



**Evidence 2 Excellence**  
BC Emergency Medicine Community  
*Collaborate, Innovate, Captivate*

## Approach to ED Flow

Creating a system and framework  
for improvement.

Dr. L. Cheng MD, MPH

## The reality...

- We know patient satisfaction is a concern.
- We know patient safety is a concern.
- We know staff satisfaction is a concern.
- We know resources are scarce...



## Defining Flow

(Leadership for smooth patient Flow – Jensen/Mayer/Welch/Haraden)

- Flow as efficiency and cycle times
- Flow as reduced variation, increased predictability and improved forecasting
- Flow as systems thinking
- Flow as empowered providers exceeding expectations
- Flow as demand capacity management

"Excellence is what we strive for, but consistency is what we demand." Spinoza



## Project Aims

Optimal care can only be delivered when the patient is in the:

right place

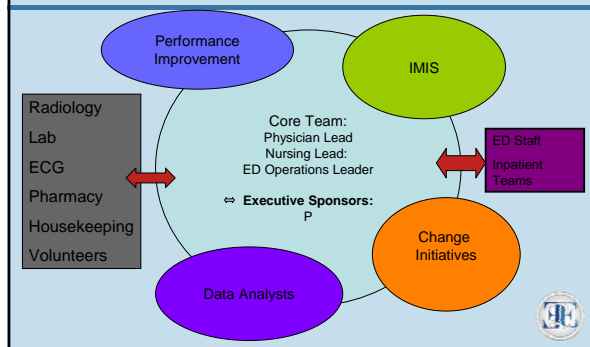
with the right provider

at the right time

with the right information



## The Right Team: The ED IMPACT Team



## Link to Strategic Priorities

Improve patient flow and access through the ED by re-engineering and optimizing key operational processes.

This project will also seek to standardize and integrate best clinical practices for key clinical presentations.

Improve Quality of work-life for staff.



## AIM Statements for ED Improvement

**ACCESS**

ED Wait time to MD.

Target:

15 min for CTAS 2; 30 min for CTAS 3

**EFFICIENCY**

ED throughput time for admitted patients.

Target:

**SAFETY**

Bounce-back Requiring Hospitalization within 72 hrs.

Target: 0.5%

## AIM Statements for ED Improvement

**PATIENT ACCEPTABILITY**

LWBS Rate

CTAS 1-3.

Target: 1.5%.

CTAS 4-5.

Target: 5%

Patient satisfaction

**CONSULT EFFICIENCY**

Target:

2hrs in 90% of cases

**DIAGNOSIS EFFICIENCY**

Imaging TAT (order-to ED Report).

Target:

90% < 90 min for US.

90% < 60min for CT.

Lab TAT (order- to ED Report).

Target:

90% < 30min for K +;

90% , 60 min for CBC , Tn

## Targets: 2 / 4 / 10

CTAS 4/5  
Triage to Discharge  
2 hours

CTAS 1/2/3  
Triage to discharge  
4 hours

CTAS 1/2/3  
Triage to transfer to inpatient unit,  
10 hours

## Keys to optimizing flow

You need to understand your system using a theory of knowledge...

You need a systematic approach or system for improvement...

You need to use tools and knowledge from other industries...

## Key Strategic Concepts

- Demand/capacity management
- Real-time monitoring of patient flow and core processes
- Forecasting
- Queuing theory
- Lean tools
- Understanding variability
- Appreciating the system: Theory of constraints

## Demand / Capacity Tools

What should capacity look like to guarantee quality care in a efficient manner?

**• Triage Scenarios**

—A

- Excess capacity
- Non-bottleneck

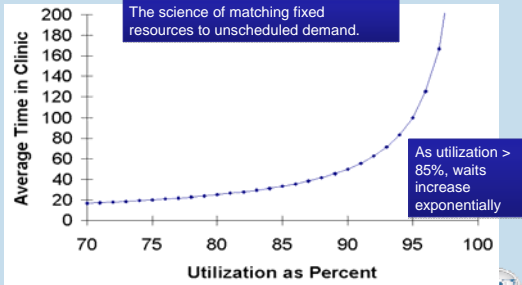
—B

- Excess capacity overnight, under capacity peak
- Bottleneck

—C

- Good alignment
- Non-bottleneck

## Queuing Theory



13

© 2007, Charles E. Noon, Ph.D.



## Managing Variability

- You must understand the variability in your system
- You must manage your variability...
- Three sources:
  - Clinical
  - Flow
  - Professional
- The key to flow is reducing variability where you can.



## Theory of Constraints / Appreciation of a system

- TOC:
  - An hour lost at a bottleneck is an hour lost for the whole system
  - Time saved at a NON-bottleneck will not help.
- Appreciation of the system:
  - You must have a whole system view...
  - The ED is a complex system – it is not possible to understand all the interactions
  - It is not necessary to change everything – find the right 15% and you can tip the scales..



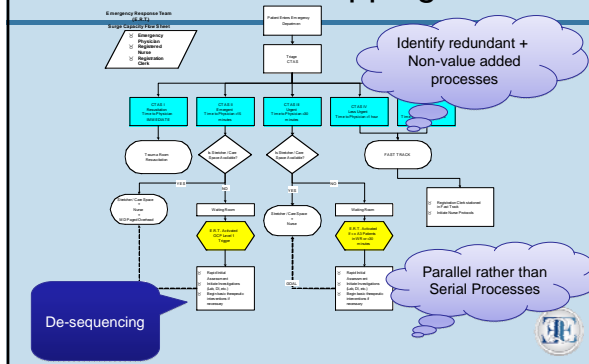
## The Lean Approach

An operations management strategy derived from Toyota Production System.

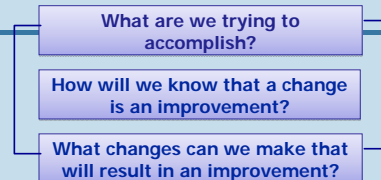
Lean Tools:  
 -value stream mapping  
 -Standard Work  
 -5S: sort, set, shine, standardize, shine  
 -Inventory control  
 -Rapid change over  
 -mistake proofing  
 -continuous work cells



## Process Mapping:



## Model for Improvement



## Critical Success Factors

(IHI)

- Will + Ideas + Execution
- A culture of continuous improvement
- Front-line staff engagement
- High level executive support + resources
- Flow seen as a organizational priority
- Day to day leader and a good team
- Finite action plans 30 – 60 -90 day plans
- Sequencing and tempo
- Sustained execution over time



## Curriculum (Draft)

- Optimize front-end strategies
- Segmentation and flow strategies
- LEAN applications in the ED
- Safety and Reliability through standardization
- Fast-track / super-track
- Demand/capacity, fore-casting, predicting, early warning and response
- Specialized units / buffer units
- Managing transitions
- Addressing the boarding burden
- Consult delays



## We can do this...

The best way to invent your future is to create it..

Plans are only good intentions unless they immediately degenerate into hard work...

• Peter Drucker

