SYSTEM CONSTRAINTS TO EFFECTIVE ED FLOW

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Chief Quality Officer

Medical West

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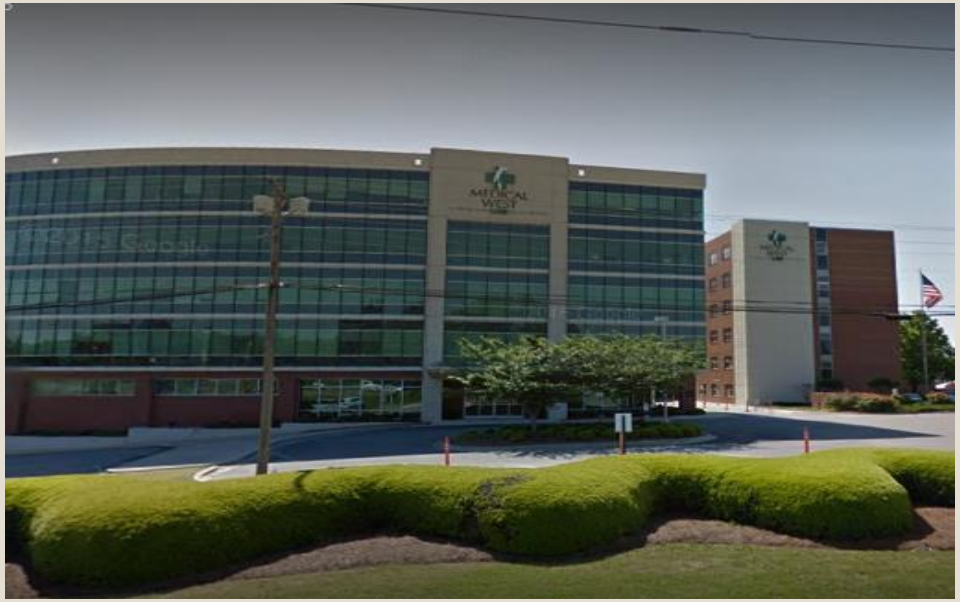
- West Jefferson County
- University Hospital Authority
- Affiliate of UAB Health System
- 310 Bed Facility
- 16 Health Centers
- 21 ED Exam Rooms
- 2018: 42,948 ED visits



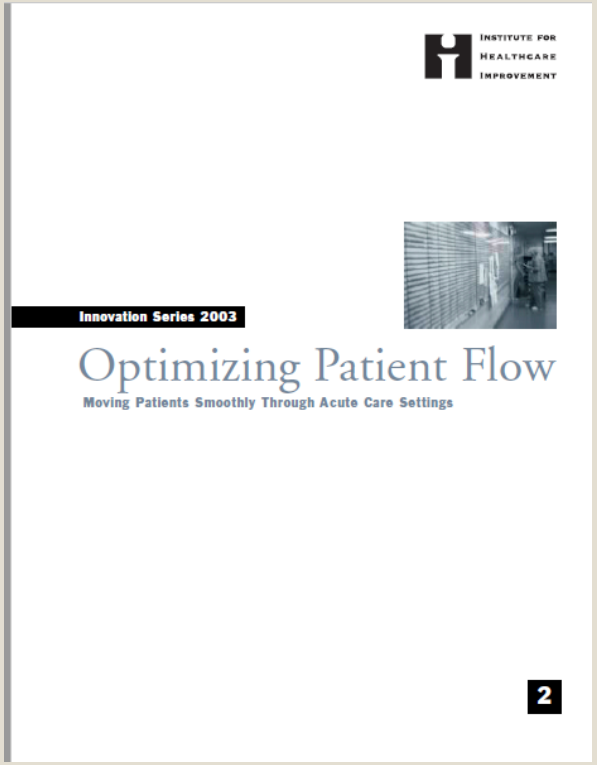
- Opened Alabama's first FED
- May 4, 2015
- 15 FED Exam Rooms
- Dedicated Lab, CT, US, & X-ray
- 2018: 32,127 FED visits

The *so-called* **ED problem…**
is actually a **system problem**.

EDs do not exist in isolation, but are part of a system of care...

The costs of delays in ED care

- Harmful delays in receiving care
- Affects service, care, and safety
- Inappropriate, expensive holding area
- Leave without being treated



Increasing capacity in the ED to accommodate more patients…
is like broadening only the large end of a funnel.

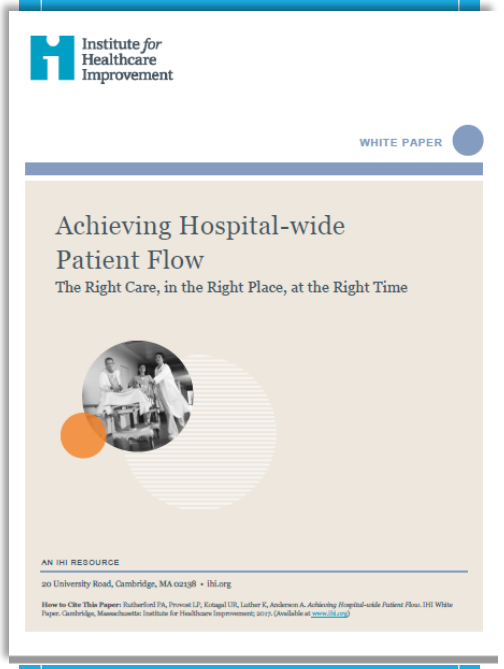
Increasing input without facilitating a smooth exit…
worsens the problem.

Objectives

- Identify approaches for optimizing patient flow
- Discuss efficient methods for identifying system constraints
- Quantify the potential impact of dedicated ancillary services

Three approaches for optimizing the system:

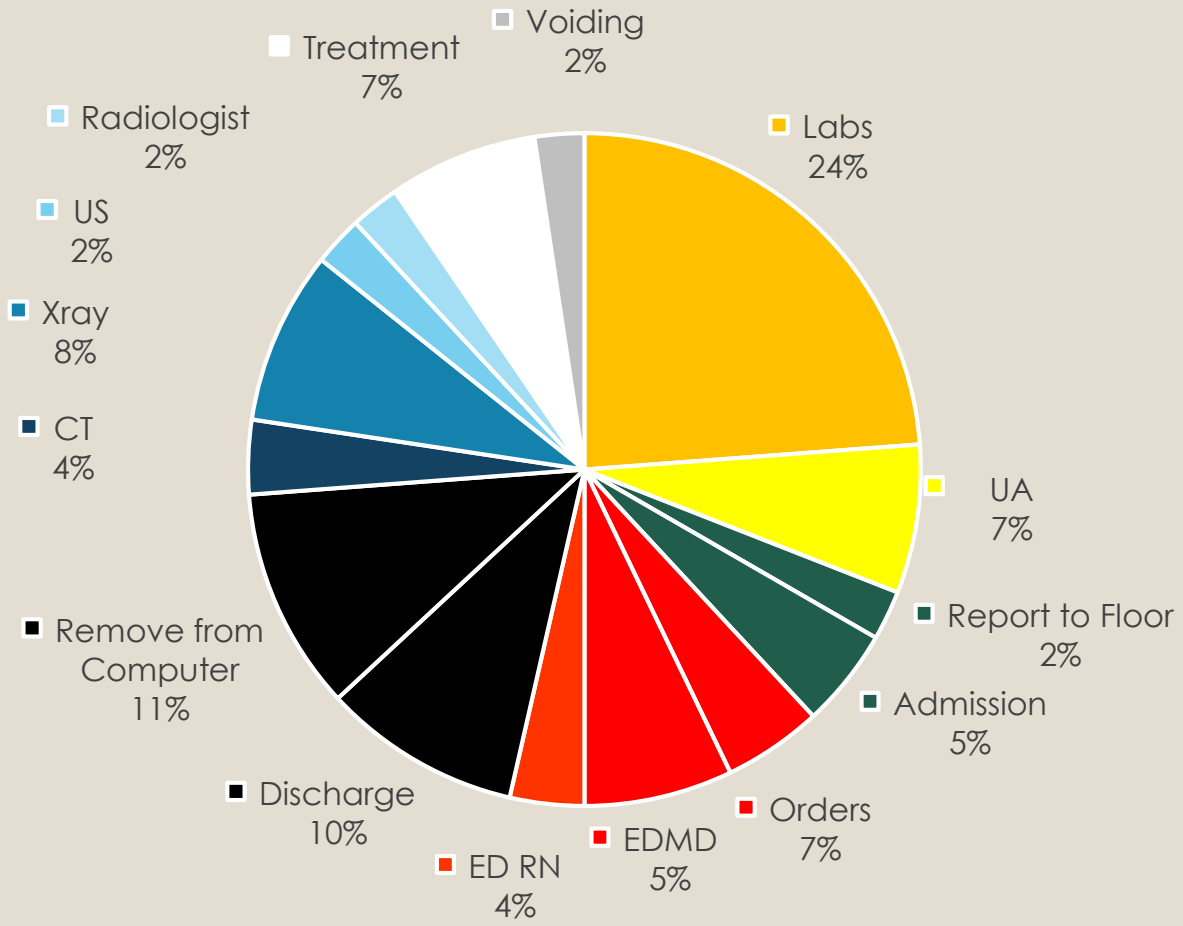
- **Shape or reduce demand**
  - Reduce demand due to defective or ineffective care
  - Provide needed care outside the hospital
  - Smooth or level-load elective clinical services
- **Match Capacity and Demand**
  - Add or reduce capacity to meet variations in demand
- **Redesign the System**
  - Do tasks in parallel
  - Change processes to create efficiency
  - Redesign work for constrained resources



RM	TH12	T06	M19	M13	F11	TH18
101			DC	LAB/CT	UA	LAB/VOID
103	UA	TX	LAB	LAB/XRAY	LAB	DC
104	ADM	TX	EDTX	LAB	DCD	LAB
105	RPT			LAB	ORD	
106	RN	DCD		LAB	LAB	DC
107	CT		ADM	LAB		TX/VOID
108	UA		RN	LAB	LAB	TX
201	UA		LAB	DCD		READ
202	UA		DCD	DCD	LAB	XRAY
203	XRAY		CT	XRAY	LAB	DC
204	UA		RN	LABS	ORD	XRAY
205	US		LAB	MD	ORD	DC
206	DC		ADM	MD	US	RPT
207	DC		ORD		DCD	LABS
208	DC		ORD	TX	LAB/XRAY	DCD
209	ADM		MD	DCD		ORD
301				DCD		
302				XRAY		
303				MD		

Identify Constraints

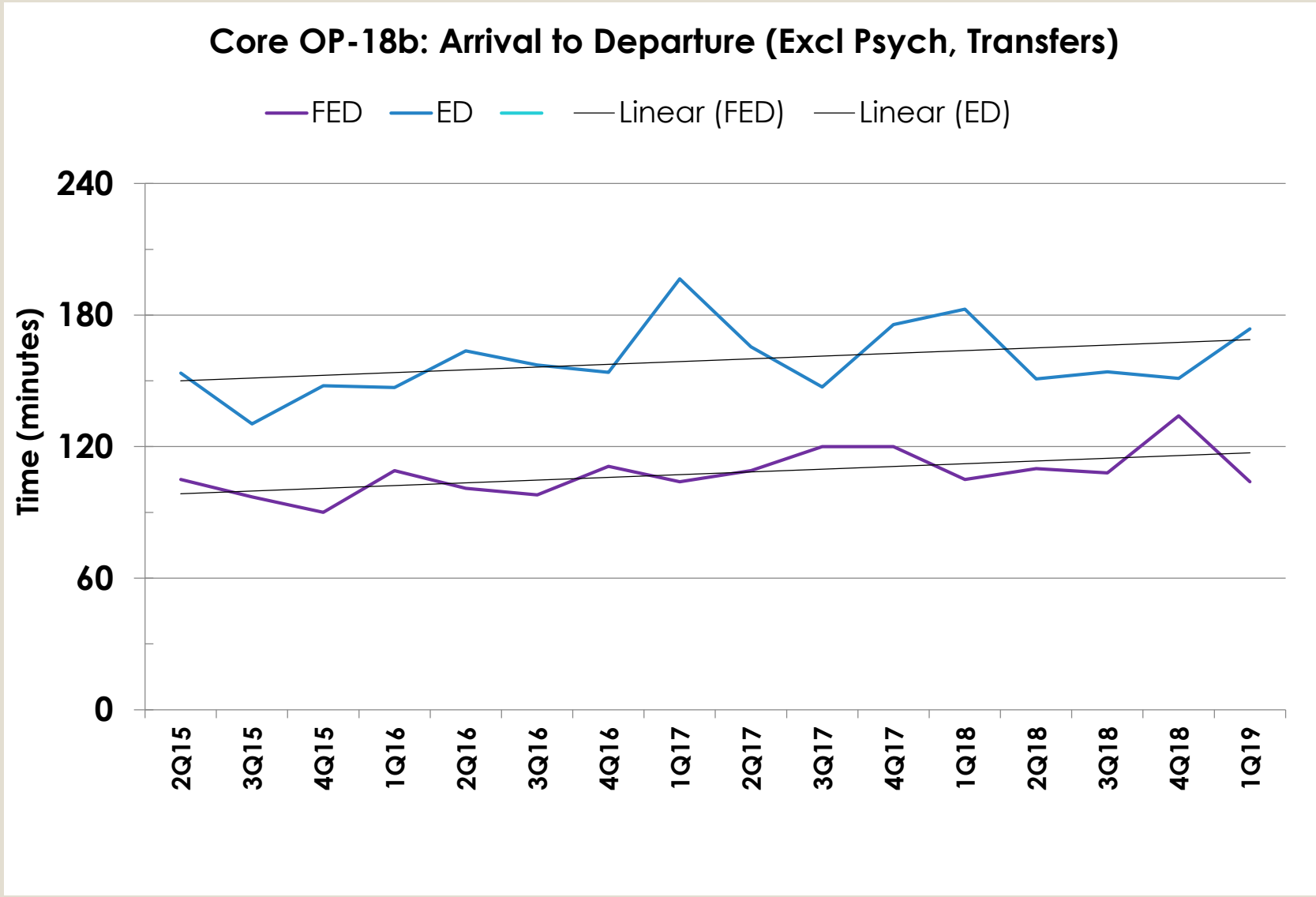
the limiting factor that stands in the way of achieving a goal



Findings

- **49% Waiting on Results**
- **30% ED Care**
- **21% Discharge**
- **7% Admission**

NEXT: Change system to address that constraint until it is no longer the limiting factor.


Core OP-18b: Arrival to Departure (Excl Psych, Transfers)
FED
ED
Linear (FED)
Linear (ED)
Time (minutes)
240
180
120
60
0
2Q15
3Q15
4Q15
1Q16
2Q16
3Q16
4Q16
1Q17
2Q17
3Q17
4Q17
1Q18
2Q18
3Q18
4Q18
1Q19

Matched Population

- Main Emergency Department
  - 1/5/2019 – 115 patients
  - 2/2/2019 – 118 patients
  - 2/10/2019 – 113 patients
- Matched Patients/Time
  - 50M Chest pain
  - 50M Flu like illness
  - 5F Flu like illness
  - 73F Cat bite
  - 24M URI
  - 20M GI symptoms
  - 38F Dysuria
  - 23M Wrist Injury
  - 47M Chest Pain
  - 21M Rash
  - 45M URI
  - 44F Back pain

- Freestanding Emergency Department
  - 1/5/2019 – 108 patients
  - 2/2/2019 – 117 patients
  - 2/10/2019 – 112 patients
- Matched Patients/Time
  - 45M SOB
  - 54F Flu like illness
  - 4M Flu like illness
  - 1F Dog bite
  - 34F URI
  - 26F GI symptoms
  - 65F Urinary frequency
  - 55F Wrist Injury
  - 22F Chest Pain
  - 44M Rash
  - 41F URI
  - 46F Back Pain

Lab Matched to Date/Time

	Main	FED	Comparison
UA	0:41	0:18	-56%
Flu serology	0:32	0:16	-50%
Urine Drug	0:32	0:18	-44%
Chemistry	0:57	0:39	-32%
CBC	0:30	0:26	-13%

Jan 5, 2019 – Jan 6, 2019

Modality	Main	FED	FED:Main
CT Head	**0:40**	**0:29**	**-28%**
Order to Image	0:29	0:21	-28%
Image to Result	0:11	0:08	-28%
CT AP	**0:49**	**0:44**	**-10%**
Order to Image	0:35	0:29	-17%
Image to Result	0:14	0:15	+7%
Radiology	**0:20**	**0:20**	**No difference**

Summary

- Control Demand – Match Capacity – Improve Systems
- Point in Time surveys can provide timely actionable data
- Dedicated Resources can reduce delays
  - Lab
    - Manual tests > Automated test
    - Decrease in transport/specimen prep
  - Imaging
    - CT head – 25% faster
    - Radiologists become limiting factor
    - No difference in radiology