

COLLEGE OF POPULATION HEALTH

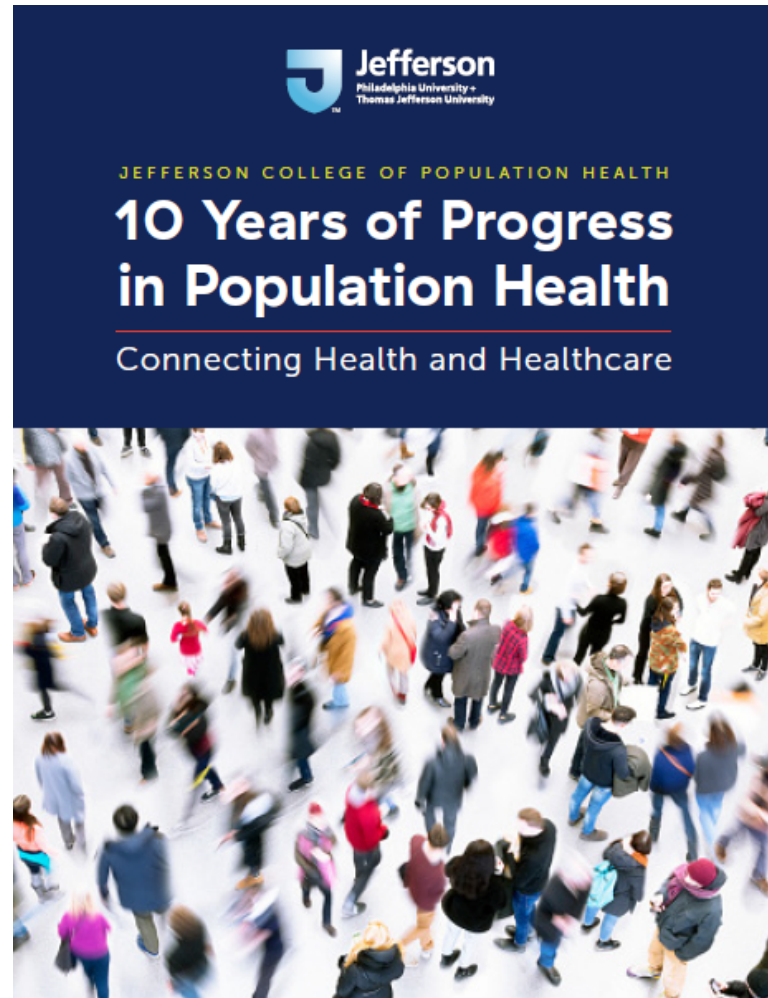
Reducing ED Overcrowding by Improving Inpatient Flow

June 4, 2020
12 - 1 pm ET



Surekha Bhamidipati, MD, MS-HQSM
Mary Reich Cooper, MD, JD

Jefferson College of Population Health



Today's Presenters



Surekha Bhamidipati, MD, MS-HQSM

Medical Director, Care Transitions
ChristianaCare



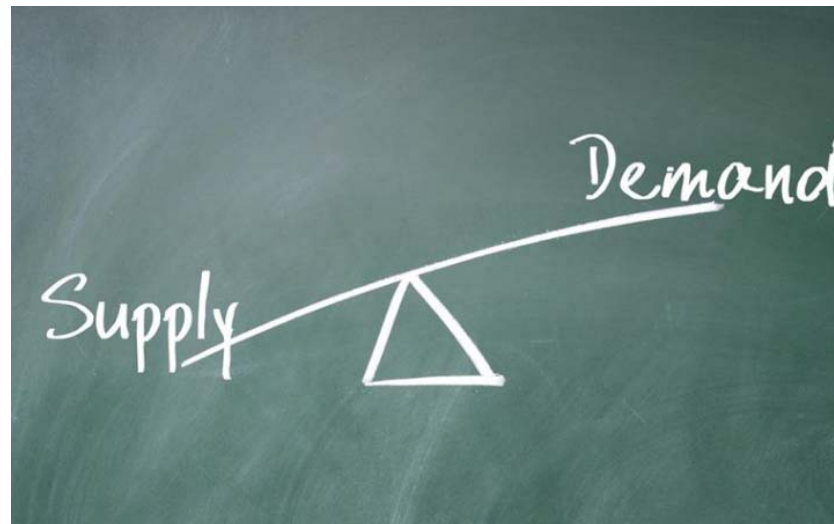
Mary Reich Cooper, MD, JD

Program Director, HQS and OPX
Jefferson College of Population Health
Chief Quality Officer
Connecticut Hospital Association

Introduction of the problem

Emergency Department Overcrowding

- Defined as a situation in which the demand for emergency services exceeds the ability of physicians and nurses to provide quality care within a reasonable time.



Sinclair D. (2007). Emergency department overcrowding - implications for paediatric emergency medicine. *Paediatrics & child health*, 12(6), 491–494. doi:10.1093/pch/12.6.491

Prevalence of the problem

Overcrowding in the Nation's Emergency
Departments: Complex Causes and Disturbing
Effects

Robert W. Derlet, MD
John R. Richards, MD

ED overcrowding is a global health issue

- US, Canada, UK, Australia and Taiwan

Derlet, R. W., Richards, J. R., & Kravitz, R. L. (2001). Frequent Overcrowding in U.S. Emergency Departments. *Academic Emergency Medicine*, 8(2), 151-155

IOM Report: The Future of Emergency Care in the United States Health System

Institute of Medicine



The Boston Globe

For emergency departments, incredible crowding can be normal



JANUARY 30 - 31, 2020

<https://brinetwork.com/2020-patient-flow-management-summit/>
www.IHI.org

Effects on Quality of Care and Patient Experience



Derlet, R. W., Richards, J. R., & Kravitz, R. L. (2001). Frequent Overcrowding in U.S. Emergency Departments. *Academic Emergency Medicine*, 8(2), 151–155

<https://www.nytimes.com/2012/09/26/movies/the-waiting-room-about-highland-hospital-by-peter-nicks.html>

<https://khn.org/news/as-er-wait-times-grow-more-patients-leave-against-medical-advice/>

Baker DW, Stevens CD, B. R. (1991). Patients who leave a public hospital emergency department without being seen by a physician: Causes and Consequences. *JAMA : The Journal of the American Medical Association*, 266(8), 1085–1090.

Chalfin, D. B., Trzeciak, S., Likourezos, A., Baumann, B. M., & Dellinger, R. P. (2007). Impact of delayed transfer of critically ill patients from the emergency department to the intensive care unit. *Critical Care Medicine*, 35(6), 1477–1483.

Rowe, B. H. (2006). Frequency, Determinants, and Impact of Overcrowding in Emergency Departments in Canada: A National Survey of Emergency Department Directors. *Academic Emergency Medicine*, 13(5Supplement 1), S27–S27.



Emergency Department Visits Total:

195,998

- Christiana Hospital: 104,078.
- Wilmington Hospital: 63,129.
- Middletown ED: 28791.

The problem

- 2016-2018
- Frequent capacity codes (hospital occupancy > 90%)
- Nearly daily capacity codes in Flu season
- Average ED boarding time ~ 10 hours (4-22 hours)
- Average discharge time 4 pm
- Clustering of discharges and admission around 4 pm

The journey

- 2 day Flow summit with ED and acute care
- Brainstormed and prioritized solutions
- Flow dashboard

Medicine Group Recommendations

Viable – which can impact Pt Flow Summit Goals

- | | |
|--|----------|
| ✦ SWAT | 24 Votes |
| ○ WH intervention before arrival on unit | |
| ○ Culture change – no pull mentality on the units | |
| ▪ SWAT “helps” | |
| ✦ Afternoon Discharge Huddle | 24 Votes |
| ○ Accountability post huddle organizational alignment | |
| ○ Early A.M. D/C incentive | |
| ○ Earlier understanding/ordering of D/C needs | |
| ○ D/C lounge | |
| ○ ID Pt for D/C Day Before | |
| ○ Physician write order early in day | |
| ○ Notify patient and family | |
| ○ Communicate POC early and often | |
| ✦ Deflecting Admissions Out of ED | 10 Votes |
| ○ Pairing a Hospitalist with CM - deflections | |
| ○ Define list of diagnoses for deflections | |
| ○ Develop collaboration on process with ED attending/Hospitalist | |
| ✦ Case Management Model in the ED | 8 Votes |

What's in place to support the service lines

- System level flow leadership headed by COO
- Flow data warehouse team with solid analytics support
- Unit based clinical leadership
- Other projects
 - Environmental services
 - ED triage to doc
 - ED to unit nursing handoffs
 - LOS tiger team
 - Interdisciplinary rounds and huddle on medicine units
 - Nurse coordinators on most medicine units

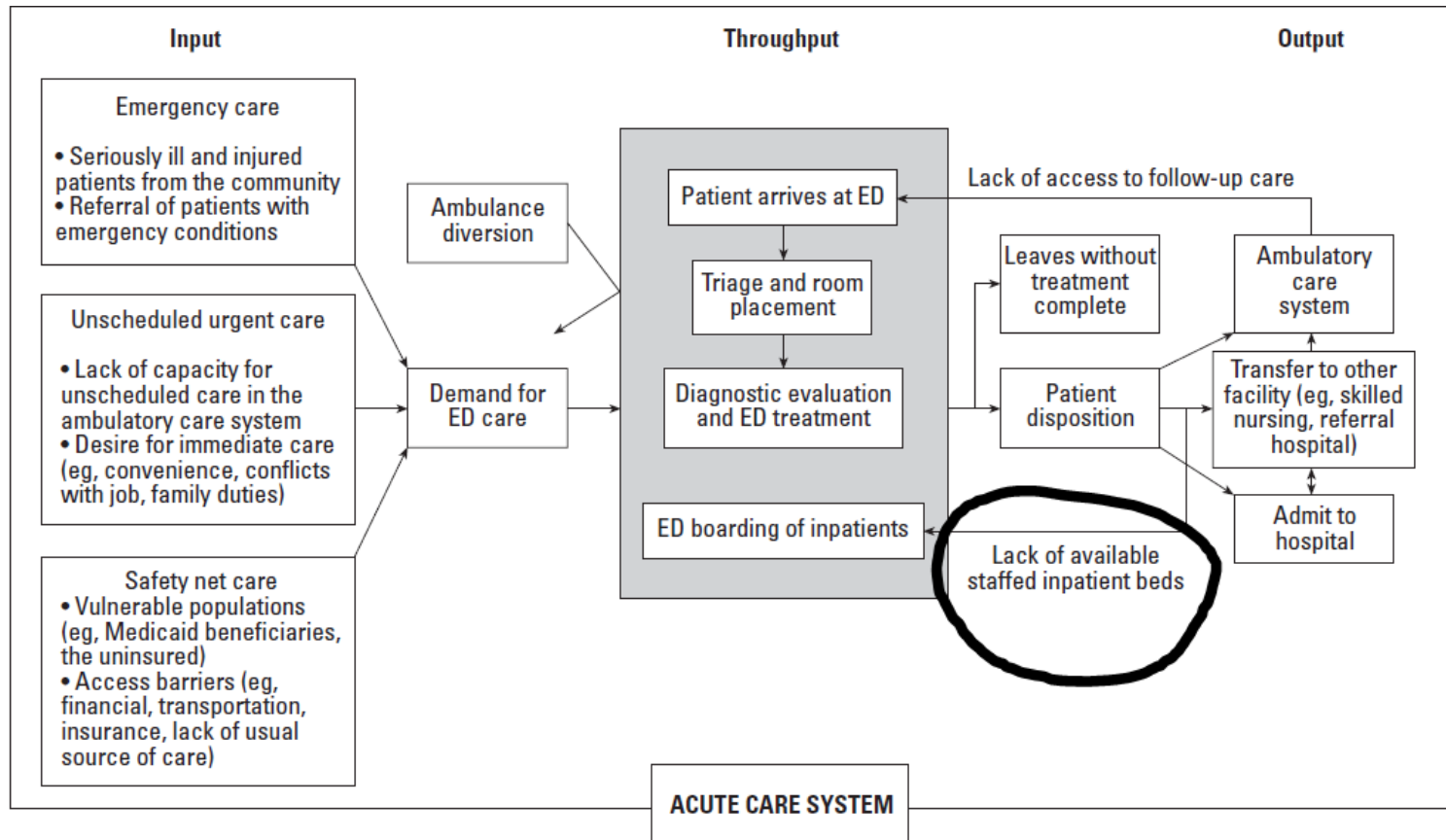
Acute Medicine Service Line

- Medicine and Emergency Department, dyad leadership
- Largest of the service lines ~25k discharges
- 50 % of the inpatient volume
- Hospitalists and house staff
- 2 campuses
- 3 Emergency Departments
- 2 ICUs
- 11 medicine units
- UBCL program

Literature review

A Conceptual Model of Emergency Department Crowding

Annals of Emergency Medicine
An International Journal



Asplin, B. R., Magid, D. J., Rhodes, K. V., Solberg, L. I., Lurie, N., & Camargo, C. A. (2003). A conceptual model of emergency department crowding. *Annals of Emergency Medicine*, 42(2), 173-180.

- Rathlev et al conducted a retrospective time series analysis of 93000 ED admits. They looked at factors impacting flow as input, output and throughput factors.
- The only factors that effected ED wait times were output factors

Asplin, B. R., & Magid, D. J. (2007). If You Want to Fix Crowding, Start by Fixing Your Hospital. *Annals of Emergency Medicine*, 49(3), 273-274.

Rathlev, N. K., Chessare, J., Olshaker, J., Obendorfer, D., Mehta, S. D., Rothenhaus, T., ... Litvak, E. (2007). Time Series Analysis of Variables Associated With Daily Mean Emergency Department Length of Stay. *Annals of Emergency Medicine*, 49(3), 265-271.

Schull, M. J., Kiss, A., & Szalai, J.-P. (2007). The Effect of Low-Complexity Patients on Emergency Department Waiting Times. *Annals of Emergency Medicine*, 49(3), 257-264.e1.

- Schull et al evaluated administrative records from 110 EDs
- Classified 4.1 million ED visits as low, medium and high complexity
- Each additional low-complexity patient associated with increase in ED length of stay
 - By 32 seconds for remaining patients
- They concluded that low complexity/walk-ins did not show a significant association with ED overcrowding

Team Decision Making

Interventions documented in literature to improve flow on medicine units

- Admit less (interventions already in place at the institution with limited impact)
- Discharge quickly (reduce length of stay)
- Discharge early on discharge day (This was our opportunity!)

SMART goals

- We will reduce ED boarding for medicine units at Newark campus by 10% over 3 months by increasing number of discharges by noon to 25% on medicine units

Stretch goals

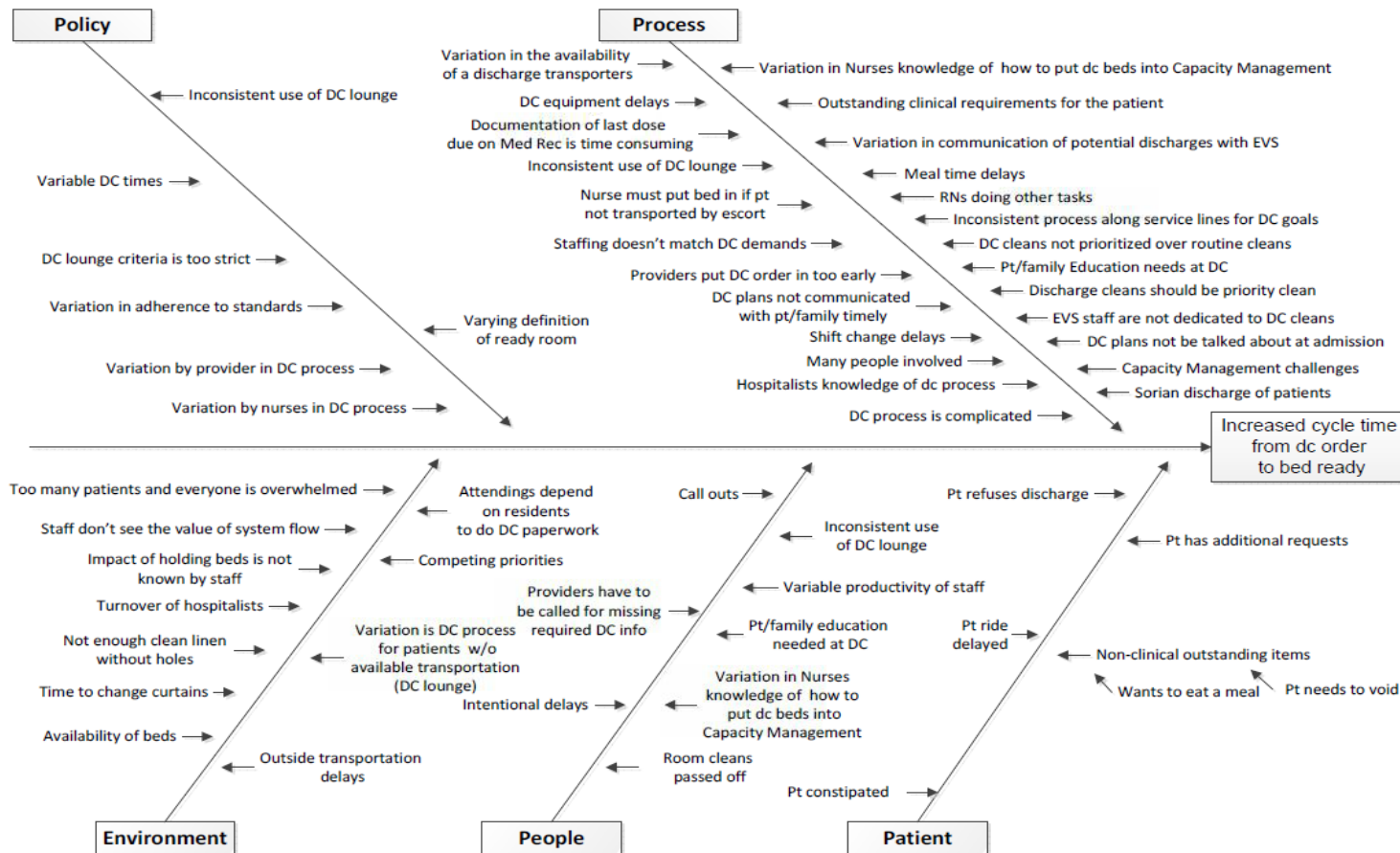
- Discharge orders by 11 am ~ 30%
- Discharges by noon ~ 30%

Balancing metric

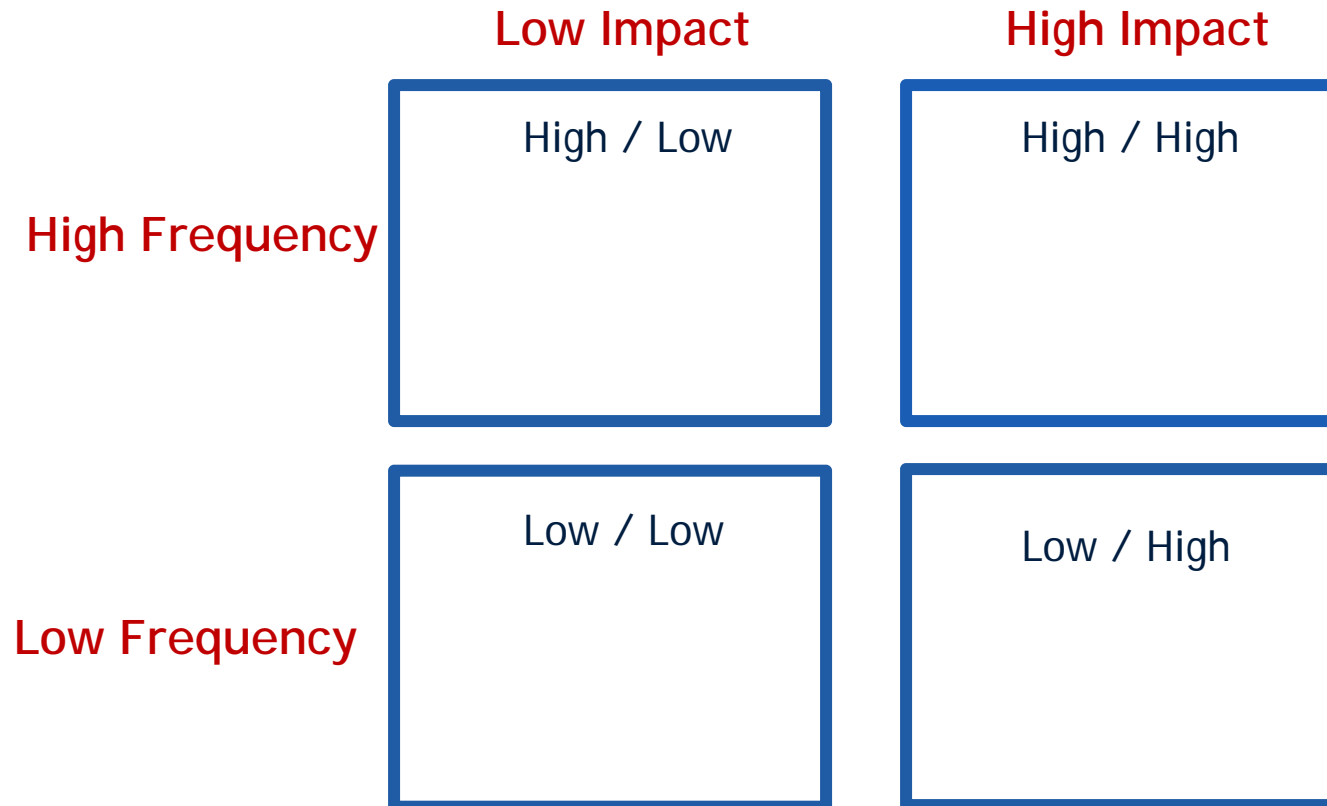
- No change in LOS

Fishbone addressing causes of delays in discharges through out the day

Fishbone/Cause and Effect



Impact/Frequency matrix of discharge delays



Fishbone consolidation/impact-frequency

Nurses
and staff

- Competing priorities/lack of support

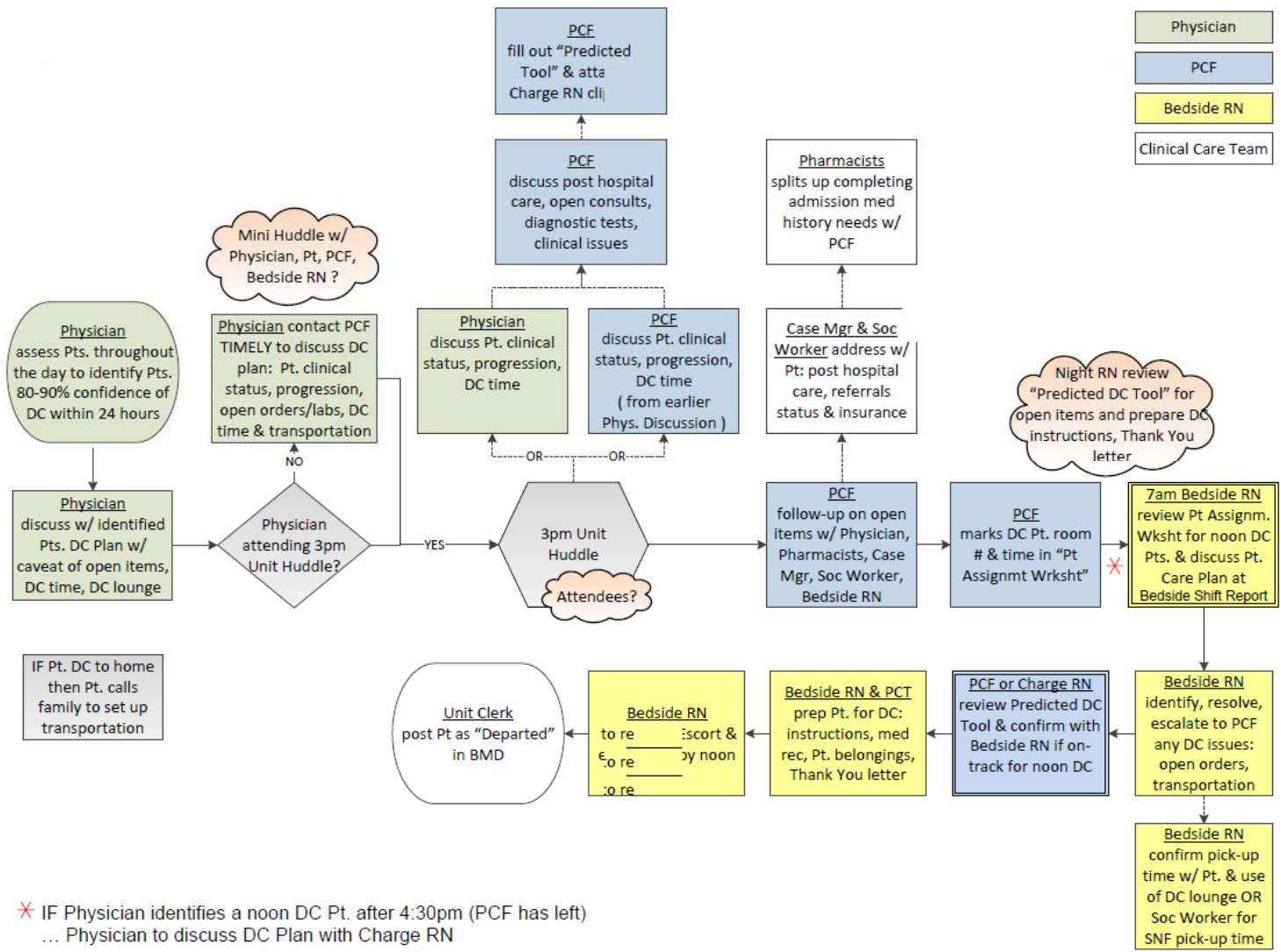
Physicians

- No buy-in about flow/lack of feedback

Families/
Patients

- Lack of awareness, family cannot pick up

Current state mapping of flow activities on units



Big picture of unit flow activities

Team rounds

- Clinical plans
- Discharge predictions
- MD, RN, Pharm, SW, nurse coordinator

3 pm huddle

- Finalize next day predictions
- Task assignment
- Nurse does not attend
- MD, SW, nurse coordinator

Post huddle activities

- Inform patients and families
- Begin paperwork

Post huddle tasks

Physician

- Discharge paperwork
- Prescriptions
- Inform patient

Nurse coordinator

- Communicate with nurse, assign bedside tasks
- Ensure patient/family aware

Case manager

- Finalize bed placement
- Arrange transportation
- Prior authorization

Final interventions

Intervention 1- Team process

Team rounds	3 pm huddle	Post huddle activities	Morning huddle
<ul style="list-style-type: none">• Clinical plans• Discharge predictions	<ul style="list-style-type: none">• Finalize next day predictions• Task assignment• Nurse does not attend	<ul style="list-style-type: none">• Inform patients and families• Begin paperwork	<ul style="list-style-type: none">• Confirm 3 pm huddle predictions• Confirm Task assignment

Intervention 2- Data reporting

- Utilize the existing flow data
- Slice admission to discharge times further to reflect process flow and increase accountability
- Make dashboard actionable
- Share unit data across all service line units to create healthy competition between units
- Share physician level data with group leaders and physicians to raise physician accountability and engagement

Existing data

Length of stay

Admission order
to patient left
system

- Service lines
- Physicians
- Case management
- Units

Existing data

ED
boarding

Boarding
(time from
admission
order to
left ED)

Nursing

- Units
- ED
- Unit leadership metric

Existing data

Discharges by
noon

Number of
discharges/total
daily discharges
%

- Physicians
- Case management
- Units

New unit data

Discharge
order to
actual
discharge

Discharge
order to
patient left
system

- Case
management
- Units

New physician level data

Discharge
orders by 11
am

Number of
discharge
orders by 11
am/total
number of
discharge
orders %

Physicians

Implementation

Communications to stakeholders

- Team meetings
- Unit meetings
- Service line leadership messaging
- Support during and after go-live
- On-going feedback to modify as needed

Small tests of change

- Pilot units
- Pilot physicians for data

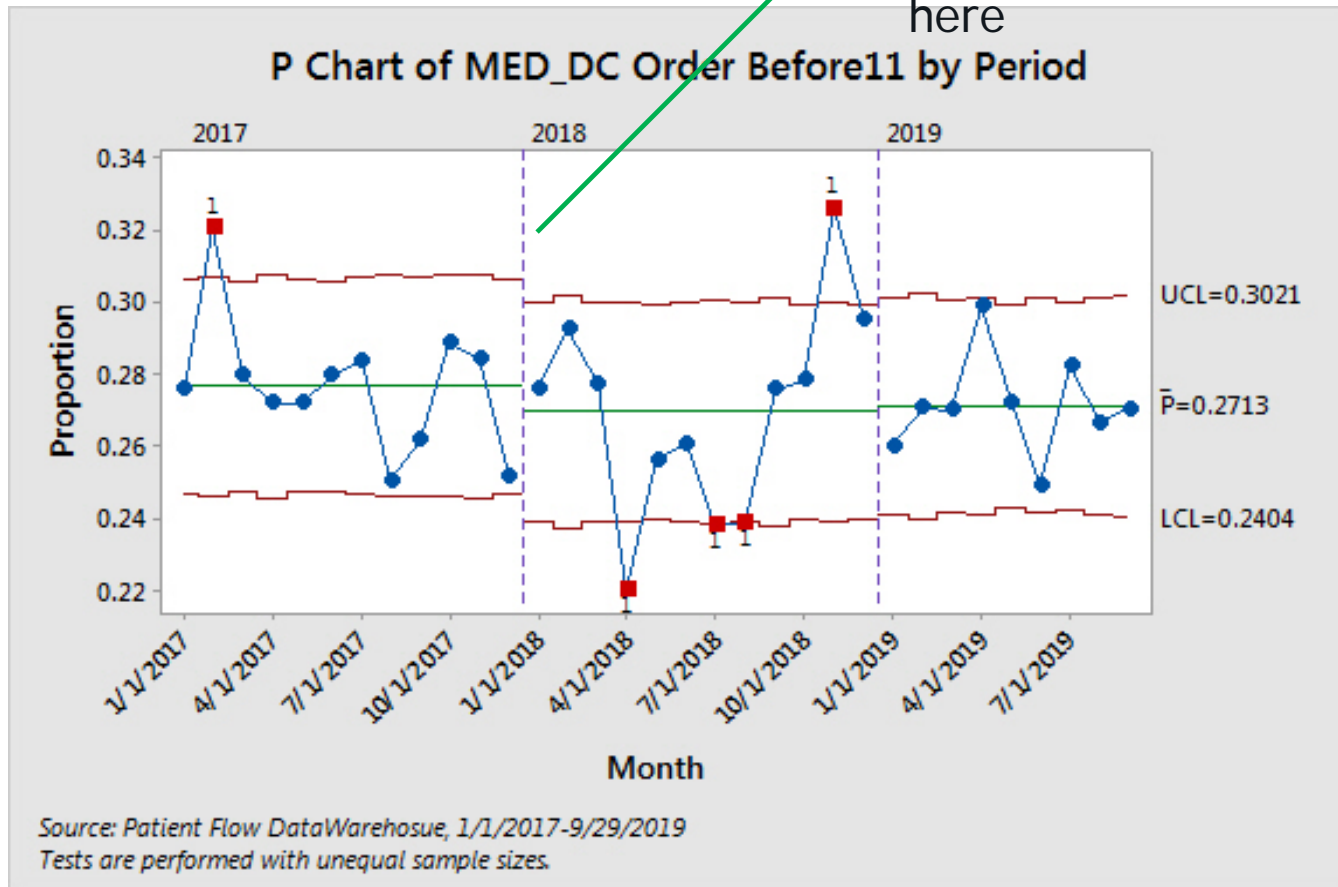
Evaluation

Team process metrics

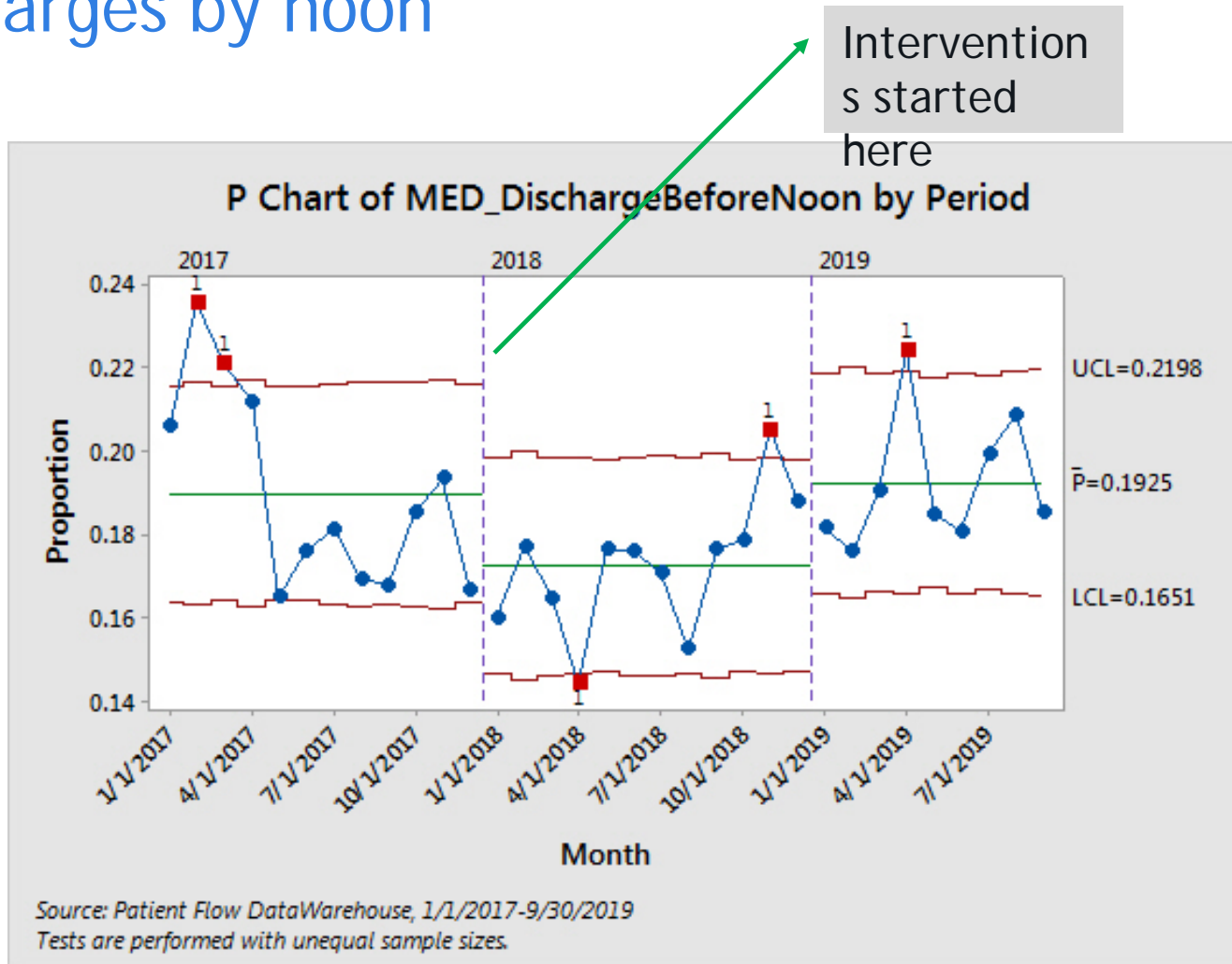
- Average time spent in huddle
 - 5-7 mins per physician
 - Target 5 mins

Discharge orders by 11 am

Intervention
s started
here

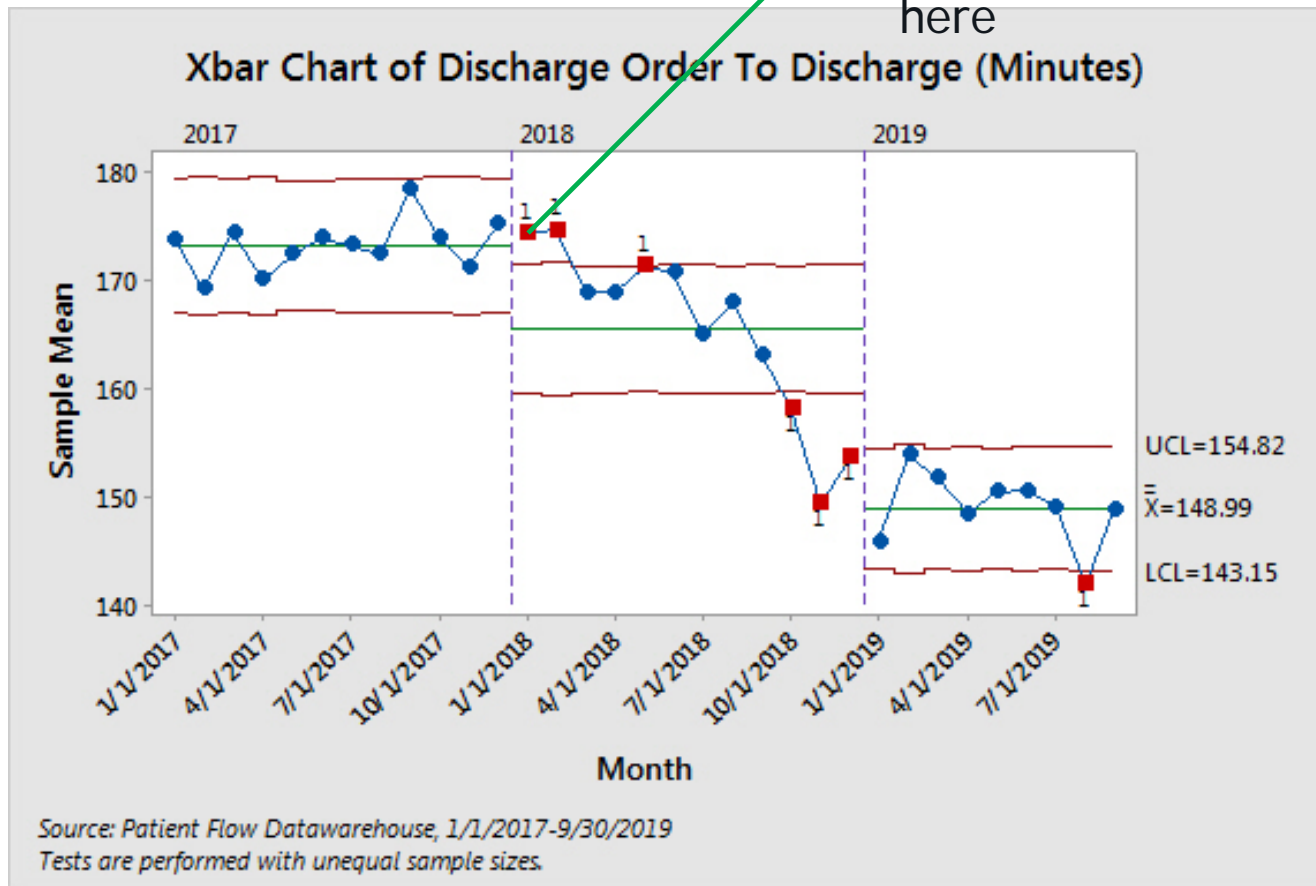


Discharges by noon

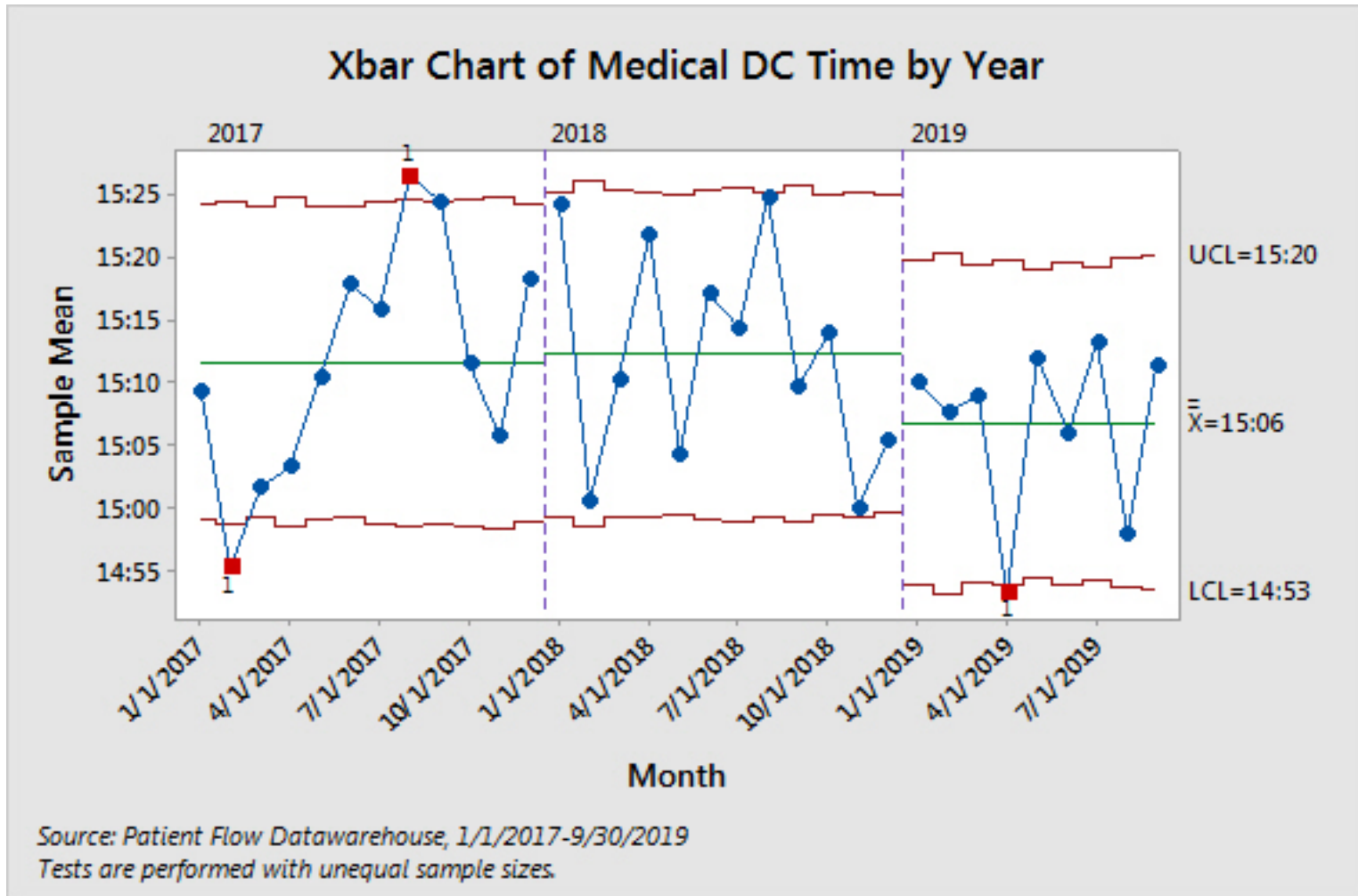


Discharge order to discharge

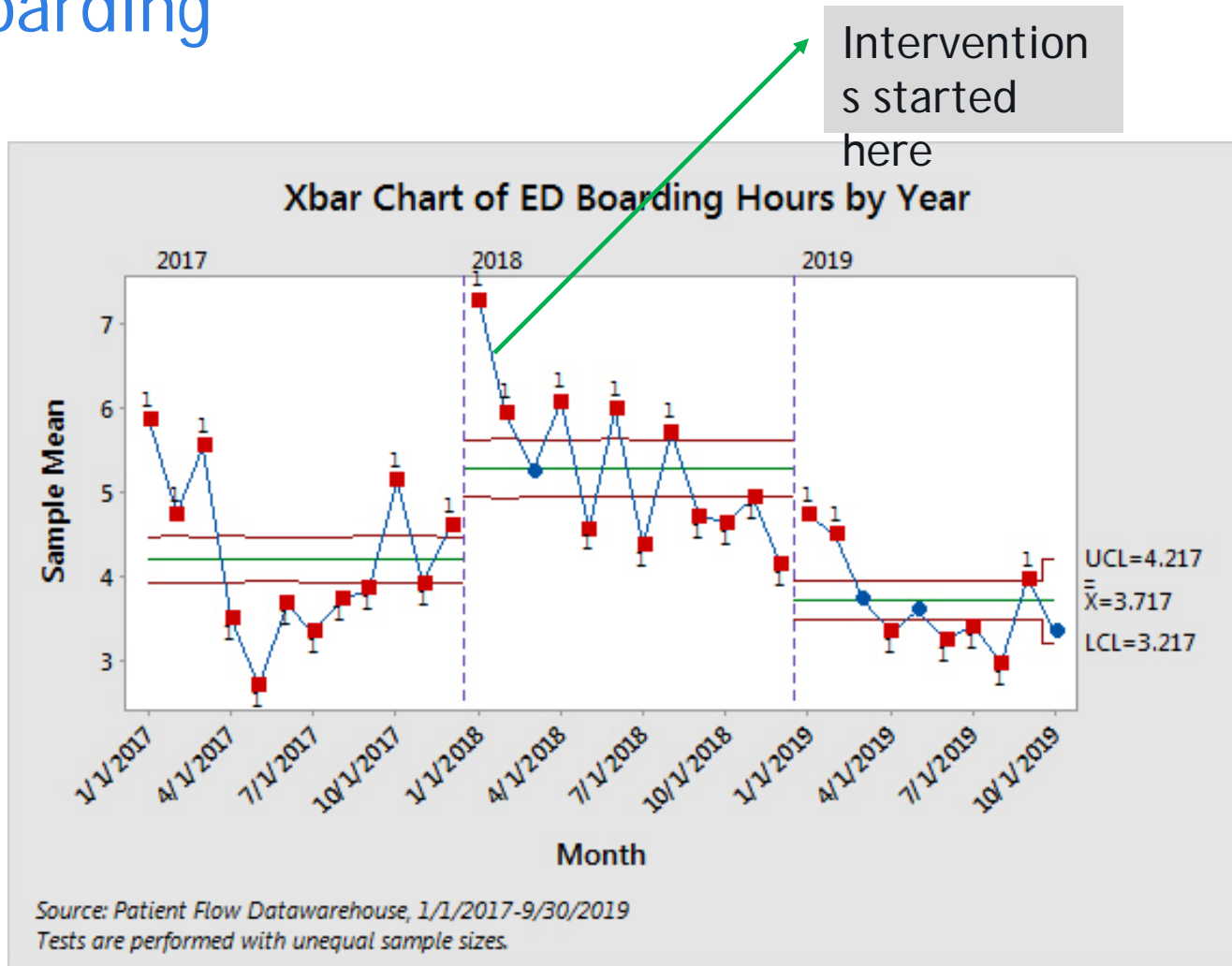
Intervention started here



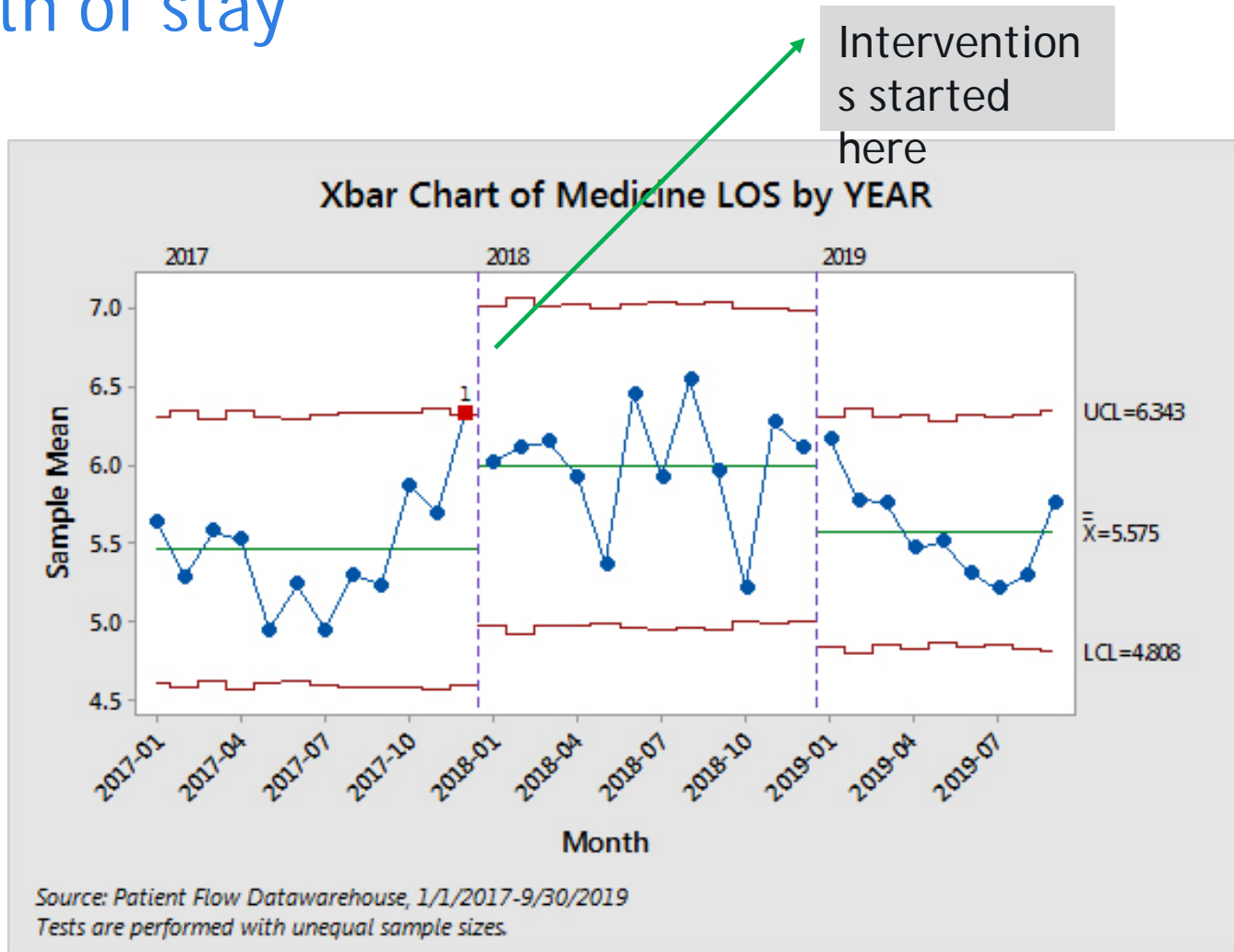
Average discharge hour



ED boarding



Length of stay



**Christiana Care Hospitalist
Partners
Physician Metrics**

- Age Group
 (All)
 Age < 65
 Age >= 65



Facility: (All) LegacyVisitTypeCode: (All) Provider Type: Permanent Measure Names: (Multiple values) VisitEndDateTime: Last 14 months Caregiver Name: BHAMIDIPATI, VUAYA...

	Oct 18	Nov 18	Dec 18	Jan 19	Mar 19	Apr 19	May 19	Jun 19	Jul 19	Aug 19	Sep 19	Oct 19	Nov 19
Discharges	1	14	23	3	4	16	22	21	22	5	33	7	8
Christiana Discharges	1	14	23	3	4	16	22	21	22	5	33	4	8
Wilmington Discharges	0	0	0	0	0	0	0	0	0	0	0	3	0
Inpatient Discharges	1	14	20	3	3	15	22	21	17	4	32	5	8
Expired	0	0	0	0	0	0	0	0	0	1	0	0	0
Avg. LOS	2.05	4.74	6.49	4.23	5.00	7.54	5.72	8.49	5.20	4.63	4.85	5.24	4.02
Avg. LOS IP Only	2.05	4.74	7.08	4.23	7.44	7.74	5.72	8.49	5.82	5.22	4.93	7.37	4.02
Avg. LOS Obs in Hours			23.75		73.00	48.00			74.67	26.00	36.00	41.00	
Avg. LOS Obs in Hours Outliers Re..			23.75						35.00	26.00	36.00	11.00	
Avg. DRGRelativeWeights	0.87	1.33	1.34	1.77	2.28	1.26	1.91	1.66	1.23	1.44	1.41	1.62	0.88
LOS CMI Adjusted	2.39	3.56	5.28	2.39	3.27	6.12	2.99	5.11	4.72	3.62	3.51	4.55	4.55
72 Hour Revisit Rate	0.00%	21.43%	0.00%	0.00%	0.00%	13.33%	4.55%	0.00%	17.65%	0.00%	3.13%	20.00%	0.00%
7-Day Readmission Rate	0.00%	21.43%	0.00%	0.00%	0.00%	6.67%	4.55%	0.00%	17.65%	0.00%	6.25%	20.00%	0.00%
30-Day Readmission Rate	0.00%	28.57%	10.00%	0.00%	33.33%	13.33%	31.82%	14.29%	29.41%	0.00%	12.50%	20.00%	0.00%
COPD 30-Day Readmission Rate		100.00%				0.00%	33.33%	0.00%			0.00%		
Discharge Order Before 11am Rate	0.0%	14.3%	34.8%	33.3%	50.0%	18.8%	36.4%	47.6%	22.7%	40.0%	24.2%	42.9%	50.0%
Out the Door Before 12pm Rate	0.00%	0.00%	8.70%	0.00%	25.00%	18.75%	4.55%	19.05%	9.09%	40.00%	6.06%	28.57%	12.50%
Coded Cdiff Rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Avg. Direct cost UHC	1,444	4,561	8,080	5,731	7,110	7,631	5,494	8,865	6,027	6,085			

What do the results mean?

- We slightly increased the number of discharge orders by 11 am
- We significantly reduced the average time between discharge order and actual discharge
- We reduced ED boarding
- CMI adjusted LOS reduction due to other concomitant projects

Lesson learned

- System factors are essential for success
- Secure buy in early and frequently
- Monitor processes
- Pay attention to data
 - If it is not measured, it is not getting done
- Anticipate, look for and address unintended consequences

Future directions

- Extend the huddle
 - Weekends
 - Focus on safety and flow

- Sustain the gains
 - Team training
 - Unit level ownership
 - Data support



*Thank
you!*

Questions?

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Questions: JCPH.Admissions@jefferson.edu

Upcoming PopTalk

June 11, 2020 from 2:00-3:00 pm ET

What's the Value of Virtual Care?



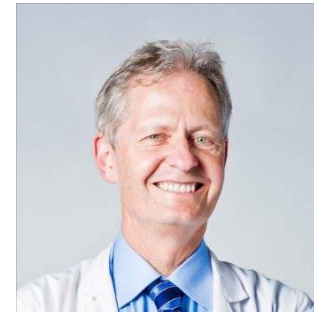
Colleen I. Baum, MD, MMM, FAAPL

Maui Director

Hawaii Independent Physician's Association

Assistant Clinical Professor

John A. Burns School of Medicine



Mitchell A. Kaminski, MD, MBA

Program Director, Population Health

Jefferson College of Population Health

Clinical Associate Professor

Sidney Kimmel Medical College

For more information: [Jefferson.edu/PHLS](https://jefferson.edu/PHLS)

Upcoming PopTalk

June 24, 2020 from 12:00-1:00 pm ET

CANDOR & High Reliability: Response to Patient Harm



Jared Capouya, MD, HQS
Vice President, Quality & Safety
Medical Director
Arkansas Children's Care Network



Mary Reich Cooper, MD, JD
Program Director, HQS and OPX
Jefferson College of Population Health
Chief Quality Officer
Connecticut Hospital Association

For more information: [Jefferson.edu/PHLS](https://jefferson.edu/PHLS)

Thank You!