ED Overcapacity: Breaking the Bottleneck

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Objectives:
1. Introduce tools and techniques for enhancing flow
2. Expose the myths surrounding ED inefficiency
3. Apply to tools to solve ED flow problems

The Emanuel Story

- The leverage: budget crisis
- Carrot: Admissions, revenue, jobs
- Goal: $4,000,000 savings/revenue
- Outcome:
  - 99.8% reduction in Divert from 80 hrs/month to 1 hr/year
  - LWBS cut in half
  - ED volumes, ambulance and ambulatory, went up
  - Admissions increased 15%
  - Inpatient LOS dropped 15-20%
  - Revenue and savings $4,500,000 in first 8 months
  - “Collateral benefits” of improved nursing productivity, moral…..

It’s the ED’s problem, why can’t the ED fix it?
The number cause of ED overcrowding and divert is boarding admitted patients

Variability: Random vs. Artificial

Random (natural) Variation
- Patients’ conditions
- Response to therapy
- Rate of arrival to hospital
- Random variation must be managed

Artificial (nonrandom) Variation
- Elective surgical/procedure scheduling
- Batching
- Providers’ practice preferences
- Artificial variation cannot be managed, it must be eliminated

The Flow Tools
1. Variability
2. Forecasting
3. Demand capacity matching
4. Theory of constraints
5. Queuing theory

Random Variation is Predictable, Artificial Variation is Not
If you can’t predict variability, you can’t plan
Forecasting

- Predict demand using historical data
- Quantitative, or qualitative
- Forecasting types:
  - Percent adjustment
  - Moving average
  - Trendline

Demand Capacity Real Time Matching

- Predict demand at unit and hospital level
- Predict capacity at unit and hospital level
- Develop a plan to match capacity with demand in real time
- Evaluate the success of the plan
- Refine the plan

Theory of Constraints

- Identifying scarcest resources in a supply or service chain
- Most effective initial tool for improving patient flow within a unit
  - Throughput: The rate a patient moves through a unit (e.g. the time a patient checks in to the time a patient leaves the ED)
  - Inventory: All the patients in a unit
  - Operational expenses: All the resources used in evaluating, diagnosing, treating, and discharging patients
- Must balance the flow of patients through a bottleneck with the demand for that resource
  - Bottlenecks – any resources whose capacity is equal to or less than the demand placed on it
  - Nonbottleneck – any resource whose capacity is greater than the demand placed on it

An hour lost on a bottleneck is an hour lost for the entire unit
An hour saved at a non bottleneck is a mirage

Reference: The Goal: A Process of Ongoing Improvement
Eliyahu M. Goldratt, Jeff CoxNorth River Press; 3 edition (July 2004)
Breaking the bottlenecks

1. Identify the bottleneck
   - Look for a pileup of inventory behind the bottleneck
2. Exploit the bottleneck
   - Modify or redesign the system for more efficiency
3. Subordinate everything else
   - Exploiting the bottleneck takes priority to all else
4. Elevate the constraint
   - Improve capacity and off load demand

Queuing theory

- Uncertain waits are longer...
- Unexplained waits are longer..
- Unfair waits are longer...
- Uncertain waits are longer...
- Unexplained waits are longer..
- Unfair waits are longer...

“Products are consumed, services are experienced”

Satisfaction bottom line: It’s perceptions about how patients are cared for as people, not competency

Measure Something

- It does not have to be perfect
- Be creative
- Finance Data
- Billing/Coding
- Part of work flow
- Measure something

Human Factors

- It needs to make sense for you
- Better to leverage behavior than try to change it
- The easy button
- Rewards need to be real, both personal and shared

Leadership for Smooth Patient Flow  Kirk Jensen MD, Carol Haraden PhD, Thom A. Mayer MD, Shari J Welch M; Health Administration Press 2006