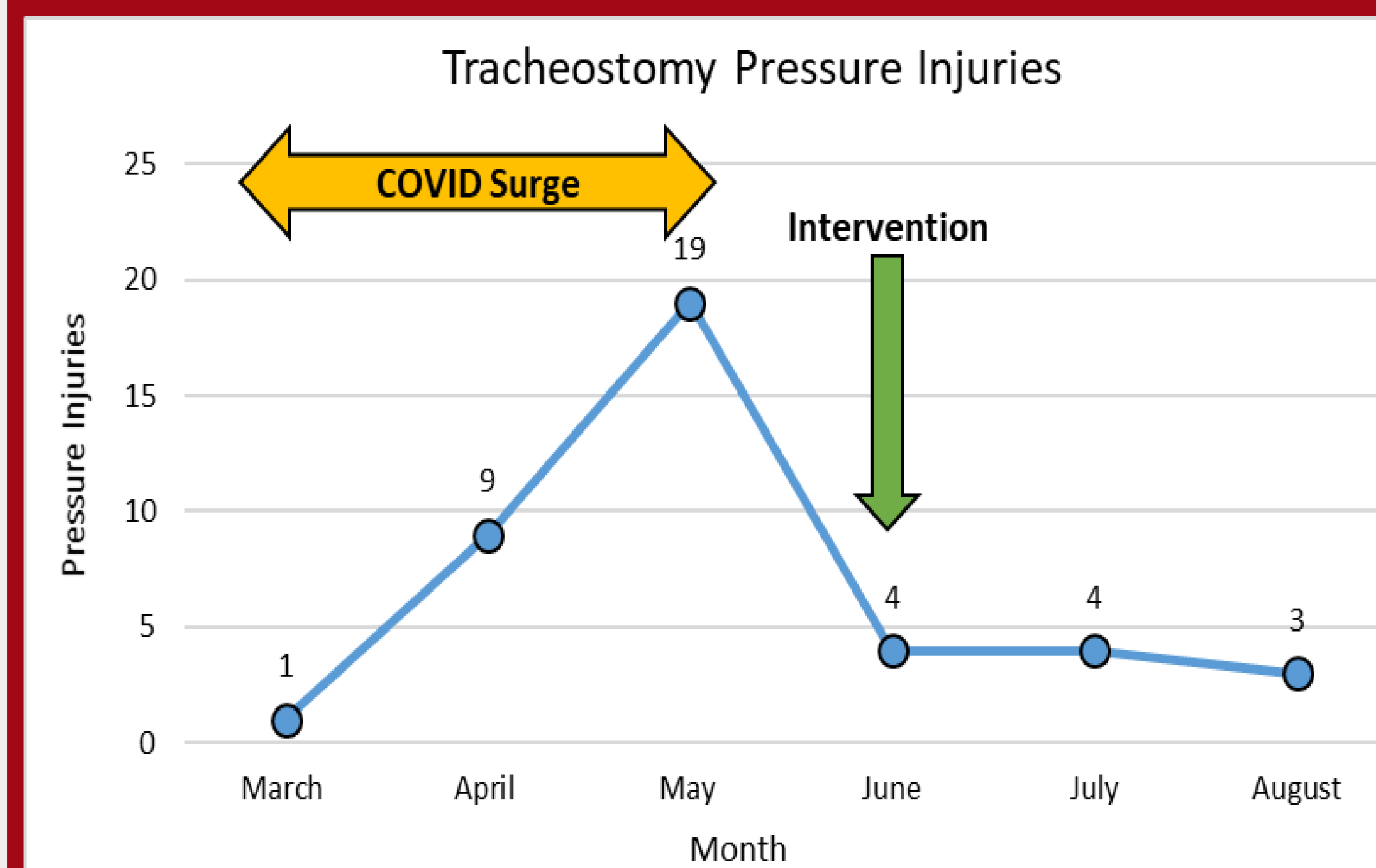
- For this quality improvement project a quantitative research model was followed.
- Data was collected from weekly champion and monthly team rounds.
- Peer to peer coaching.



Unstageable

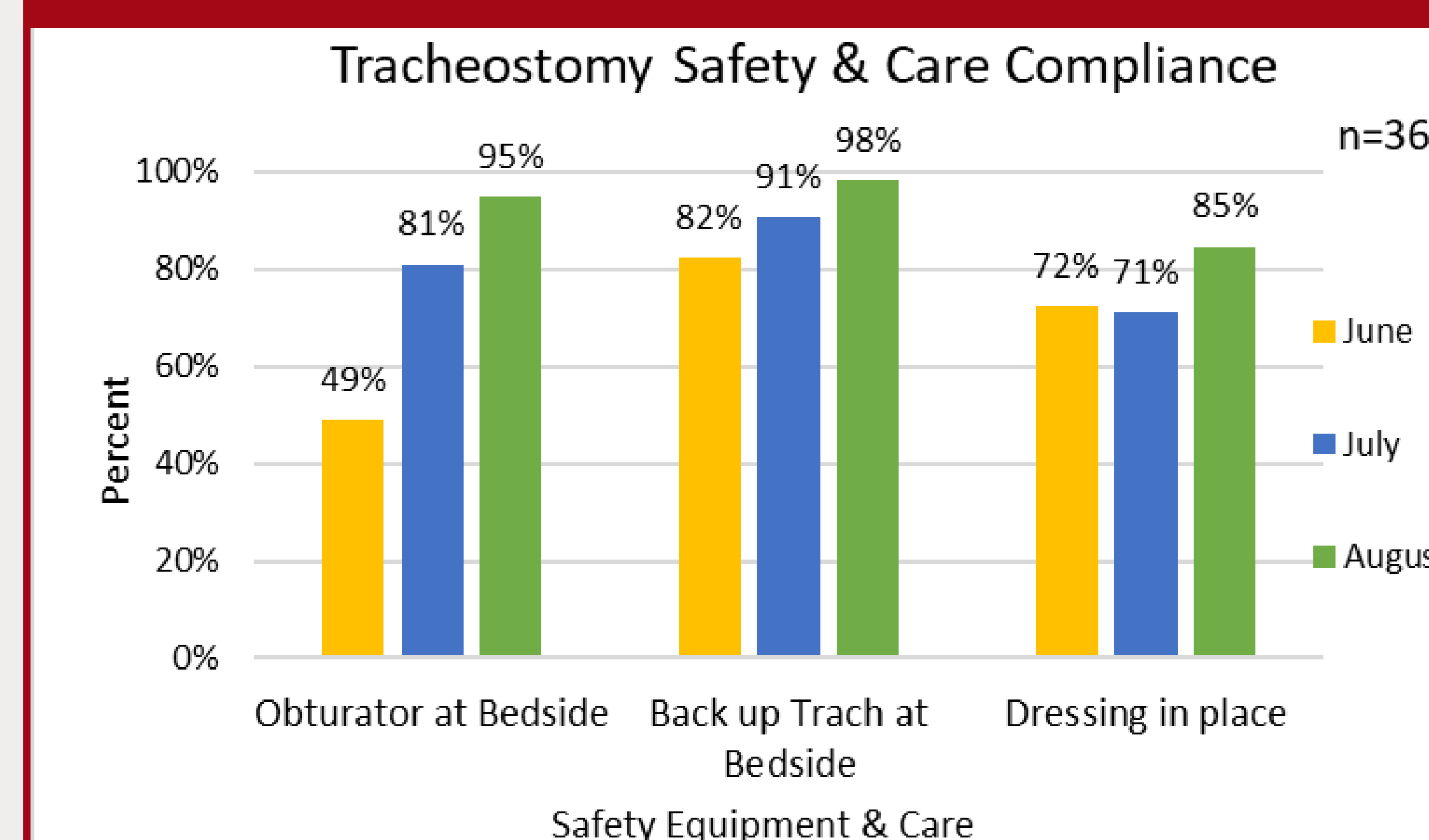
## Results:

- 366 Tracheostomy patients have been rounded on since June.
- TPIs decreased by 79% in June and July.
- TPIs decreased by 84% in August.



Month	Stage < 2	Stage 3	Unstageable	# Trach Patients
March	0	0	1	unknown
April	3	2	4	unknown
May	5	8	6	unknown
June	0	2	2	108
July	0	1	3	141
August	0	2	1	117

- Obturator at bedside improved by 93%.
- Back up trach at bedside improved by 20%.
- Dressing in place improved by 18%.



## Limitations:

- Need to manually create patient list.
- Lack of participation from all units.
- Lack of supplies on units.
- Insertion of tracheostomies in non-ICU areas.

## Next Steps:

- Continue rounding with goal of zero harm.
- Add checklist to policy and implement enterprise wide.
- Anticipate COVID resurgence

## Conclusion:

- Interdisciplinary rounding decreased patient harm, improved safety and staff knowledge.

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- Monarca, M. C., Marteka, P., & Breda, K. (2018). Decreasing Incidence of Medical Device-Related Pressure Injuries in a Small Community Hospital. *Journal of Wound, Ostomy and Continence Nursing*, 45(2), 137-140. <https://doi.org/10.1097/won.0000000000000419>.
- O'Toole, T. R., Jacobs, N., Hondorp, B., Crawford, L., Boudreau, L. R., Jeffe, J., Losavio, P. (2017). Prevention of Tracheostomy-Related Hospital-Acquired Pressure Ulcers. *Otolaryngology-Head and Neck Surgery*, 156(4), 642-651. <https://doi.org/10.1177/0194599816689584>.

## Acknowledgements:

Mary Gallagher DNP, RN-BC; Christa Kleinschmidt MS, RN, NEA-BC, FNP-BC, Cliff Dryden MBA, RRT-NPS; Carl Blake MPH, BS-RT, RRT, EMT-D



## **Beyond ABCs- An Interdisciplinary Approach to Preventing Tracheostomy Related Pressure Injuries**

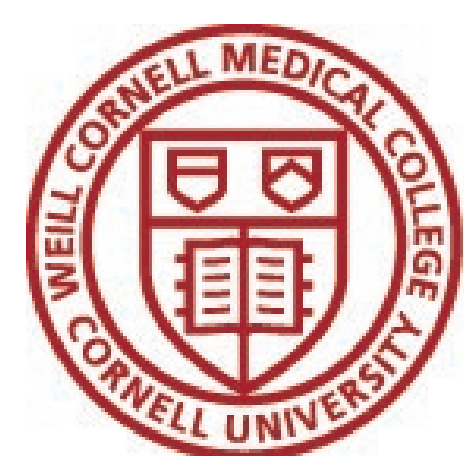
During the COVID-19 pandemic at New York Presbyterian Weill Cornell Hospital, there was an increase in the number of critically ill adult patients requiring tracheostomies. The tracheostomies were inserted and sutured in place, but sutures were not being removed in the usual practice of seven days post-insertion. Not removing sutures and lack of protective dressing under tracheostomies caused an increase in incidence of tracheostomy pressure injuries (TPIs). Nursing together with wound care, respiratory therapy, and surgeons collaborated to provide hospital wide tracheostomy rounds to decrease TPIs and improve tracheostomy safety precautions at the bedside. For adult patients with a tracheostomy, does implementing interdisciplinary weekly rounds and creation of a bedside checklist improve the presence of tracheostomy safety equipment at bedside and decrease the incidence of TPIs from June through August 2020?

The aim of this study is to decrease TPIs and improve compliance with tracheostomy safety precautions at the bedside through applying a protective dressing under the tracheostomy and interdisciplinary rounding on all adult tracheostomy patients. For this quality improvement project, a quantitative research model was followed for adult tracheostomy patients at New York Presbyterian Weill Cornell Hospital. The incidence of TPIs and compliance with safety equipment at the bedside was measured.

There was a decrease in the incidence of TPIs and an increase in compliance with tracheostomy safety precautions at the bedside. In May, at the peak of the surge of COVID-19, there were 19 tracheostomy related pressure injuries found. Immediately upon initiation of interdisciplinary rounds, there was a 79% decrease in TPIs in June through July, and an 84% decrease in August from the surge in May.

This study shows implementing skin protecting dressing on insertion, weekly unit rounding, and monthly hospital wide rounding decreased incidence of TPIs. Furthermore, the study showed that there was a significant increase in compliance with tracheostomy safety precautions at the bedside. Not only did rounding decrease the incidence of pressure injuries, it also assisted in the early identification of TPIs, which allowed early intervention to aid in the healing process. Limitations of this quality improvement initiative include lack of representation from all units for weekly rounds, absence of necessary supplies on every unit, and the nonexistence of a master list of all hospitalized patients with a tracheostomy. Changes to the adult tracheostomy policy will include suture removal in seven days and a bedside checklist to be implanted enterprise wide. We hope to decrease TPIs to zero by the end of 2020 and continue to increase tracheostomy safety through sustaining the tracheostomy rounds initiative and peer-to-peer education.



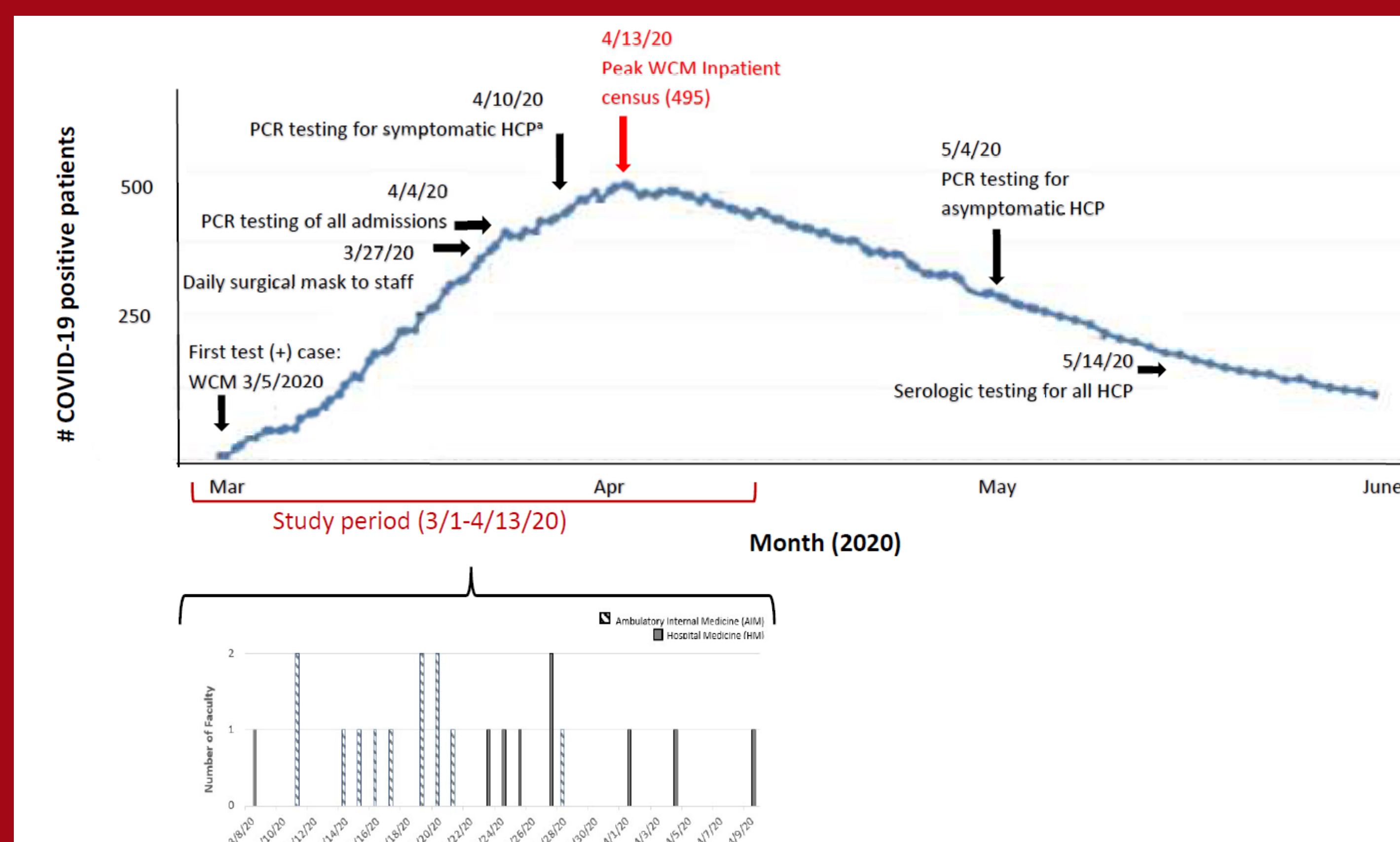


## Introduction

- Division of General Internal Medicine faculty at Weill Cornell Medicine were frontline providers in both inpatient and outpatient settings during the epicenter of the COVID-19 pandemic in the United States. During this period several clinical faculty reported COVID-like illness (CLI) and/or SARS-CoV2 PCR positivity

## Aim of the Study

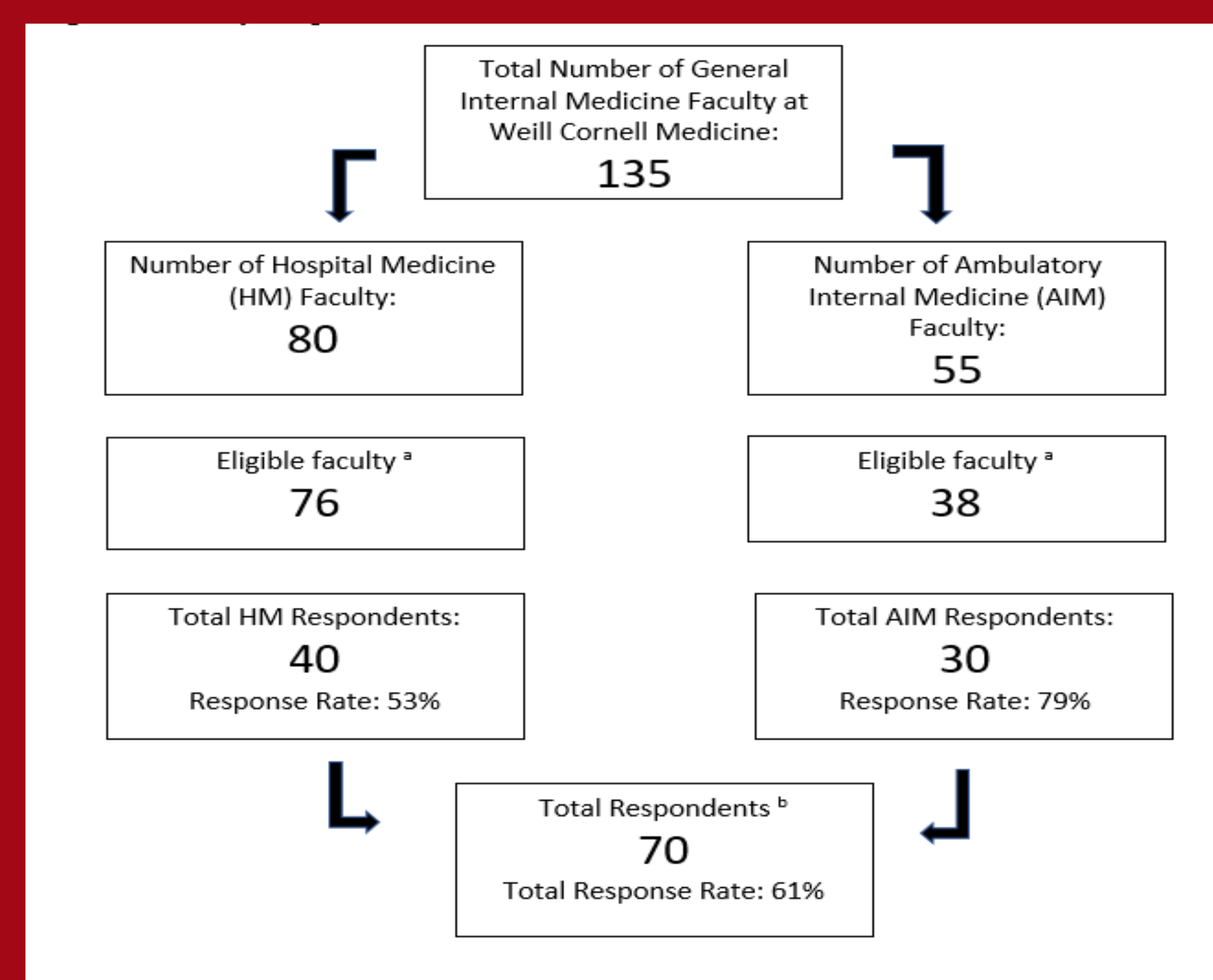
- We developed a quality improvement project with the aims of (1) estimating the prevalence of COVID-19 among our patient-facing faculty during NYC's first six weeks of the pandemic and (2) characterizing potential transmission sources to mitigate risks of exposure.



**Figure 1. Timeframe of survey period compared to NYP daily hospitalization rate.**

## Methods

- All GIM clinical faculty involved in inpatient or ambulatory care with direct patient contact from March 1 to April 13, 2020 received an email survey link. All identifiers were removed prior to analysis.
- Data were collected from April 6 to April 20, 2020.
- 61% (70/135) of faculty responded.
- Faculty reporting either CLI or a positive SARS-CoV-2 PCR were categorized as COVID-positive.



**Figure 2. Survey Response**

<sup>a</sup> Number of HM Faculty on service between 3/1/20 - 4/13/20

<sup>b</sup> Percent of eligible faculty who responded to the survey

## Results

Twenty-one faculty (21/70, 30%) were COVID-positive with eight confirmed by SARSCoV2 PCR (8/21, 38%).

- 61% of COVID-19 positive faculty cared for patients with “unknown” COVID status.
- COVID-19 positive faculty performed more auscultation during exams (39% vs 13%) and used N95 masks less often (44% vs 73%) when seeing patients highly suspicious for COVID-19.
- Less than half of providers in both groups reported PPE was available when needed.
- Only 22% (4/18) of COVID-positive faculty reported adherence with social isolation as compared to 60% (29/48) among those COVID-negative.

**Table. Characteristics of Surveyed GIM Faculty**

	COVID Positive <sup>a</sup> N=21 n (%)	COVID Negative <sup>b</sup> N=49 n (%)
<b>Characteristics of GIM Faculty Surveyed (N=70)</b>		
<b>Specialty</b>		
Ambulatory Internal Medicine (AIM)	12 (57)	18 (37)
Hospital Medicine (HM)	9 (43)	31 (63)
<b>Age</b>		
<40	14 (67)	27 (55)
40-60	2 (10)	16 (33)
>60	5 (24)	5 (10)
Missing	0 (0)	1 (2)
<b>Sex</b>		
Female	14 (67)	29 (60)
<b>Race</b>		
Asian	11 (52)	16 (33)
Black or African American	0 (0)	1 (2)
Hispanic	1 (5)	3 (6)
White	9 (43)	26 (54)
Other	0 (0)	2 (4)
<b>Type of Patients Seen<sup>c</sup></b>		
Known COVID	2 (10)	21 (43)
Known Non-COVID	4 (19)	5 (10)
Mixed	2 (10)	11 (22)
Unknown status	13 (62)	12 (25)
<b>Characteristics of COVID Positive GIM Faculty Surveyed (N=21)</b>		
<b>Total days in patient care prior to onset of symptoms</b>		
Less than 7	6 (29)	
8-14	7 (33)	
More than 14	8 (38)	
<b>COVID Status Confirmed by SARS-CoV2 PCR</b>		
Yes	8 (38)	
<b>Symptoms</b>		
Fever	16 (76)	
Chills and/or rigors	15 (71)	
Headache	14 (67)	
Fatigue	20 (95)	
Respiratory	18 (86)	
Myalgias and/or arthralgias	15 (71)	
GI	14 (67)	
Anosmia and/or dysgeusia	13 (62)	
Rash	1 (5)	
Other	3 (14)	
<b>Level of Clinical Care Received</b>		
Did not seek care	11 (52)	
Ambulatory	7 (19)	
Emergency room visit (discharged)	1 (5)	
Inpatient floor	1 (5)	
ICU care	1 (5)	
<b>Self-reported Source of Exposure</b>		
Community	6 (29)	
Extremely Confident	3 (14)	
Suspected	3 (14)	
Colleague at the workplace	5 (24)	
Patient in your care	10 (48)	
Emergency Room	1/10 (10)	
Inpatient	6/10 (10)	
Office	3/10 (10)	

<sup>a</sup> Covid positive = Covid like illness and/or known SARS-CoV-2 PCR positive

<sup>b</sup> Covid negative = Asymptomatic and/or known SARS-CoV-2 PCR negative

<sup>c</sup> Status was triaged based on presence of classic symptoms and/or SARS-CoV-2 PCR results. Patients were of “unknown status” if they did not meet either criteria. Of note, mandatory testing of all admitted patients began on April 4, 2020.

## Conclusion

- Differences in close-contact physical exam techniques such as auscultation, caring for patients with “unknown” COVID-19 status, social distancing, and access to N95 respirators may have contributed to the transmission of COVID-19 among GIM faculty.

## Next Steps

- Early characterization and education around potential sources of exposure to the SARS-CoV-2 virus is critical to understanding the epidemiology of transmission and improving the safety of frontline providers through enforcement of infection control procedures
- Reinforce the importance of PPE supply, timely COVID-19 testing of patients, and carefully following infection prevention protocols.



## **COVID-19 Infections among General Internal Medicine Faculty at a New York Teaching Hospital: A Descriptive Report**

Daniel J. Crossman, MD; Jennifer I. Lee, MD; Brooke W. Bullington, BS; Matthew S Simon, MD; Arthur T. Evans, MD, MPH; Margaret L. McNairy, MD

Department of Medicine

New York-Presbyterian/Weill Cornell Medicine, New York, NY

**Statement of the Problem:** Division of General Internal Medicine faculty at Weill Cornell Medicine were frontline providers in both inpatient and outpatient settings during the epicenter of the COVID-19 pandemic in the United States. During this period several clinical faculty reported COVID-like illness (CLI) and/or SARS-CoV-2 PCR positivity.

**Aim of the Study:** We developed a quality improvement project with the aims of (1) estimating the prevalence of COVID-19 among our patient-facing faculty during NYC's first six weeks of the pandemic and (2) characterizing potential transmission sources to mitigate risks of exposure.

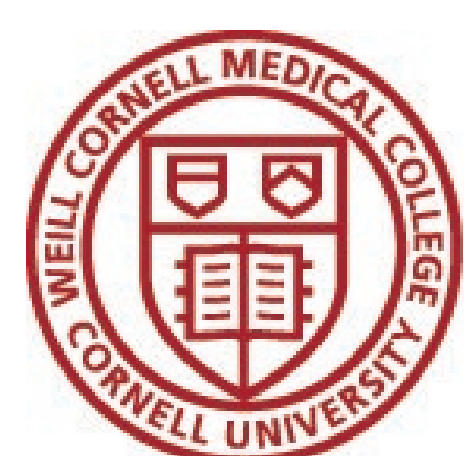
**Methods:** All GIM clinical faculty involved in inpatient or ambulatory care with direct patient contact from March 1 to April 13, 2020 received an email survey link. All identifiers were removed prior to analysis. Sixty one per cent (70/135) of faculty responded. Data were collected from April 6 to April 20, 2020. Faculty reporting either CLI or a positive SARS-CoV-2 PCR were categorized as COVID-positive.

**Results:** Twenty-one faculty (21/70, 30%) were COVID-positive with eight confirmed by SARS-CoV-2 PCR (8/21, 38%). Two faculty were hospitalized (2/21, 9.5%) including one to the intensive care unit (1/21, 4.8%); none required intubation. There were no deaths

Sixty two per cent (13/21) of COVID-19 positive faculty cared for patients with "unknown" COVID status as compared to 25% (12/49) among COVID-19 negative faculty. COVID-19 positive faculty performed more auscultation during exams (39% vs 13%) and used N95 masks less often (44% vs 73%) as compared to COVID-19 negative faculty when seeing patients highly suspicious for COVID-19. Less than half of providers (44% vs 46%) in both groups reported that PPE was available when needed. Only 22% (4/18) of COVID-positive faculty reported adherence with social isolation as compared to 60% (29/48) among COVID-negative faculty.

**Conclusions:** Differences in close-contact physical exam techniques such as auscultation, caring for patients with "unknown" COVID-19 status, social distancing, and access to N95 respirators may have contributed to the transmission of COVID-19 among GIM faculty. The safety of health care workers is paramount in a pandemic. The early characterization and education around potential sources of exposure to the SARS-CoV-2 virus is critical to understanding the epidemiology of transmission and improving the safety of frontline providers through development and enforcement of robust infection control procedures. This study suggests the importance of PPE supply, timely COVID-19 testing of patients, and carefully following infection prevention protocols.





**Introduction:** Electroconvulsive therapy (ECT) is identified as an essential procedure during the COVID pandemic.<sup>1</sup>

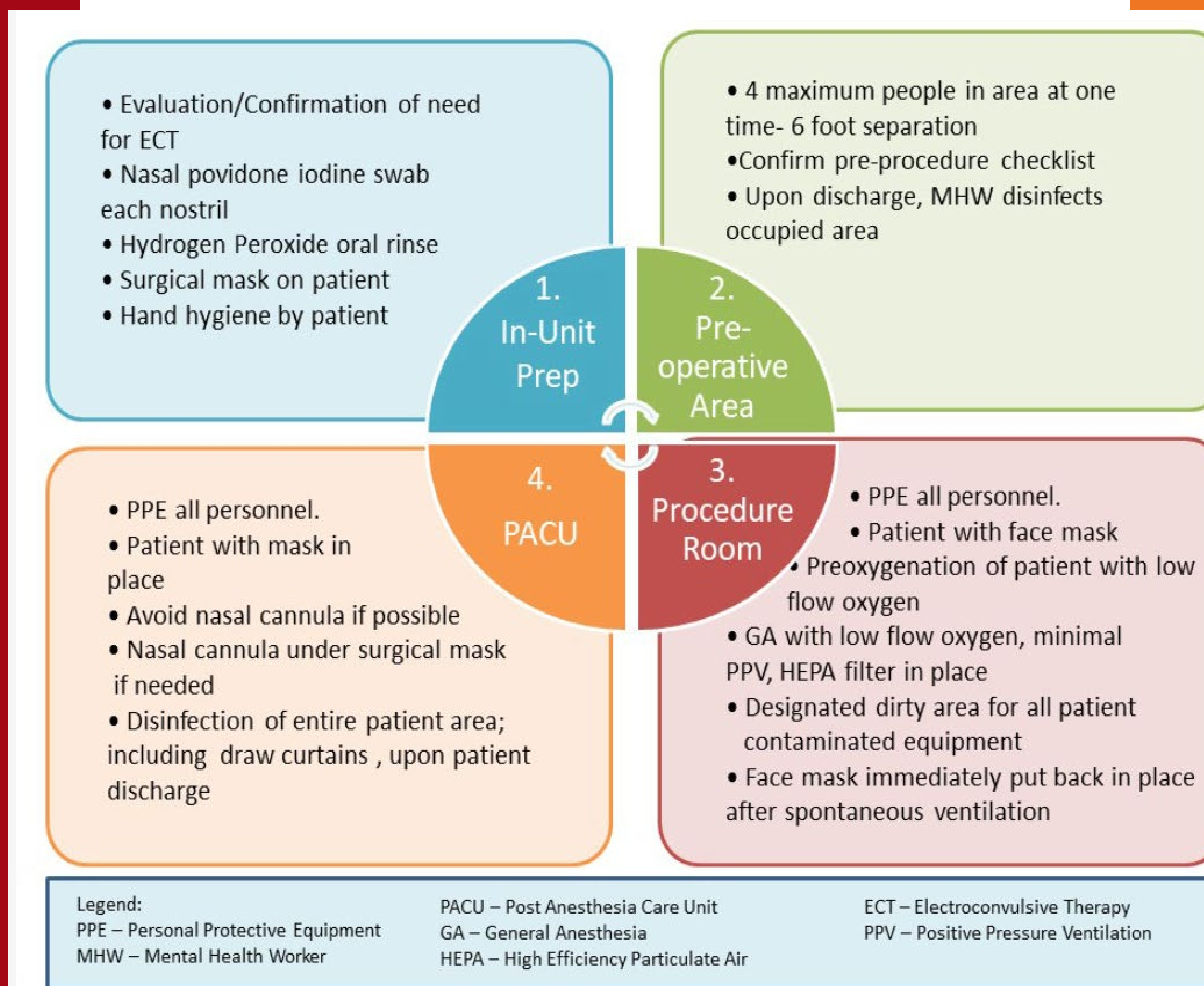
#### HOWEVER

1. Mask Ventilation is an aerosolizing procedure<sup>2,3</sup>
2. High prevalence of COVID in New York
3. Difficulty in social distancing in the inpatient psychiatric environment.
4. Prevent health care worker (HCW) exposure
5. Prevent patient-to-patient transmission in the ECT environment

**Methods:** Inpatient ECT services were consolidated to one hospital within Weill Cornell Medicine (WCM)

- Same anesthesiologist led team performing all ECT procedures for 7 weeks.
- ECT clinical teams trained together on donning and doffing, simulated patient flow and room decontamination.
- ECT Protocol developed (Figures 1-3)
- Testing : initially only if symptomatic. Later, improved availability allowed PCR testing prior to initiation of ECT and weekly surveillance

**Figure 1. Protocol for ECT During COVID Pandemic**



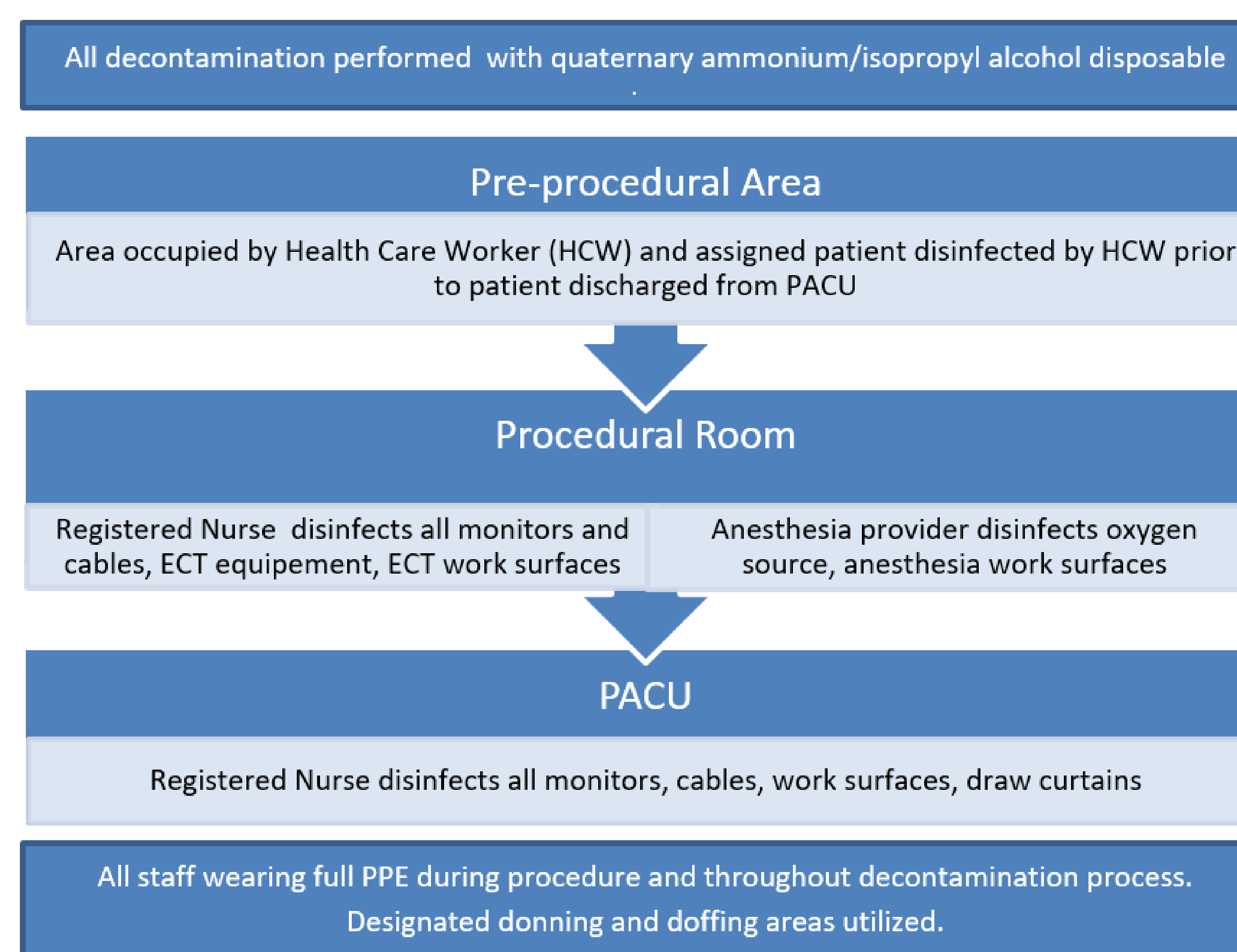
**Results:** ECT protocol (Figure 1) guided care for over 300 treatments in 35 patients. On average, 10% of the in-patient population was COVID+.

Three patients who had been transferred from Manhattan became symptomatic after several treatments and tested COVID+. ECT was suspended for those patients. None had been consecutively scheduled at any time. Epidemiology determined there was likely no transmission in the ECT suite.

None of the ECT clinicians developed symptoms or tested COVID+.

**Conclusion:** In spite of the high prevalence of COVID in the in-patient community and the treatment of several asymptomatic COVID+ patients, there was no evidence of COVID transmission to any patient or staff member in the ECT suite. This is the result of the collaborative protocols put in place to maximize patient and staff safety.

**Figure 3. Decontamination Process in ECT Suite**



**Figure 2. Sample Pre-ECT Checklist**

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ UNIT: \_\_\_\_\_ SAMPLE PRE-ECT CHECKLIST

**VITAL SIGNS**

B/P lying	SYMPTOM CHECK: Patient report or evidence of-
B/P standing	
Pulse lying	
Pulse standing	
Respiration lying	
Respiration standing	
Temperature	
O <sub>2</sub> Saturation	

Symptom Check	Yes (Provide Details)
Cough	
Sore Throat	
Headache	
Shortness of Breath	
Myalgia	
Anosmia	
Other symptoms (describe)	

#### References:

1. Espinoza RT, Kellner CH, McCall WV. ECT during COVID-19: An Essential Medical Procedure – Maintaining Service Viability and Accessibility. Journal of ECT, published ahead of print, April 9, 2020,
2. <https://www.apsf.org/news-updates/perioperative-considerations-for-the-2019-novel-coronavirus-covid-19/> Accessed March 18, 2020
3. Dexter F, Parra MC, Brown JR et al. Perioperative COVID-19 Defense, Anesthesia & Analgesia: March 26, 2020 - Volume Publish Ahead of Print - Issue - doi: 10.1213/ANE.0000000000004829

#### Questions/Comments, Contact:

Janine Limoncelli, MD, [jal9203@med.cornell.edu](mailto:jal9203@med.cornell.edu)

Earlier version of this work was published online on the Anesthesia Patient Safety Foundation website.



## **ECT DURING THE COVID EPIDEMIC: PROTOCOL FOR PATIENT AND CLINICIAN SAFETY**

Janine Limoncelli MD, Roy Smetana, MD, PhD<sup>2</sup>, Pablo Sanchez-Barranco, MD<sup>2</sup>, Mark Russ, MD<sup>2</sup>, Patricia Fogarty Mack, MD<sup>1</sup>

Departments of Anesthesiology<sup>1</sup> and Psychiatry<sup>2</sup>, Weill Cornell Medicine 1300 York Ave, New York, NY 10065

Introduction: Electroconvulsive therapy (ECT) is life-saving for patients with major depression and other psychiatric disorders and is identified as an essential procedure during the COVID pandemic.<sup>1</sup> In addition to aerosolization during mask ventilation,<sup>2</sup> concerns include the high prevalence of COVID in New York as well as the difficulty in maintaining social distancing in the inpatient psychiatric environment. Challenges in protecting health care workers (HCW) from exposure during treatment as well as preventing patient to patient transmission in the ECT environment were addressed collaboratively by the departments of anesthesiology and psychiatry

Methods: Inpatient ECT services were consolidated to one hospital within Weill Cornell Medicine (WCM). The same anesthesiologist led the team performing all ECT procedures for 7 weeks. The ECT clinical teams trained together on donning and doffing, simulated patient flow and room decontamination. The consensus of the Clinical Practices Committee (Anesthesiology) was that low tidal volume mask ventilation would be preferable to repeated intubation or supraglottic airway use. PPE for aerosolizing procedures would be observed by all personnel. Nasopharyngeal decontamination,<sup>3</sup> hydrogen peroxide 1% mouth rinse and povidone nasal swabs, and patient hand hygiene was implemented as part of a comprehensive preprocedure checklist. (Figure 1) Upon arrival to the ECT suite, patients placed their own bite block and then had an anesthesia facemask connected to a HEPA filter and a Jackson Rees circuit secured with a head strap for preoxygenation. During treatment, mask ventilation was administered as necessary to maintain O<sub>2</sub> saturation >90%. After treatment, strict decontamination



protocols were followed.( Figure 2) At first, patients were tested only if they developed symptoms. Later, improved availability allowed PCR testing prior to initiation of ECT and weekly surveillance on all ECT patients. The entire protocol is illustrated in Figure 3.

Results: Over 7 weeks more than 200 treatments were performed in 35 patients at the Westchester Division of WCM. On average, 10% of the in-patient population was COVID+. Three patients who had been transferred from the Manhattan campus developed symptoms after several treatments and were found to be COVID+. ECT was suspended for those patients. None of those patients had been consecutively scheduled in the treatment room at any time. Epidemiology determined there was likely no transmission in the ECT suite. None of the ECT clinicians developed symptoms or tested COVID+.

Conclusion: In order to continue to provide ECT in a high prevalence area for COVID, consensus-based protocol and a pre-procedure checklist needed to be instituted rapidly to ensure patient and staff safety. In spite of the high prevalence of COVID in the in-patient community and the treatment of several asymptomatic COVID+ patients, there was no evidence of COVID transmission to any patient or staff member in the ECT suite. This is the result of the collaborative protocols put in place to maximize patient and staff safety.

References:

1. Espinoza RT, Kellner CH, McCall WV. ECT during COVID-19: An Essential Medical Procedure – Maintaining Service Viability and Accessibility. Journal of ECT, published ahead of print, April 9, 2020,
2. <https://www.apsf.org/news-updates/perioperative-considerations-for-the-2019-novel-coronavirus-covid-19/> Accessed March 18, 2020
3. Dexter F, Parra MC, Brown JR et al. Perioperative COVID-19 Defense, Anesthesia & Analgesia: March 26, 2020 - Volume Publish Ahead of Print - Issue - doi: 10.1213/ANE.00000000000004829



Figure 1

**VITAL SIGNS**

<b>B/P lying</b>	
<b>B/P standing</b>	
<b>Pulse lying</b>	
<b>Pulse standing</b>	
<b>Respiration lying</b>	
<b>Respiration standing</b>	
<b>Temperature</b>	
<b>O<sub>2</sub> Saturation</b>	

**SYMPTOM CHECK**

**Any evidence of or report by patient of the following:**

<b>Symptom Check</b>	<b>Yes (Provide Details)</b>	<b>No</b>
<b>Cough</b>		
<b>Sore Throat</b>		
<b>Headache</b>		
<b>Shortness of Breath</b>		
<b>Myalgia</b>		
<b>Anosmia</b>		
<b>Other symptoms (describe)</b>		

**COMPLETE AND CHECK OFF THE FOLLOWING:**

**Povidone Iodine Nasal Swab\*\* to each nostril:** ☐

**Hydrogen peroxide mouth rinse\*:** ☐

**Surgical mask put on patient:** ☐

**Patient performed hand hygiene:** ☐



Figure 2

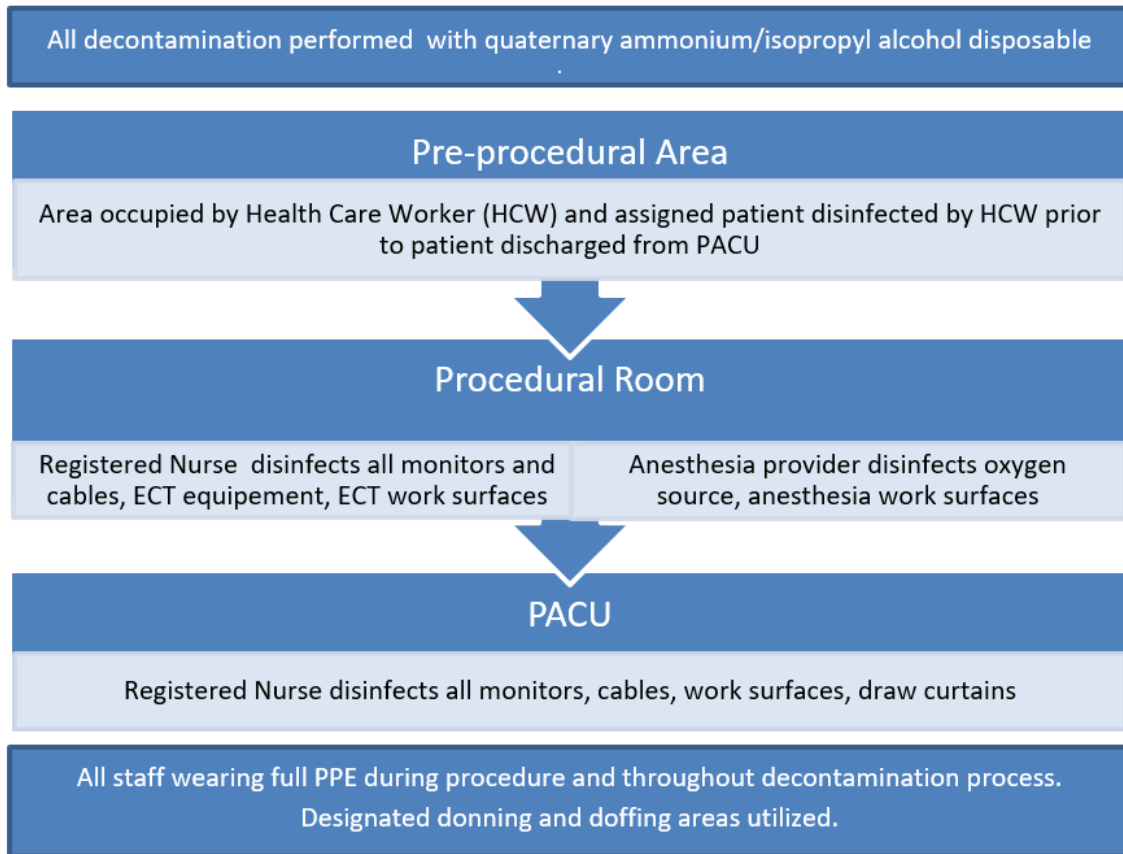
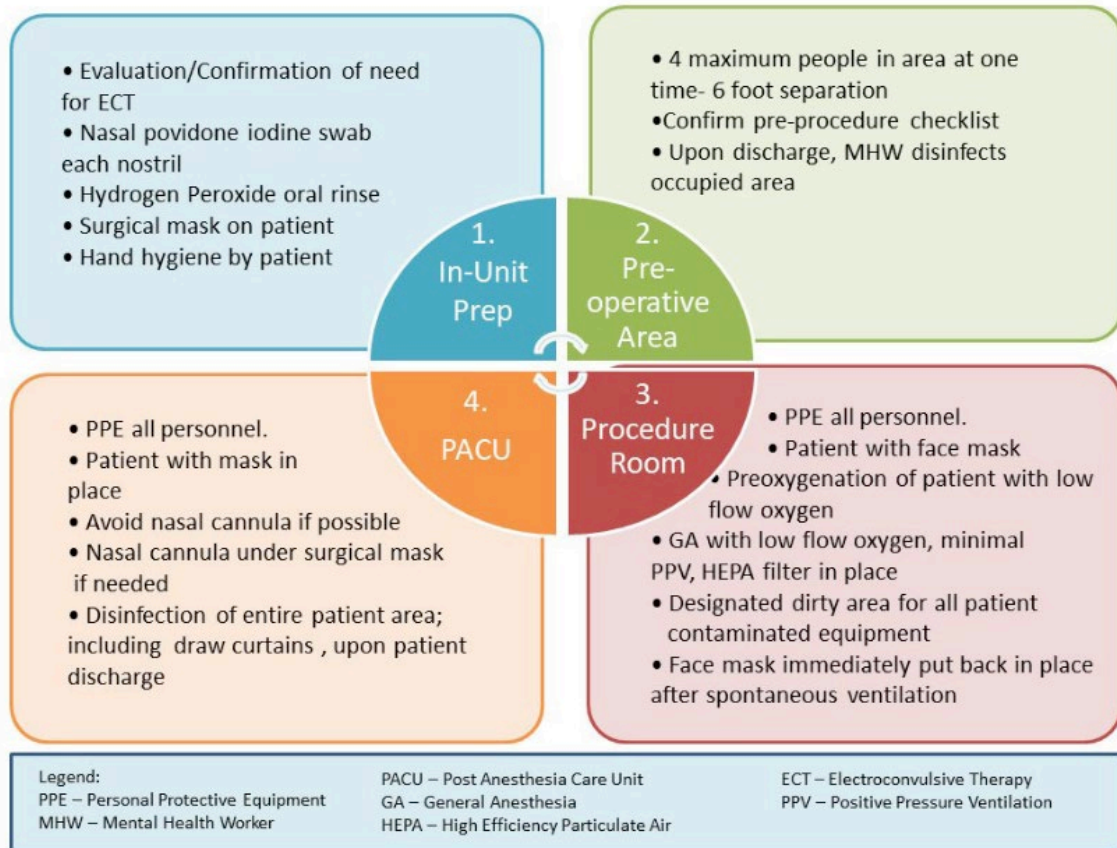
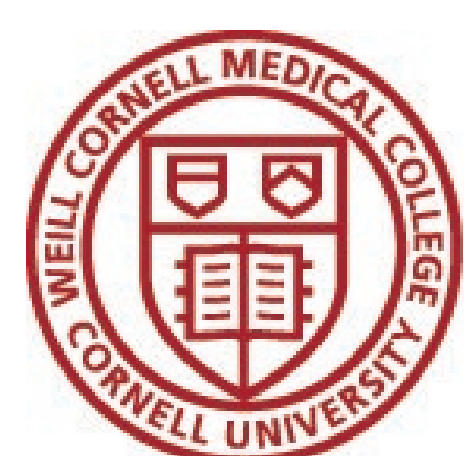




Figure 3







### Problem Statement

- During the height of the coronavirus (COVID-19) pandemic in New York City, the majority of in-person ambulatory care visits needed to be converted to video visits to decrease the risk of transmission. In order to evaluate and treat our patients, we implemented a video visit program at our primary care practice.

### Objective

- To describe the implementation and evaluation of a video visit program at a large, academic primary care practice in New York, NY, the epicenter of the COVID-19 pandemic.

### Design/Methods

- Design and Participants:** We included consecutive adults (age >18) scheduled for video visits from March 16, 2020 to April 17, 2020 for COVID-19 and non-COVID-19 related complaints.
- Intervention:** New processes were established to prepare the practice and patients for video visits. Video visits were conducted by attendings, residents, and nurse practitioners.
- Main Measures:** Guided by the RE-AIM Framework, we evaluated the Reach, Effectiveness, Adoption, and Implementation of video visits.

### Results

In the 4 weeks prior to the study period, 12 video visits were completed. During the five-week study period, we completed a total of 1,030 video visits for 817 unique patients. Of the video visits completed, 42% were for COVID-19 related symptoms, and the remainder were for other acute or chronic conditions. Video visits were completed more often among younger adults, women, and those with commercial insurance, compared to those who completed in-person visits pre-COVID (all  $p < 0.0001$ ). Patients who completed video visits reported high satisfaction (mean 4.6 on a 5-point scale [SD: 0.97]); 13.3% reported technical challenges during video visits.

### Conclusion

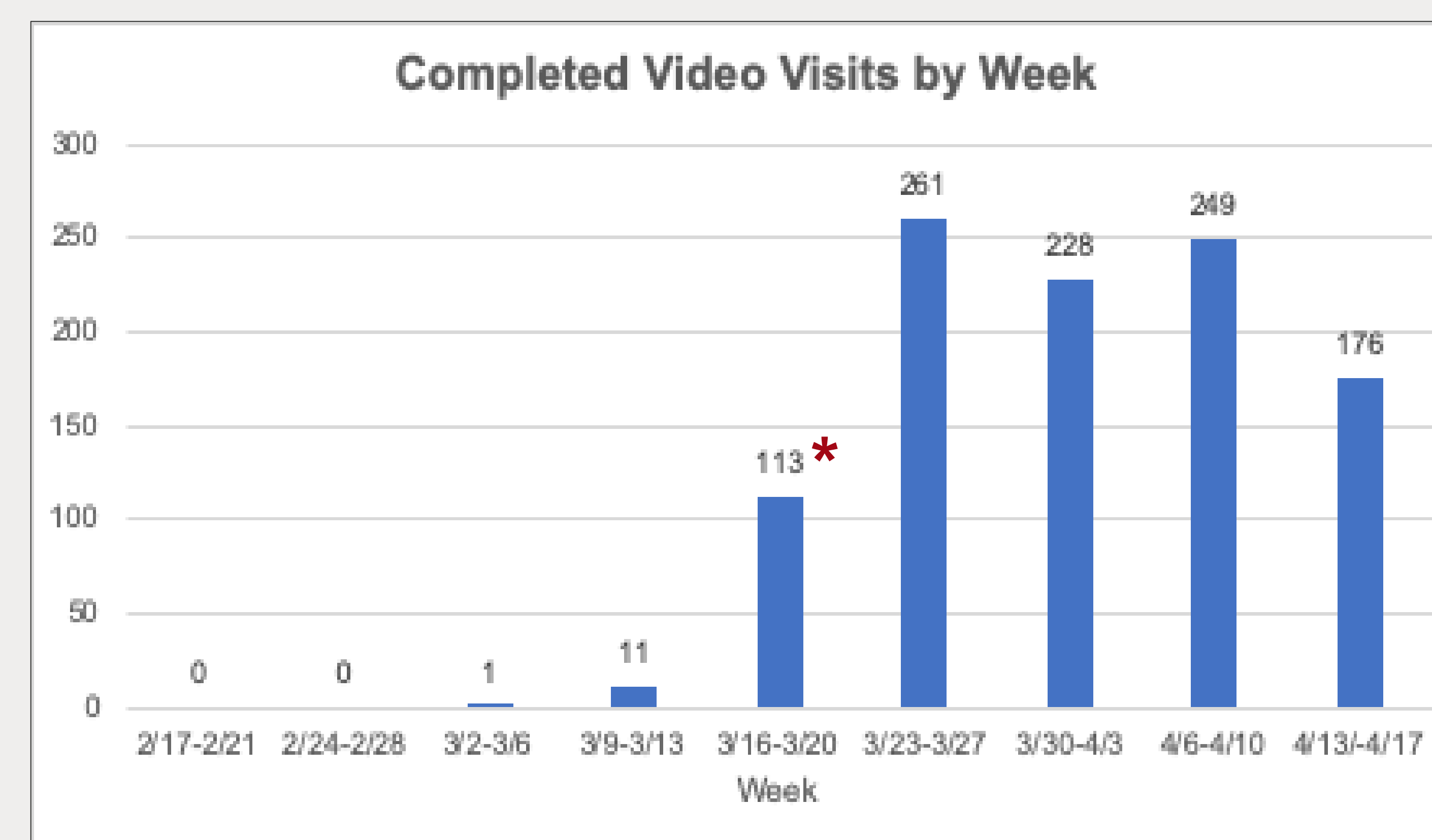
During a five-week period, 70 providers completed 1,030 video visits, compared to only 12 video visits completed in the preceding four weeks. New workflows for staff, providers, and patients were developed to implement this program. Overall, patients reported high satisfaction with the care they received during their video visits. Our findings suggest that video visits provide a feasible way to care for patients with and without COVID-19 symptoms. Additional study on the sustained implementation of video visits in primary care, as well as their effect on patient outcomes, is warranted.

Characteristics	Completed Video Visits during Study Period (n=1,030)	Completed In-Person Visits Prior to Study Period (N=38,614)	Omnibus p-values*	Bonferroni adjusted p-values for multiple comparisons
Age, median category, y.	41-50**	61-70	<.0001	
Sex				
Male	30.8%	35.2%	.0035	
Female	69.2%	64.8%		
Race				
Black	24.7%	22.0%	.00003	.156
Asian / Pacific Isl.	7.9%	8.0%		.990
White	39.1%	34.5%		.008
Other/unknown	28.1%	35.2%		< .00001
Ethnicity				
Hispanic	22.9%	19.8%	<.00001	.042
Non-Hispanic	61.0%	50.5%		< .00001
Other/unknown	16.1%	29.7%		< .00001
Insurance				
Medicare	13.0%	31.5%	<.00001	< .00001
Medicaid	27.6%	30.6%		.158
Commercial	49.0%	36.5%		< .00001
Self-pay/other	10.4%	1.4%		< .00001
Relationship to practice				
New patient	2.3%	9.3%	<.00001	
Established patient	97.7%	90.7%		

**Demographic characteristics of patients who completed video visits during the study period compared to patients who completed in-person visits during the prior fiscal year**

Survey Domain	Response (n=113)* (mean [SD]) or %
Overall experience with video visit (1 worst, 5 best)	4.6 (0.97)
Satisfied with the level of care offered during video visit, compared with in-person visit?	94.5%
Percent of future care preferred as video visit versus in-person	49% (0.26)
Experienced technical challenges during video visit	13.3%

**Patient Satisfaction and Attitudes Towards Video Visits**



**Number of completed video visits by week pre-COVID-19 and during COVID-19**

\* Video visit program begins



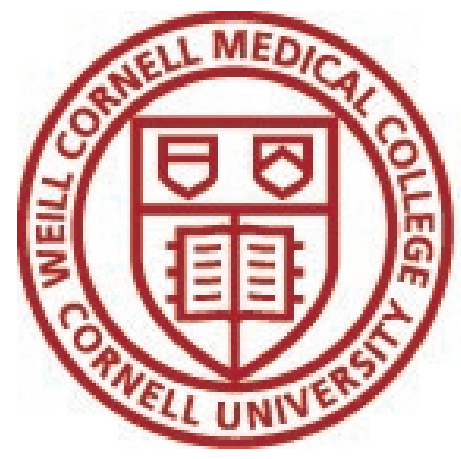
**Title:** *Implementation of Video Visits during COVID-19: Lessons Learned from a Primary Care Practice in New York City*

**Authors:** Sanjai Sinha, MD, Lisa M. Kern, MD, MPH, Laura F. Gingras, MD, Evgeniya Reshetnyak, PhD, Judy Tung, MD, Fred Pelzman, MD, Thomas A. McGrath, MBA, Madeline R. Sterling, MD, MS, MPH

**Department:** Medicine, Division of General Internal Medicine

1. **Statement of the Problem:** During the height of the coronavirus (COVID-19) pandemic in New York City, the majority of in-person ambulatory care visits needed to be converted to video visits to decrease the risk of transmission. In order to evaluate and treat our patients, we implemented a video visit program at our primary care practice.
2. **Objective/Aim of the study:** To describe the implementation and evaluation of video visit program at a large, academic primary care practice in New York, NY, the epicenter of the COVID-19 pandemic.
3. **Project Design/Methods:**  
**Design and Participants:** We included consecutive adults (age >18) scheduled for video visits from March 16, 2020 to April 17, 2020 for both COVID-19 and non-COVID-19 related complaints.  
**Intervention:** New processes were established to prepare providers, staff, and patients for video visits. Video visits were conducted by attendings, residents, and nurse practitioners.  
**Main Measures:** Guided by the RE-AIM Framework, we evaluated the Reach, Effectiveness, Adoption, and Implementation of video visits. Data were collected from multiple sources including the electronic health record, administrative records, and an online survey.
4. **Results:** In the 4 weeks prior to the study period, 12 video visits were completed. During the five-week study period, we completed a total of 1,030 video visits for 817 unique patients. Of the video visits completed, 42% were for COVID-19 related symptoms, and the remainder were for other acute or chronic conditions. Video visits were completed more often among younger adults, women, and those with commercial insurance, compared to those who completed in-person visits pre-COVID (all  $p < 0.0001$ ). Patients who completed video visits reported high satisfaction (mean 4.6 on a 5-point scale [SD: 0.97]); 13.3% reported technical challenges during video visits.
5. **Conclusions:** During a five-week period, 70 providers completed 1,030 video visits, compared to only 12 video visits completed in the preceding four weeks. New workflows for staff, providers, and patients were developed to implement this program. Overall, patients reported high satisfaction with the care they received during their video visits. Our findings suggest that video visits provide a feasible way to care for patients with and without COVID-19 symptoms. Additional study on the sustained implementation of video visits in primary care, as well as their effect on patient outcomes, is warranted.





## Introduction:

- SARS-CoV-2 has highlighted our incomplete understanding of aerosol-generating procedures (AGPs). Office laryngoscopy is a prime example—being a source of concern, debate, and speculation among otolaryngologists.
- Currently, there is insufficient evidence to support either view. By standard definition, AGPs are procedures that have the potential to create aerosols in addition to those that patients regularly form from breathing, coughing, sneezing, or talking.
- In this study, we quantify aerosolization associated with flexible and rigid office laryngoscopy, and critically review methods for measuring the aerosolizing potential of medical and surgical interventions.

## Methods:

- Two healthy volunteers were recruited to undergo both flexible (FL) and rigid laryngoscopy (RL).
- An optical particle sizer (OPS), AeroTrak 9306, TSI Incorporated (Shoreview, MN), was used to quantify aerosols and droplets for:
  - 4 positive controls relative to ambient particles (speech, breathing, /e/ phonation, and /æ/ phonation)
  - 5 test interventions relative to breathing and phonation (FL alone, FL with humming, FL with /e/ phonation, RL alone copy, and RL with /æ/ phonation).



Figure 1. Experimental Design

- Particle counts in mean diameter size ranges from 0.3 to >10µm were measured with OPS placed at 12 cm from the subject's nose/mouth.
- Each intervention was repeated for each subject five times, for a total of 10 replicates per intervention.

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## Results:

- Statistically significant increase in particle counts between 1-3 µm ( $p = 0.016$ ) for breathing and for /æ/ phonation (1-3 µm:  $p = 0.022$ ; 3-5 µm:  $p = 0.083$ ; >5 µm:  $p = 0.012$ ) relative to background.
- No significant increase in aerosol and droplet counts for FL alone, FL with humming, FL with /e/ sound, RL alone, and RL with /æ/ sound relative to breathing or phonation for any particle size.

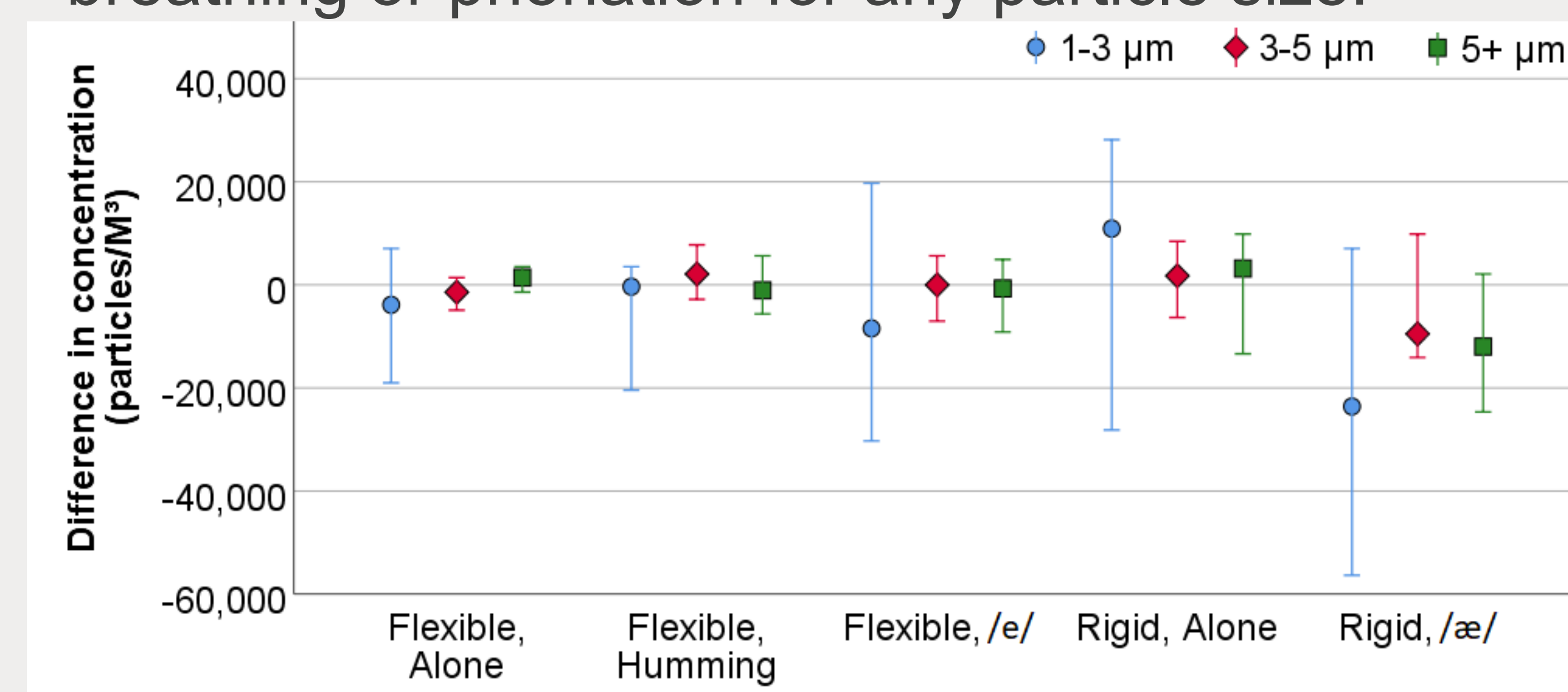


Figure 2. Difference between intervention and reference counts for test interventions stratified by particle size. Marker = median, Error bars = 95% CI.

## Discussion:

- By the standard AGP definition, **office laryngoscopy is likely not an AGP when assessed with OPS technology.**
- Limitations:
  - OPS is highly susceptible to errors in sizing and related miscounts, as its accuracy depends on the optical properties of the particles measured, such as color
  - Our findings are based on a limited number of replicates in two healthy volunteers.
  - Laryngoscopy is associated with increased risk of coughing/ sneezing & requires phonation, all of which are aerosol-generating.

## Conclusion:

- Our study suggests that office laryngoscopy may not be an AGP according to the standard medical definition, namely aerosol production more than normally expected from breathing, coughing, sneezing and speaking.
- However, optical particle sizing, our method of aerosol quantification, is subject to significant limitations, and needs to be supplemented by more sophisticated aerosol measurement techniques.

<https://voice.weill.cornell.edu>



# **IS OFFICE LARYNGOSCOPY AN AEROSOL-GENERATING PROCEDURE?**

Anaïs Rameau, MD, MPhil<sup>1\*</sup>, Mark Lee, BS, BA<sup>1\*</sup>, Necati Enver, MD<sup>1,2</sup>, Lucian Sulica, MD<sup>1</sup>

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**Statement of the problem:** The novel coronavirus, SARS-CoV-2, has highlighted our incomplete understanding of aerosol-generating procedures (AGPs). Office laryngoscopy is a prime example—being a source of concern, debate, and speculation during this crisis. Some organizations have listed it as potentially aerosol generating, while others have stated the opposite, citing factors such as absence of sheer stresses needed to generate aerosols. Currently, there is insufficient evidence to support either view.

**Objective:** (1) To investigate whether office laryngoscopy is an aerosol-generating procedure with an optical particle sizer (OPS) during clinical simulation on healthy volunteers, and (2) To critically discuss methods for assessment of aerosolizing potentials in invasive interventions.

**Study Design:** Prospective quantification of aerosol and droplet generation during clinical simulation of rigid and flexible laryngoscopy.

**Methods:** Two healthy volunteers were recruited to undergo both flexible and rigid laryngoscopy. OPS was used to quantify aerosols and droplets generated for four positive controls relative to ambient particles (speech, breathing, /e/ phonation, and /æ/ phonation) and for five test interventions relative to breathing and phonation (flexible laryngoscopy, flexible laryngoscopy with humming, flexible laryngoscopy with /e/ phonation, rigid laryngoscopy, and



rigid laryngoscopy with /æ/ phonation). Particle counts in mean diameter size ranges from 0.3 to  $>10\mu\text{m}$  were measured with OPS placed at 12 cm from the subject's nose/mouth.

**Results:** None of the laryngoscopy interventions ( $N=10$  each) generated aerosols above that produced by breathing or phonation. Breathing ( $N=40$ , 1-3  $\mu\text{m}$ :  $p=0.016$ ) and /æ/ phonation ( $N=10$ , 1-3  $\mu\text{m}$ :  $p=0.022$ , 3-5  $\mu\text{m}$ :  $p=0.083$ ,  $>5\mu\text{m}$ :  $p=0.012$ ) were statistically significant producers of aerosols and droplets. Neither speech nor /e/ phonation ( $N=10$  each) were associated with statistically significant aerosols and droplet generation.

**Conclusions:** Using OPS to detect droplets and aerosols, we found that office laryngoscopy is likely not an aerosol-generating procedure. Despite its prior use in otolaryngological literature, OPS has intrinsic limitations. Our study should be complemented with more sophisticated methods of droplet distribution measurement.



### BACKGROUND:

- The COVID-19 pandemic uprooted students from clinical clerkships, removing medical students from direct patient care during the largest global health crisis of the century.
- Virtual platforms can provide students with a valuable opportunity to re-engage in the clinical environment and actively participate in patient care during this history-making event.
- Identifying the greatest need to be a sense of contribution during COVID-19, patient interactions, and involvement with the medical teams.

### METHODS:

From April 6 to May 31, 2020, we designed a two 4-week inpatient medicine elective blocks for medical students in their second year and above to participate in acute patient care as “virtual team members” (VTM) (Figure 1) Students were:

- Assigned to teaching and non-teaching hospital medicine teams at WCM and LMH
- Responsible for maintaining daily virtual contact with persons-under-investigation (PUI) and COVID-19 positive patients during a time when no visitors were allowed in the hospital.

Faculty experts in infectious disease, mental health, medical ethics, quality improvement and patient safety incorporated weekly didactics through video conferences throughout the elective.

**DATA:** A total 26 students enrolled in two sequential 4-week blocks, with majority in the 2<sup>nd</sup> year in their early stages of clinical clerkships. Students completed an anonymous voluntary questionnaire at two and four weeks of the elective to capture their experience and identify opportunities for course improvement.



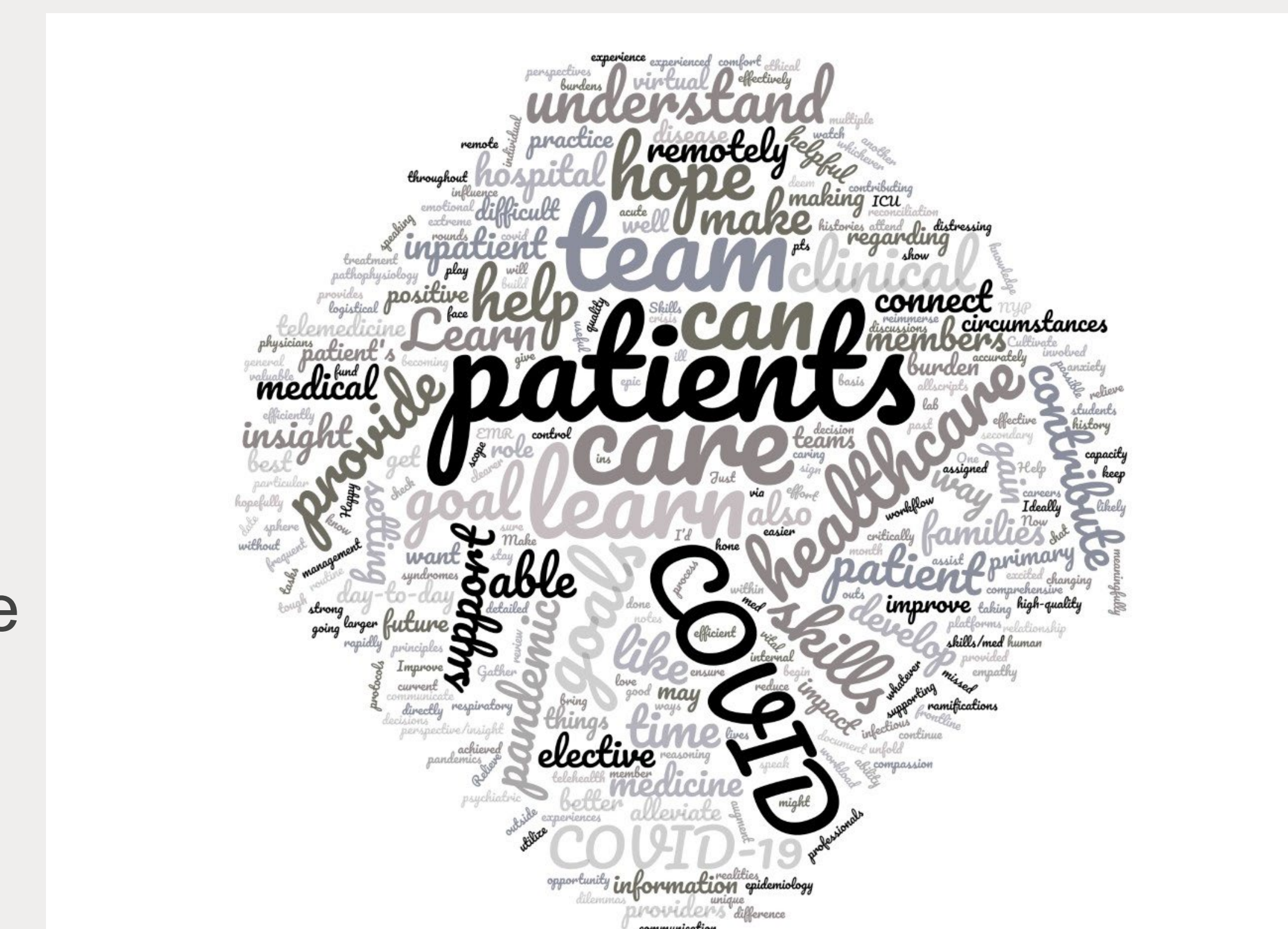
**Figure 1.** Sample Daily Schedule of VTM

### RESULTS:

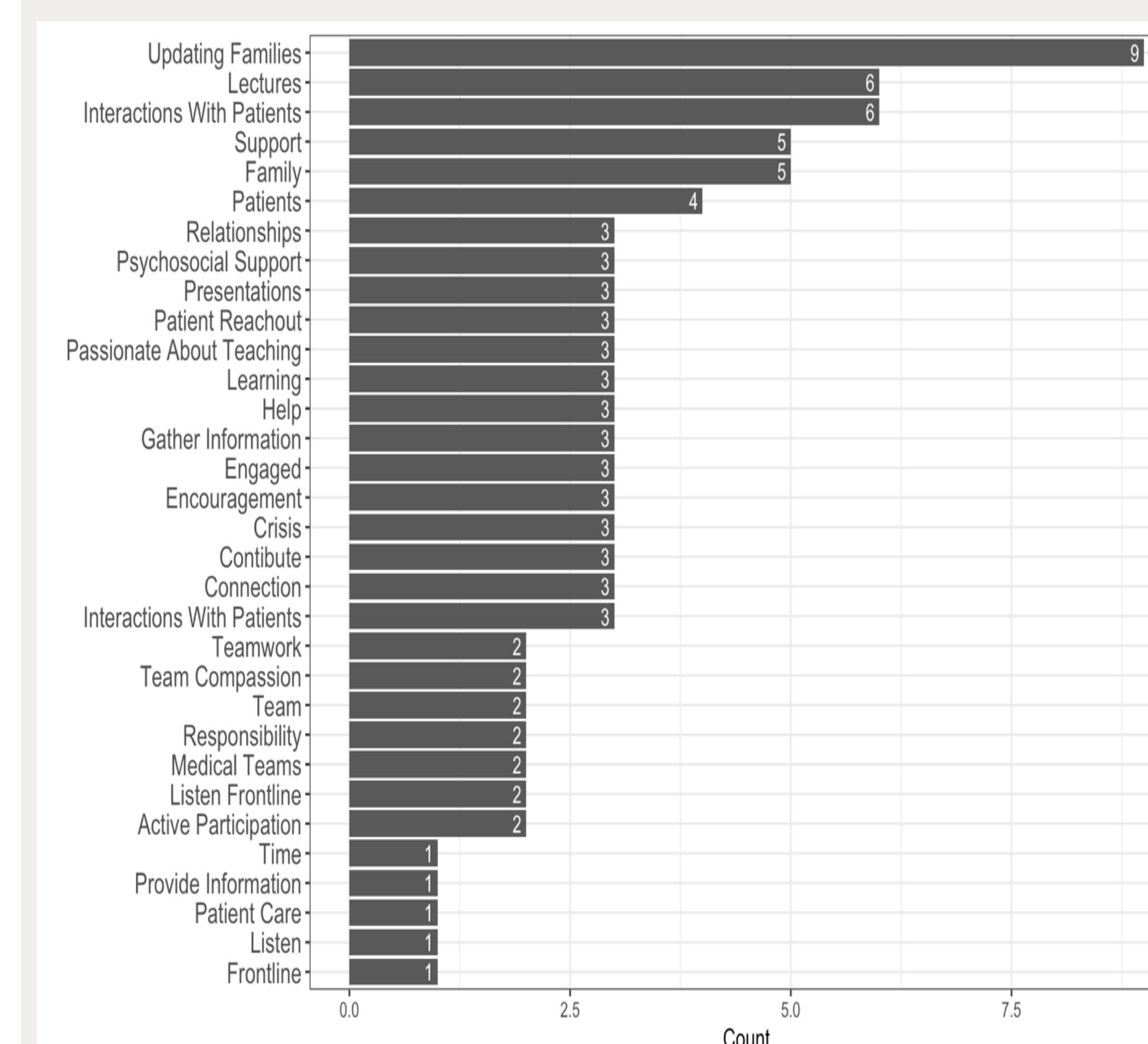
All interactions with the care team and patients took place by phone, computer or video conferencing platforms. Responsibilities included reviewing patient charts, participating in virtual morning rounds, daily weekday calls to patients and/or their families, obtaining collateral information. Their experiences and satisfaction level depended on their expectations and engagement from patient contacts, variability in assigned tasks, and hospital attendings team.

Category	N (%)
Be part of team	10 (27.0%)
COVID	12 (32.4%)
Clinical experience	7 (18.9%)
Patient care	7 (18.9%)
Telemedicine	1 (2.7%)

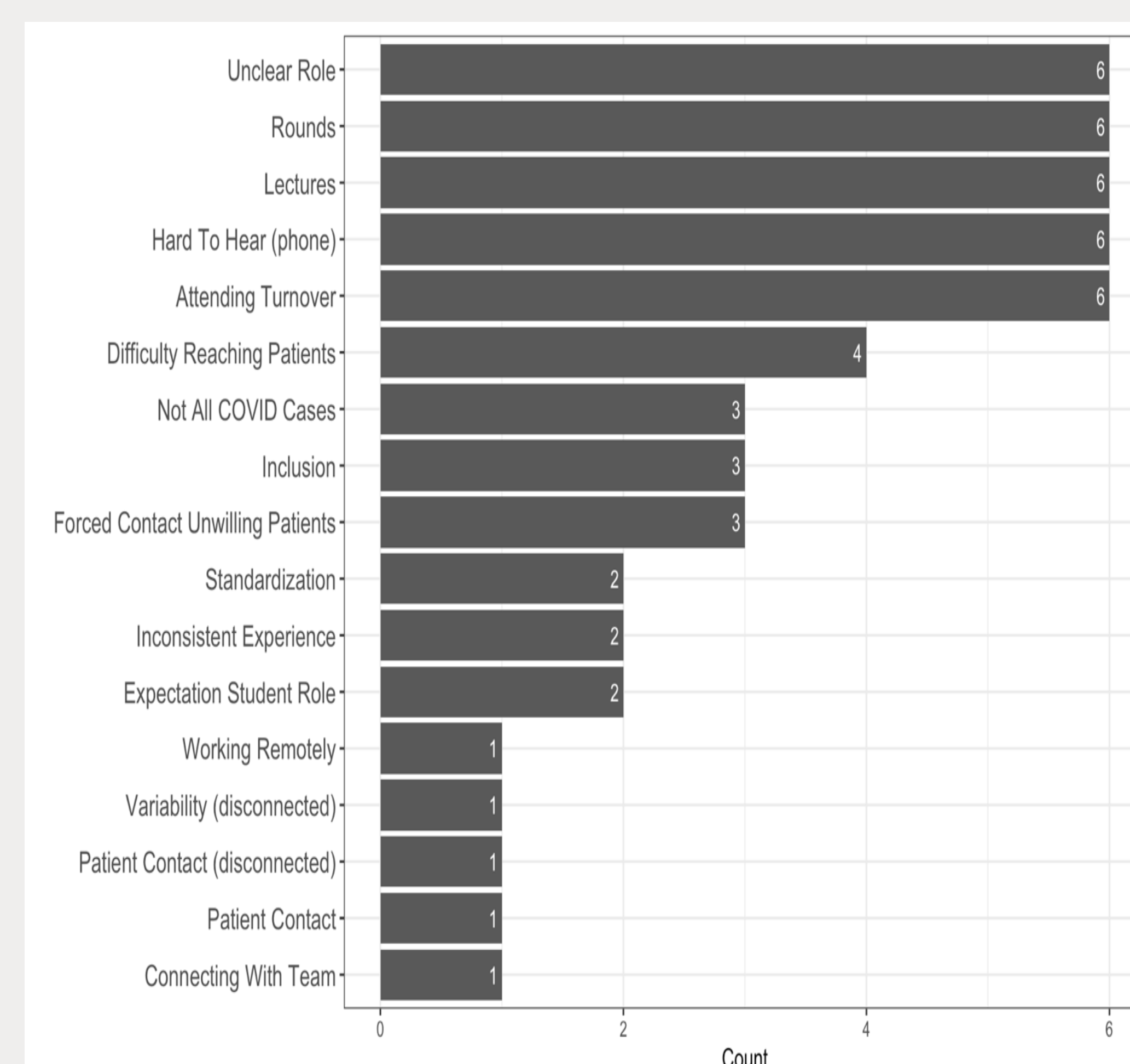
**Table 1.** Reason for signing up the elective (Pre; multiple answers)



**Figure 2.** Goals of elective (Pre)



**Figure 3.** Best part of the elective (Post)



**Figure 4.** Worst part of the elective (Post)

**CONCLUSIONS:** Clinical experiences through a virtual COVID-19 inpatient elective allowed students to maintain patient interaction and fulfilling learning objectives.



## **Title: Virtual Team Member: Remote Engagement of Medical Students in COVID-19 Care**

Authors: Ericka Fong, BS; Cecilia J. Yoon, MD; Jihui Lee, Ph.D; Jennifer I. Lee, MD

Department: Weill Department of Medicine

### **Statement of the Problem:**

The COVID-19 pandemic uprooted students from clinical clerkships, removing medical students from direct patient care during the largest global health crisis of the century.

Using virtual platforms we were able to provide students with a valuable opportunity to re-engage in the clinical environment and actively participate in patient care during this history-making event.

### **Project Design/Methods:**

From April 6 to May 31, 2020, we designed a two 4-week inpatient medicine elective blocks for medical students in their second year and above to participate in acute patient care as “virtual team members” (VTM) (Figure 1)

Students were:

- Assigned to teaching and non-teaching hospital medicine teams at WCM and LMH
- Responsible for maintaining daily virtual contact with persons-under-investigation (PUI) and COVID-19 positive patients during a time when no visitors were allowed in the hospital.

Faculty experts in infectious disease, mental health, medical ethics, quality improvement and patient safety incorporated weekly didactics through video conferences throughout the elective. Students completed an anonymous voluntary questionnaire at two and four weeks of the elective to capture their experience and identify opportunities for course improvement.

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A total 26 students enrolled in two sequential 4-week blocks, with majority in the 2<sup>nd</sup> year in their early stages of clinical clerkships. Students completed an anonymous voluntary questionnaire at two and four weeks of the elective to capture their experience and identify opportunities for course improvement.

### **Results:**

All interactions with the care team and patients took place by phone, computer or video conferencing platforms. Responsibilities included reviewing patient charts, participating in virtual morning rounds, daily weekday calls to patients and/or their families, obtaining collateral information. Their experiences and satisfaction level depended on their expectations and engagement from patient contacts, variability in assigned tasks, and hospital attendings team.

### **Conclusions:**

Clinical experiences through a virtual COVID-19 inpatient elective allowed students to maintain patient interaction and fulfilling learning objectives.



# On the Road to Zero: HAPI Prevention



A multi-prong approach to reducing HAPI incidence

**Ekta Vohra BSN, RN, CWON, Jennifer Shaw, MSN, RN, NEA-BC, AGPCNP-BC**

For more information, please contact: Jennifer Shaw, PCD at jes9291@nyp.org, or (212) 746-0265

## Background

According to the Agency for Healthcare Research and Quality, over 2.5 million people in the US develop pressure injuries every year, which are associated with pain, infections, and increased healthcare costs.<sup>1</sup> Hospital Acquired Pressure injuries (HAPI's) are considered a nursing sensitive quality indicator by the National Database of Nursing Quality Indicators, and are typically preventable conditions.<sup>2</sup> Historically, hospitals have used NDNQI prevalence data, which is a snapshot in time, to measure pressure injury rates. Since 2014, the Center for Medicare and Medicaid services considers HAPIs a "never event" and not only does not reimburse hospitals for this, but also reduces reimbursement rates based on the number of incidences that occur at a hospital.<sup>3</sup> In order to reduce patient harm and address the increased financial burden of these never events, NYP started tracking incidence rates, in addition to prevalence rates, in May 2018.

- **P** – Hospital Acquired Pressure Injury
- **I** – Prevention Process on 5W
- **C** – Standard of care
- **O** –Reduction in HAPI incidence
- **T** –Post April intervention period, 2019
- **S** –5W, Medical Stepdown

Does adding a multi-prong prevention process to the current standard of care reduce HAPI incidence, compared to the standard of care, on a high acuity medical stepdown unit?

## Methods

Measure and track monthly incidence for improvement and reduction of HAPI.

### Standard of Care on 5W:

- Yearly NDNQI online education addressing identification, prevention, and treatment. Additionally, 2018 interventions include new orientation checklist, and education sessions with the Wound Ostomy Nurse (WON)

### Multi-prong Process:

- Pioneered 2 RN skin check, documented in a miscellaneous note in the EMR with second RN co-signature required.
- Door tags for identifying prevention and treatment measures.
- Audit tool to assess compliance with measures 2 & 3
- Increase WON presence
- "HAPI" hour/reward for achieving 0 PI's/month for unit

The data collection period:

- April 2019 new interventions initiated
- Data reviewed January – November 2019

- Incidence rates were collected and assessed weekly for accuracy by the WON assigned to the unit. This data was broken down into monthly rates for the purpose of assessing the outcomes of these interventions.
- Pre- intervention incidence rates were measured January- March and the month of April was excluded from the data as the intervention time period.
- The post- intervention incidence rates were measured from May- November 2019 and compared to 2018 results.

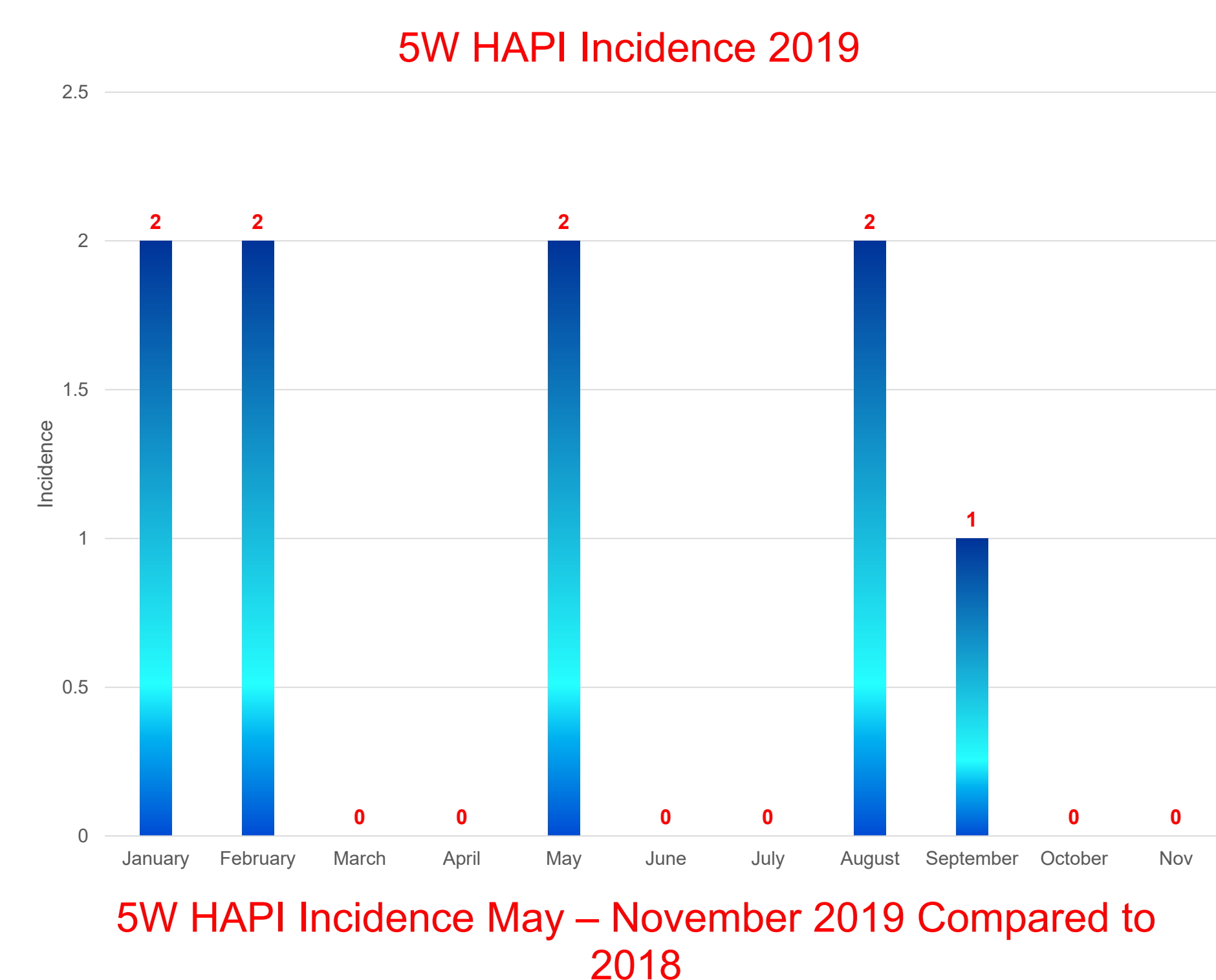
## Results

### Process Metrics

- Monthly audits of at least 10 patients/month, with an average compliance rate of 90%.

### Outcome:

- Decrease in HAPI incidence
- Pre-intervention 4 HAPIs January-March Post intervention 6 HAPIs May-November
- We decreased our monthly average HAPI rate from 1.33 to 0.85 in 2019 in our post intervention period.
- There was a 68% decrease in HAPIs for months May through November compared to 2018 (19 in 2018, 6 in 2019).



## Discussion

- Our multi-prong approach was successful due to the collaboration between the WON, the Unit Council (UC) chair, skin champions, staff nurses and unit leadership.
- Strengths of our study include, innovative interventions, ensuring protocol compliance through audit process, and partnership between WON and nursing staff. **HAPI hour** recognized staff for unit success and maintained momentum of the interventions.
- Year over year comparison showed that there was a significant improvement in our HAPI incidence rate after implementing these additional interventions to our already robust HAPI prevention standard of care.
- Limitations: time, documentation
- Take away and Next Steps: Staff remarked the most impactful intervention is our innovative **2 RN skin check** process. This process has been adopted by multiple units throughout the hospital and have since seen success in reduction of HAPI incidences. Our study implies that this multi-pronged approach can work to decrease the incidences of HAPI. Increasing nursing aide involvement will continue to be beneficial.

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## ***On the Road to Zero: HAPI Prevention A multi-prong approach to reducing HAPI incidence***

**Background:** According to the Agency for Healthcare Research and Quality, over 2.5 million people in the US develop pressure injuries every year, which are associated with pain, infections, and increased healthcare costs.<sup>1</sup> Hospital Acquired Pressure injuries (HAPI's) are considered a nursing sensitive quality indicator by the National Database of Nursing Quality Indicators, and are typically preventable conditions.<sup>2</sup> Historically, hospitals have used NDNQI prevalence data, which is a snapshot in time, to measure pressure injury rates. Since 2014, the Center for Medicare and Medicaid services considers HAPIs a “never event” and not only does not reimburse hospitals for this, but also reduces reimbursement rates based on the number of incidences that occur at a hospital.<sup>3</sup> In order to reduce patient harm and address the increased financial burden of these never events, NYP started tracking incidence rates, in addition to prevalence rates, in May 2018. In order to address this issue, we asked: Does adding a multi-prong prevention process to the current standard of care reduce HAPI incidence, compared to the standard of care, on a high acuity medical stepdown unit?

### **Multi-prong Process:**

- Pioneered 2 RN skin check, documented in a miscellaneous note in the EMR with second RN co-signature required.
- Door tags for identifying prevention and treatment measures.
- Audit tool to assess compliance with measures 2 & 3
- Increase WON presence
- “HAPI” hour/reward for achieving 0 PI's/month for unit

**Methods:** Measure and track monthly incidence for improvement and reduction of HAPI.

**The data collection period:** April 2019 new interventions initiated, the data reviewed January – November 2019. Incidence rates were collected and assessed weekly for accuracy by the WON assigned to the unit. This data was broken down into monthly rates for the purpose of assessing the outcomes of these interventions. Pre-intervention incidence rates were measured January- March and the month of April was excluded from the data as the intervention time period. The post- intervention incidence rates were measured from May- November 2019 and compared to 2018 results. Process Metrics- Monthly audits of at least 10 patients/month, with an average compliance rate of 90%.

**Results:** We saw a decrease in HAPI incidence overall. The pre-intervention period had 4 HAPIs January-March compared to post-intervention period of 6 HAPIs May-November. We decreased our monthly average HAPI rate from 1.33 to 0.85 in 2019 in our post intervention period. There was a 68% decrease in HAPIs for months May through November compared to 2018 (19 in 2018, 6 in 2019).

**Discussion:** Our multi-prong approach was successful due to the collaboration between the WON, the Unit Council (UC) chair, skin champions, staff nurses and unit leadership. Strengths of our study include, innovative interventions, ensuring protocol compliance through audit process, and partnership between WON and nursing staff. **HAPI hour** recognized staff for unit success and maintained momentum of the interventions. Year over year comparison showed that there was a significant improvement in our HAPI incidence rate after implementing these additional interventions to our already robust HAPI prevention standard of care. Limitations: time, documentation. Take away and Next Steps: Staff remarked the most impactful intervention is our innovative **2 RN skin check** process. This process has been adopted by multiple units throughout the hospital and have since seen success in reduction of HAPI incidences. Our study implies that this multi-pronged approach can work to decrease the incidences of HAPI. Increasing nursing aide involvement will continue to be beneficial.



Katherine Pumphrey, Leonard Haas, Allison Portenoy, Lara Pavageau, Erika Abramson, Snezana Osorio and Jennie G. Ono | September 15, 2020

For comments/questions, please contact kap9163@nyp.org

## Statement of the Problem

- Asthma is the leading cause of chronic disease in children. Guidelines from the NHLBI Expert Panel Report-3 emphasize the assessment of asthma severity, control and use of an Asthma Action Plan (AAP) to provide effective asthma care to pediatric patients. Despite published guidelines to improve asthma care, compliance to the guidelines is a challenge.

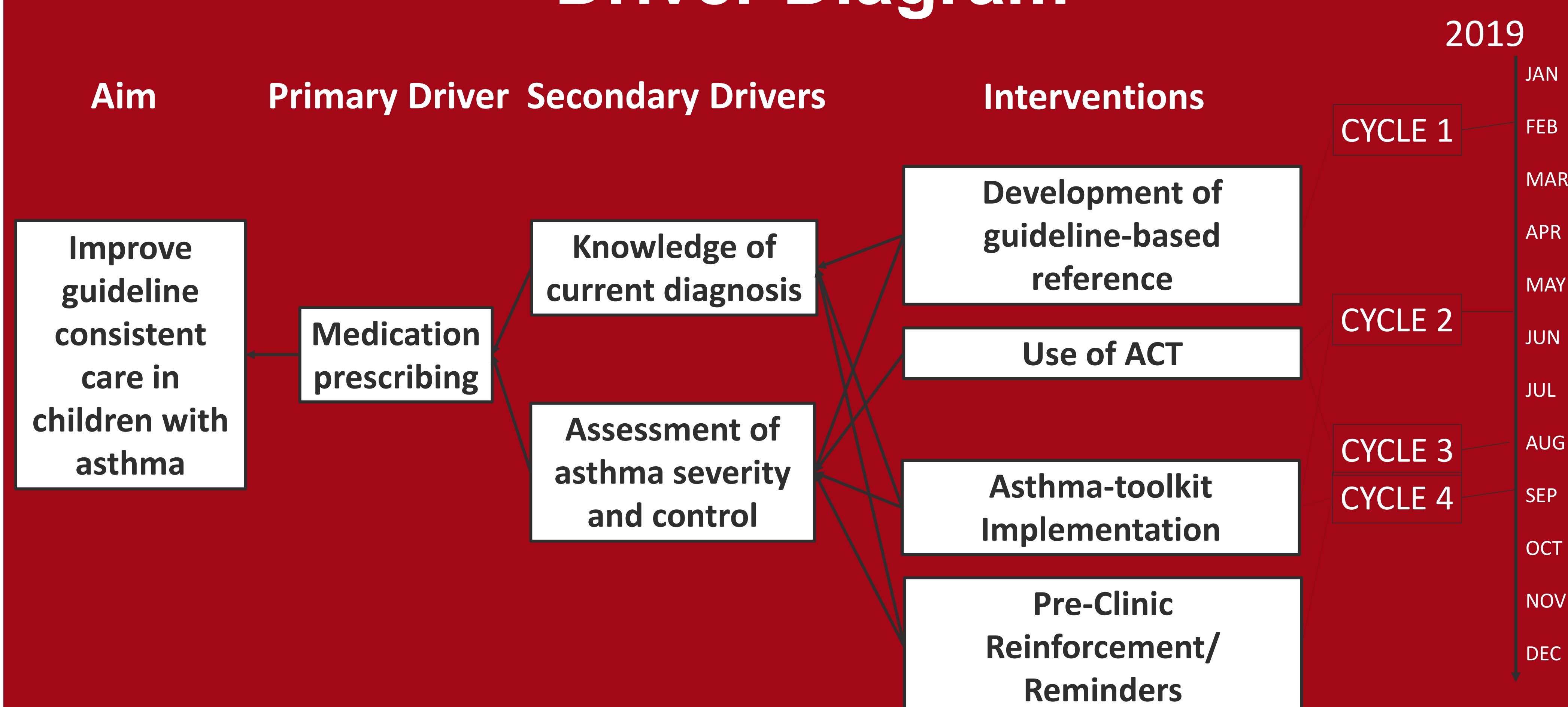
## SMART AIM

- By June 2020, the PGY2 RGP Quality Improvement Team will improve guideline-consistent care in patients with asthma (3-21 years) at the NYPH-WCM resident-based clinic by at least 50%.

## Methods

- Model for Improvement
- Observational study using sequential planned experimentation over 13 months
- Data were collected via EMR review (n=368 charts)
- Data display and analysis via SPC (P) charts

## Driver Diagram



## Measures

### Process

- % of patients with documented asthma severity
- % of patients with documented asthma control
- % Documented AAP
- % Received ACT

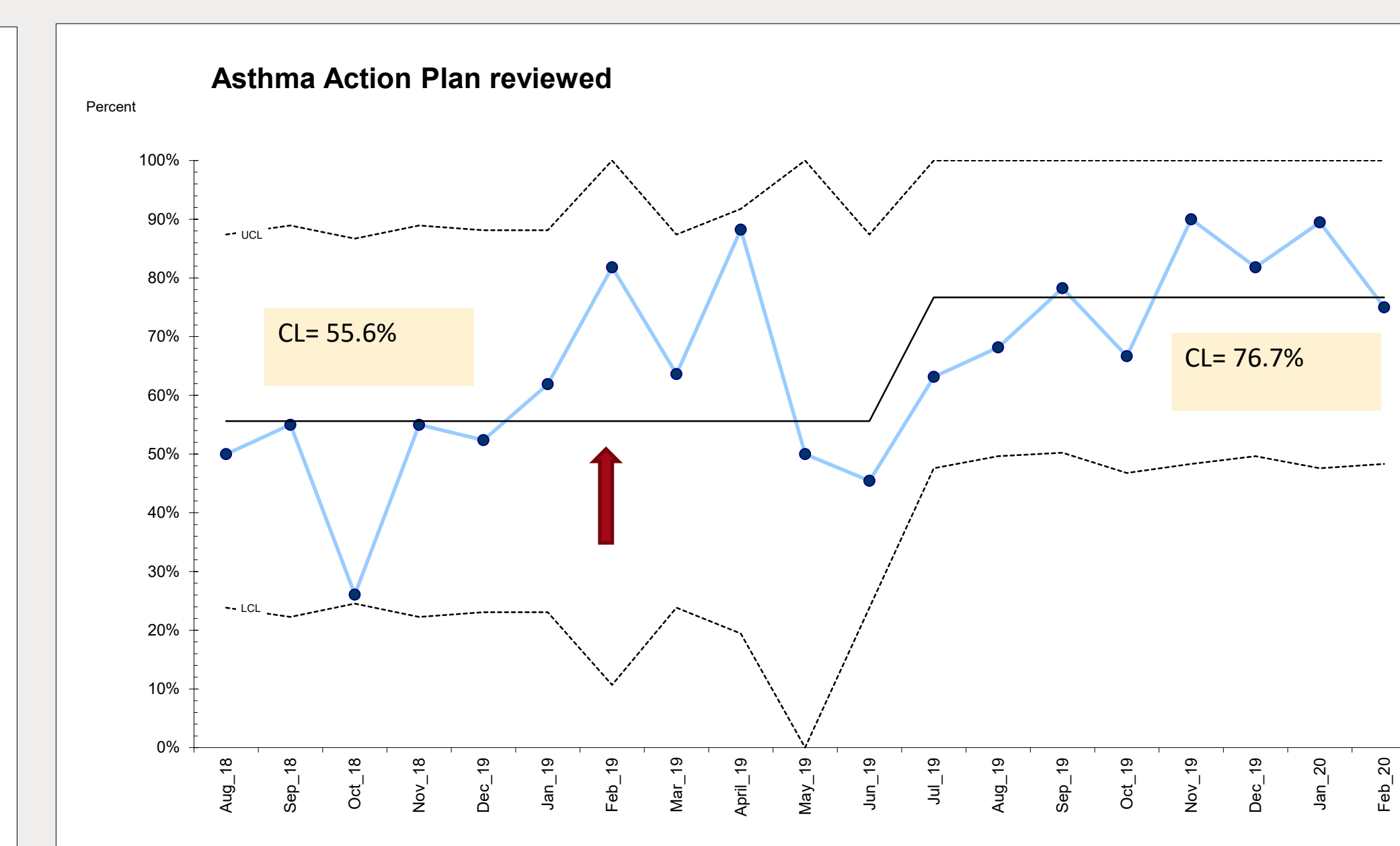
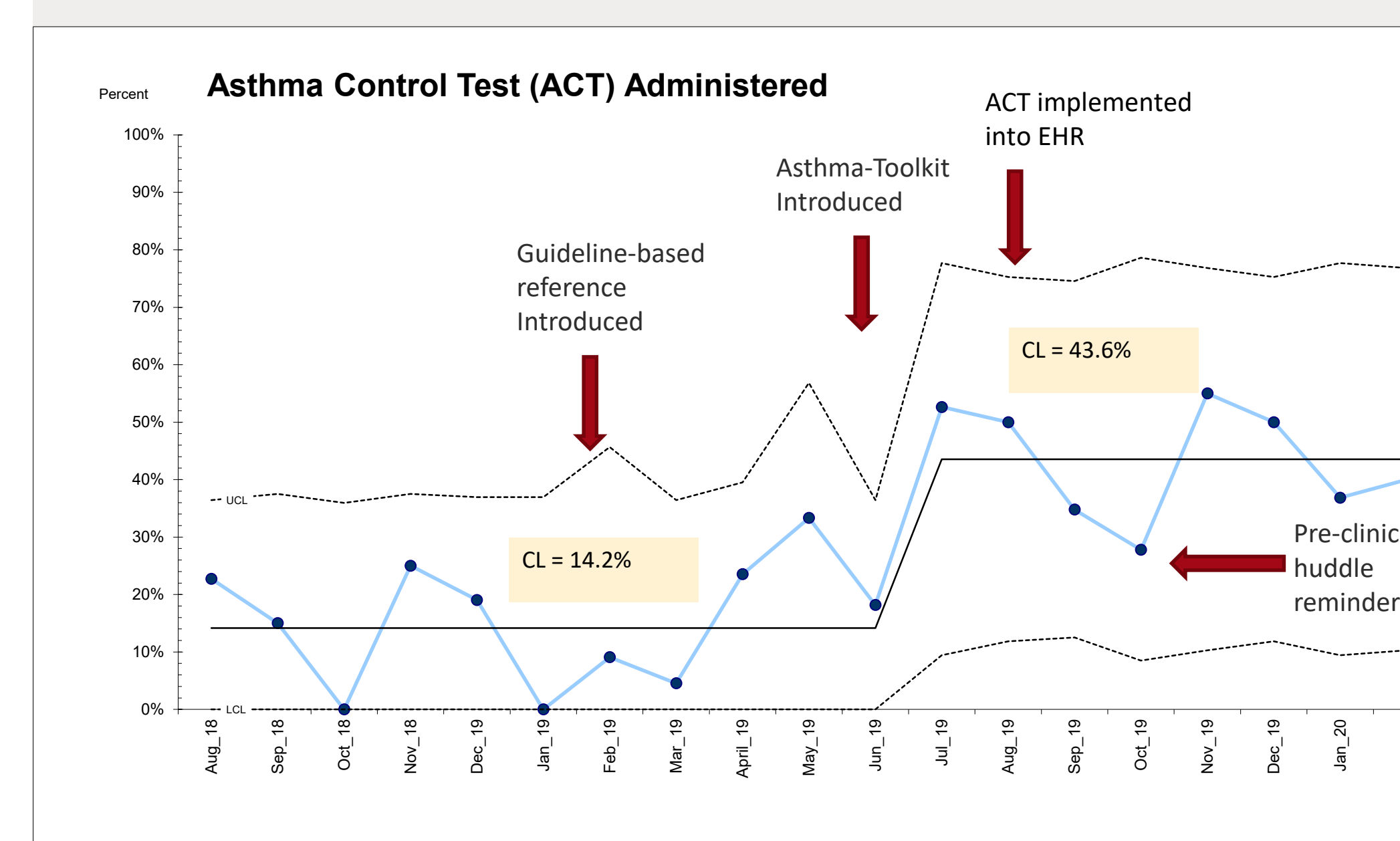
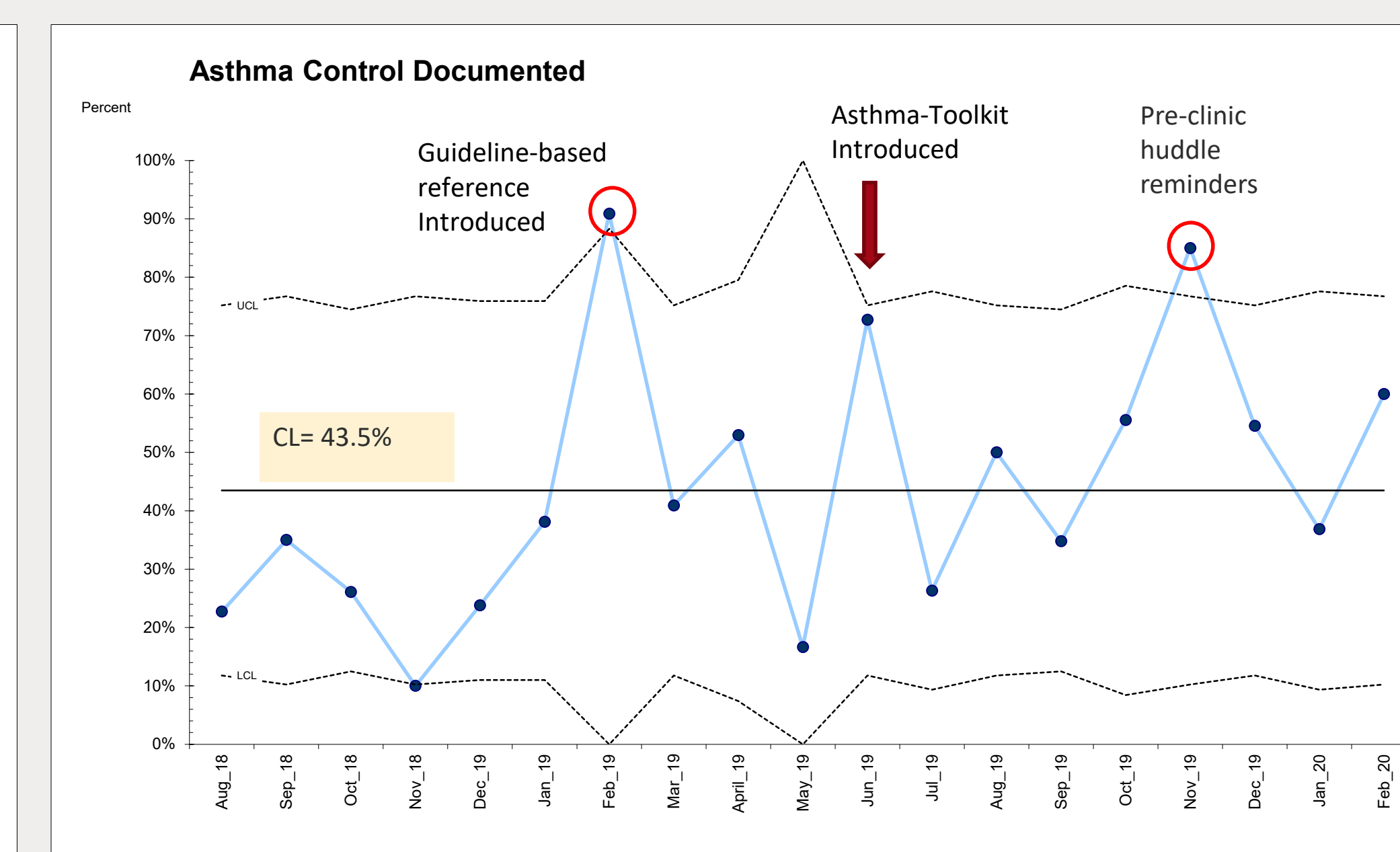
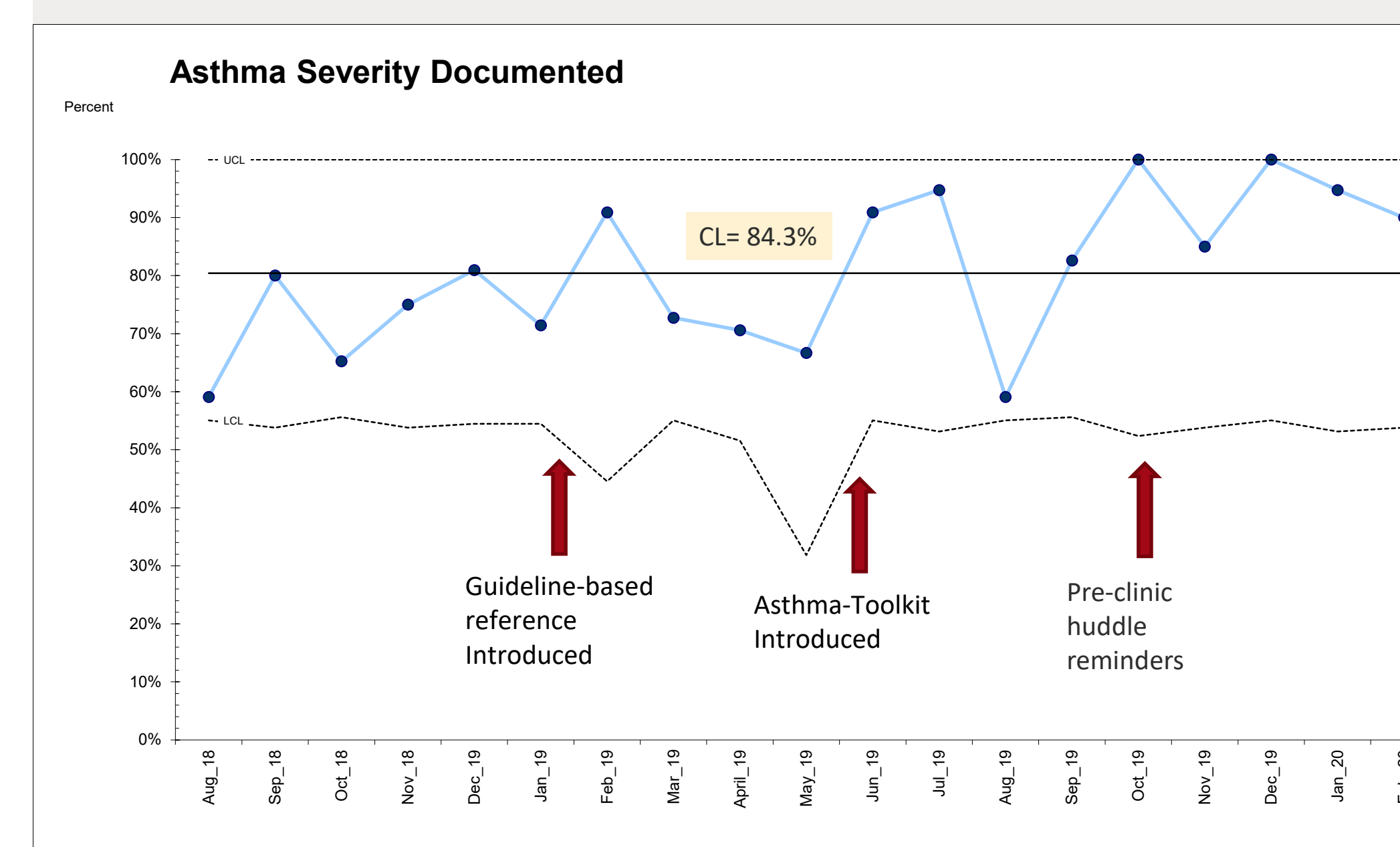
### Outcomes

- Hospitalizations for acute asthma exacerbation
- ED visits for asthma
- Missed school days (future)
- Missed parental workdays (future)

### Balance

- Resident perception of time spent with patients
- Oral Steroid Prescriptions

## Results



## Conclusions

- Resident-led QI increased guideline-consistent care for pediatric asthma
- The overall positive trend for documentation of asthma severity, control and use of the AAP suggests that resident-developed tools to assist in their workflow have a positive effect on asthma care delivery.



## **Title: Resident-led Quality Improvement Initiative to Improve Guideline-Consistent Care for Pediatric Asthma**

**Authors:** Katherine Pumphrey, Leonard Haas, Allison Portenoy, Lara Pavageau, Erika Abramson, Snezana Osorio and Jennie G. Ono

**Institution:** New York Presbyterian Hospital (NYPH)-Weill Cornell Medicine

**Background:** Asthma is the leading cause of chronic disease in children. Guidelines from the NHLBI Expert Panel Report-3 emphasize the assessment of asthma severity, control and use of an Asthma Action Plan (AAP) to provide effective asthma care to pediatric patients. Despite published guidelines to improve asthma care, compliance to the guidelines is a challenge.

**Aim:** To improve guideline-consistent care in patients with asthma (3-21 years) at the NYPH-WCM resident-based clinic by at least 50% by June 2020.

**Methods:** This is an observational time series study using sequential planned experimentation to improve severity and control documentation, review of the AAP, and use of the asthma control test (ACT) as process measures in patients with asthma. Balancing measures include the number of oral steroid prescriptions written; outcome measures include emergency department visits and hospitalizations. This study focuses on the effect of intervention on process measures; outcome data is currently being collected. 368 charts were reviewed over 18 months with four PDSA cycles (Fig 1). In Cycle 1, an asthma guideline-based reference was developed for severity and control assessment. Cycle 2 introduced the ACT as a measure of asthma control, and an Asthma-toolkit was implemented. The Asthma-toolkit combined the asthma guideline-based reference, the ACT, and reminders to review the AAP, which was made available in all exam rooms. In Cycle 3, the ACT was incorporated into the electronic health record (EHR). In Cycle 4, pre-clinic team huddle reminders to use the asthma-tool kit were implemented. Statistical control charts were used to display and analyze the data. API rules were applied to detect special cause variation.

**Results:** The use of an ACT increased from 14.2% to 43.6% and AAP review increased from 55.6% to 76.7% (Figure 2). After four cycles, documentation of asthma severity and control showed overall improvement, but did not reach our targeted goal (Fig 3). Despite increased focus on asthma assessments, the number of oral steroid prescriptions did not rise.

**Conclusions:** By creating an Asthma-toolkit and reminders to raise awareness in clinic, resident-led QI increased guideline-consistent care for pediatric asthma, and most significantly in the use of the ACT as a measure of control and review of the AAP. These improvements along with the overall positive trend for documentation of asthma severity and control suggests that resident-developed tools to assist in their workflow have a positive effect on asthma care delivery.



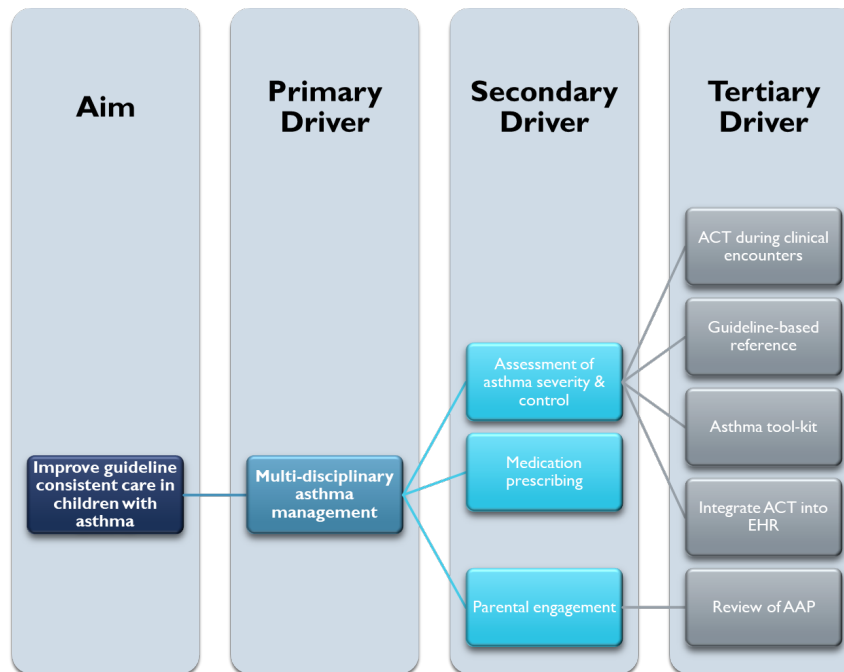


Figure 1. Driver Diagram with interventions and timeline

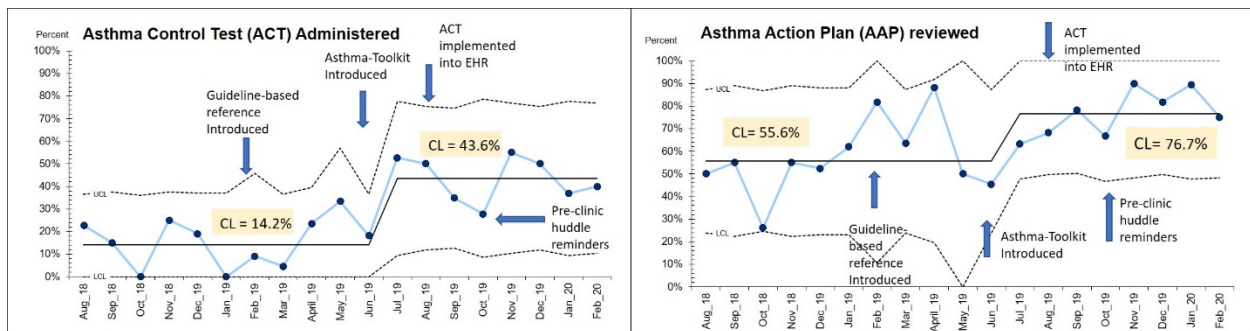


Figure 2. ACT use and AAP review, August 2018-February 2020 (P chart).

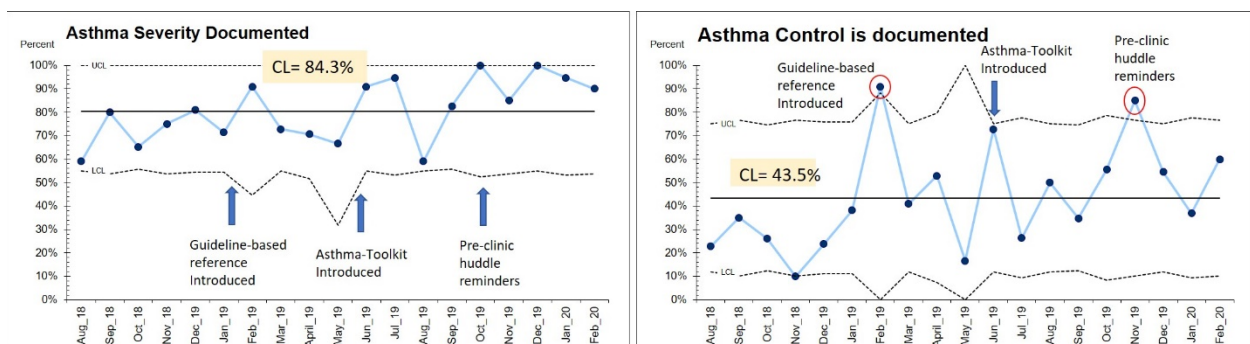


Figure 3. Asthma Severity and Control documentation, August 2018-February 2020 (P charts).



### Problem

Chronic obstructive pulmonary disease (COPD) is the third leading cause of death worldwide with high treatment costs and a hospital readmission rate of 22%.

Hospital readmissions may be modifiable with interventions focused on disease specific management interventions.

COPD was added to the Medicare Hospital Readmission Reductions Program in 2015 with financial penalties for COPD readmissions within thirty days of discharge.

### Objective

The goal of the COPD Transitions of Care program is to improve the quality of care and enhance the transitions of care from inpatient to outpatient care for COPD patients admitted for any reason, especially for a COPD exacerbation aiming to prevent avoidable future hospital readmissions. The program allows for the patient to establish continuity with the COPD nurse practitioner as an outpatient, and provides post discharge remote monitoring and ongoing collaboration with Weill Cornell Pulmonary Physicians and the Emergency Room Community Teleparamedicine program.

### Methods

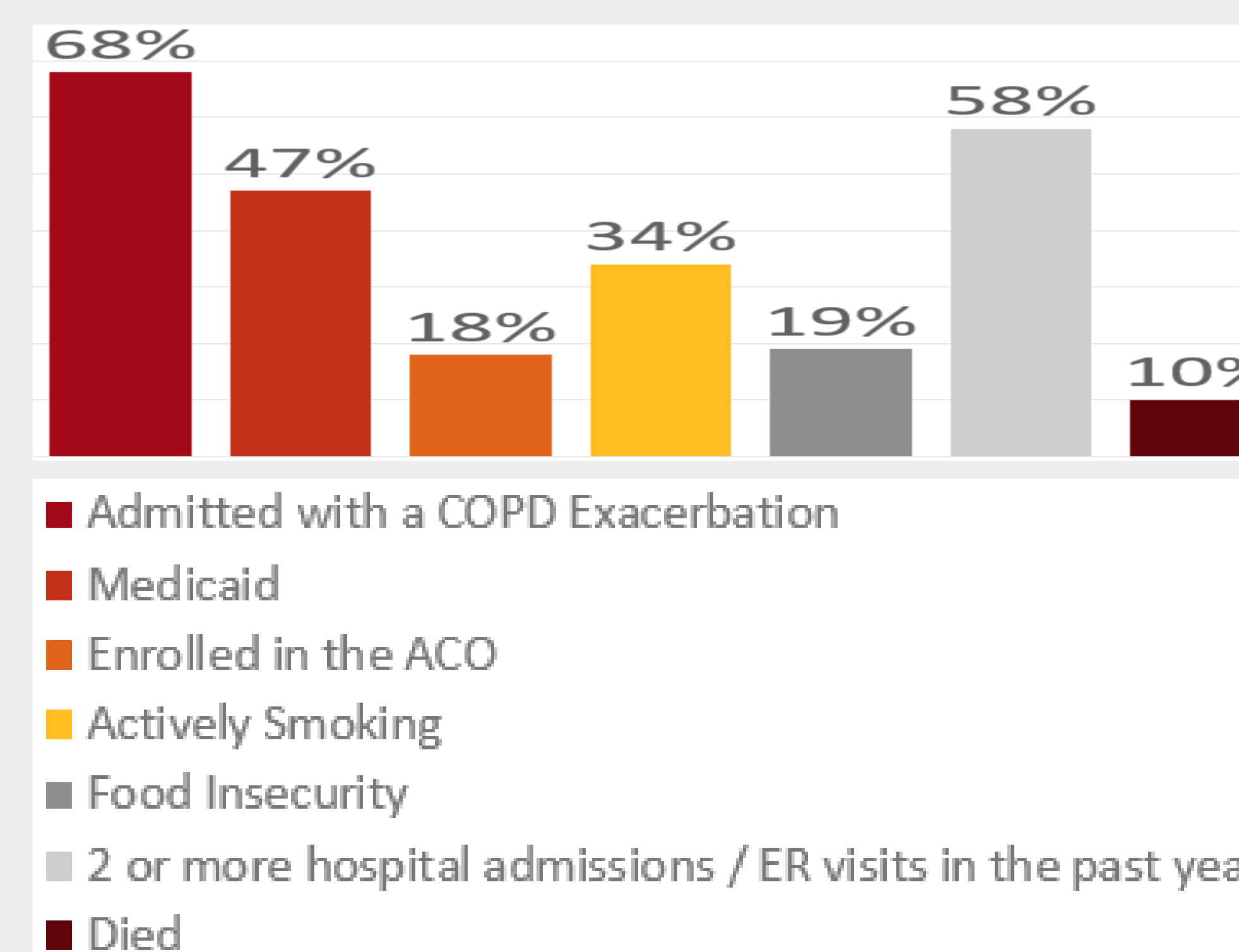
Our program began in July 2019, using chart review and referrals to identify hospitalized patients. We provided bedside COPD teaching, inhaler training, educational materials, medication education and reconciliation, smoking cessation counseling, referrals to care management, post discharge remote monitoring, and follow up with a healthcare provider. Our COPD pharmacist called pharmacies to reconcile medications, check compliance, insurance issues and copay costs.

Appropriate patients were referred for outpatient telemedicine monitoring after discharge, using surveys and remote oximetry, with follow up calls from nurses for the first 4 weeks post discharge. Homebound patients were referred to Community Teleparamedicine program for home visits. Those with food insecurity were referred to God's Love We Deliver. Follow up appointments were made prior to discharge.

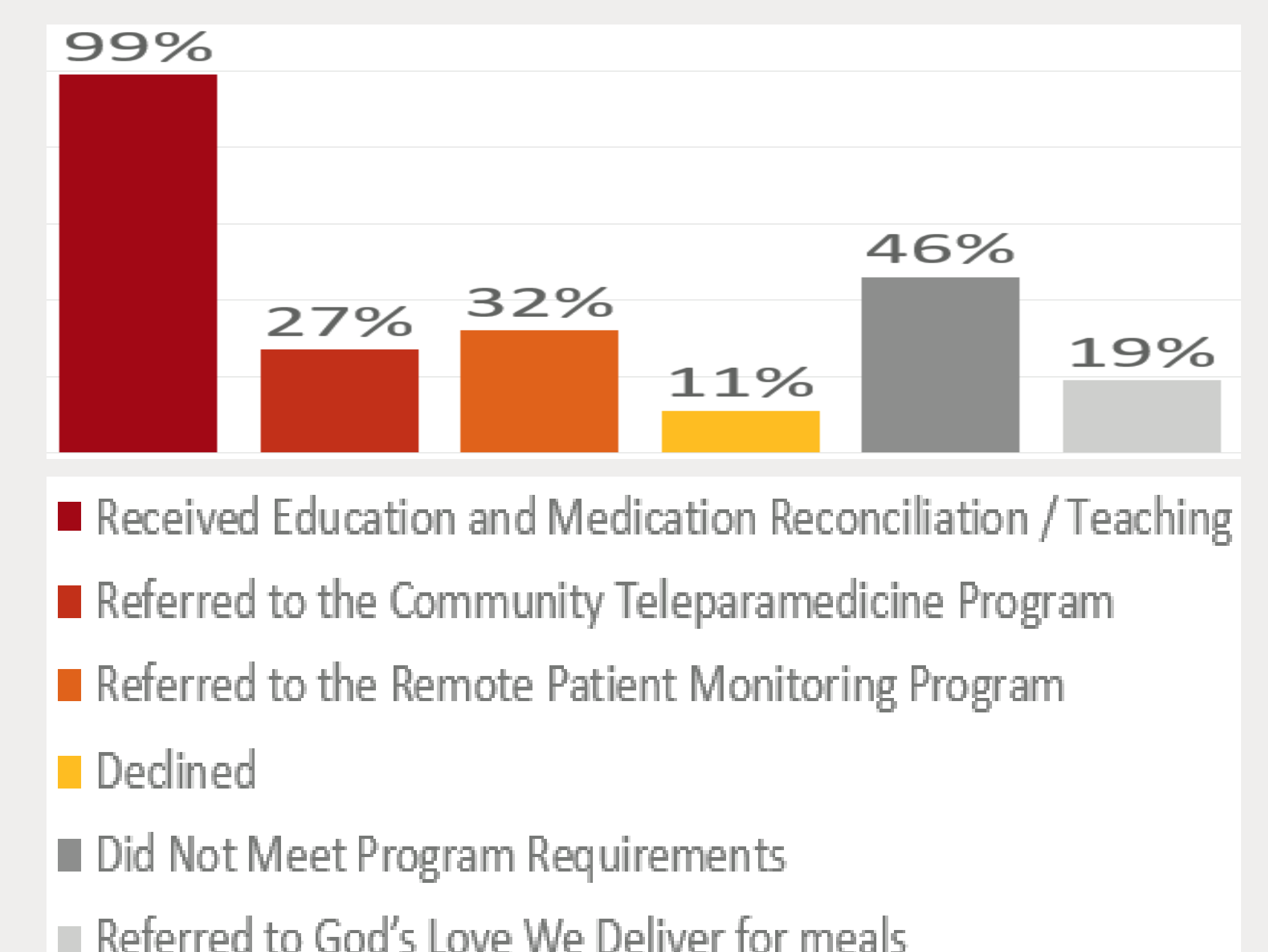
### Results

Between August, 2019 and February 21, 2020, 125 patients were seen. Patient characteristics: 68% admitted with a COPD exacerbation; 47% Medicaid; 18% ACO; 34% actively smoking, 19% food insecurity, 58% 2 or more hospital admissions / ER visits in the past year. Median LOS 6 days. 10% died within the 7 month period.

**Figure 1: Patient Characteristics**



**Figure 2: Interventions**



### Interventions

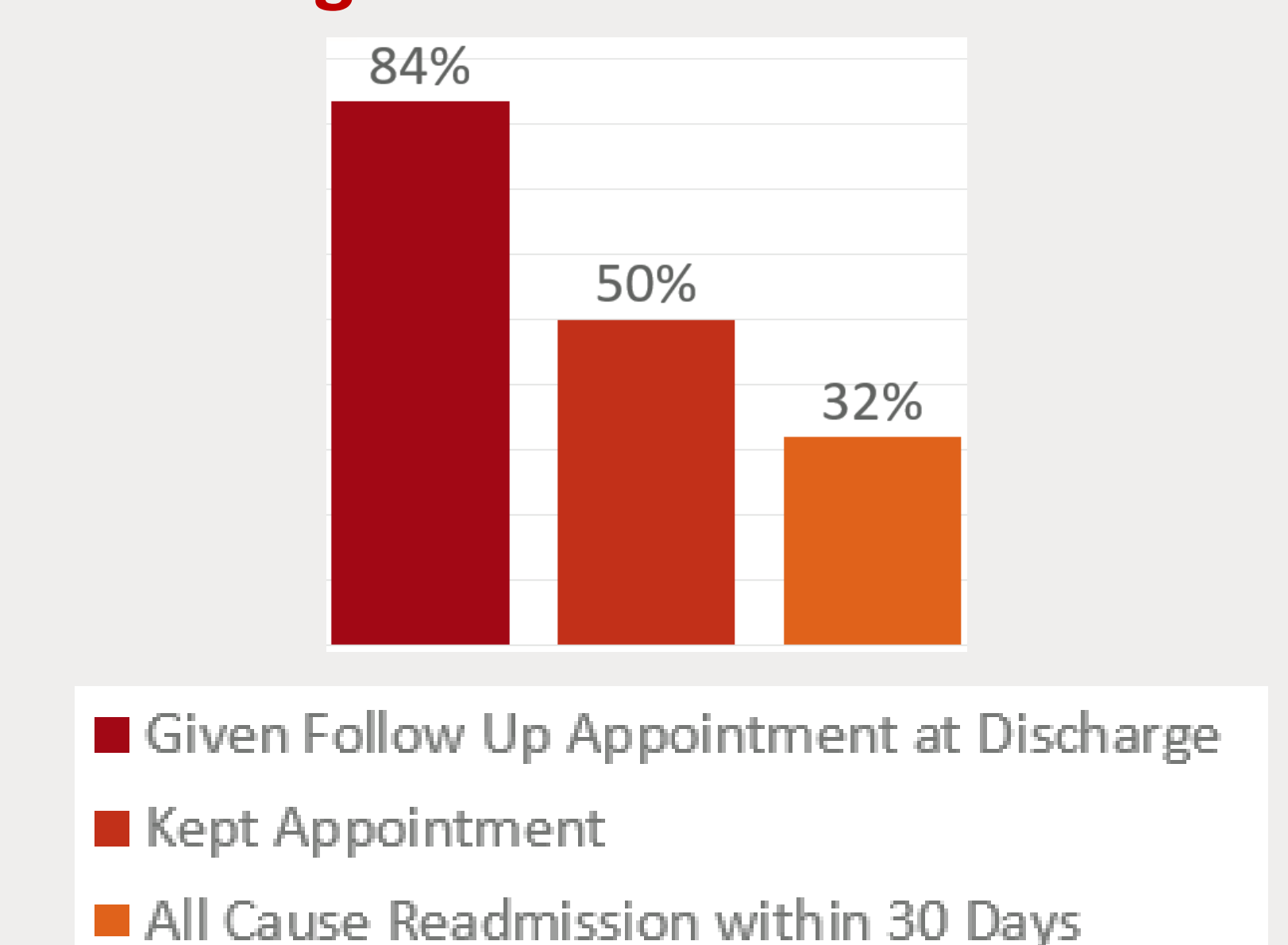
99% received education and medication reconciliation and COPD teaching; 34% actively smoking patients were advised to quit and referred to smoking cessation; 27% referred to the Community Teleparamedicine program; 32% referred to the Remote Patient Monitoring Program; 19% referred to God's Love We Deliver

### Outcomes

83.5% of patients were given follow up appointment at discharge, at a median of 16 days. 50% kept appointment, 27% no show, 8% died, 3% hospitalized, 1% hospice, 4% rescheduled, 7% outside follow up

All cause readmission within 30 days was 32%

**Figure 3: Outcomes**



### Conclusions

The COPD program offered comprehensive education and medication reconciliation to 99% of patients as well as referrals to services to optimize COPD care. The 30 day readmission rate of 32% is higher than the national average. Our COPD population has a high baseline readmission rate compounded by complex social issues and multiple comorbid conditions.

### Future Directions

COPD patients are complex and need education, smoking cessation, medication teaching, care management services and monitoring after discharge. Leveraging these interventions may improve the quality of care and overall health of this population resulting in a reduction of per capita costs for COPD patients.



## **Title: Transitions of Care for Inpatients with COPD**

Authors: Maria Spinelli, NP; Jessica Snead PharmD; Michael S. Niederman, M.D.

Department: Division of Pulmonary and Critical Care Medicine

**1. Statement of the Problem:** Chronic obstructive pulmonary disease (COPD) is the third leading cause of death worldwide with high treatment costs and a hospital readmission rate of 22%. Hospital readmissions may be modifiable with interventions focused on disease specific management interventions. COPD was added to the Medicare Hospital Readmission Reductions Program in 2015 with financial penalties for COPD readmissions within thirty days of discharge.

**2. Objective/Aim of the study:** The goal of the COPD Transitions of Care program is to improve the quality of care and enhance the transitions of care from inpatient to outpatient care for COPD patients admitted for any reason, especially for a COPD exacerbation aiming to prevent avoidable future hospital readmissions. The program allows for the patient to establish continuity with the COPD nurse practitioner as an outpatient, and provides post discharge remote monitoring and ongoing collaboration with Weill Cornell Pulmonary Physicians and the Emergency Room Community Teleparamedicine program.

### **3. Project Design/Methods:**

Our program began in July 2019, using chart review and referrals to identify hospitalized patients. We provided bedside COPD teaching, inhaler training, educational materials, medication reconciliation, smoking cessation counseling, referrals to care management, post discharge remote monitoring, and follow up with a healthcare provider. Our COPD pharmacist called pharmacies to reconcile medications, check compliance, insurance issues and copay costs.

Appropriate patients were referred for outpatient telemedicine monitoring after discharge, using surveys and remote oximetry, with follow up calls from nurses for the first 4 weeks post discharge. Homebound patients were referred to Community Teleparamedicine program for home visits. Those with food insecurity were referred to God's Love We Deliver. Follow up appointments were made prior to discharge

### **4. Results:**

Between August, 2019 and February 21, 2020, 125 patients were seen.

Patient characteristics: 68% admitted with a COPD exacerbation; 47% Medicaid; 18% ACO; 34% actively smoking, 19% food insecurity, 58% 2 or more hospital admissions / ER visits in the past year. Median LOS 6 days. 10% died within the 7 month period.

Interventions:



99% received education and medication reconciliation and COPD teaching; 34% actively smoking patients were advised to quit and referred to smoking cessation; 27% referred to the Community Teleparamedicine program; 32% referred to the Remote Patient Monitoring Program; 9% referred to God's Love We Deliver.

#### Outcomes:

83.5% of patients were given follow up appointment at discharge, at a median of 16 days. 50% kept appointment, 27% no show, 8% died, 3% hospitalized, 1% hospice, 4% rescheduled, 7% outside follow up

All cause readmission within 30 days was 32%

### **5. Conclusions:**

The COPD program offered comprehensive education and medication reconciliation to 99% of patients as well as referrals to services to optimize COPD care.

The 30 day readmission rate of 32% is higher than the national average. Our COPD population has a high baseline readmission rate compounded by complex social issues and multiple comorbid conditions.

### **6. Future Directions:**

COPD patients are complex and need education, smoking cessation, medication teaching, care management services and monitoring after discharge. Leveraging these interventions may improve the quality of care and overall health of this population resulting in a reduction of per capita costs for COPD patients.



# CT Angiography-Guided Protocol for Lower Gastrointestinal Bleeding

Annual WCM Quality Improvement & Patient Safety

Poster Symposium

David Wan, MD | September 15, 2020

For comments/questions, please contact daw9044@med.cornell.edu

## Problem Statement

- Patients with acute lower gastrointestinal bleeding (LGIB) often receive urgent colonoscopies or standard abdominal CT scans that do not lead to therapy or alter clinical outcomes (i.e. mortality, rebleeding, etc.).
- CTAs appear to be underutilized nationally and at our institution and it is unclear if the increase in uptake of CTAs in these patients will improve clinical outcomes.

## Objective/Aim

To increase the **percentage of CTA utilization** for patients with severe lower GI bleeding by 50% over a 1-year period (12/15/19-12/15/20).

## Design/Methods

- This is a longitudinal cohort study of adult patients with patients presenting to NYP/WC with severe LGIB.
- Intervention consists of CTA-guided pathway.(see Fig. 1)

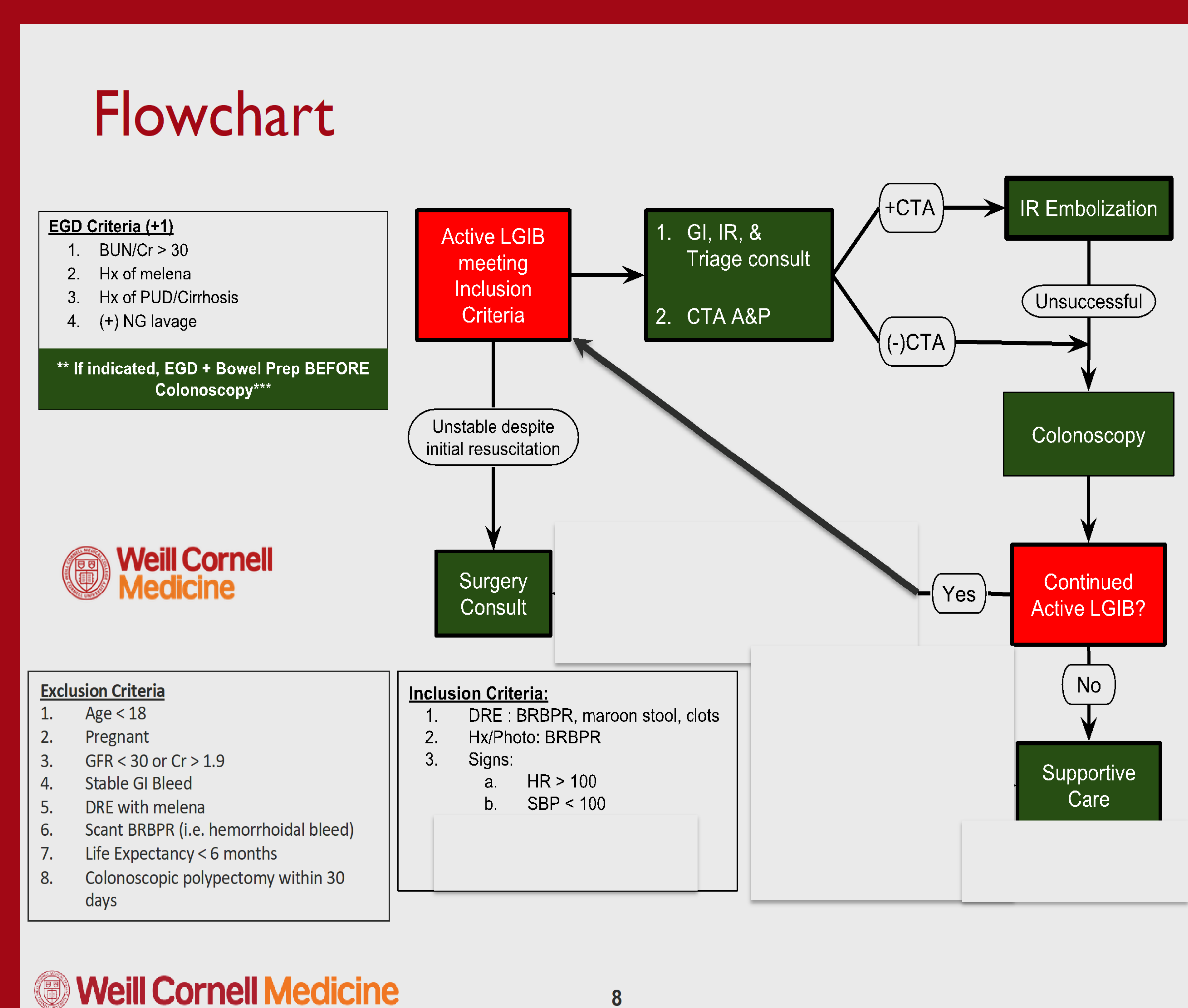
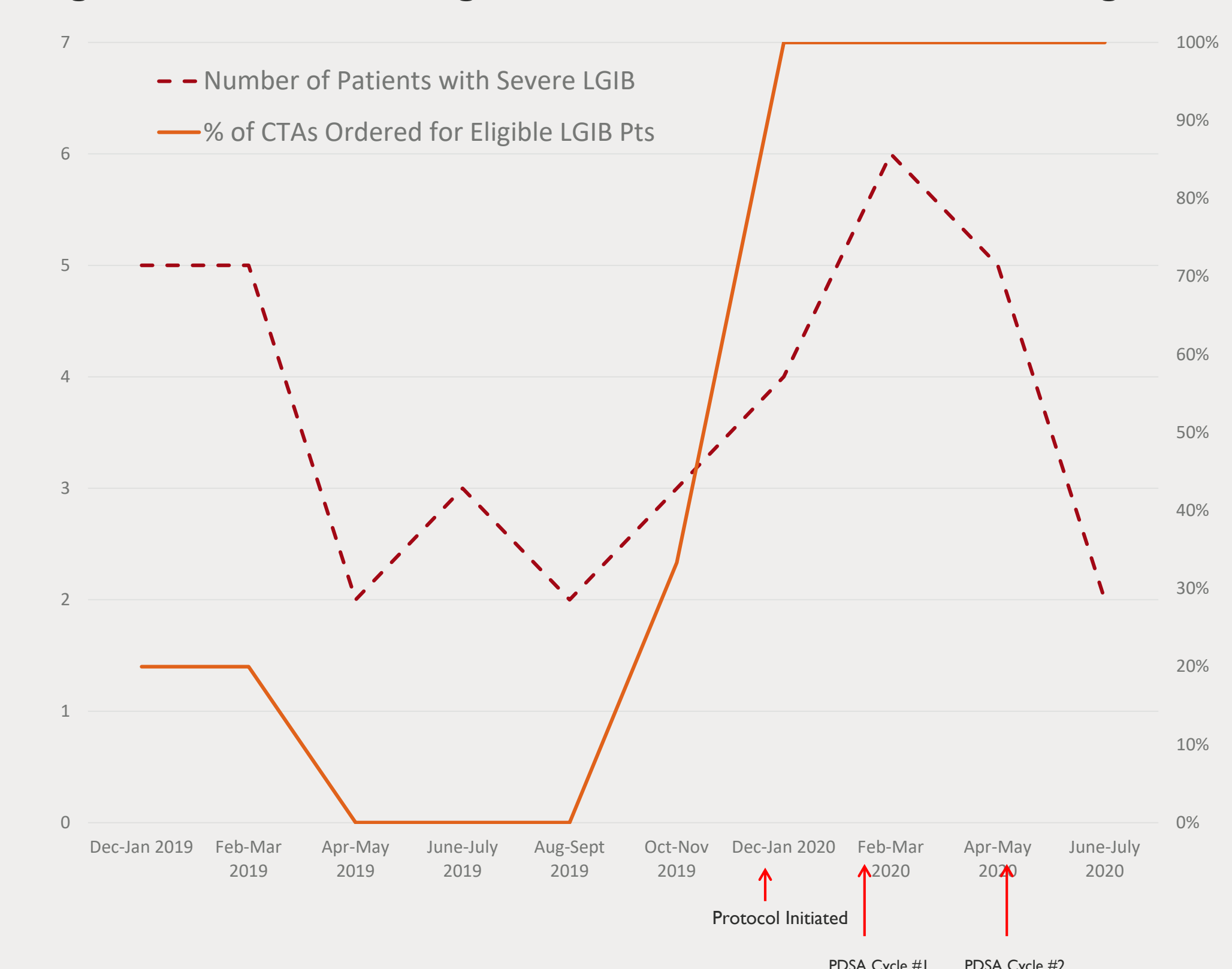


Figure 1: LGIB Protocol Flowchart

## Results

Table 1: Characteristics of Patients Pre- and Post-Intervention

Figure 2: Number of Eligible LGIB Patients and % Receiving CTAs



	Prospective Cohort (n=17)	Retrospective Cohort (n=20)
<b>Baseline Characteristics</b>		
Age, mean (y)	68.6 (14.8)	61.4 (20.3)
Gender, M:F	14:3	10:10
Oakland score, mean (SD)	17.7 (6.92)	17.9 (7.00)
# of pRBC transfused, mean (SD)	3.25 (5.22)	2.05 (4.25)
<b>Process Outcomes</b>		
CTA Ordered, n (%)	17 (100)	3 (15.0)
Received Correctly Protocolled CTA, n (%)	15 (88.2)	3 (100)
Positive CTA result, n (%)	5 (33.3)	1 (33.3%)
Received IR angiogram, n (%)	3 (17.6)	1 (5.0)
Received colonoscopy, n (%)	10 (58.8)	8 (40.0)
<b>Clinical Outcomes</b>		
Mortality, n (%)	3 (17.6)	0 (0)
Bleeding-related mortality, n (%)	0 (0)	0 (0)
Recurrent bleeding within 30d, n (%)	1 (5.9)	0 (0)
Readmission for GIB within 30d, n (%)	1 (5.9)	0 (0)

- We enrolled 17 patients from 12/15/19 to 7/8/20.
- There were 20 patients in the 12 mos prior to the intervention.
- Pre-intervention, 3 out of 20 patients received a CTA (15.0%).
- Post-intervention, all received a CT abdomen/pelvis, and 15 (88.2%) were correctly protocolled.
- CTA showed active extravasation 1/3rd of the time.
- No patients receiving CT scans developed contrast-induced nephropathy.

## Conclusion/Lessons Learned

- A multidisciplinary pathway significantly improved the percentage of CTAs performed for patients with severe LGIB.
- The effect of increased CTA utilization on clinical outcomes (i.e. mortality, rebleeding) or LOS is unclear at this point, and more patients need to be accrued.



**Title: CT Angiography-Guided Protocol for Severe Lower Gastrointestinal Bleeding**

Authors: David Wan, Tracey Martin, Anuj Malhotra, Patrick Scanlon, Steve Mathews, David Bodnar, Sara Murphy, Deanna Pereira Jannat-Khah, Victoria Cooley, Jennifer Lee

Department(s): Medicine, Interventional Radiology, Emergency Medicine

**1. Statement of the Problem:** Patients with acute lower gastrointestinal bleeding (LGIB) often receive urgent colonoscopies or standard abdominal CT scans that do not lead to therapy or alter clinical outcomes (i.e. mortality, rebleeding, readmission, etc.). Colonoscopies require bowel preparation and is resource intense. Overall, inpatient colonoscopies only result in endoscopic therapy 2.1% to 4.6% of patients. In patients with severe LGIB, retrospective studies suggest CT angiography (CTA) can aid in diagnoses and guide therapy. CTAs appear to be underutilized nationally and at our institution and it is unclear if the increase in uptake of CTAs in these patients will improve clinical outcomes.

**2. Objective/Aim of the study:** To increase the percentage of CTA utilization for patients with severe lower GI bleeding by 50% over a 1-year period (12/15/19-12/15/20).

**3. Project Design/Methods:** This is a longitudinal cohort study of adult patients with severe patients presenting to NYP/WC with severe LGIB. The intervention consists of a multidisciplinary CTA-guided pathway. A historical cohort of patients presenting to NYP/WC with ICD-9/10 code of severe LGIB from 12/15/18-12/14/19 to determine the baseline rate of CTA utilization.

The primary metric will be the percentage of patients undergoing CTAs. Secondary metrics included percentage of patients with positive CTA who get IR angiogram, percentage of overall patients undergoing IR angiogram. For those patients undergoing protocol, other clinical data will be collected including mortality, length of stay, localization of bleeding source, rate of intervention, number of packed red blood cell transfusions needed, recurrent bleed within 30 days, readmission for GI bleeding within 30 days.

The GI fellows were educated on the new pathway and received email reminders regarding the inclusion criteria. Two PDSA cycles to audit all the patients that were enrolled and review if clinical care adhered to the protocol.

**4. Results:** At the time of the analysis, we enrolled 17 patients from December 15<sup>th</sup>, 2019 to July 8<sup>th</sup>, 2020. All received a CT abdomen/pelvis, and 15 (88.2%) were correctly protocolled. The mean age of this cohort was 68.6 years with an Oakland Score of 17.7. The CTA showed active extravasation 5 times (33.3%). Three patients proceeded to conventional angiography. Three patients died (17.6%), though these were not attributed to the GI bleed. There were 20 patients in the historical cohort, with a mean age of 61.4 years, Oakland Score of 17.9. Three of 20 (15%) had a CT abdomen/pelvis ordered, all of which were correctly protocolled as a CTA. The CTA was positive for extravasation one (33.3%) and the patient proceeded to conventional angiography. There were no deaths in this cohort. No patients receiving CT scans developed



contrast-induced nephropathy.

**5. Conclusions:** A multidisciplinary pathway significantly improved the percentage of CTAs performed for patients with severe LGIB. CTAs appear to be positive 1/3<sup>rd</sup> of the time. The effect of increased CTA utilization on clinical outcomes (i.e. mortality, rebleeding) or LOS is unclear at this point, and more patients need to be accrued.



# Impact of a Multidisciplinary Interventional Program on Identified Super-High Utilizers of an Urban Academic Medical Center Emergency Department

Annual WCM Quality Improvement and Patient Safety Poster Symposium | 9.15.20

Amos Shemesh MD, Yvette Rolon-Fink LCSW-R ACSW, Amy Kim PharmD, Yiye Zhang PhD MS, Richard Lappin, MD PhD, Peter Steel MA MBBS

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## Problem Statement

- Super-high utilizer patients are a unique subset with a host of complex and challenging medical, psychiatric, behavioral, financial, and other psychosocial conditions affecting social determinants of health that can result in high use of emergency and hospital resources.
- Healthcare spending attributed to this small percentage of patients is disproportionately large compared to the overall patient population.

## Objectives

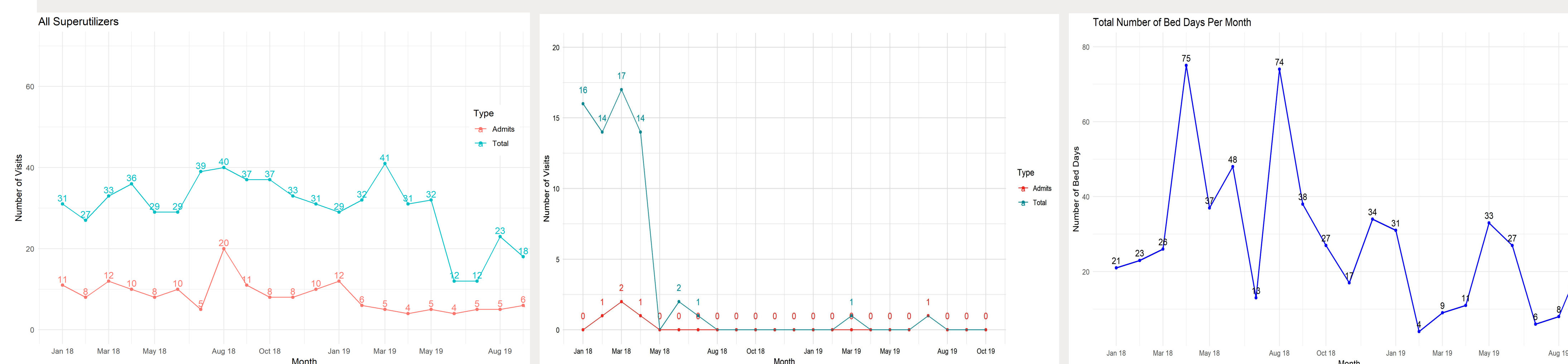
- Identify the scope of the problem and closely follow individuals who would benefit from tailored interventions driven by data and shared clinical experience.
- Address potentially avoidable ED visits and hospitalizations by improving resource utilization, reducing practice variability, and reducing avoidable admission bed-days, while still serving the complex needs of these patients.

## Project Design & PDSA QI Methodology

- We are conducting a PDSA cycle as our model of improvement.
- **PLAN:** We convene a multidisciplinary group of physicians, social workers, care managers, subspecialty providers, and informatics specialists in order to identify patients in a data driven operational process.
- **DO:** Data and clinical experience are reconciled with frontline clinical experience to develop specific multidisciplinary care plans vetted by physicians for applicable patients leveraging relevant subspecialty services based on comorbidities and needs. Real-time notifications were enacted to target patient arrivals.
- **STUDY:** We review pre and post-intervention number of ED visits, number of admissions, and number of admitted bed-days.
- **ACT:** Interventions are multifactorial including curated multidisciplinary care management plans for approximately 75% of the cohort, collaboration with subspecialty services, real-time 24/7 automated early recognition system of email notification upon patient registration, referral and linkage to community resources, and staff education.

## Results

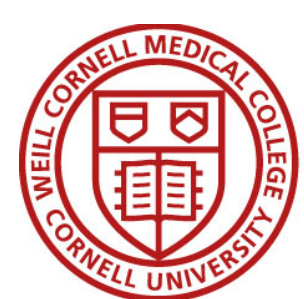
- We identified 19 super-high utilizer patients known to our institution with over 10 admissions per year which accounted for 1% of hospital admissions and 1,300 admitted bed-days (~4 beds/day).
- We subsequently developed care plans for a small cohort selected from among those 19 patients and applied automated real-time notifications to their arrivals.
- Admitted Bed-Days in 2019 for this cohort of patients is 205, effectively saving 228 admission bed-days annually with this project.



## Conclusions & Next Steps

- The intervention bundle on super high-utilizer patients with multidisciplinary care management plans, collaboration with subspecialty services, real-time automated arrival notifications, referral and links to community resources, and staff education is a unique budget-neutral product contributing to a significant improvement in resource utilization and individualized care delivery to some of the most complex and challenging patients that come to our hospital.
- Data analysis is ongoing of adult patients that presented to NYP/WCM ED from 01/01/2017 to 06/30/2020 (3.5 years), including: length of stay, cost, admission diagnosis, medical and psychiatric history, substance abuse history, active medications, number and rate of readmissions, social characteristics including social determinants of health, and demographic information.
- Next steps are to utilize statistical models and machine learning analytic approaches to define common characteristics among this cohort and propose a predictive model for early identification and intervention.





# Implementation of a Depression Screening Protocol at a Student-Run Free Clinic Uncovers High Rates of Depression

## Annual WCM Quality Improvement & Patient Safety Poster Symposium

Yu Han Chen<sup>1</sup>, Evan Balmuth<sup>1</sup>, Nicolas J. Blobel<sup>1</sup>, Brian LaGrant<sup>1</sup>, Lillye Anderson<sup>1</sup>, Alexandra H. Miller<sup>1</sup>, Ashita S Batavia MD, MS<sup>2</sup>, Pamela Charney MD<sup>2</sup>

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### Background

Nearly 1 in 10 uninsured New Yorkers experience symptoms of depression, yet there is limited information on depression screening rates in free clinics (Roll et al., 2013, Liberman et al., 2011). The Weill Cornell Community Clinic (WCCC) is a student-run free clinic that provides comprehensive multi-disciplinary care to uninsured New Yorkers. The WCCC currently screens all patients for depression using the Patient Health Questionnaire (PHQ). Here we report the utility of PHQ in screening for depression in a student-run free clinic and the rate of follow-up at the WCCC mental health clinic, which is staffed by a board-certified psychiatrist.

The **goals** of this study are to:

1. Determine the utility of the Patient Health Questionnaire (PHQ) in screening for symptoms of depression in a student-run free clinic setting
2. Track successful follow-up with psychiatry
3. Identify potential areas to improve access to mental health care in our uninsured patient population.

### Patient Health Questionnaire (PHQ)

PHQ-2				
Over the past two weeks, how often have you been bothered by any of the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things?	0	1	2	3
2. Feeling down, depressed, or hopeless?	0	1	2	3
Total: ____				

PHQ-9				
Over the past two weeks, how often have you been bothered by any of the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things?	0	1	2	3
2. Feeling down, depressed, or hopeless?	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much?	0	1	2	3
4. Feeling tired or having little energy?	0	1	2	3
5. Poor appetite or overeating?	0	1	2	3
6. Feeling bad about yourself - or that you are a failure or have let yourself or your family down?	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television?	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite - being so fidgety or restless that you have been moving around a lot more than usual?	0	1	2	3
9. Thoughts that you would be better off dead, or of hurting yourself in some way?	0	1	2	3
Total: ____				

Figure 1: PHQ-2 and PHQ-9 Questionnaires

### Methods

All WCCC patients (n=138) seen between April 2017 and September 2019 were verbally screened for depression in the patient's primary language by a trained medical student using the PHQ.

A positive PHQ-2 was defined as at least 1 point out of 6 possible points. If the PHQ-2 was positive, the PHQ-9 was then administered to estimate the severity of depression. If PHQ-9  $\geq 5$ , the patient was then referred to WCCC Mental Health Clinic. (Figure 2)

Patient demographics, PHQ scores, and referral to the WCCC mental health clinic were assessed using descriptive statistics. Number of previous psychiatric disorders and medical comorbidities were obtained from problem lists of patients' charts.

### Screening Workflow

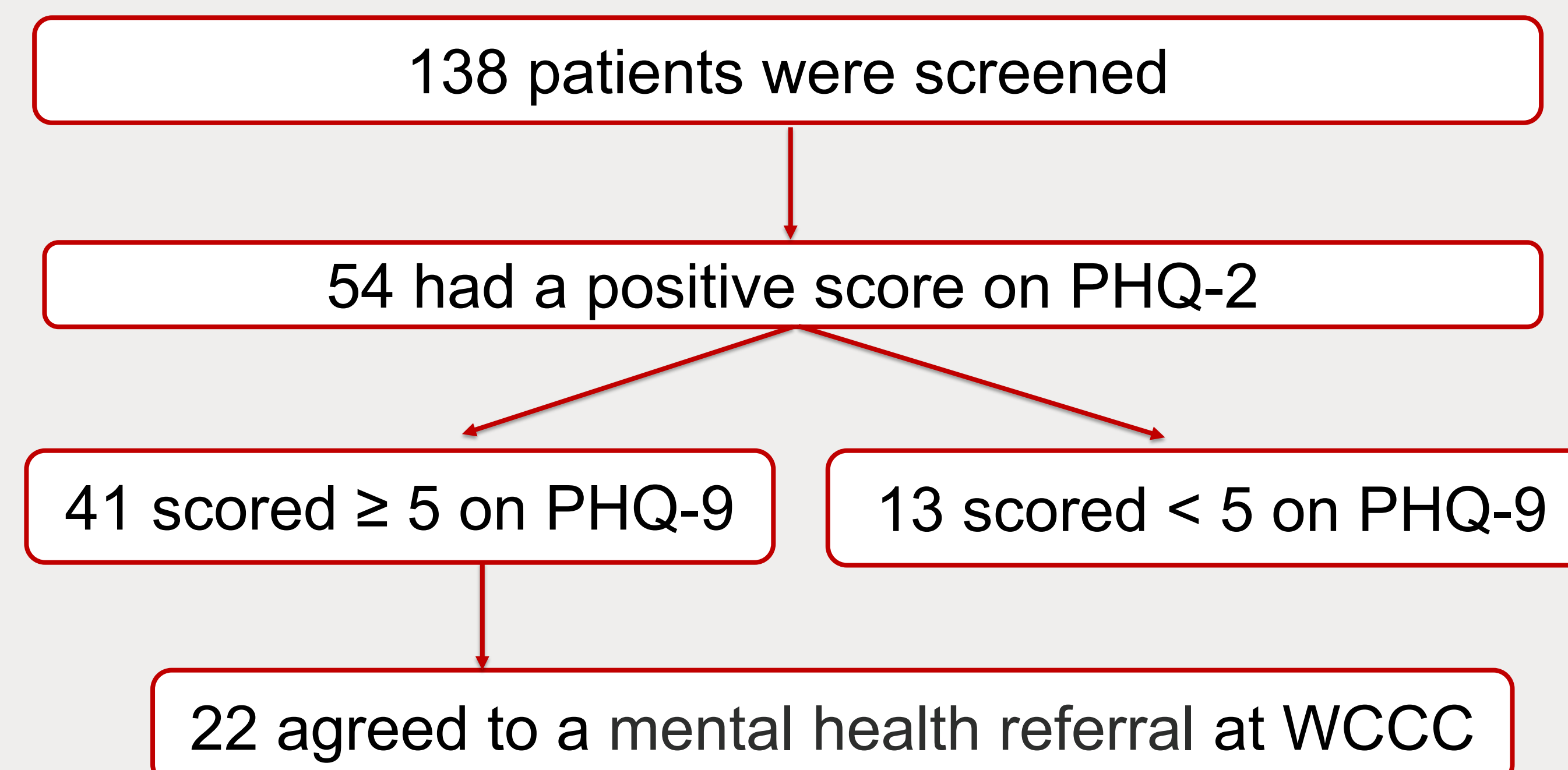


Figure 2: Breakdown of Screening Workflow

### Results

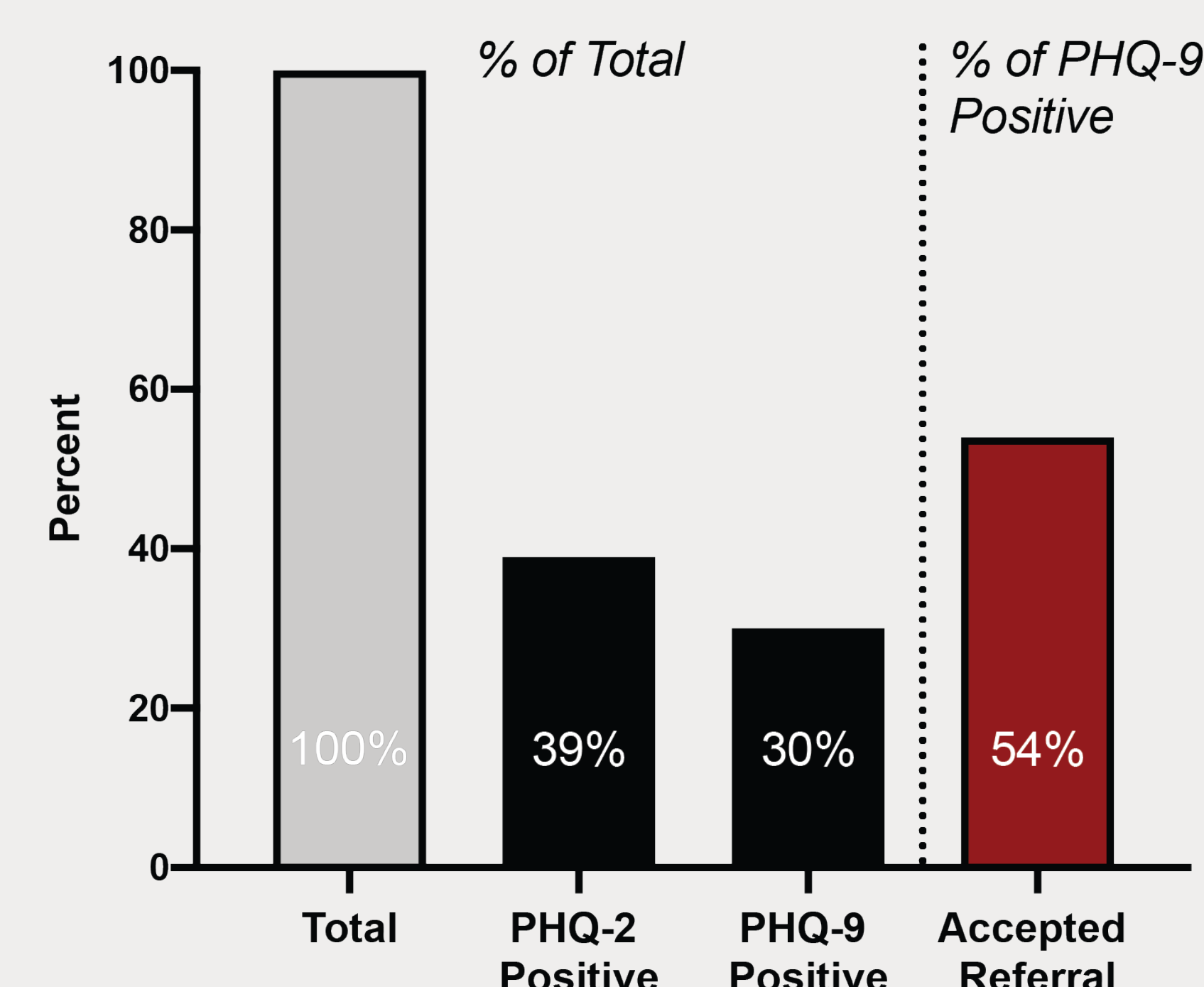


Figure 3: Percentages by group for the 138 patients screened.

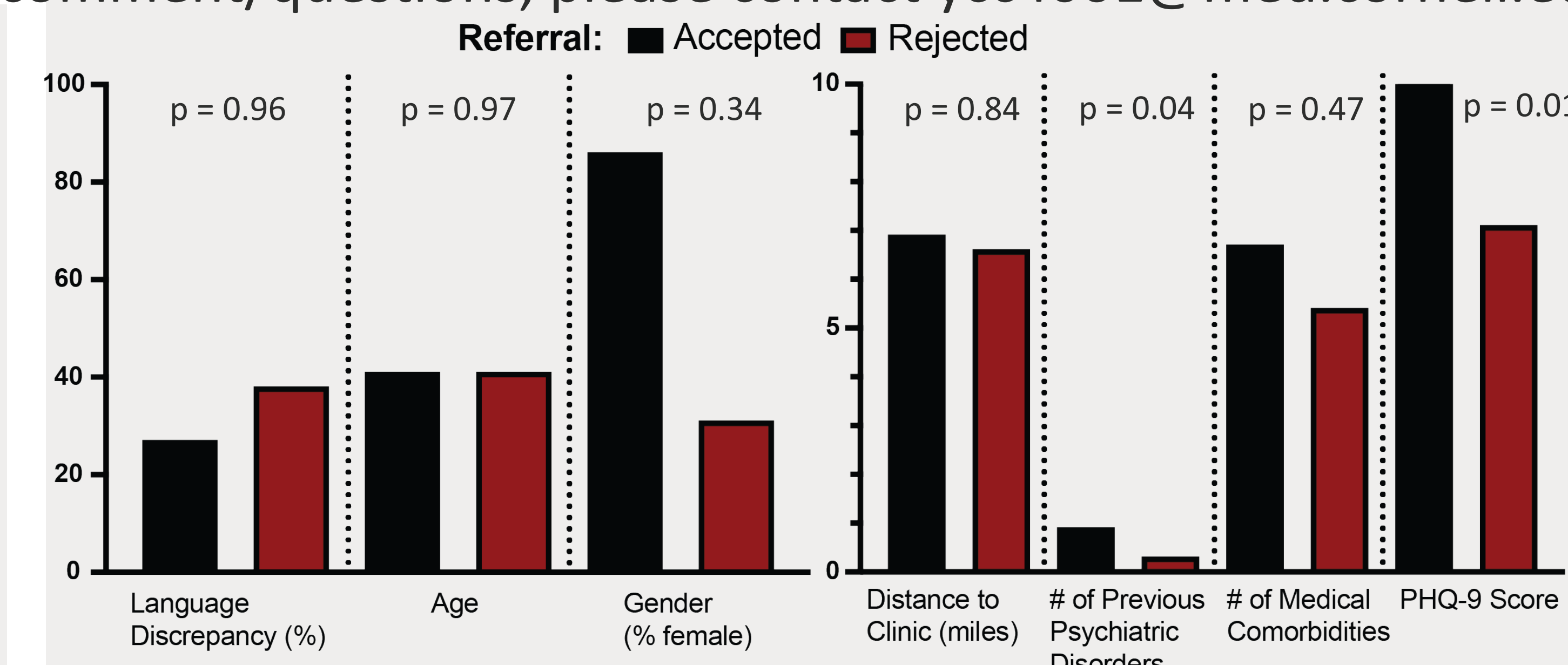


Figure 4: Comparison of patient demographics between group that accepted vs. rejected WCCC mental health referral. Patients who accepted mental health referral at WCCC had significantly higher number of previous psychiatric disorders (0.86 vs. 0.30;  $p=0.04$ ) and scored significantly higher on PHQ-9 (10.43 vs. 7.08;  $p=0.01$ ).

### Conclusions

The WCCC was able to successfully implement the PHQ as a point-of-care depression screening tool for all patients. Our data reveal a 4-fold higher rate of depressive symptoms relative to city-wide estimates for uninsured patients. This underscores the need for consistent widespread depression screening at free clinics serving the uninsured.

Referral acceptance to the WCCC mental health clinic (54%) was higher than the national average for primary care settings (less than 50%), and may reflect patient's existing trust in the WCCC and the convenience of a real-time on-site referral (Auxier et al., 2012).

Finally, analysis on patient demographics reveals that patients who accepted mental health referral at WCCC had significantly higher number of previously diagnosed psychiatric disorders (0.86 vs. 0.30;  $p=0.04$ ) and scored significantly higher on PHQ-9 (10.43 vs. 7.08;  $p=0.01$ ), when compared to patients who declined referral. These data suggest that patients with more severe symptoms are more likely to accept our referral, further highlighting that our on-site mental health service is especially vital for this vulnerable group of patient population.

### Future Directions

Use PHQ to track patients' response to treatment and therapy over time. Continue to track the success rate of providing depression screens to all WCCC patients. Understand the drivers of a patient's willingness to accept a referral to psychiatry. Utilize Qualtrics to continue administering these surveys to patients during telehealth visits.

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## **Implementation of Depression Screening at a Student-Run Free Clinic Uncovers High Rates of Depression**

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**Background:** Nearly 1 in 10 uninsured New Yorkers experience symptoms of depression, yet there is limited information on depression screening rates in free clinics. The Weill Cornell Community Clinic (WCCC) is a student-run free clinic that provides comprehensive multi-disciplinary care to uninsured New Yorkers. The WCCC currently screens all patients for depression using the Patient Health Questionnaire (PHQ). The PHQ is verbally administered in the patient's primary language. If the initial 2-item screen (PHQ2) is positive, an additional 9-items (PHQ9) are used to estimate the severity of depression. Here we report the utility of PHQ in screening for depression in a student-run free clinic and the rate of follow-up at the WCCC mental health clinic, which is staffed by a board-certified psychiatrist.

**Methods:** All WCCC patients seen between April 2017 and September 2019 were verbally screened for depression by a trained medical student using the PHQ2 (n=138) and, if positive, the PHQ9. Score on the PHQ9 range from 0 to 27, and correlate with depression severity. Patient demographics, PHQ scores, and referral to the WCCC mental health clinic were assessed using descriptive statistics.

**Results:** 39.1% (N=54) of WCCC patients had a positive PHQ2 depression screen. Of these patients, 75.9% (N=41) had a positive depression screen with the PHQ9 and were referred to the WCCC mental health clinic. Among patients that screened positive, six individuals reported that they were currently utilizing community mental health resources. Among the remaining patients who screened positive for depression, 62.9% (22 out of 35 patients) accepted a referral to the WCCC mental health clinic, while 13 declined referral. Among patients with positive depression screens, the demographics of patients who accepted a referral to psychiatry were similar to those who declined: age (41.0 vs. 40.7), distance traveled to WCCC (6.92 vs. 6.58), language discordance (27% vs. 38%), and the number of other medical comorbidities (6.68 vs. 5.38). Interestingly, patients who accepted referral scored significantly higher on PHQ9 than those who declined referral (10.43 vs. 7.08, p=0.013).

**Conclusions:** The WCCC was able to successfully implement the PHQ as a point-of-care depression screening tool for all patients. Our data reveal a 4-fold higher rate of depressive symptoms relative to city-wide estimates for uninsured patients. This underscores the need for consistent wide-spread depression screening at free clinics serving the uninsured. Referral acceptance to the WCCC mental health clinic was higher than the national average for primary care settings (54% vs. 50%), and may reflect patient's existing trust in the WCCC and the convenience of a real-time on-site referral. Further research is needed to understand the drivers of a patient's willingness to accept a referral to psychiatry.





# TeleMSE: An Innovative Program to Expedite Patient Care in the Emergency Department

**Annual WCM Quality Improvement and Patient Safety Poster Symposium**

Matthew Laghezza, David Leyden, Peter Greenwald, Rahul Sharma | September 15, 2020

For comments/questions, please contact [mrl9002@med.cornell.edu](mailto:mrl9002@med.cornell.edu)

## Objective

- Expedite patient care for patients arriving to the Emergency Department via ambulance

## Method

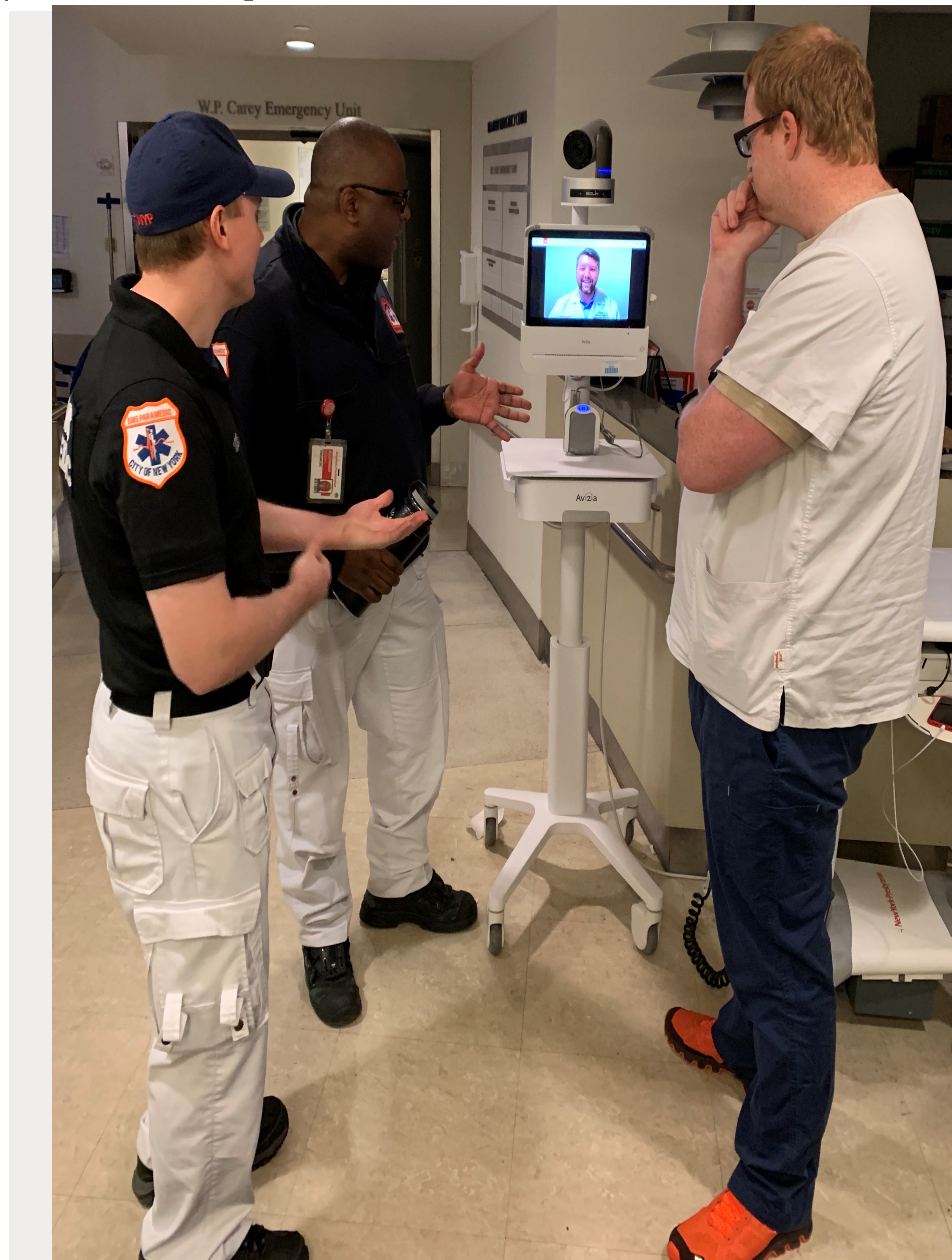
- Utilize telemedicine to perform a medical screening exam with an Advanced Practice Provider immediately upon patient arrival

## Results

- Total patients screened: 14,339
- Patients Screened per hour: 4.9
- Median door-to-provider time: 3.5 minutes (pre-implementation average time was 38 minutes)
- Documentation compliance: 95%

## Conclusion

- MSE's are a vital component of patient care and implementation of our provider-in-triage model using telemedicine has shown an improvement in efficiency of care





## Tele-MSE: An Innovative Program to Expedite Patient Care in the Emergency Department

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**Statement of the Problem:** Under the Emergency Treatment and Labor Act (EMTALA), every patient who presents to the Emergency Department (ED) must receive a medical screening exam (MSE). One CMS core quality measure is the “door to provider” time, which is defined as the time from patient arrival to first being seen by an ED provider. In 2018, patients arriving to the ED at NYP/WCM via ambulance had a “door to provider” time of 38 minutes.

**Objective/Aim of the study:** To increase the efficiency of patient care for patients arriving to the ED via ambulance, the Tele-MSE project utilizes a virtual examination with an Advanced Practice Provider (APP) through video communication hardware and software from a remote location immediately upon patient arrival.

### Project Design/Methods:

Plan: To decrease “door-to-provider” time for patients arriving via Ambulance during designated times, as well as increase the efficiency of patient care.

Do: Current ED APP's with 5+ years of experience and interest in telemedicine received formal training with the Director of Telemedicine of the ED. The triage nurse, the patient, and EMS have a video interaction with the APP through a HIPAA-secure video conferencing unit physically located at a remote centralized location. The APP receives and documents pertinent on-scene information from EMS as well as any pre-hospital intervention. A virtual physical examination assisted by the triage nurse or EMS is performed in full view of a high-definition camera remotely controlled by the APP. The APP documents this interaction in the electronic medical record and may enter orders such as laboratory tests, point-of-care testing, imaging and ECGs prior to the patient being transported to the Main ED.

Study: Monitor hours worked, patients seen per hour, median door-to-provider time, quality of medical screening notes documented in the EMR, and feedback from triage RNs and APPs.

Act: We have improved the backdrop behind the APP working remotely and have improved the sound quality and privacy screens for patients in the Emergency Department.

### Results:

2019 Totals	
Total Patients Screened	14,339 patients
Patients Screened per Hour	4.9 patients per hour
Median Door-to-Provider Time	3.5 minutes
Documentation Compliance	95%

**Conclusions:** MSE's are a vital component of patient care and implementation of our provider-in-triage model using telemedicine has shown an improvement in efficiency of care. Future studies of Tele-MSE should focus on patient satisfaction, time to diagnosis, time to discharge or admission, and efficiency/appropriateness of laboratory and radiology test ordering.