



DOM Summer Education Program: Quality Improvement

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UNIVERSITY OF ILLINOIS
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Topics for Today's Session

1. Context-Setting
2. An Improvement Framework:
The Model for Improvement
3. Improvement Tools & Techniques
4. FY19 UIH Improvement Priorities
5. Other . . .



What is “High Quality?”



The Institute of Medicine's Answer: Measurable Performance in Six Dimensions

- Safe
- Timely
- Effective
- Efficient
- Equitable
- Patient-Centered

Quality & Safety Defined



Quality: Deliver all and only the care that we know will help
➤ **Goal is 100%**

Safety: Do no harm
➤ **Goal is 0%**

There is ample opportunity on both of these curves

Which Activity is Riskier?



Mount Everest climber
overall mortality rate: 1.3%



Findings from *To Err Is Human*

(Institute of Medicine, 1999)

- Adverse medical events occur in between 2.9% and 3.7% of admissions
- These events lead to death in between 6.6% and 13.6% of occurrences
- Over half of these events could have been prevented
- Extrapolated to the 33.6 million US hospital admissions (1997), between 44,000 and 98,000 Americans die each year of medical errors



Findings from Other Studies

- 1 out of every 17 US inpatients (2 million total) acquire infections in the hospital, contributing to 98,000 deaths each year (CDC, 2002)
- 88 out of every 1000 patients suffer injury or illness as a consequence of treatment, and 6 die (Spear, 2005)



DHHS Office of the Inspector General Study (2008)

- Examined random national sample of Medicare patients hospitalized during October 2008
- MDs reviewed records and determined whether:
 - An adverse event occurred
 - The event was an National Quality Forum “Serious Reportable Event”
 - The event was a Medicare “Hospital Acquired Condition”
 - The event was preventable
 - What the level of harm was to the patient

What Did The OIG Find?

For Medicare patients hospitalized in October 2008...

- 13.5% (1 out of 7) had an adverse event
- 0.6% had an National Quality Forum “Serious Reportable Event” (sometimes called “Never Events”)
- 1.0% had a Medicare “Healthcare Acquired Condition”
- **1.5% had an adverse event that contributed to death**
- **~15,000 deaths in October 2008**



“44% of the harm was preventable”

Topics: Patient Care & Outcomes


Hospital medical errors now the third leading cause of death in the U.S.

New study highlights the fact that estimates in 'To Err is Human' report were low

September 20, 2013 | By [Ilene MacDonald](#)

SHARE

Medical errors leading to patient death are much higher than previously thought, and may be as high as 400,000 deaths a year, according to a new study in the *Journal of Patient Safety*.

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 8+1

The latest numbers are dramatically higher than those in the [Institute of Medicine's 1999 report, *To Err is Human: Building A Safer Health System*](#), which estimated that up to 98,000 people a year die because of hospital mistakes. The data for that report is based on medical record reviews from 1984 and doesn't take into account studies published since 2008.

The new study reveals that each year preventable adverse events (PAEs) lead to the death of 210,000-400,000 patients who seek care at a hospital. Those figures would make medical errors the third leading cause of death behind heart disease and cancer, [according to](#) Centers for Disease Control and Prevention statistics.

What's in a Mobility Strategy? Answers Revealed

Spok's InfoBrief provides a snapshot of the mobility strategies trend, with results from our June 2014 survey of more than 600 healthcare organizations. [Download Now.](#)

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POPULAR STORIES

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ANALYSIS

Medical error—the third leading cause of death in the US

Medical error is not included on death certificates or in rankings of cause of death. **Martin Makary** and **Michael Daniel** assess its contribution to mortality and call for better reporting

Martin A Makary *professor*, Michael Daniel *research fellow*

Department of Surgery, Johns Hopkins University School of Medicine, Baltimore, MD 21287, USA

The annual list of the most common causes of death in the United States, compiled by the Centers for Disease Control and Prevention (CDC), informs public awareness and national research priorities each year. The list is created using death certificates filled out by physicians, funeral directors, medical examiners, and coroners. However, a major limitation of the

How big is the problem?

The most commonly cited estimate of annual deaths from medical error in the US—a 1999 Institute of Medicine (IOM) report⁷—is limited and outdated. The report describes an

Relative Risk ...

- Patient Safety expert Lucian Leape compares the risk of entering a hospital to that of parachuting off a bridge or building
- Unfortunately (or fortunately?), there's not good data on the risk of parachuting off a bridge or building
- There is, however, data about the risks of BASE* jumping ...

*Building

Antenna

Span (e.g. of a bridge)

Earth (e.g. a cliff)



Lucian Leape, MD

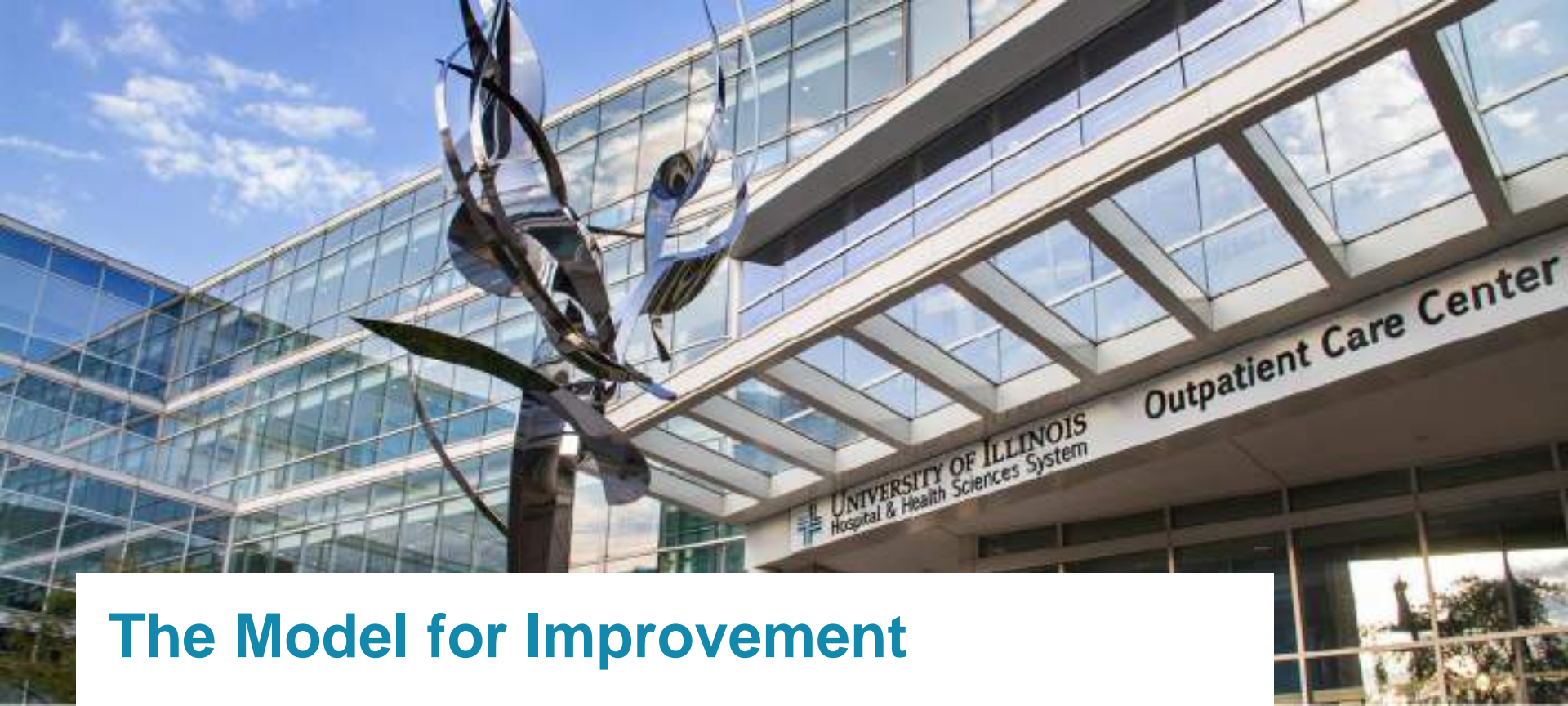
Relative Risk ...



- BASE jumping has a fatality rate of 0.04% and an injury rate of 0.39%¹
- Which means base jumping is **38 times safer** than entering a hospital as a Medicare patient (who faces an adverse event-related mortality rate of 1.5% and injury rate of 13.5%)²

¹ Bandolier Knowledge Library 2016

² DHHS Office of the Inspector General 2008



The Model for Improvement

***All improvement
requires change,
but not all change
leads to improvement.***

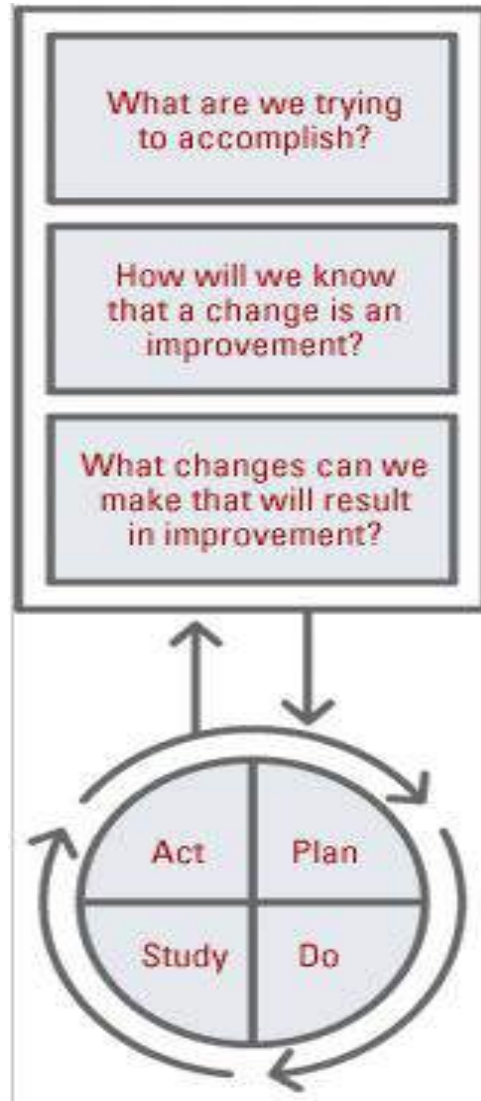


The Model For Improvement (MFI)

- **Tool to accelerate improvement**
 - *Developed by Associates in Process Improvement*
- **Complementary to other improvement methodologies**
 - *Lean (Toyota Production System)*
 - *Plan-Do-Study-Act*
 - *Six Sigma*
- **It has been used successfully in many health care organizations to**
 - *Improve processes and outcomes*
 - *Address gaps between knowledge and practice*
 - *Minimize waste of time, resources, and good will*



The Model For Improvement Asks and Answers Three Vital Questions



Set Aims

Establish Measures

Outcome measures

Process measures

“Balancing” measures

Select Changes

Conduct Tests of Change

1. What Are We Trying to Accomplish? – Setting Aims

- **Your aim should be time-specific and measurable**
 - *How good?*
 - *By when?*
- **Make sure the aim/problem is manageable in size/scope and that you can do something about it**
 - *Determine the project scope (e.g. the patient population or operational units it addresses)*
 - *Be aware of “scope creep” and “aim drift”*
 - *Stay focused*



Example Aim Statements – Which are “Good” Ones?

1. Improve patient satisfaction
2. Reduce the average length of stay for medical ICU patients by 50% within 9 months
3. Reduce the incidence of Sepsis-related deaths by 10 to 20%
4. Reduce the number of clicks required for admitting a patient to UIH
5. Reduce “Left without being seen” for ED patients by June
6. Improve our Culture of Safety scores by 20 to 30% by September 2018 as compared to March 2017
7. Within 6 months, ensure every patient from the ED is transferred to an inpatient bed within 1 hour of the decision to admit

2. How Will We Know That a Change is an Improvement? – Establishing Measures

Three Types of Measures in Improvement Efforts

- **Outcome Measures**
 - How is the system performing? What is the **result**?
- **Process Measures**
 - Are the parts of the system performing **reliably** and **as planned**?
- **Balancing Measures**
 - Did the changes we made to improve one part of the system have an **unintended consequence** on another part of the system?



Example Measures:

Reducing Ventilator-Acquired Pneumonia (VAP)

- **Outcome Measures**
 - VAPs per 1000 ventilator days
 - VAP mortality rate
- **Process Measures**
 - Percent documented adherence to the VAP bundle
 - Average duration of intubation
- **Balancing Measure**
 - Re-intubation rate
 - ICU mortality rate

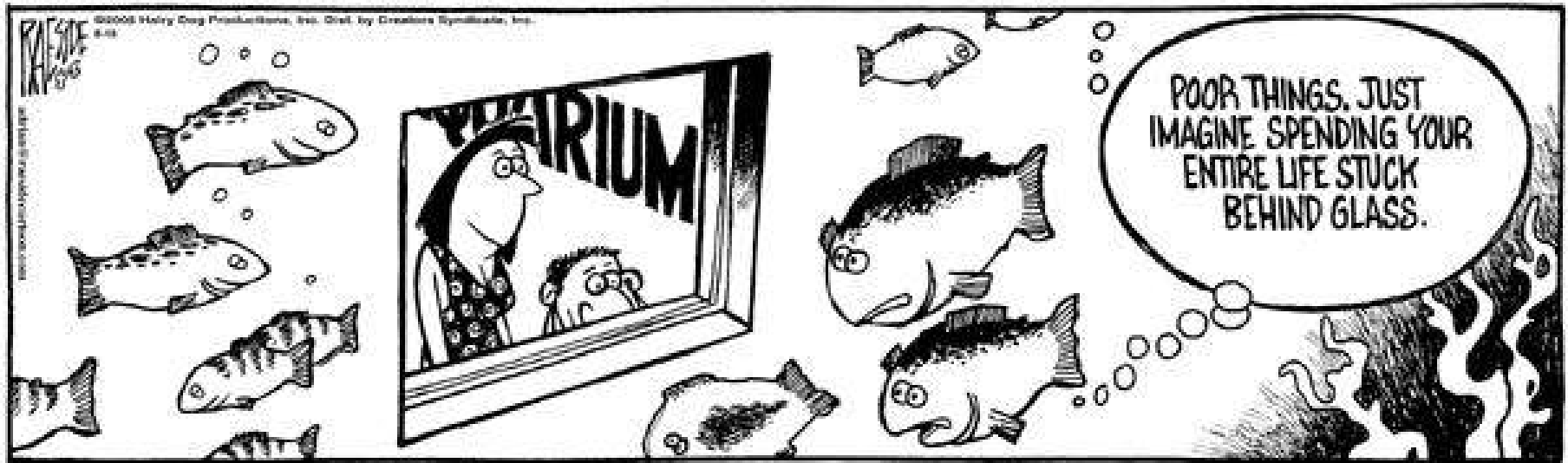
3. What Changes Can We Make that Will Result in Improvement? -- Selecting Changes

- **Generate ideas for tests of change**
 - Literature review
 - Benchmarking
 - Brainstorming
- **Ensure you actively involve staff who regularly encounter this issue or patient population**
- **Prioritize**
 - Start with the ideas that address the most common challenges or that may have the best chance of working
 - The Plan-Do-Study-Act (PDSA) cycle should be used to conduct multiple “**small**” and “**rapid**” tests of change in the “real world”, so lots of ideas are needed



How you see things all depends on your point of view...

The Other Coast



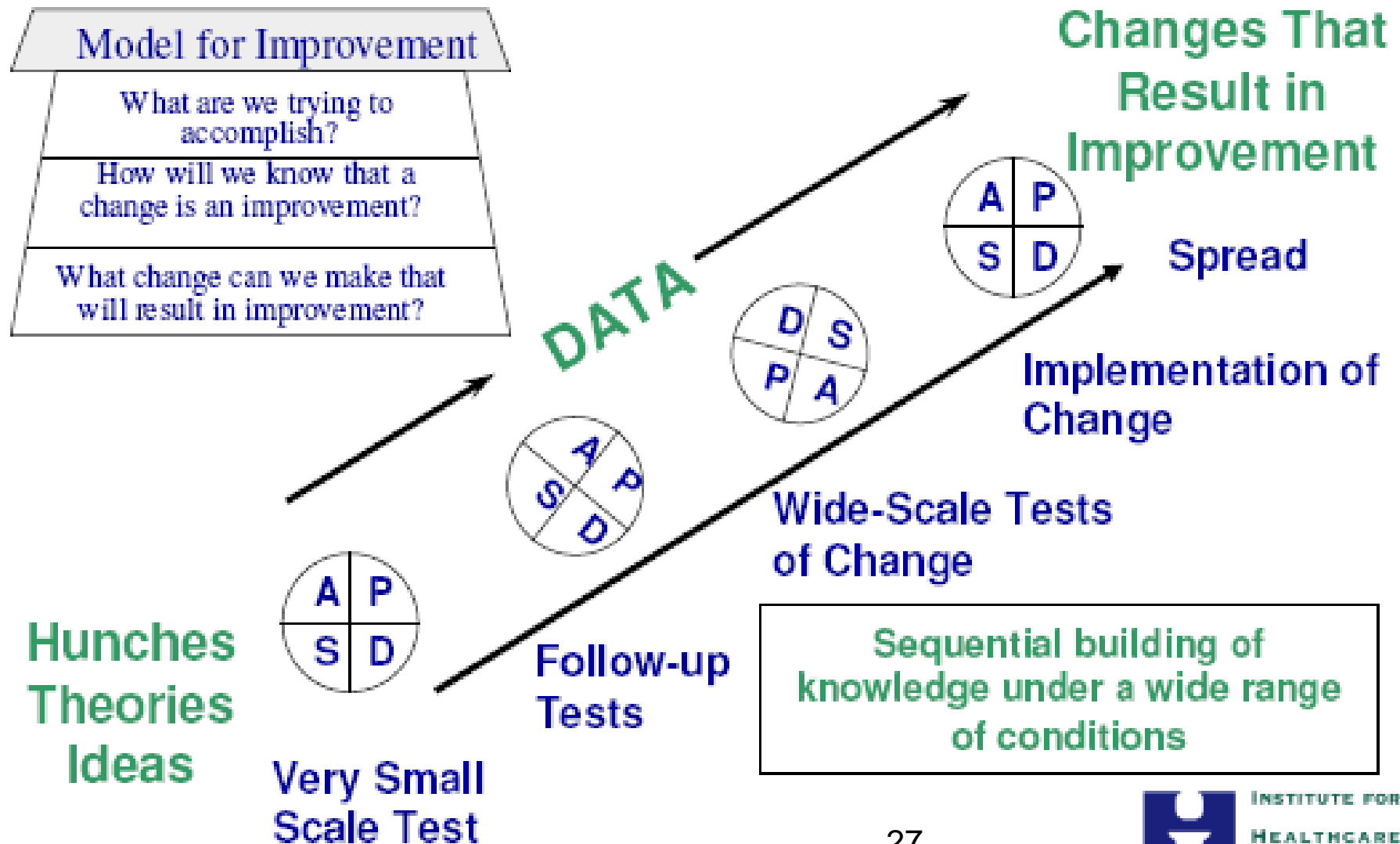
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The 4th Step: Test Changes Using the PDSA Cycle

- Testing changes is an iterative process: the completion of each cycle leads to the start of the next
- The words “small” and “rapid” should be taken literally – it could be “1 patient” today, “all of 1 doctor’s patients” next week, and “all of 1 unit’s patients” the following
- The goal of tests is to learn – e.g. what worked, what didn’t; what should be kept, changed, or abandoned – and to use that knowledge to plan the next test
- People are far more willing to test a change when they know that changes can and will be modified as needed. Linking small tests of change helps overcome an organization’s natural resistance to change and helps with clinician buy-in.



Repeated Use of the PDSA Cycle

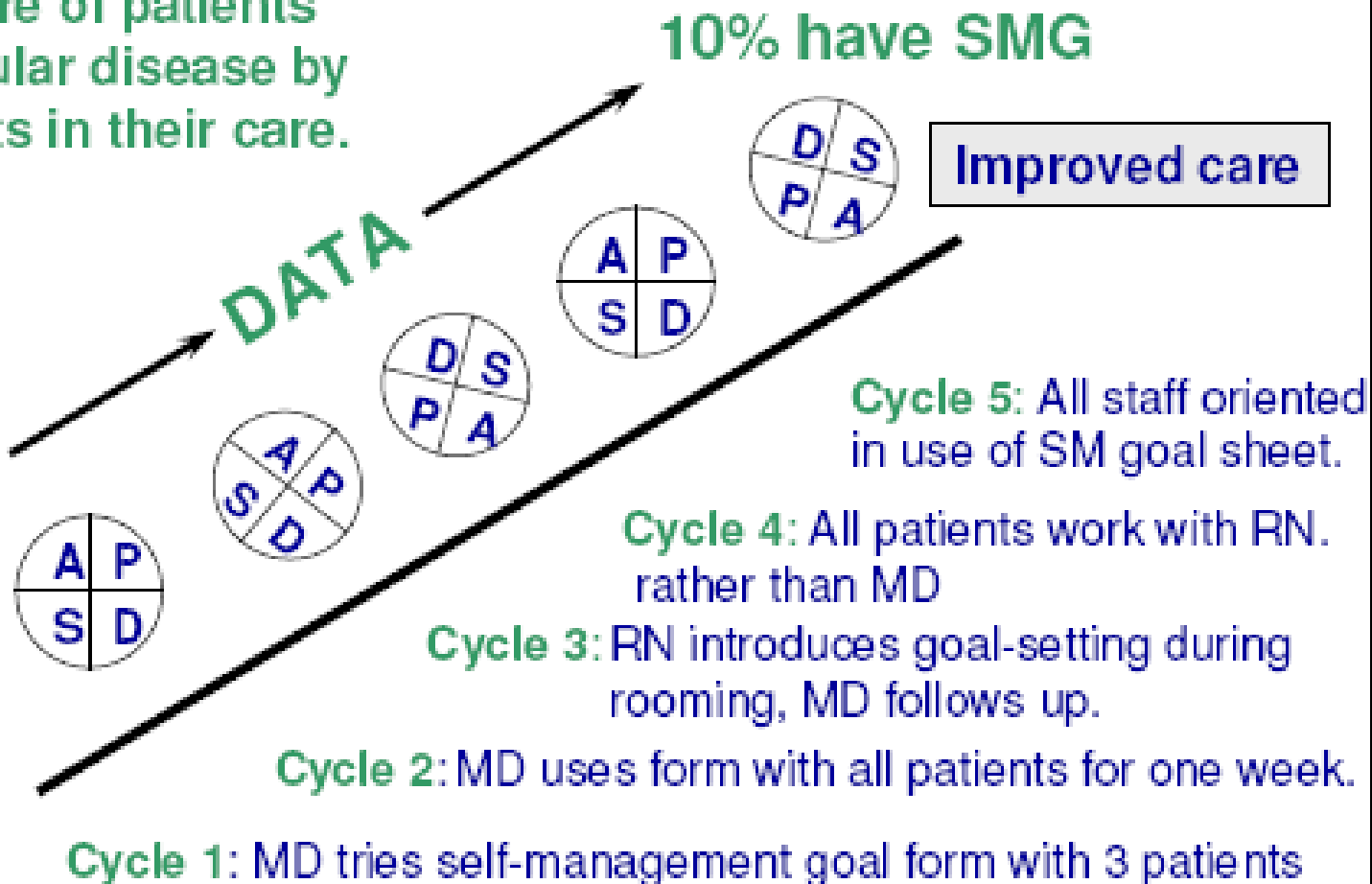


Multiple Cycles of PDSAs (an example)

Aim: Improve care of patients with cardiovascular disease by involving patients in their care.

0% have SMG

Having patients set self-management goals will improve care.



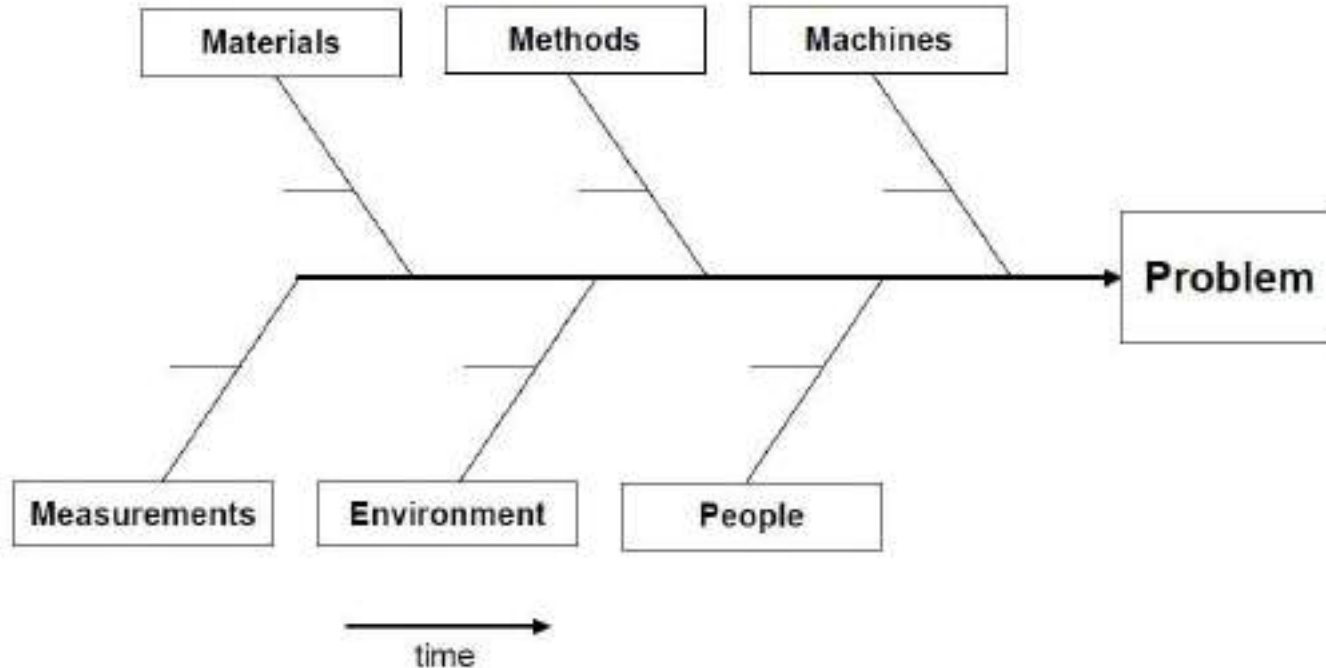
Resources and References

- ❑ *The Improvement Guide*, Langley et al, Jossey-Bass Publishers, Inc., 1996
- ❑ *The Data Guide: Learning from Data to Improve Healthcare*, L. Provost and S. Murray, Associates in Process Improvement, 2010
- ❑ *Understanding Variation: The Key to Managing Chaos*, Donald J. Wheeler, SPC Press, 2000
- ❑ Institute for Healthcare Improvement www.IHI.org (free registration)
- ❑ Associates in Process Improvement (www.apweb.org)
- ❑ The Joint Commission (www.jointcommission.org)
- ❑ National Quality Forum (www.qualityforum.org)
- ❑ Agency for Healthcare Research and Quality (www.ahrq.gov)



Improvement Tools and Techniques

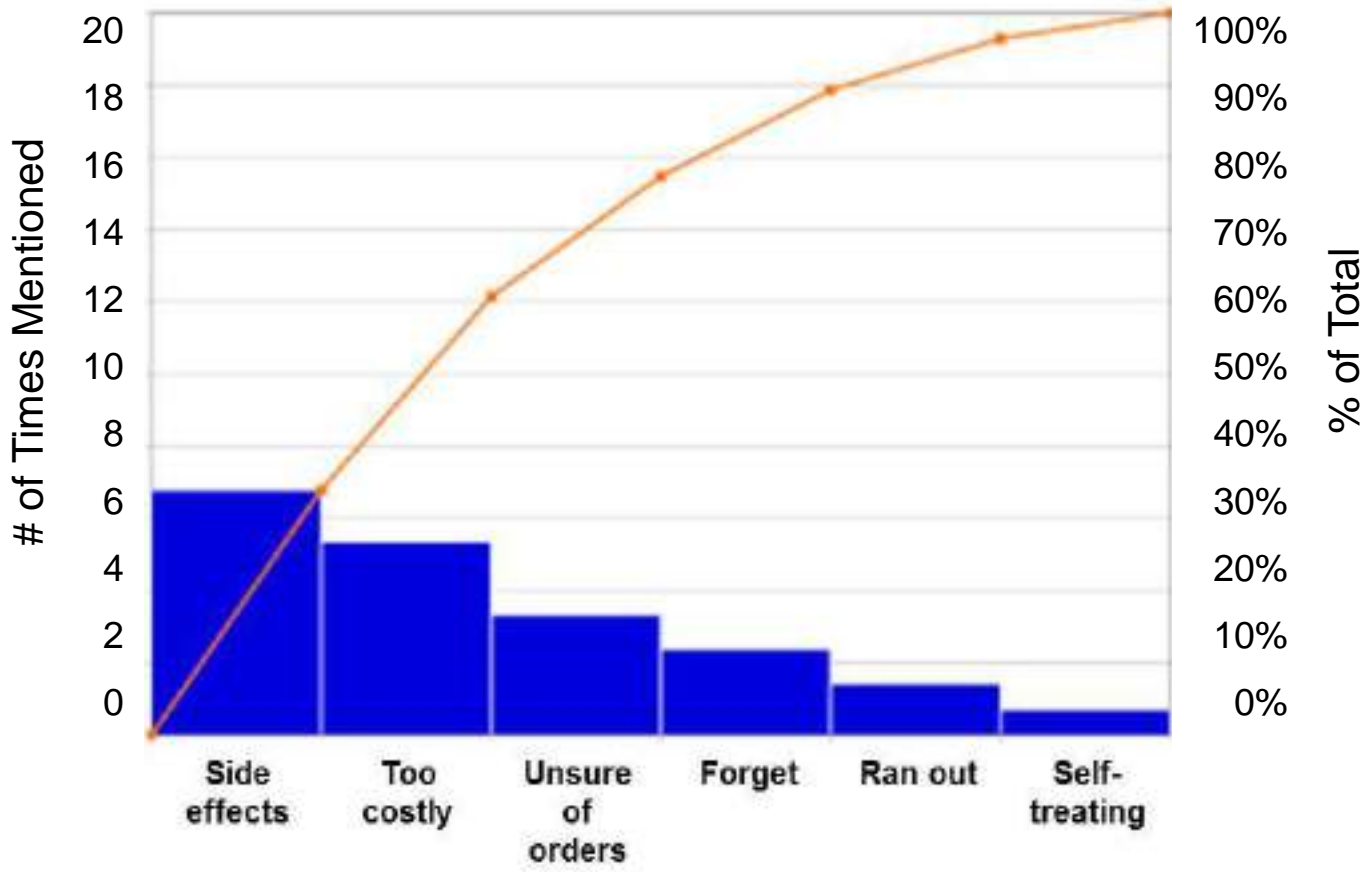
Improvement Tools and Techniques: Ishikawa / Cause-and-Effect / Fishbone Diagrams



- Helps visually capture a problem's possible causes by separate categories

Improvement Tools and Techniques: Pareto Charts

Patient Non-Adherence with Medications



- Display factors in decreasing order of occurrence in columns, along with cumulative importance in a line
- Show the 80/20 rule for the most common reasons for defects, customer complaints, etc.

Improvement Tools and Techniques:

Check Sheets

Telephone Interruptions

Reason	Day					
	Mon	Tues	Wed	Thurs	Fri	Total
Wrong number	+++			+++	+++	20
Info request						10
Boss	+++		+++			19
Total	12	6	10	8	13	49

- A structured, prepared form for collecting and analyzing data.
- Useful when data can be observed and collected repeatedly by the same person or at the same location.

Improvement Tools and Techniques:

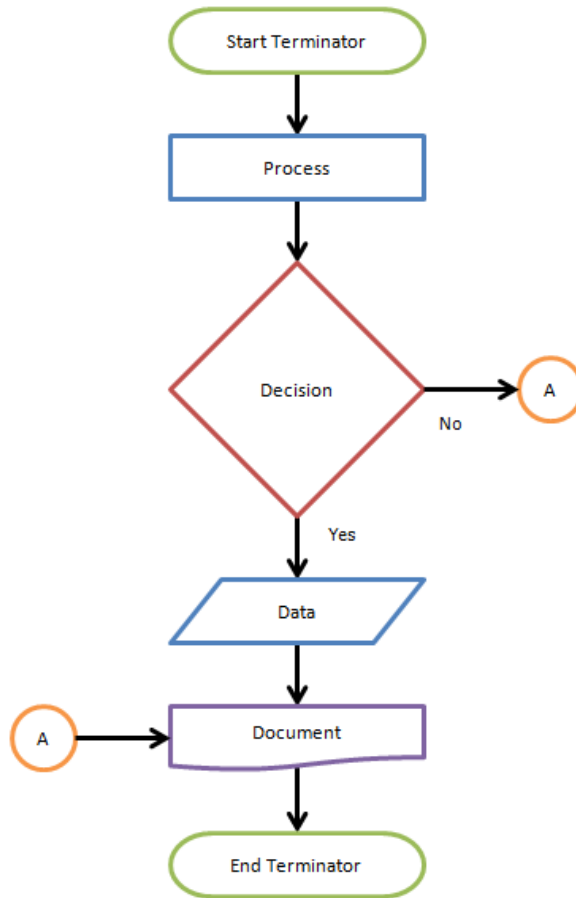
Run Charts



- Used to monitor the behavior of a variable over time for a process or system.
- Graphically display cycles, trends, shifts, or non-random patterns over time.
- Can help identify problems or monitor progress

Improvement Tools and Techniques

Process Flow Charts



- A picture of the separate steps of a process in sequential order
- Can be used to:
 - develop an understanding of how a process is done,
 - study a process for improvement
 - communicate to others how a process is done

Improvement Tools and Techniques:

Evaluating care using the Donebedian Model

Category	Focus	Examples
STRUCTURE	“What is the framework for care?”	<ul style="list-style-type: none">• Size and layout of ICU• Number and competency of staff• Information systems
PROCESS	“What is done to the patient?”	<ul style="list-style-type: none">• Clinical care, e.g. examination, diagnosis, treatment• Patient education• Interpersonal interactions
OUTCOMES	“What happens to the patient?”	Changes to <ul style="list-style-type: none">• Health status, behavior, and/or knowledge• Patient satisfaction• Health-related quality of life



Improvement Tools and Techniques:

Balanced Scorecard

	A	B	I	J	K	L	S	T	U	V	AE	AF	AG
1		Measure	Unit	FY Target	1st Quarter		2nd Quarter		3rd Quarter		4th Quarter		Year to
2					Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual
3		Customer Perspective											
4	C1	Satisfied customers	%	55%	55.0%	55.0%	53.0%	55.0%	57.0%	55.0%	NA	55%	NA
6	C2	Complaints	No.	<3600	360	<1000	1004	<1000	787	<800	NA	<800	2751
9		Business Process Perspective											
10	P1	Calls answered before abandoned	%	98%	99%	98%	98%	98%	99%	98%			99%
15	P2	Products delivered on time	%	100%	100%	100%	100%	100%	98%	100%			NA
12		Learning & Growth Perspective											
13	L1	Staff satisfaction score	%	70%	NA	NA	68%	70%	NA	NA			68%
14	L2	Scheduled training completed	%	100%	78%	100%	97%	100%	NA	100%		100%	
15		Financial Perspective											
16	F1	Operating revenue		##	##	##	##	##	##	##			##
	F2	Costs	%										

A strategic management tool that views the organization from different perspectives, usually the following:

- Financial
- Customer
- Internal/Business Processes
- Learning and Growth

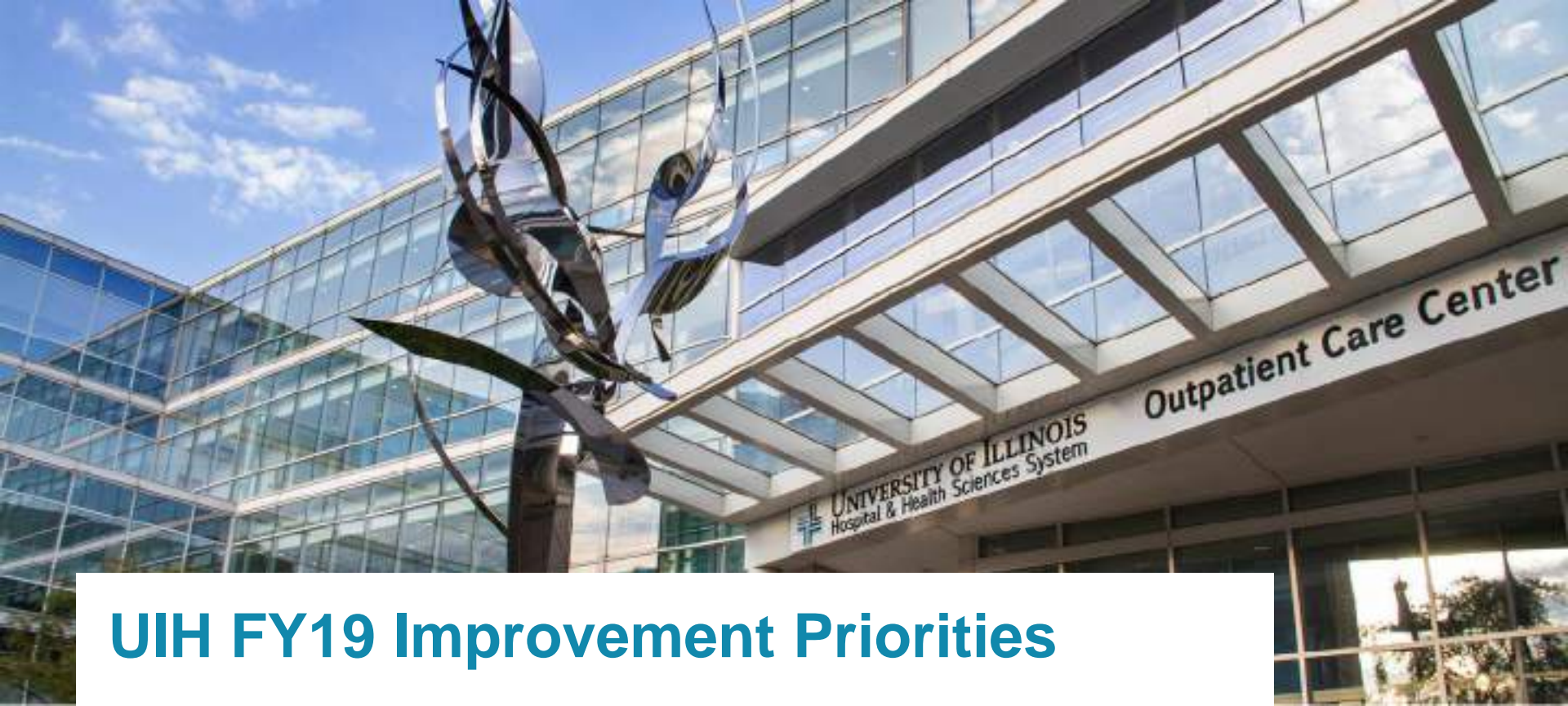
Improvement Tools and Techniques:

Lean



For Tools, Templates, and Additional Information:

- ❑ Quality Department webpages on the UIH Hospital Intranet (<http://intranet.uimcc.uic.edu/Quality/SitePages/PDSA%20Cycle.aspx>)
- ❑ American Society for Quality (asq.org)
- ❑ DMAIC: Define, Measure, Analyze, Improve, Control (www.DMAICtools.com)
- ❑ iSixSigma (www.isixsigma.com)



UIH FY19 Improvement Priorities

UIH: Sustaining Improvements in Most Areas

Priority	FY18 Improvement	Improvement since 1/2013
Central Line-Associated Blood Stream Infections (CLABSIs)	39% ▼	84% ▼
Catheter-Associated Urinary Tract Infections (CAUTIs)	56% ▼	78% ▼
Surgical Site Infections (SSIs)	10% ▼	22% ▼
Hand Hygiene Compliance	2% ▼	12% ▲
Post-Operative Deep Venous Thrombosis (DVT) and Pulmonary Embolism (PE)	10% ▲	38% ▼
Inpatient Falls resulting in Injury	19% ▲	21% ▼
Hospital-Acquired Pressure Injuries	26% ▼	47% ▼
Medication-Related Harm	10% ▼	24% ▼
Employee Harm Events	13% ▼	20% ▼
Sepsis Mortality Index (Observed / Expected)	1% ▼	13% ▼
Total Inpatient Mortality Index (Observed / Expected)	2% ▼	4% ▼

FY19 Quality & Patient Safety Goals

- **Reduce Sepsis Mortality by 20-33%**
- **Reduce Post-Operative Blood Clots by 20-50%**
- **Reduce Patient Harm Events by 10-20%**
 - CLABSIs
 - CAUTIs
 - Med Errors resulting in Harm
 - Post-Operative DVTs & PEs
 - Surgical Site Infections
 - Inpatient Falls resulting in Harm
 - Hospital-Acquired Pressure Ulcers
 - Sentinel Events
- **Reduce Employee Harm Events by 10-20%**
 - Sharps Injuries
 - Slips, Trips, and Falls
 - Patient & Equipment Handling Injuries
 - Injuries from Physical Altercations

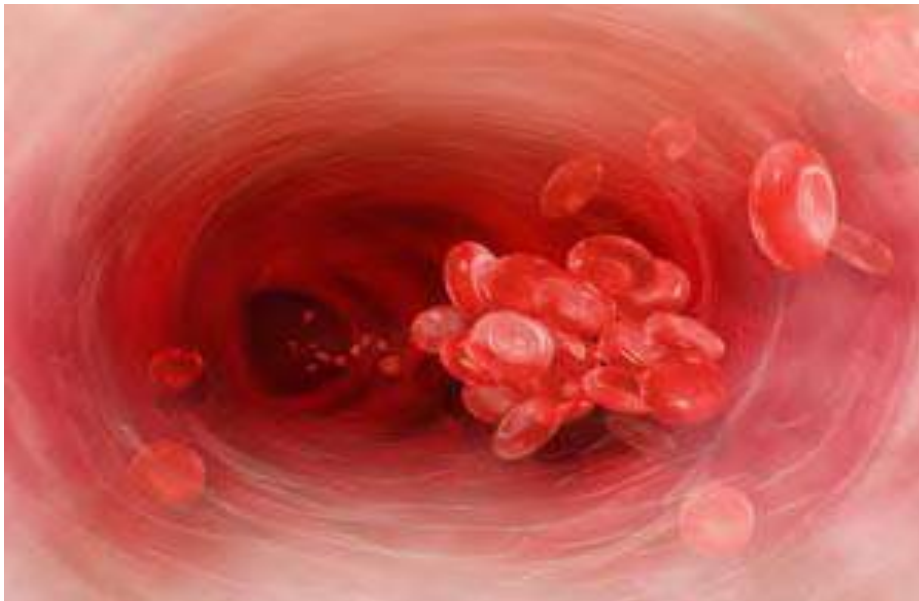
Sepsis: What's Your Role?

- **Prevent Infections:** wash your hands, practice good Infection Control
- **Think Sepsis:** know signs & symptoms to identify and treat patients early
- **Act Fast:** if sepsis is suspected, initiate 3-hour bundle including **ordering STAT antibiotics** to expedite care
- **Reassess** your **Patient** and **Management** regularly
- **Document** your **Clinical Reasoning** and your **Plan**
- **Educate Patients and their Families:** 80% of sepsis cases begin outside the hospital (most often after prior medical care)



VTE: “Every order, every patient, every time”

- **Blood Clot Prevention:** remember our “**3 M’s**” - most patients should be receiving **all 3** of these:
 - **Medication:** enoxaparin is recommended 1st line med
 - **Mobility:** as much movement as patient can tolerate: “early, often, and far”
 - **Machine:** intermittent pneumatic compression (IPCs)



Hand Hygiene: If you get feedback, say “Thank You”



Plate A - After a nurse examined, by touching bare-handed, a patient’s abdomen, she placed her hand on a culture plate that allows only MRSA to grow. The patient was culture-positive for MRSA colonized in his nose, but did not have any active infection.

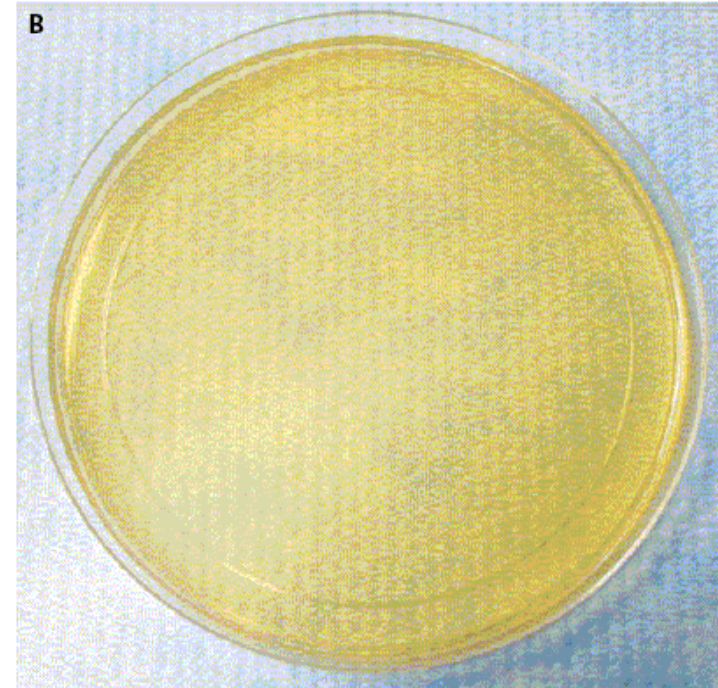


Plate B - After doing the same examination of the patient, but using the alcohol-based sanitizer correctly before touching the culture plate. No MRSA grew.

Zero Harm



Our long-term aim is elimination of all preventable patient- and employee-related harm

- Residents are especially at risk of **incurring or inflicting Sharps Injuries**



**Please contact me if you have questions,
suggestions, or would like to be a part of
our Quality improvement efforts :**

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Final Q&A, Discussion, and Wrap-Up

