Managing Quality to Control Costs

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Core idea behind variation research

Apply rigorous measurement tools developed for clinical research

to

routine care delivery performance

Quality, Utilization, and Efficiency (QUE)

- ***Six clinical areas studied over 2 years:***

- transurethral prostatectomy (TURP)
- open cholecystectomy
- total hip arthroplasty
- coronary artery bypass graft surgery (CABG)
- permanent pacemaker implantation
- community-acquired pneumonia

- ***pulled all patients treated over a defined time period***

across all Intermountain inpatient facilities - typically 1 year

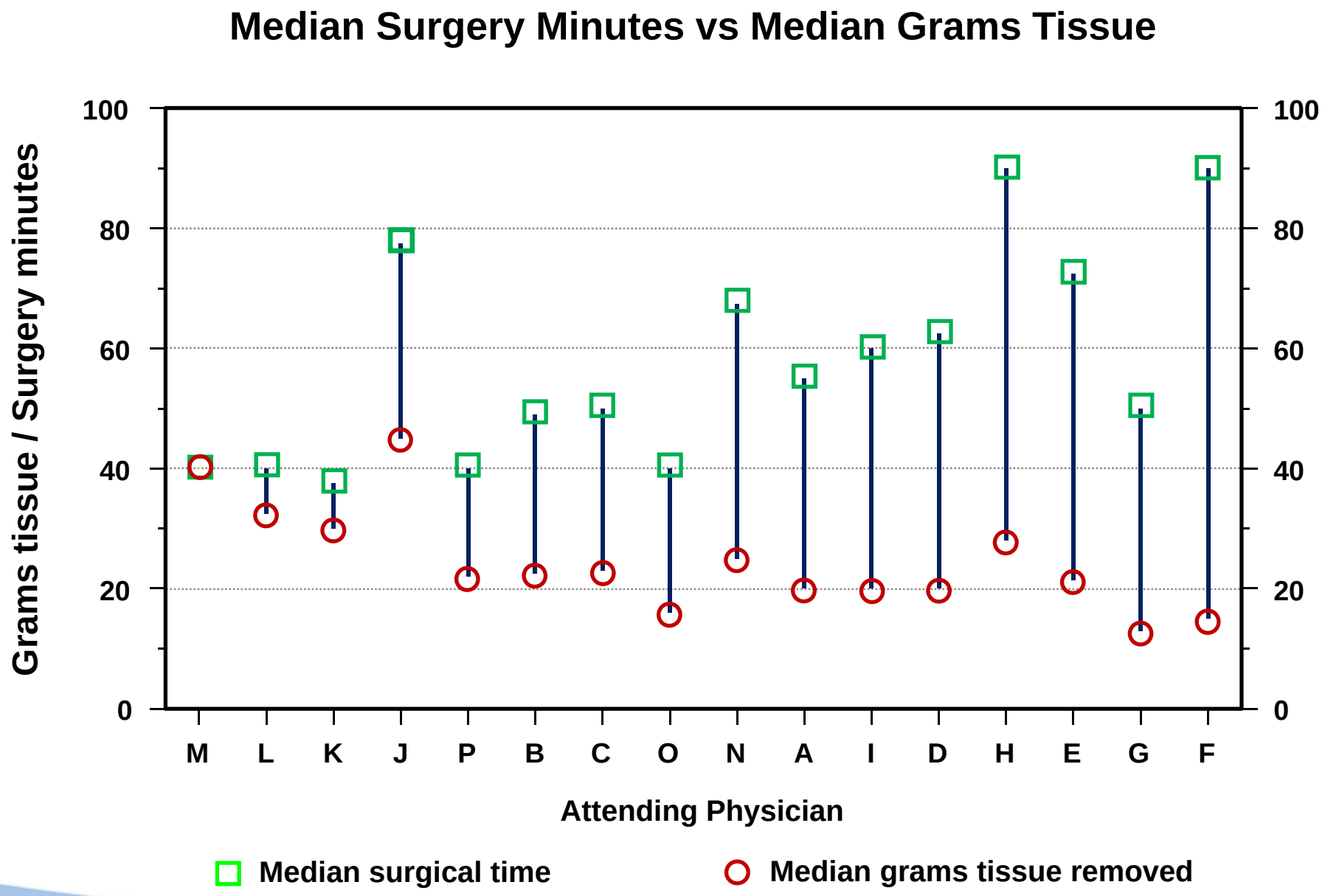
- ***identified and staged*** *(relative to changes in expected utilization)*

- severity of presenting primary condition
- all comorbidities on admission
- every complication
- measures of long term outcomes

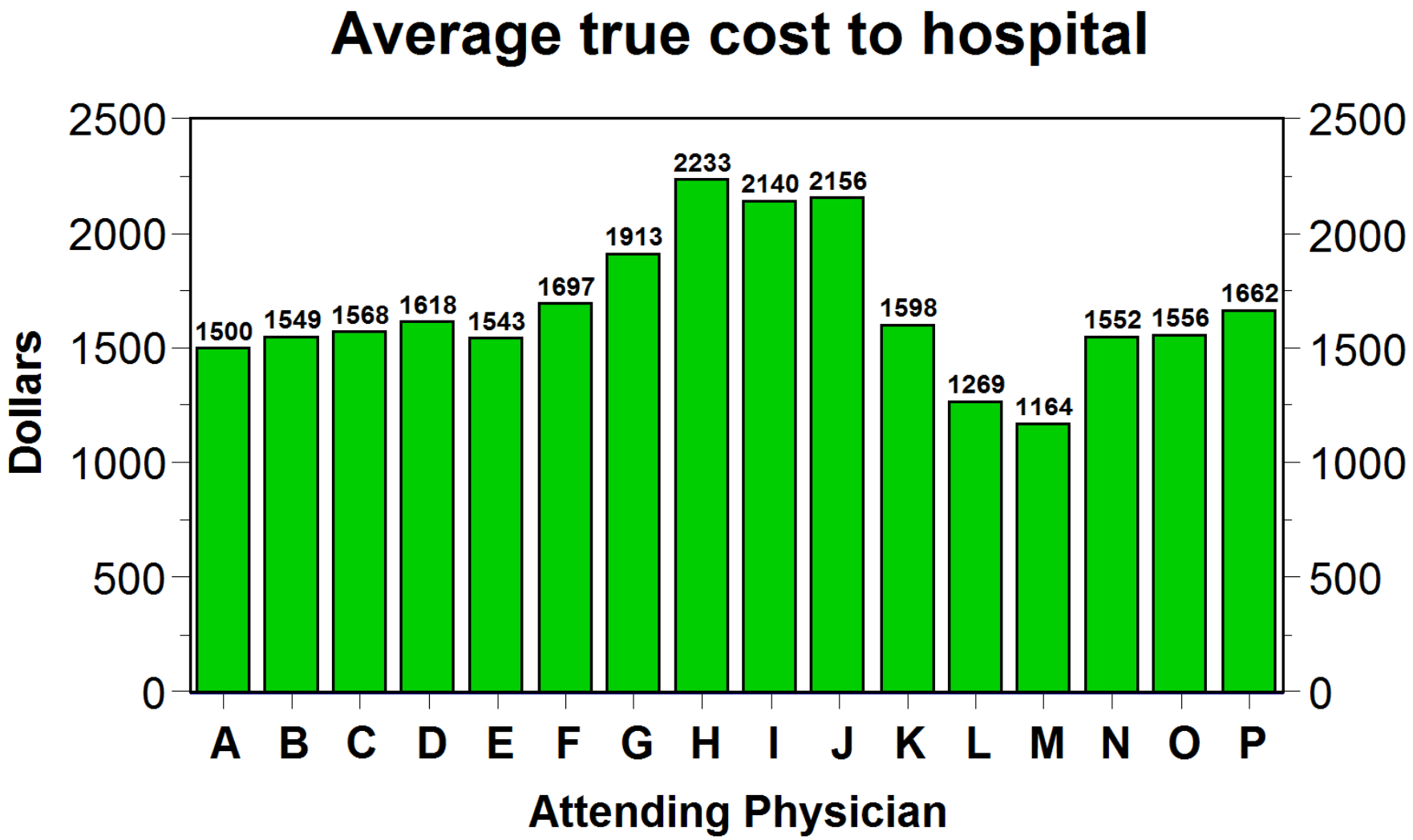
- ***compared physicians with meaningful # of cases***

(low volume physicians included in parallel analysis, as a group)

Intermountain TURP QUE Study



Intermountain TURP QUE Study



The opportunity *(care falls short of its theoretic potential)*

1. ***Massive variation in clinical practices*** *(beyond even the remote possibility that all patients receive good care)*
2. ***High rates of inappropriate care*** *(where the risk of harm inherent in the treatment outweighs any potential benefit)*
3. ***Unacceptable rates of preventable care-associated patient injury and death***
4. ***Striking inability to "do what we know works"***
5. ***Huge amounts of waste, leading to spiraling prices that limit access to care***

Under process management theory *higher quality = lower costs*

Within this framework,

***>50%** of all hospital resource expenditures are*

quality-associated waste:

- *recovering from preventable foul-ups*
- *building unusable products*
- *providing unnecessary treatments*
- *simple inefficiency*

Andersen, C. 1991

James BC *et al*., 2006

We know why variation occurs

(1) Continued reliance on the "craft of medicine"

(clinicians as stand-alone experts)

encounters

(2) Complexity / clinical uncertainty

- the fruits of 100 years of clinical discovery

"The complexity of modern medicine exceeds the capacity of the unaided expert mind."

Dr. David Eddy, Stanford University -- the father of evidence-based medicine)

Two methods to manage complexity

Subspecialize *(analytic method; reductionism; 'divide and conquer')*

An old joke: ***Know more and more about less and less until you know everything about nothing***

Mass customize *(a shared baseline: focus on that relatively small subset of factors that are unique for each individual patient [typically 5-15% of all factors], concentrating your most important resource -- the trained human mind -- where it can have the greatest impact)*

Dr. Alan Morris, LDS Hospital, 1991

- ***NIH-funded randomized controlled trial***
  assessing an Italian "artificial lung" vs. standard ventilator management for acute respiratory distress syndrome (ARDS)
- ***discovered large variations in ventilator settings***
  across and within expert pulmonologists
- ***created a protocol*** *for ventilator settings in the control arm of the trial*
- ***implemented the protocol using Lean principles***
  (Womack et al., 1990 - The Machine That Changed the World)
  - built into clinical workflows - automatic unless modified
  - clinicians encouraged to vary based on patient need
  - variances and patient outcomes fed back in a Lean Learning Loop

Problems with “best care” protocols

- ***Lack of evidence for best practice***
  - *Level 1, 2, or 3 evidence available only about 15-25% of the time*

- ***Expert consensus is unreliable***
  - *experts can't accurately estimate rates relying on subjective recall (produce guesses that range from 0 to 100%, with no discernable pattern of response)*
  - *what you get depends on whom you invite (specialty level, individual level)*

- ***Guidelines don't guide practice***
  - *systems that rely on human memory execute correctly ~50% of the time (McGlynn: 55% for adults, 46% for children)*

- ***No two patients are the same;*** *therefore, no guideline perfectly fits any patient (with very rare exception)*

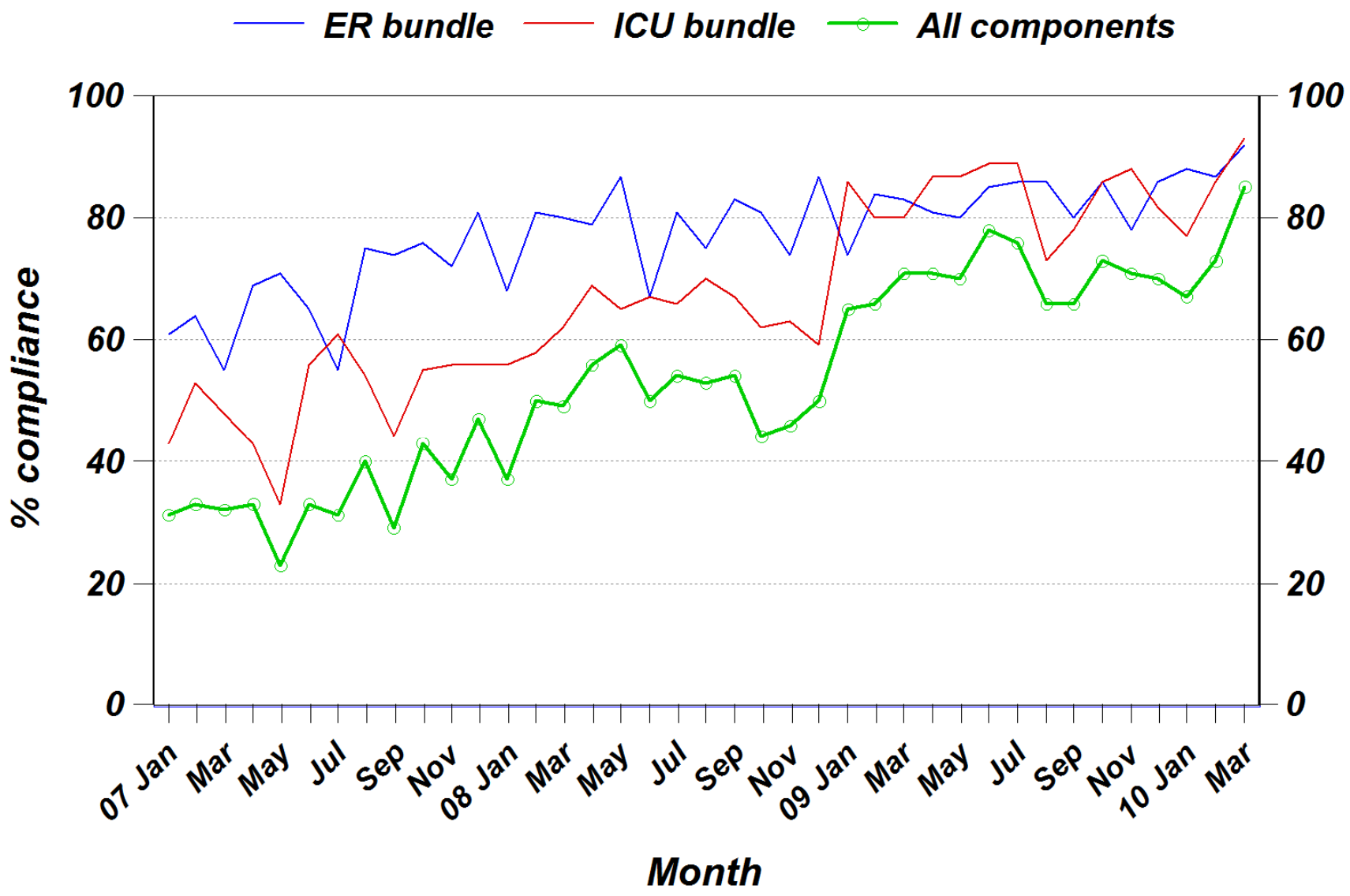
Shared Baseline "Lean" protocols *(bundles)*

1. ***Identify a high-priority clinical process*** *(key process analysis)*
2. ***Build an evidence-based best practice protocol*** *(always imperfect: poor evidence, unreliable consensus)*
3. ***Blend it into clinical workflow*** *(= clinical decision support; don't rely on human memory; make "best care" the lowest energy state, default choice that happens automatically unless someone must modify)*
4. ***Embed data systems to track (1) protocol variations*** *and* ***(2) short and long term patient results*** *(intermediate and final clinical, cost, and satisfaction outcomes)*
5. ***Demand that clinicians vary based on patient need***
6. ***Feed those data back*** *(variations, outcomes)* ***in a Lean Learning Loop*** *- constantly update and improve the protocol*

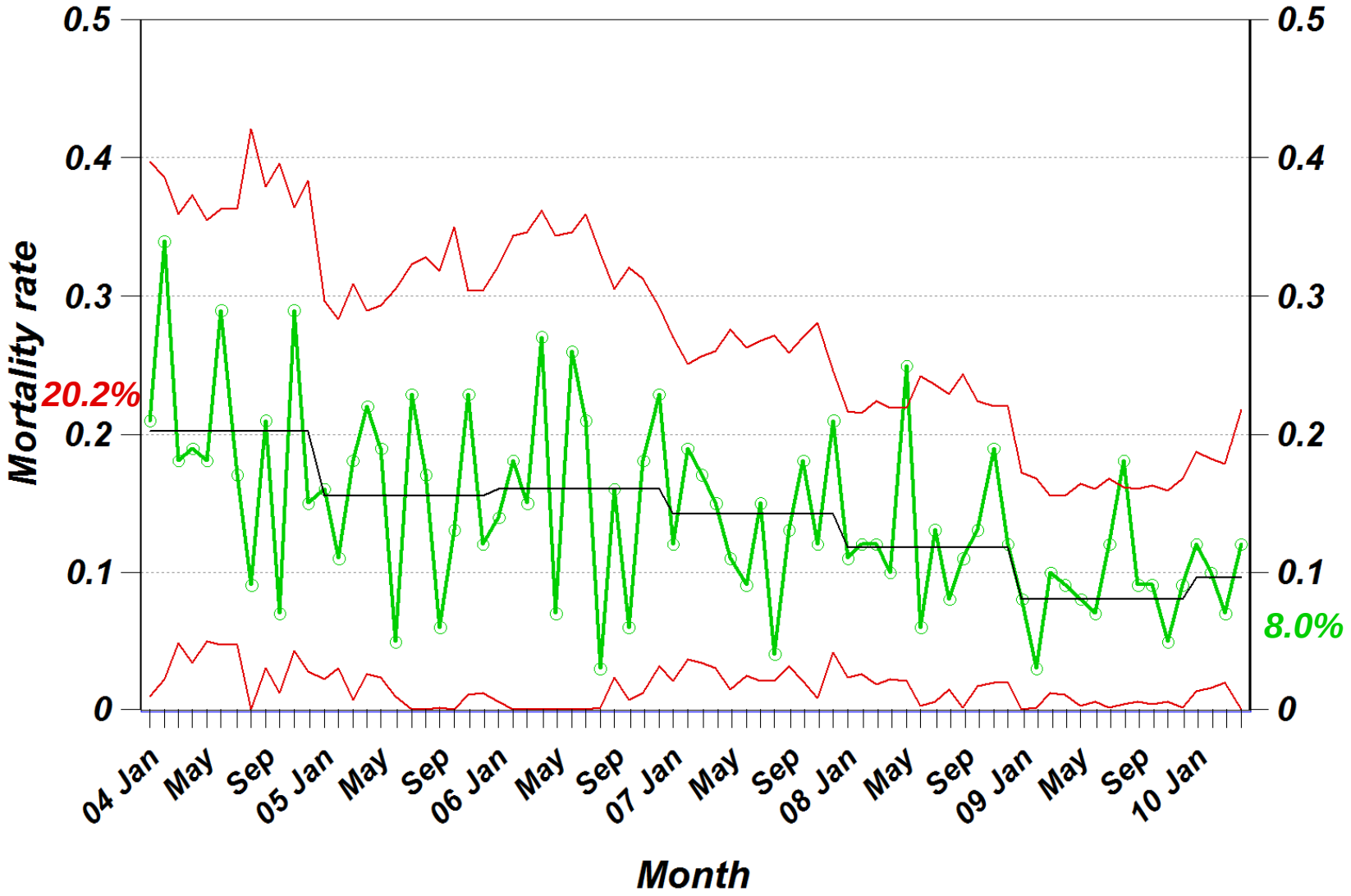
Results:

- ***Survival*** *(for ECMO entry criteria patients)* ***improved from 9.5%*** *to* ***44%***
- ***Costs fell by ~25%*** *(from ~$160,000 to ~$120,000 per case)*
- ***Physician time fell by ~50%*** *(a major increase in physician productivity)*

Sepsis bundle compliance



Sepsis mortality - ER-ICU transfers



125+ fewer inpatient deaths per year

Lesson 1

We count our successes in lives

Sepsis costs - all ER-ICU transfers

Adjusted for age and severity at admission (CCIS); inflation adjusted to 2012 dollars

Year	# cases	Compliance rate	Mortality rate	Total cost reduction ($)	Annual NOI impact ($)
2004	384	4.4%	21.2%	18,062	9,967
2005	469	23.2%	15.0%	115,628	63,752
2006	395	24.8%	14.5%	103,774	57,362
2007	680	35.0%	13.5%	252,652	139,374
2008	756	50.0%	13.2%	401,436	221,760
2009	927	70.2%	8.8%	692,416	381,746
2010	965	73.4%	8.7%	752,292	414,876
2011	1097	81.2%	9.1%	948,500	523,658
2012	1146	85.1%	8.2%	1,036,648	573,038
2013	1405	87.3%		1,302,379	719,258

No significant inflation-adjusted financial change for patients presenting w septic shock.

For patients presenting with severe sepsis, savings of

11% ($2557 per case) in total cost,

12% ($1288 per case) in variable cost.

Lesson 2

Most often

(but not always)

better care is cheaper care

Process management is the key

- ***better clinical results produces lower costs***
- ***more than half of all cost savings will take the form of unused capacity*** *(fixed costs: empty hospital beds, empty clinic patient appointments, reduced procedure, imaging, and testing rates)*
- ***balanced by increasing demand:***
  - *demographic shifts (Baby Boom);*
  - *population growth;*
  - *behavioral epidemics (e.g., obesity);*
  - *technological advances*

A new health care delivery world …

- ***All the right care*** *(no underuse)****, but***
- ***only the right care*** *(no overuse)****;***
- ***Delivered free from injury*** *(no misuse)****;***
- ***At the lowest necessary cost*** *(efficient)****;***
- ***Coordinated along the full continuum of care*** *(timely; "move upstream")****;***
- ***Under each patient's full knowledge and control*** *(patient-centered; "nothing about me without me")****;***
- ***With grace, elegance, care, and concern.***

Better has no limit ...

an old Yiddish proverb