

1C -Determining What to Measure



CAUTI Case Outlines the Approach

1. Baselines, Gaps, Aims, Outcomes
Where are we now, and what are we trying to accomplish?
2. Building a Theory of Improvement (Driver Diagram)
What should we measure and why?
3. Mapping the measures (Measure Tree)
How will we calculate the measures?
4. Defining the Measures
Attributes of Useful Improvement Measures
5. Collecting Data and Testing Changes



Case Background: Reducing CAUTIs

Catheter-Associated Urinary Tract Infections

A medium sized acute care hospital has noticed that there has been an increasing occurrence of catheter associated urinary tract infections (CAUTIs) over the past year. Not only has the occurrence of CAUTIs been gradually going up but also the severity of the infections has been increasing.

Indwelling urinary catheters are commonly used medical devices within acute and non-acute settings. But their use does increase the risk of CAUTIs by:

- Enabling organisms to gain entry to the bladder via external surface or opened connections
- Reducing the body's defense of flushing out organisms during urination
- Facilitating biofilm formation

Reducing CAUTIs would contribute to:

- Improving the patient experience
- Reducing the cost of antibiotic prescribing
- Reducing inpatient length of stay
- Reducing readmissions
- Improving patient outcomes



What Are We Trying to Accomplish?



Improvement is a Systems Issue

What's A 'System'?

- An interdependent group of items, people, or processes acting with a common purpose.¹
- Systems include physical, social, and functional aspects.²
- Stakeholder (patients, customers, staff) values define the outcomes of the system.
- The system is dynamic: The 'thing in motion'.
- The system 'is what it is.'
- Improving system outcomes requires changing the dynamics of the system.

¹ Langley, G. J., K. M. Nolan, et al. (2009). *The improvement guide: a practical approach to enhancing organizational performance*. San Francisco: Jossey-Bass.

² Maccoby, M., C. L. Norman, et al. (2013). *Transforming Health Care Leadership: A systems guide to improve patient care, decrease costs, and improve population health*. San Francisco: Jossey-Bass.



Ain't It the Truth?

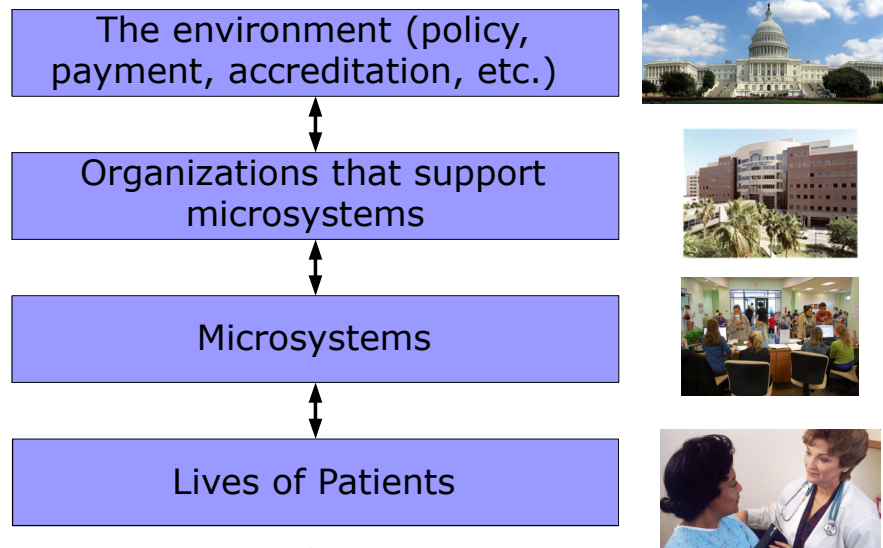
"If you always do what you always did, you'll always get what you always got."

- Jackie "Moms" Mabley

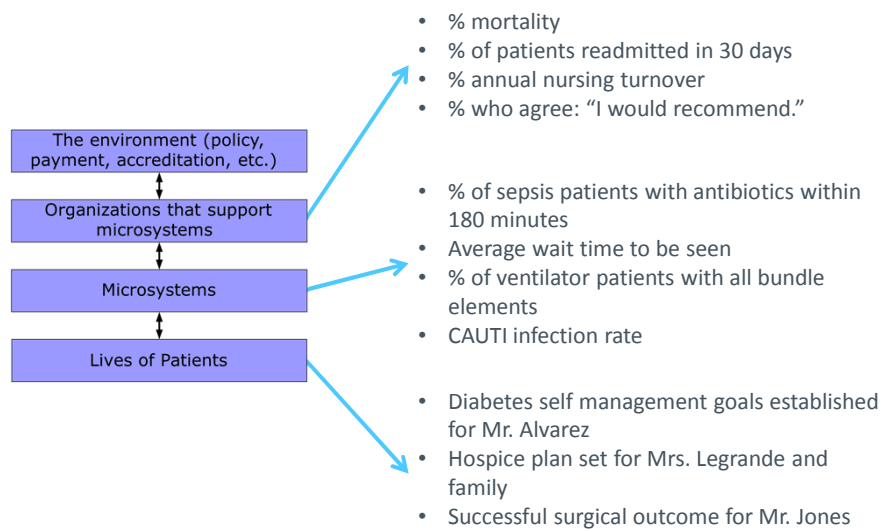


Hierarchical Systems of Care

P7



Measuring 'Quality of Care'



Exercise Part 1 :The Voice of the Patient

How would your patients describe the purpose of your system of care?

What do your patients value in your system of care?

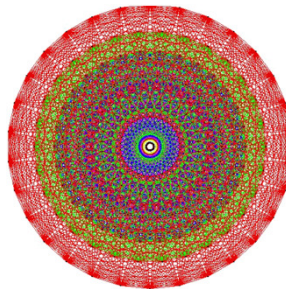
"I want your pharmacy to provide me with the right medications at the right time, in the correct dosages, to help me heal."

"While I am in your care, I want you to provide me with compassionate, respectful care. I want to be free from pain and have a dignified death."



Exercise Part 2: What's Your System?

1. Describe the system you want to improve; what is it's 'level' (microsystem, organization, ...)?
2. Identify the patient population; list other key stakeholders and what they value in the system.
3. Tell how the system needs to change – what improvements are required?





P11

Balancing Stakeholder Values

- Outcomes, Process, & Balancing measures
- Balancing frameworks; Triple Aim
- Unintended consequences



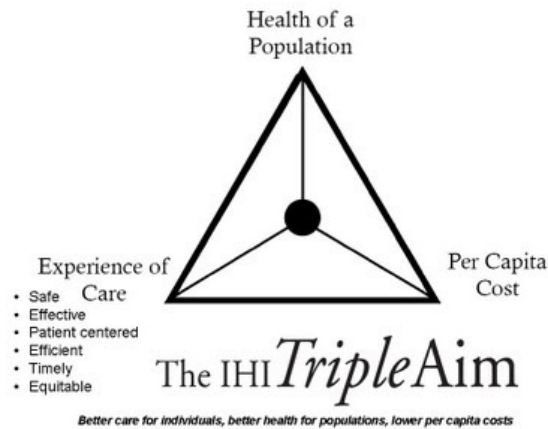
Pilobolus Dance Theater

Key Definitions

- **Outcome Measures**
 - ✓ Point to qualities that stakeholders value.
 - ✓ Is this system meeting the needs of those who care about its operation?
 - ✓ Is our improvement work making a meaningful impact?
- **Process Measures**
 - ✓ Voice of the process.
 - ✓ Are the parts/steps in the system performing as planned? Are processes reliable? Efficient? Patient-Centered?
 - ✓ Are we on track to improve?
- **Balancing Measures**
 - ✓ Are we producing perverse unintended consequences in our efforts to improve? What other factors may be affecting results?



Balancing Outcomes: IHI Triple Aim⁵¹³



IHI Triple Aim: Examples of Measures



Dimension	Measure
Population Health	1. Health/Functional Status: single-question (e.g. from CDC HRQOL-4) or multi-domain (e.g. SF-12, EuroQol)
	2. Risk Status: composite health risk appraisal (HRA) score
	3. Disease Burden: Incidence (yearly rate of onset, avg. age of onset) and/or prevalence of major chronic conditions; summary of predictive model scores
	4. Mortality: life expectancy; years of potential life lost; standardized mortality rates. <i>Note: Healthy Life Expectancy (HLE) combines life expectancy and health status into a single measure, reflecting remaining years of life in good health. See http://reves.site.ined.fr/en/DFLE/definition/</i>
Patient Experience	1. Standard questions from patient surveys, for example: -Global questions from US CAHPS or How's Your Health surveys -Experience questions from NHS World Class Commissioning or CareQuality Commission -Likelihood to recommend
	2. Set of measures based on key dimensions (e.g., US IOM Quality Chasm aims: Safe, Effective, Timely, Efficient, Equitable and Patient-centered)
Per Capita Cost	1. Total cost per member of the population per month
	2. Hospital and ED utilization rate

IOM Report: Dimensions of Care Quality

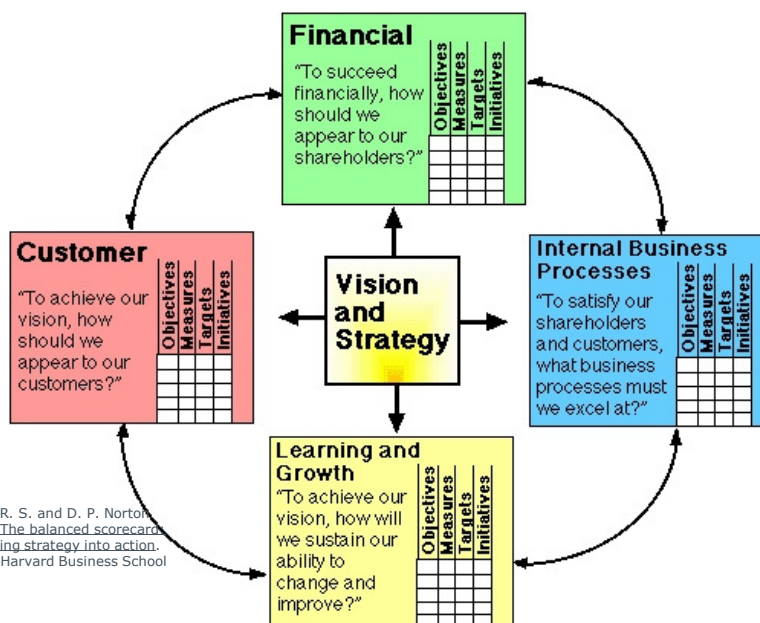
- **Safe** - as safe in healthcare as in our homes
- **Effective** - matching care to science; avoiding overuse of ineffective care and underuse of effective care
- **Patient-centered** - honoring the individual and respecting choice
- **Timely** - less waiting for both patients and those who give care
- **Efficient** - reducing waste
- **Equitable** - closing racial and ethnic disparities in access and health status



Institute Of Medicine (2001). *Crossing the quality chasm : a new health system for the 21st century*. Washington, D.C., National Academy Press.



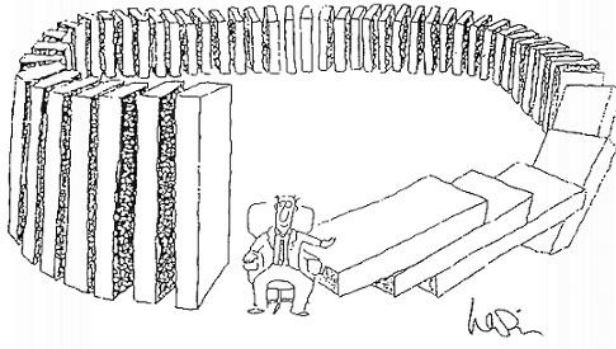
Balanced Scorecard



Kaplan, R. S. and D. P. Norton (1996). *The balanced scorecard: Translating strategy into action*. Boston, Harvard Business School Press.



Suboptimization



If each part of a system, considered separately, is made to operate as efficiently as possible, then the system as a whole will not operate as effectively as possible.

Ackoff, R. L. (1971). "Towards a System of Systems Concepts." Management science 17(11): 661-671.



21-Mar-15 • 17

For Balancing Measures, Listen to the “Yeah, but’s...”

“Yeah, but...”

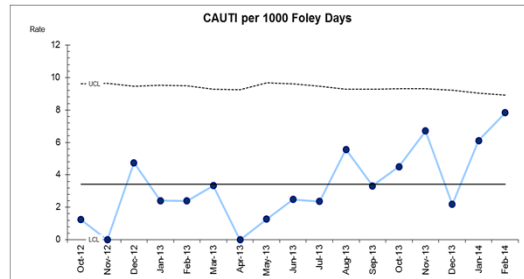
- “... what’s it gonna cost?”
- “... will it really make a difference for my patients?”
- “... we’re already working too hard!”
- “... we don’t need to improve. We already do it every time!”
- “... our adjusted mortality ratio already compares favorably with national benchmarks.”

Beware of Unintended Consequences!



CAUTI Baseline – Key Outcome

P20



What other measures might be needed
for a balanced set of outcome
measures?



CAUTI Aim

P21

***Reduce CAUTI infections in all units below
1.6 (10th percentile) within 12 months and
to zero within 24 months.***

Aim statement essentials:

- *How much?*
- *By when?*
- *For whom?*



Exercise

P22

1. CAUTI Case Discussion

- ✓ Why are catheter-associated infections measured as 'Number of CAUTIs per 1000 Foley catheter days?'
- ✓ What is the evidence that the rate of infections has actually been increasing?

2. Own Project: Reflect and discuss in pairs

- ✓ What are you trying to accomplish (your aim?)
- ✓ What is the outcome measure that best captures the aim of your project?
- ✓ What is the baseline level of performance on the outcome? How much does the outcome need to improve?

3. Share with the group



Improvement

So you have a system. That's nice.
So how can you improve it?





Building a Theory of Improvement

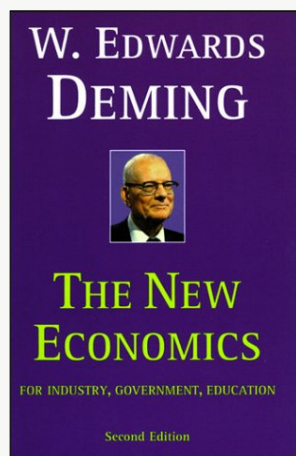
- Driver diagrams
- Prioritization
- Linking drivers and measures

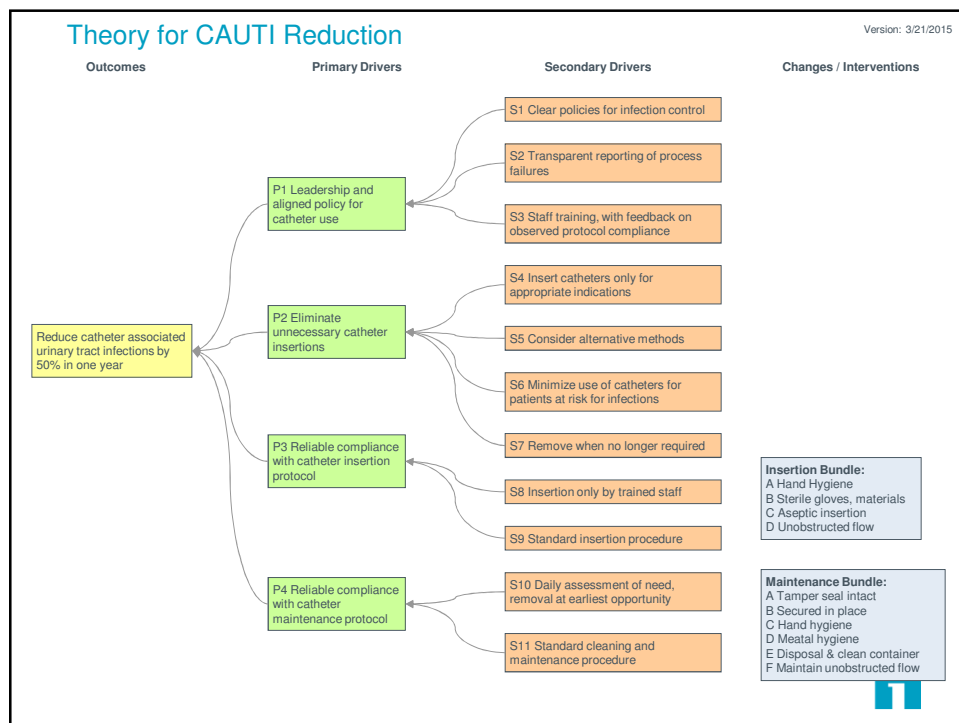
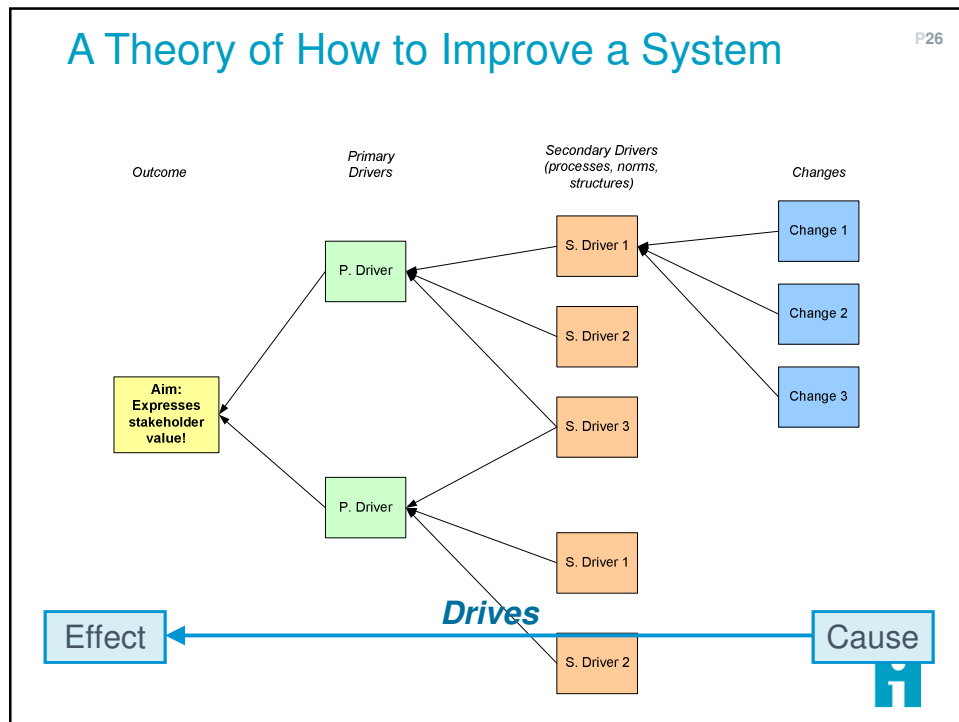


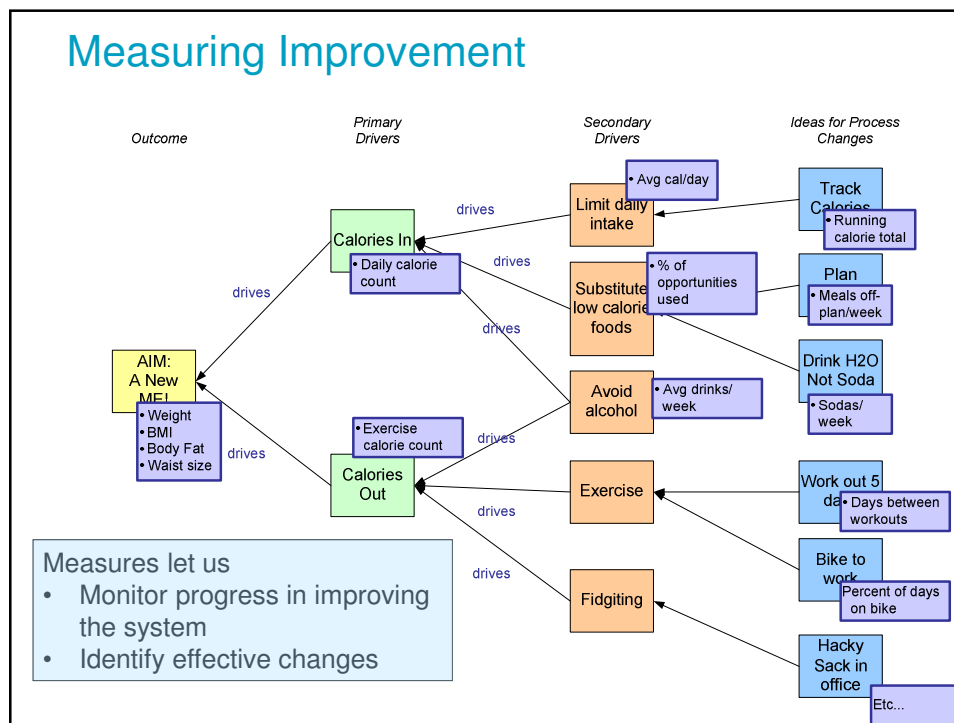
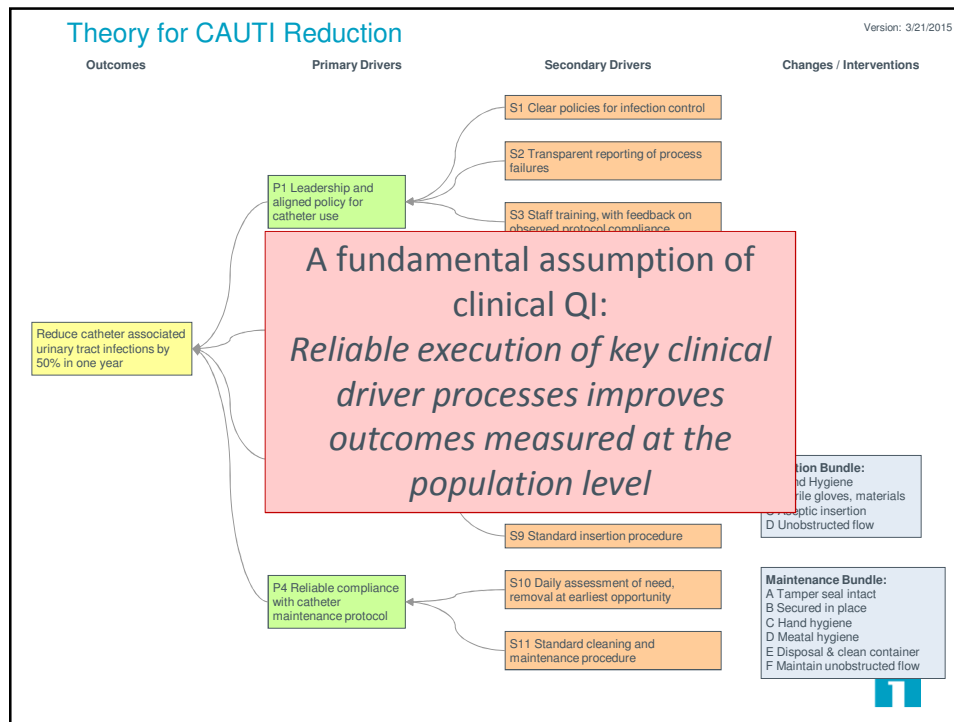
Theory Drives Improvement

P25

“Without theory, there are no questions; without questions, there is no learning.”







Exercise

P31

- Case Discussion

- ✓ Do you have questions or issues about the CAUTI driver diagram?
- ✓ Discuss and resolve. If you get 'stuck', raise the question to the group.

- Own Project Discussion

- ✓ Review (or create) your own project driver diagram
- ✓ Discuss in pairs (or to table)
- ✓ Be prepared to share with the group



Identifying Process Measures

- Prioritizing drivers
- Measure Tree Diagram



Prioritizing Drivers

P33

Limitations of resources, attention or will usually mean we cannot work on (or measure!) everything.

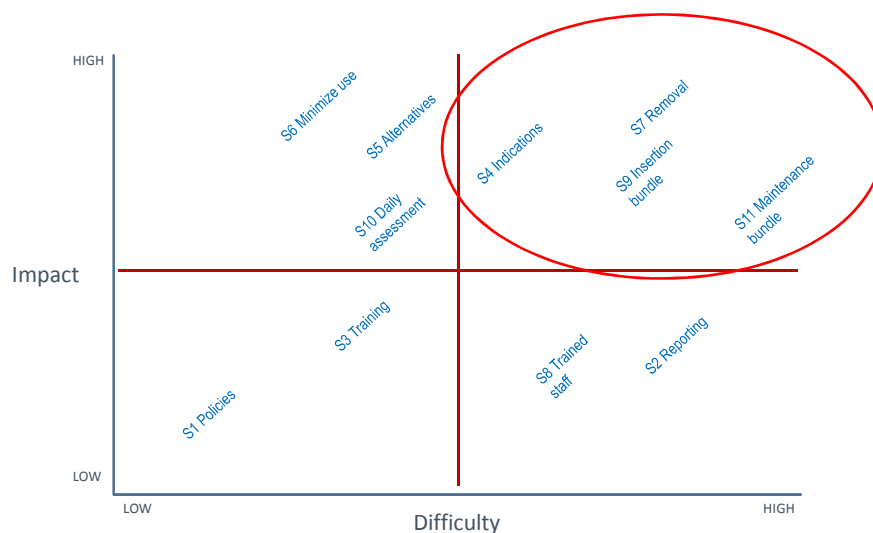
Priorities:

- Where is the 'Bang for Buck?' Which drivers do we believe will deliver the biggest impact?
- Which ones will be easiest to work on? Most difficult? Are some 'beyond our control'?
- What is our current level of performance on these drivers?



CAUTI Driver Rankings

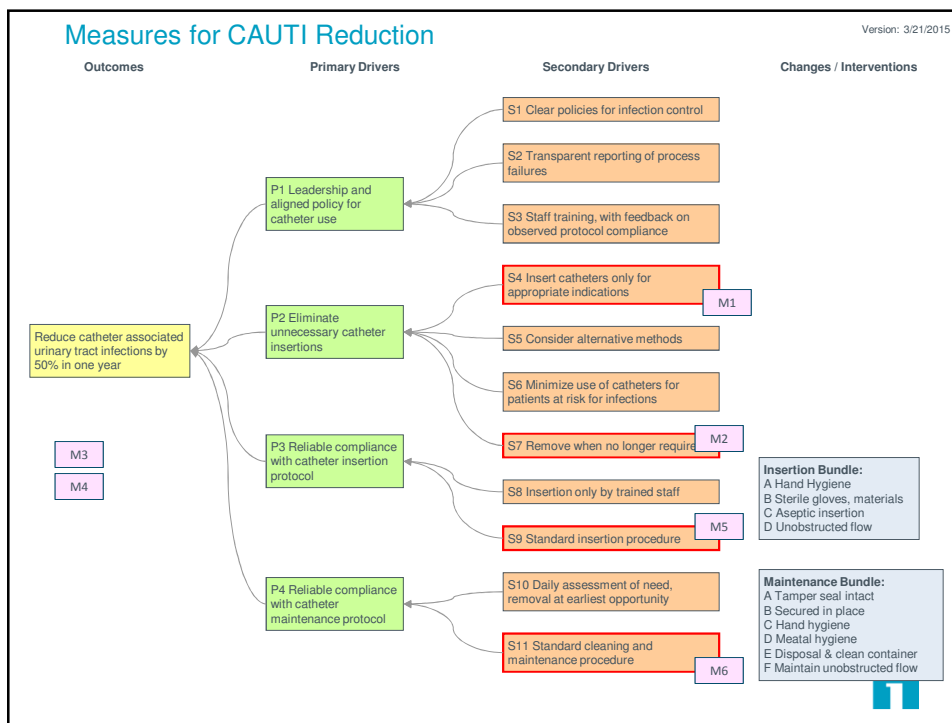
P34



CAUTI Priority Measure Concepts

P35

- **S4: Insert catheters only for appropriate indications.**
The most effective way to eliminate the possibility of a CAUTI is to eliminate an unneeded catheter.
- **S7: Remove when no longer required.**
Since the risk of infection is roughly proportional to the time the catheter is in place, removing catheters as soon as possible will reduce the risk.
- **S9: Standard insertion procedure.**
If trained staff follow strict protocols for aseptic insertion of catheters, the risk of bacterial infection will be minimized.
- **S11: Standard cleaning and maintenance procedure.**
Similarly, careful adherence to the components of the maintenance bundle will reduce risk.



CAUTI Measures

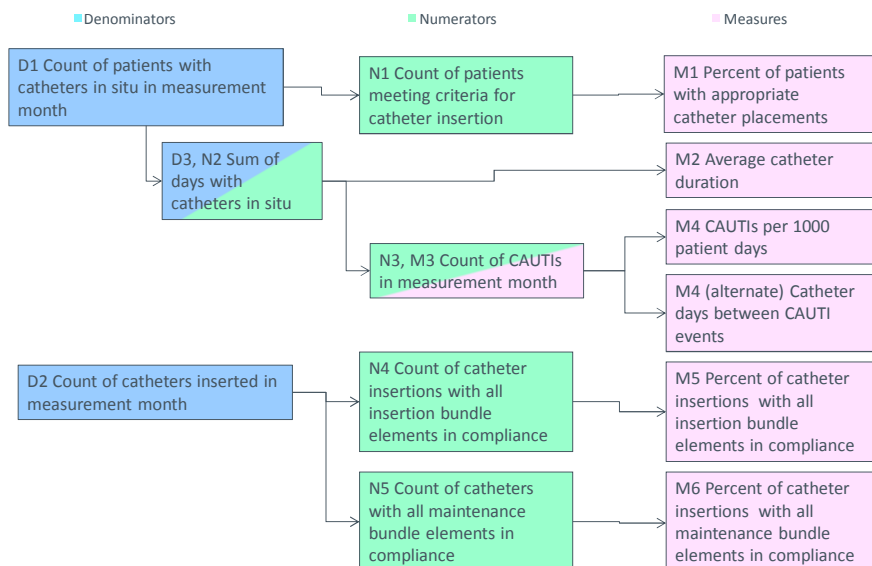
P37

<i>Measure</i>	<i>Type</i>	<i>Driver</i>	<i>Desired Direction of Change</i>
M1 Percent of patients with appropriate catheter placements	Process	S4 Insert catheters only for appropriate indications	Increase
M2 Average catheter duration	Process	S7 Remove when no longer required	Decrease
M4 CAUTIs per 1000 patient days	Outcome	N/A	Decrease
M3 Count of CAUTIs	Outcome	N/A	Decrease
M4 (alternate) Catheter days between CAUTI events	Outcome	N/A	Increase
M5 Percent of catheter insertions with all insertion bundle elements in compliance	Process	S9 Standard insertion procedure	Increase
M6 Percent of catheter placements with all maintenance bundle elements in compliance	Process	S11 Standard cleaning and maintenance procedure	Increase



CAUTI Reduction Measures

P38



Exercise

P39

- Case Discussion

- ✓ Do you have questions or issues about the CAUTI measure tree?
- ✓ Discuss and resolve. If you get 'stuck', raise the question to the group.

- Own Project Discussion

- ✓ Based on your own driver diagram, identify the outcome and key process measures you will need (1 outcome, no more than 4 process)
- ✓ Be sure your process measures are linked to drivers.
- ✓ Sketch a measure tree for your key measures.

