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Chasing the Rabbit:
What Healthcare Organizations Can Learn from the World's Greatest Organizations

Steven J. Spear
Senior Lecturer, MIT
Senior Fellow, IHI

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World Class Competitors

Toyota	Quality, efficiency, product variety --> market share growth, profitability, and market cap.
Alcoa	Safest large employer in United States
US Navy, Nuclear Reactor Division	57,000 reactor years without a single causality or fatality
Southwest	34 years of operating profit.
Vanguard	Back office operational efficiencies --> management fees fraction of industry.

Cited from: Spear, Steven J. *Chasing the Rabbit: Why the World's Greatest Organizations Outrace Their Competition*, McGraw-Hill, Forthcoming 2008, citing other sources.

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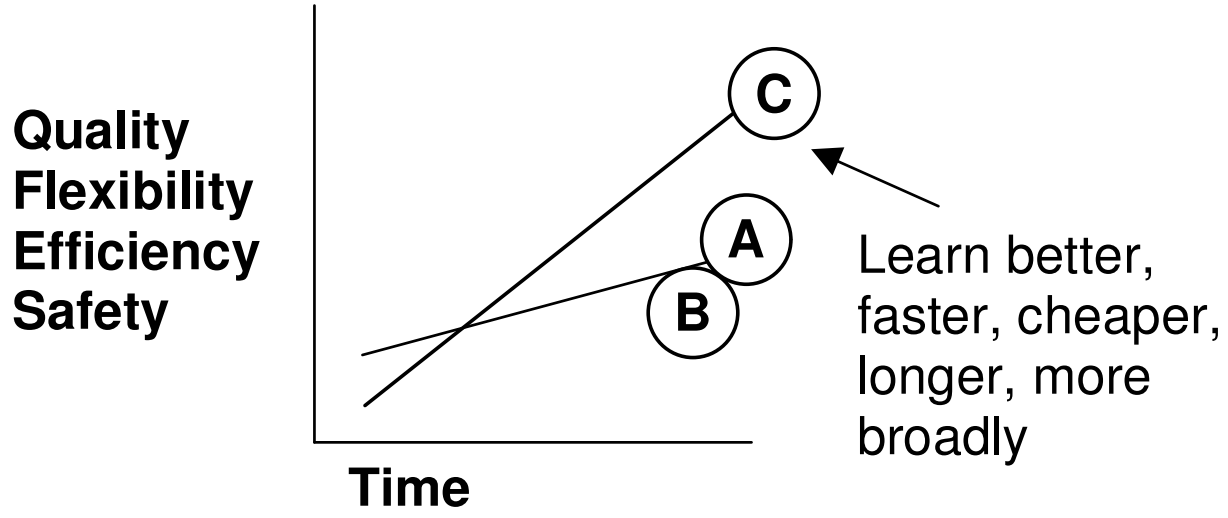
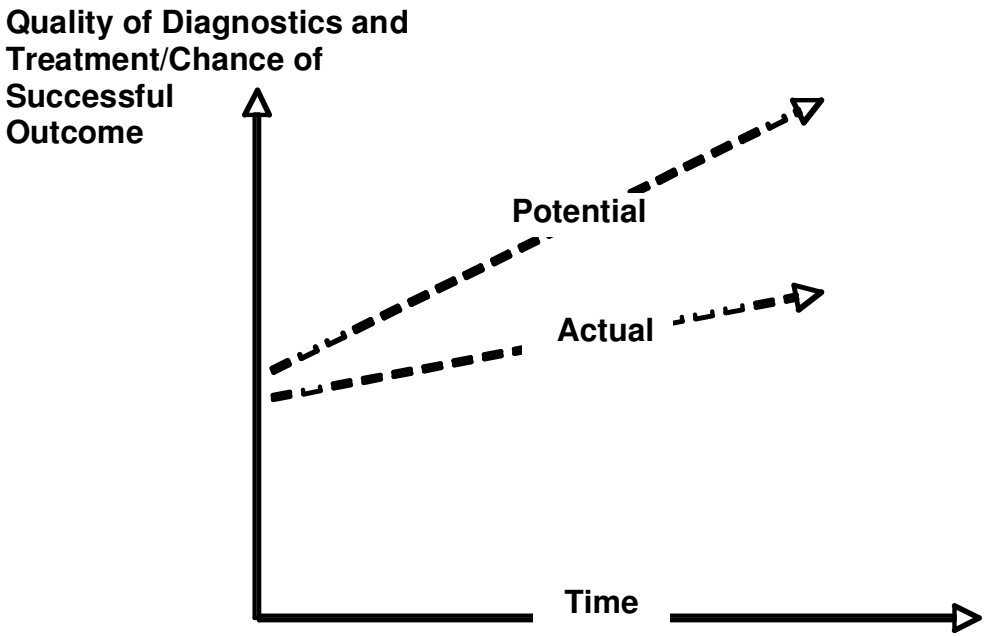
Achieving Great Position:
High Velocity Improvement and Innovation



Good News, Bad News



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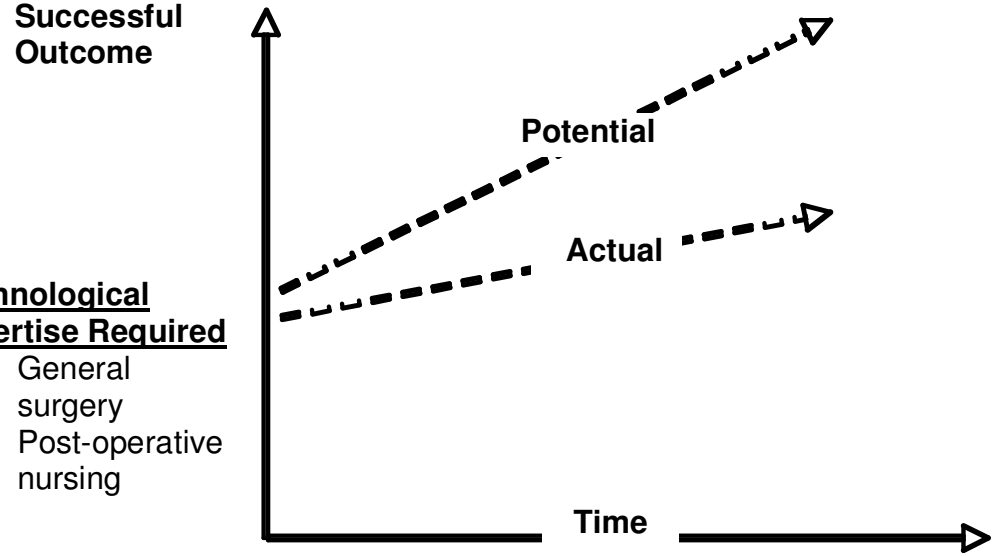


Technological Expertise Required

- General surgery
- Post-operative nursing

Technological Expertise Required

Radiology

- CT Scans
- X-Rays
- Magnetic Resonance Imaging

Pharmacy

- Chemo Therapy

Radiation Oncology

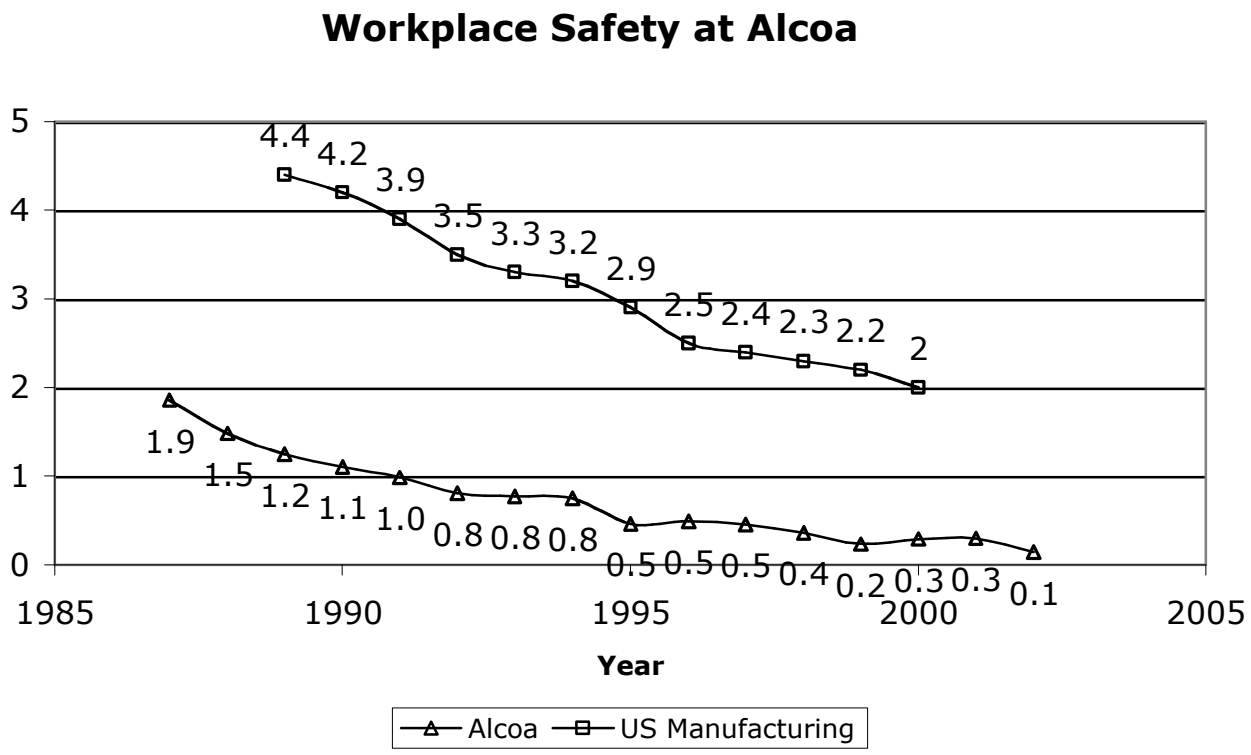
- Proton beam therapy
- Gamma knife
- Nuclear medicine

Endocrinology

Nutrition

Rehabilitation

Alcoa's Pursuit of Perfect Workplace Safety



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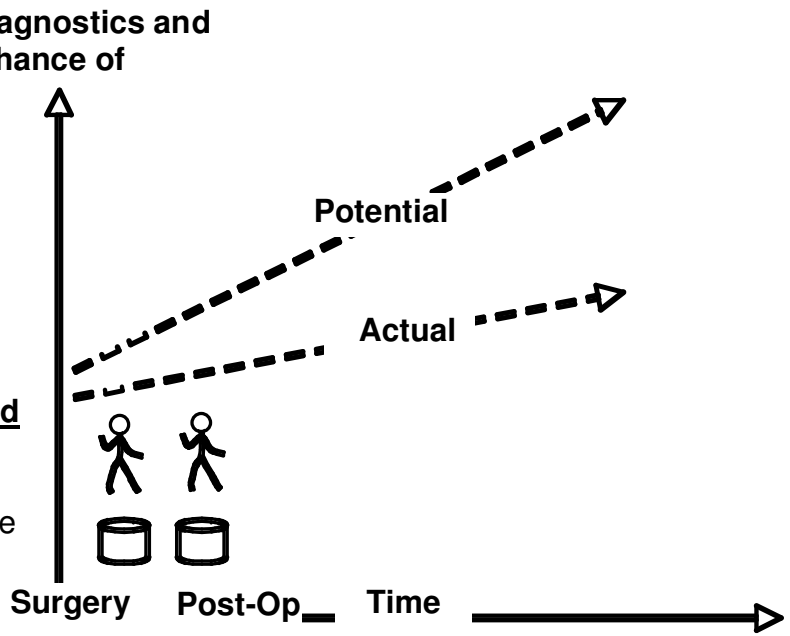

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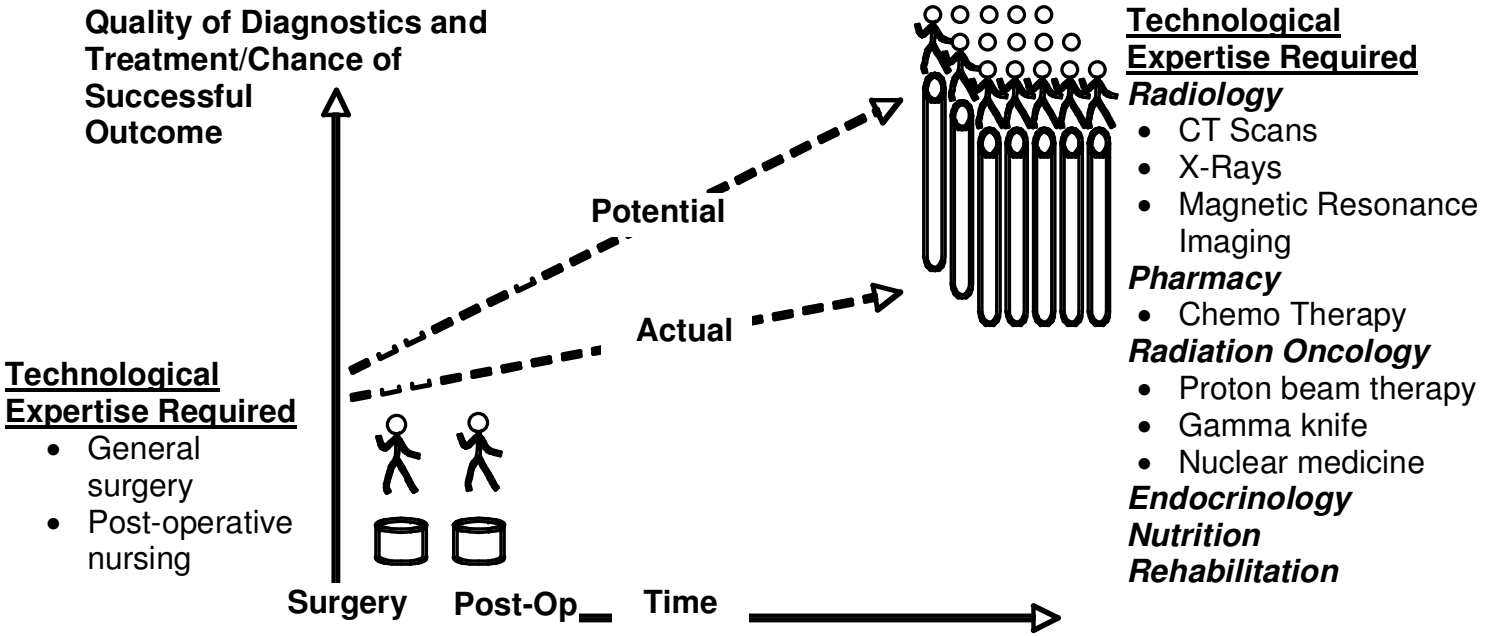

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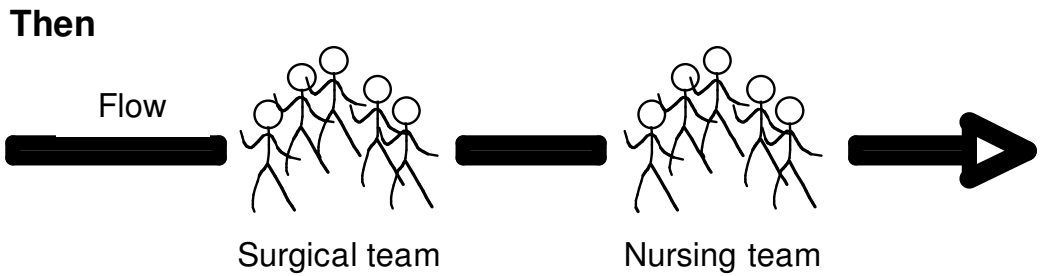
Simple Science, Simple Processes



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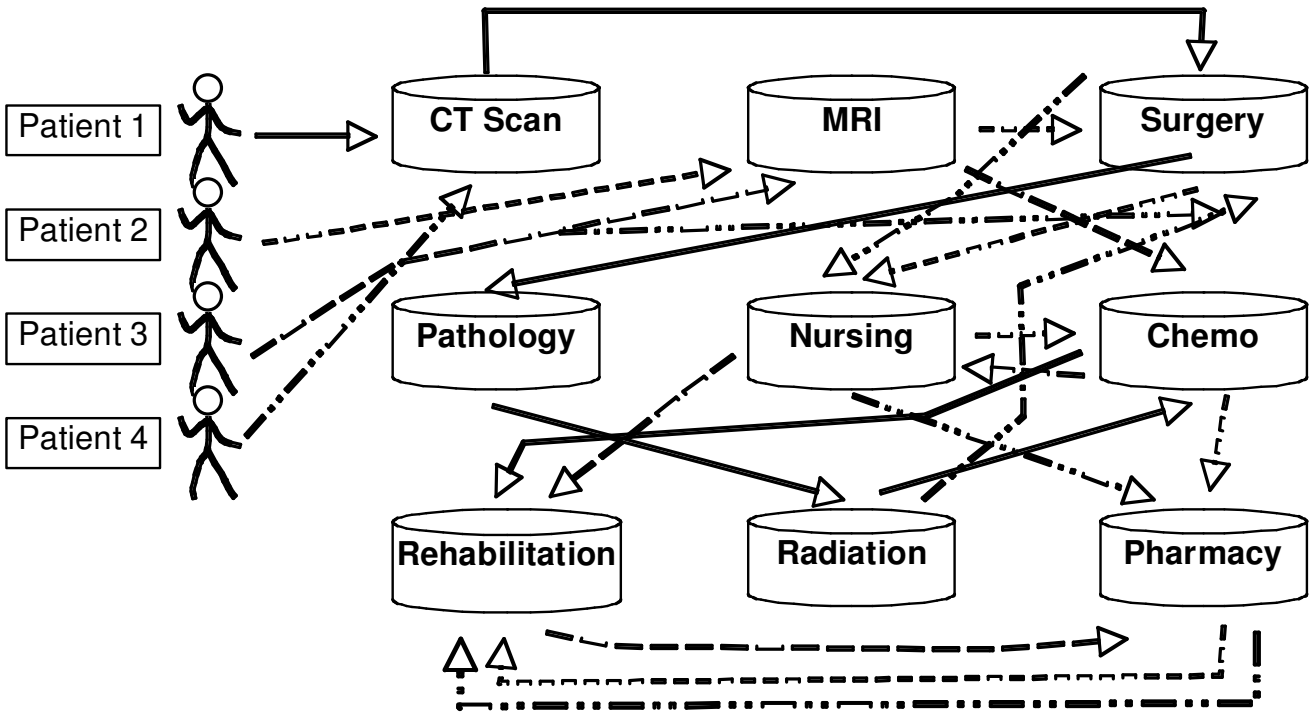
Complex Science, Complex Processes

Now



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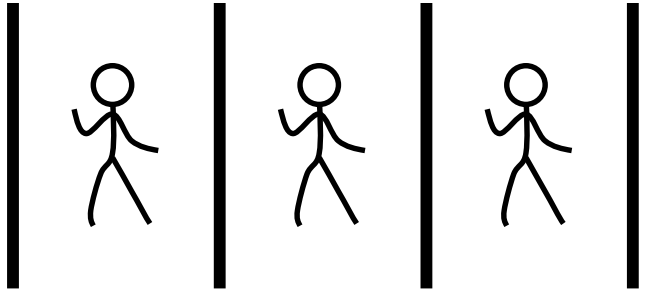
Failure Modes

- Functional Focus without process view



- Continuous Workarounds of Known Problems

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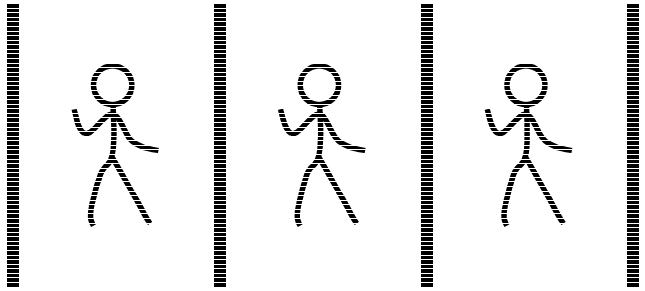
Failure Modes

- Functional Focus without process view



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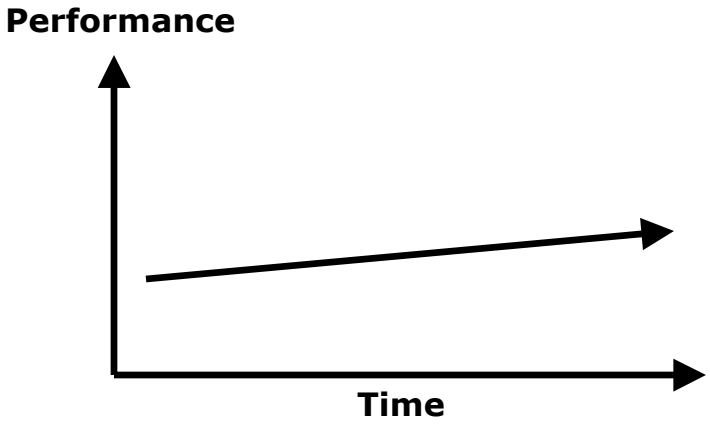

Failure Examples

- Medical Errors
- Challenger and Columbia
- 9/11

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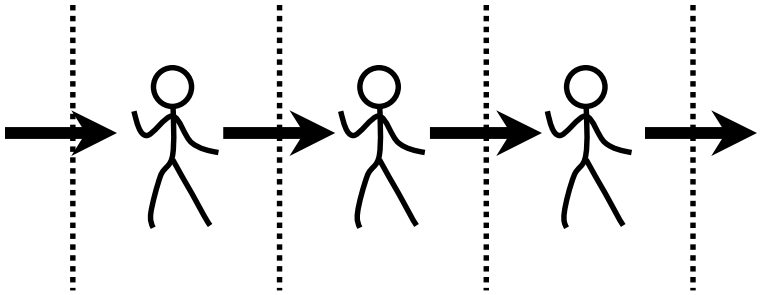
Success Modes

- System View Compliments Functional Expertise



- Continuous Process Improvement and Innovation

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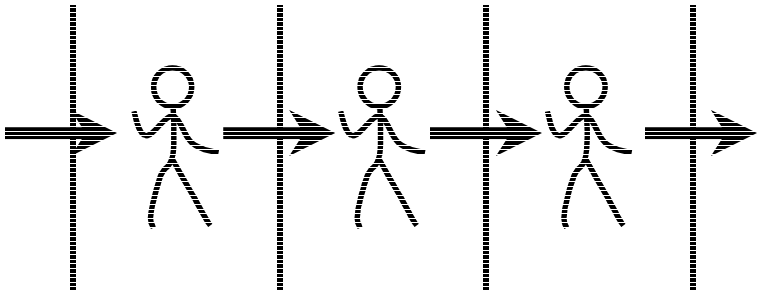
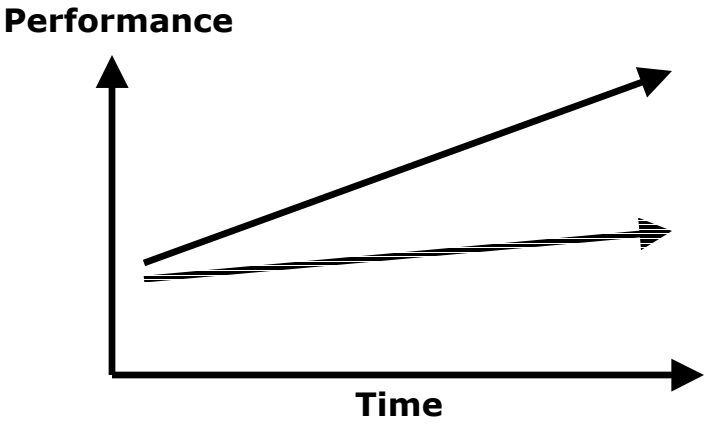
Success Modes

- System View Compliments Functional Expertise



- Continuous Improvement and Innovation

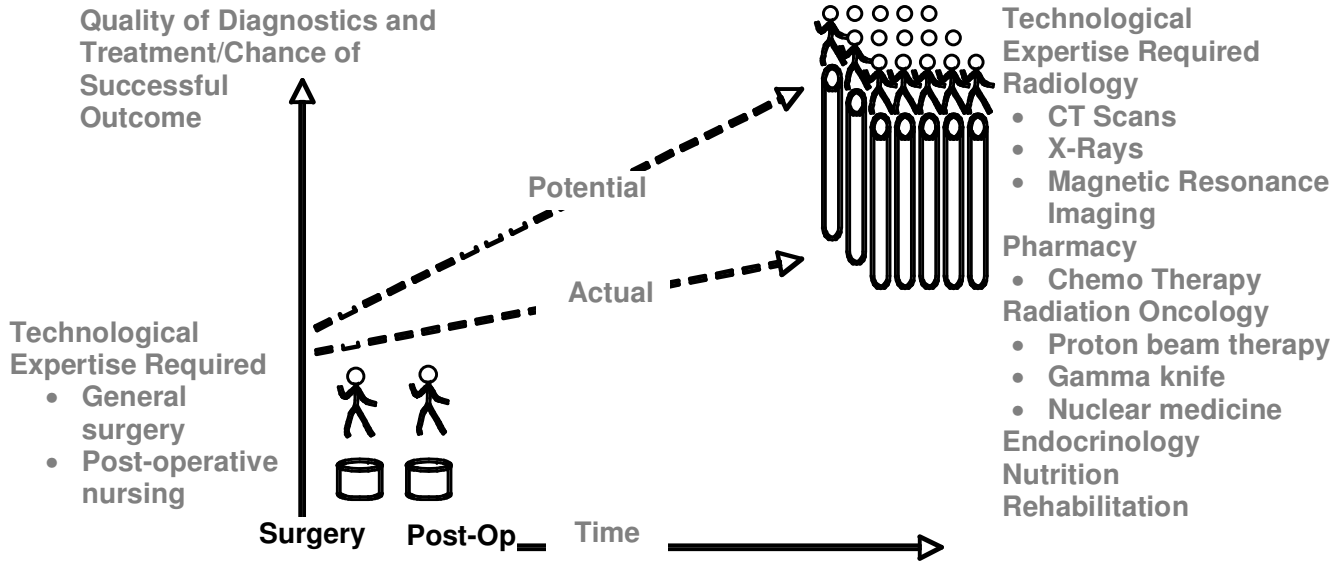


Success Examples

- **Allegheny General Hospital**
  Eliminating Central Line Infections
- **South Side Pharmacy**
  Medication Administration
- **Massachusetts General Hospital**
  Primary care
- **Shadyside Hospital**
  Patient Falls
- **Virginia Mason Medical Center**
  Institution wide transformation

Why Doesn't Healthcare Get it Right?

- Organized by discipline, without process ownership.
- Training centered around discipline without systems training.



Why Can't Healthcare Get it Right?

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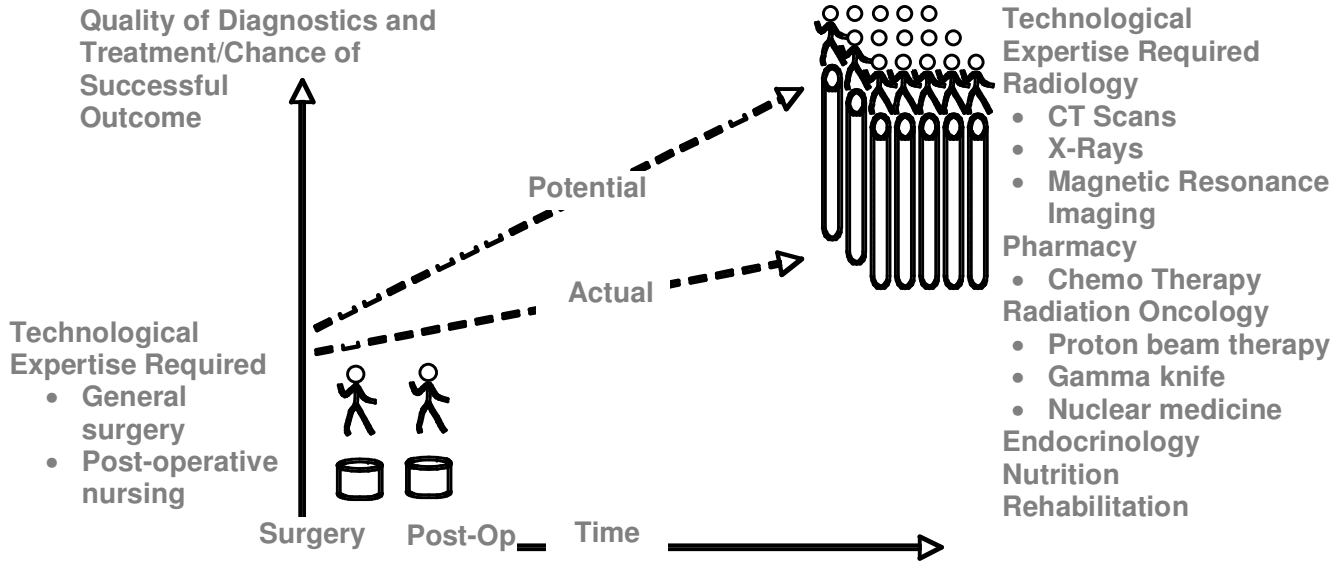

Patient Flow—West Penn Allegheny

	Before	**After**
From sign-in to registration	Up to two hours	0
Registration	12 to 60 minutes	3 minutes
Chart assembly	9 hours per day	2 1/4 hours per day
Time reworking charts	70 minutes	0
Unnecessary blood bank reports	10 to 11 per day	0
Incomplete lab results	7 out of 42 patients	0

Cited from: "Using Real-Time Problem Solving to Eliminate Central Line Infections," R Shannon and co-authors. *Jnt Comm J on Qual and Pt. Safety*, (2006)

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System

Define *expected* output: 42 patients/day

n in □ Register □ History □ Vital signs □ Blood sample

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Define *expected* output: 42 patients/day

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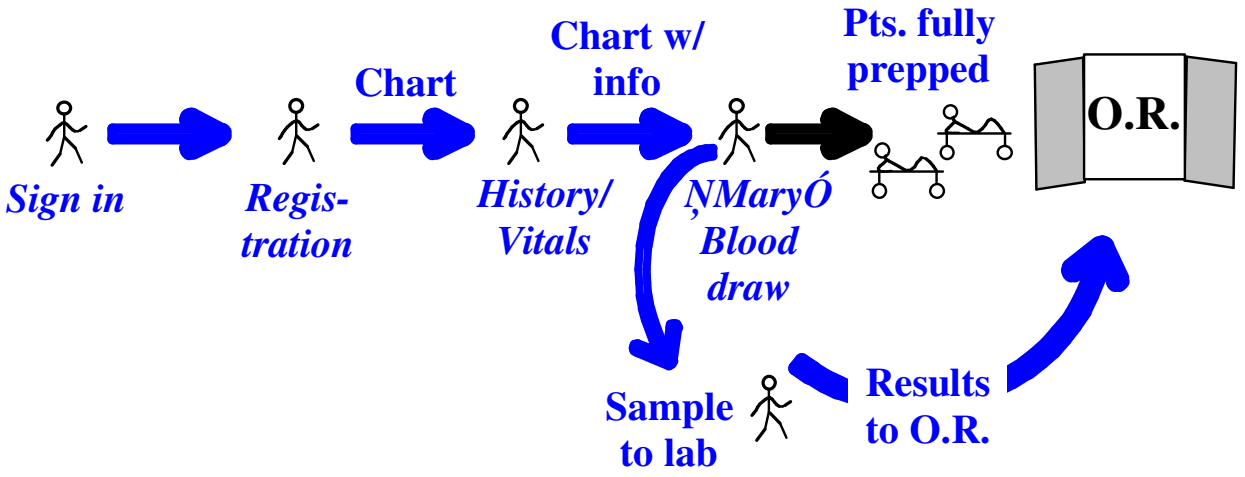
Pathway

Define who is expected to provide what to whom in what order.



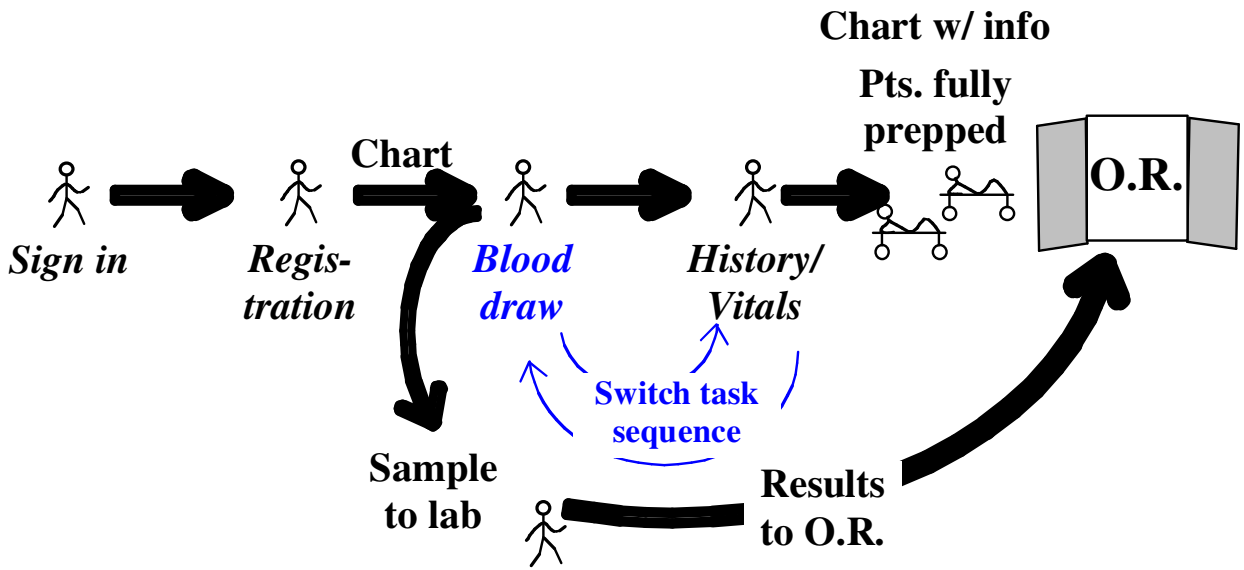
System

Define *expected* output: 42 patients/day

Sign in Register History Vital signs Blood sample

Pathway

***Redefine* who is *expected* to provide what to whom in**



System

Define *expected* output: 42 patients/day:

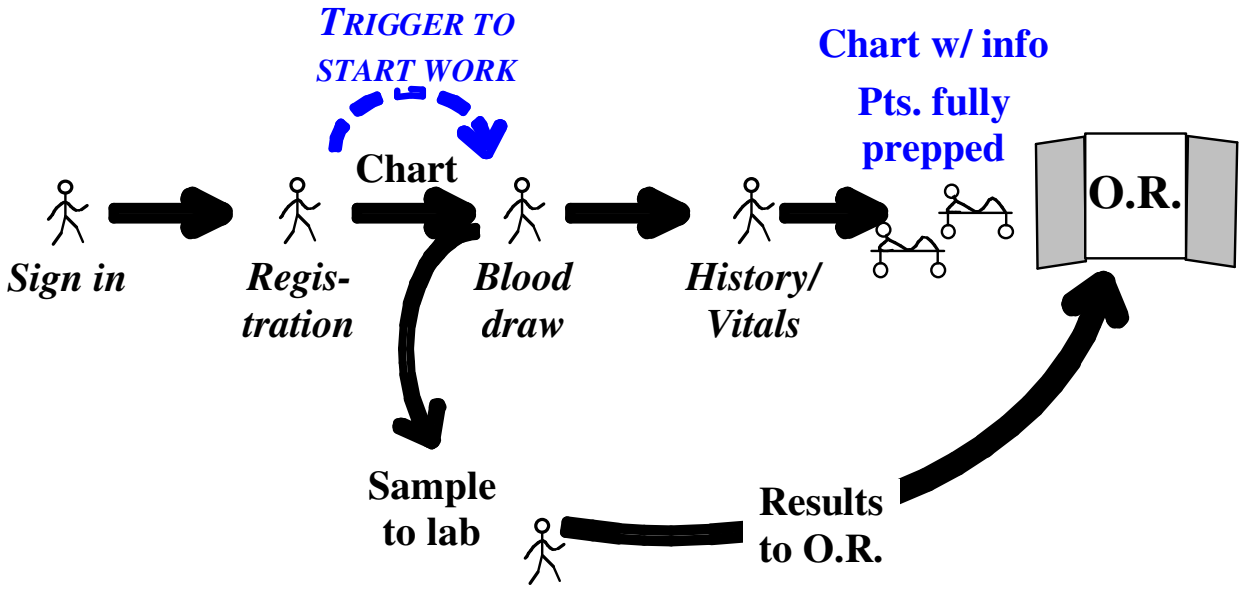
- Sign in
- Register
- History
- Vital signs
- Blood sample

Pathway

Define who is expected to provide what to whom in what order.

Connection

Define how to make exchanges



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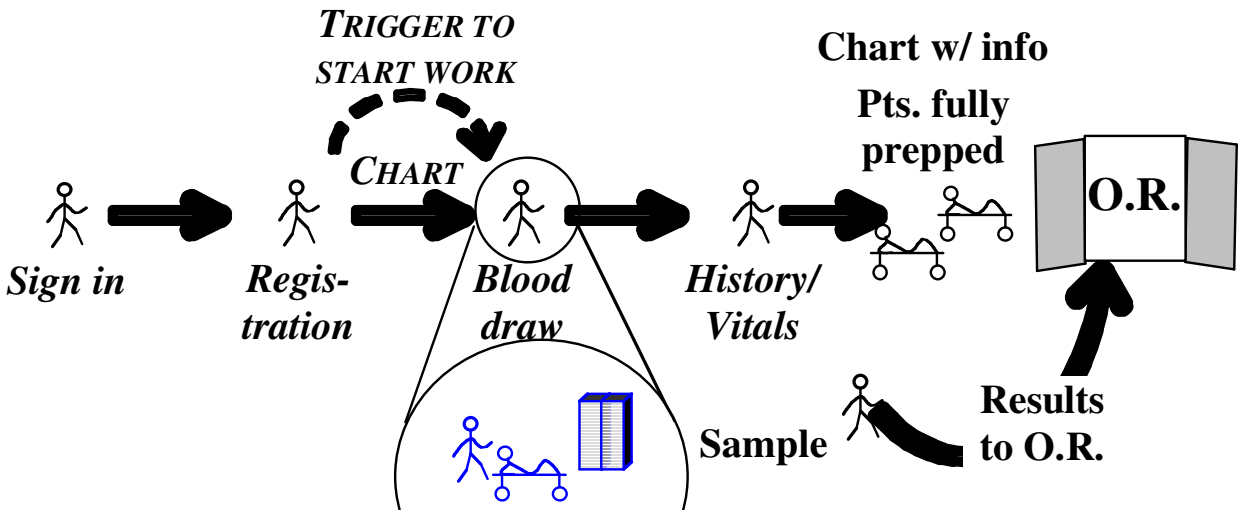


Activity: Define method for performing individual tasks.

Central Line Infections at Allegheny General

	FY 03 (Baseline)	**FY 04** Year 1	**FY 05** Year 2	**FY 06** Year 3 (10 months)
Intensive care unit admissions	1,753	1,798	1,829	1,832
Central lines employed	1,110	1,321	1,487	1,898
Line days	4,687	5,052	6,705	7,716
Infections	49	6	11	3
Patients infected	37	6	11	3
Rates (infections per 1,000 line days)	**10.5**	**1.2**	**1.6**	**0.39**
Deaths	**19 (51%)**	**1 (16%)**	**2 (18%)**	**0 (0%)**

Cited from: "Using Real-Time Problem Solving to Eliminate Central Line Infections," R Shannon and co-authors. *Jnt Comm J on Qual and Pt. Safety*, (2006)

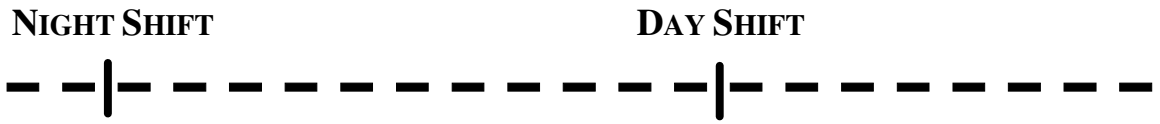
Central Line Infections at Allegheny General Hospital

Problems

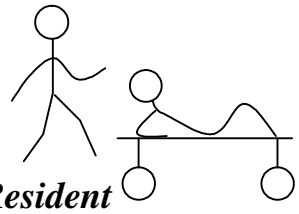
- Femoral lines left in place rather than being relocated.
- Procedure breaks in line placement and maintenance.

Goal: No femoral lines

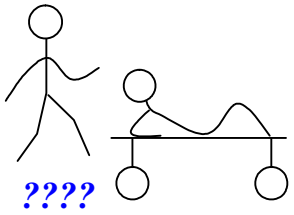
Goal (short term): Femoral lines removed next day



PLACE FEMORAL LINE



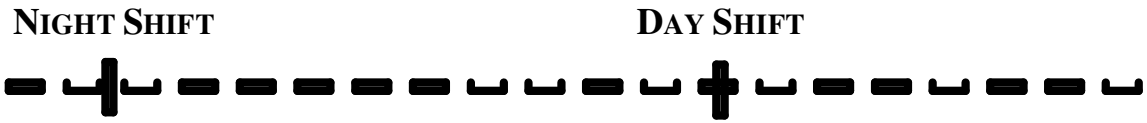
MOVE FEMORAL LINE



Goal: No femoral lines
Goal (short term): Femoral lines removed next day

Who is responsible for what task (Pathway):

- **Resident places femoral line.**
- **Fellow moves line.**



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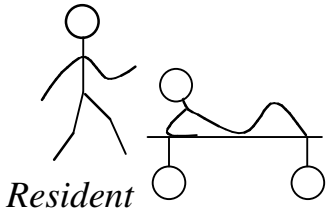

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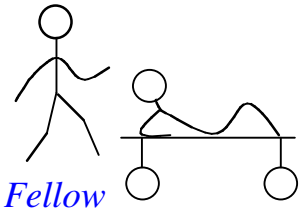

Goal: No femoral lines
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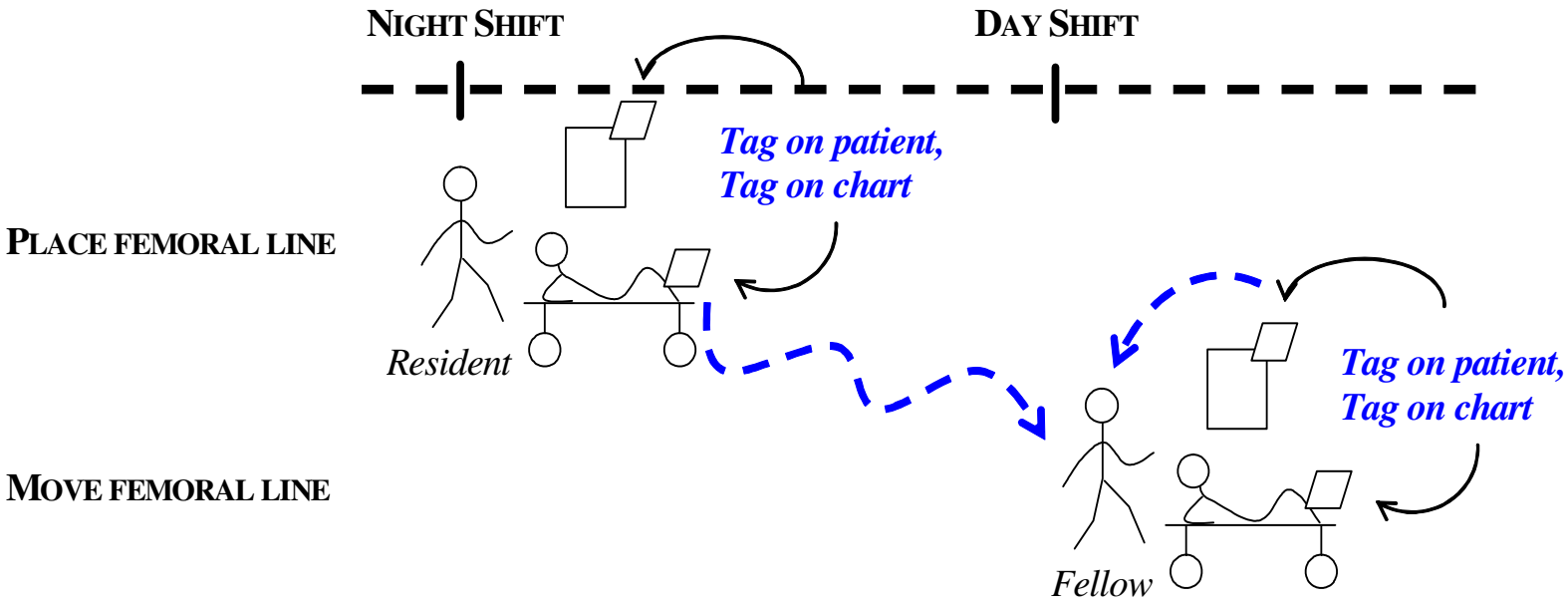
Who is responsible for what task (Pathway):
• Resident places femoral line. • Fellow moves line.

Handoffs and Exchanges (Connections):

- **Signals from resident to fellow to move line.**



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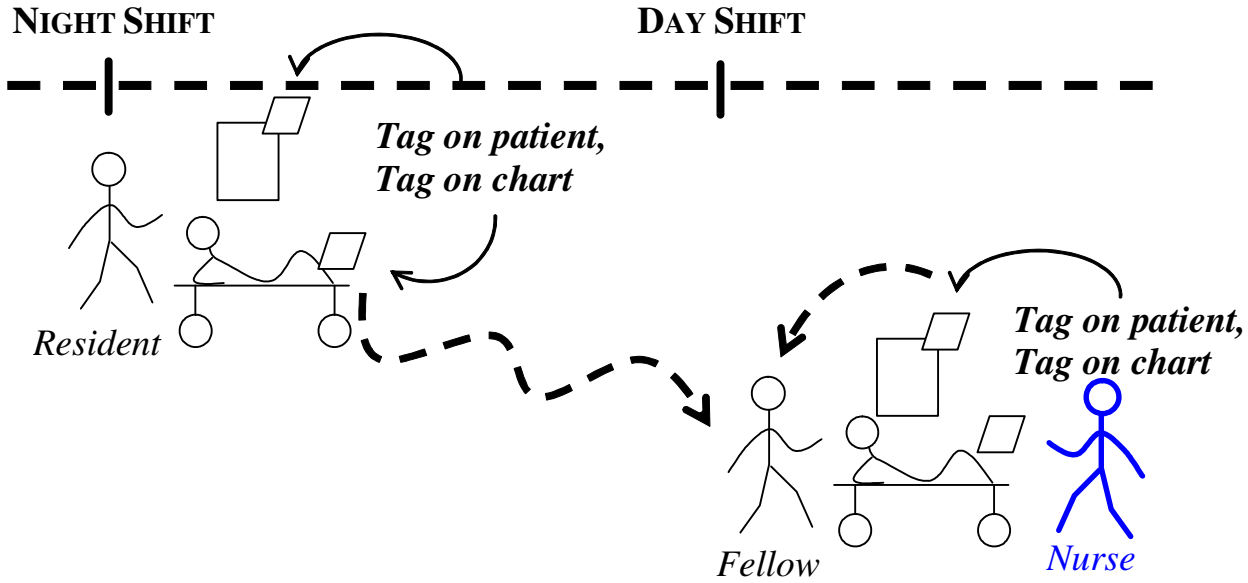
- Resident places femoral line
- Fellow moves line

Handoffs and Exchanges (Connections):

- Signals from resident to fellow to move line

How to do individual tasks (*Methods*):

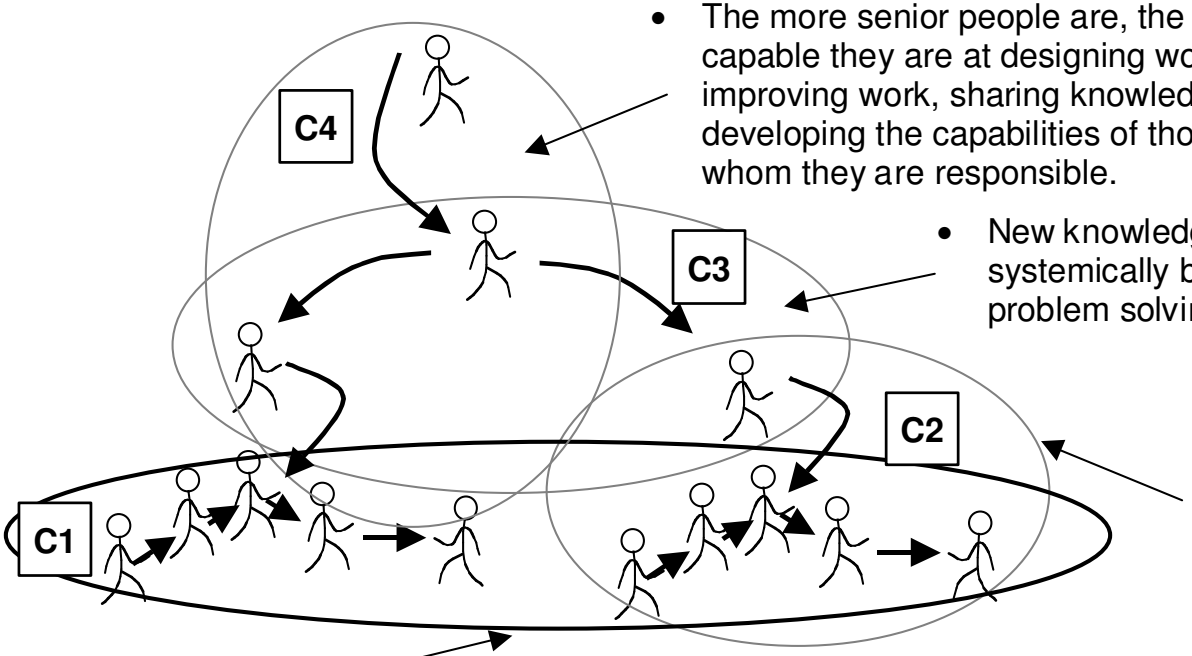
- **Changes in materials (kits, fast vaporizing cleaners, etc.) and methods.**



MGH Revere Flu Clinic

	Session 1	Session 2	Session 3
Hours/Session	2	2	2
Flu Shots Administered	43	71	151
Clinical Support Staff FTEs Involved	3.5	2.5	2.5
Flu Shots per Hour of Staff Time	6.1	14.2	30.2

The Leadership Imperative



- The more senior people are, the more capable they are at designing work, improving work, sharing knowledge, and developing the capabilities of those for whom they are responsible.
- New knowledge is shared systemically by collaborative problem solving.
- Problems are solved as fast-paced, low-cost experiments.

- **HIGHLY SPECIFIED:**
  <u>Output</u>: What product or service is being provided to whom.
  <u>Pathway responsibility</u>: Who does what task in what sequence.
  <u>Connections/Handoffs</u>: How information (including requests for something), products, and services are exchanged.
  <u>Methods</u>: Work content, sequence, timing, location, and output of a task.

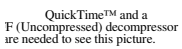
- **Imbedded tests refute assumptions implicit in the designs.**

Adapted from: "Learning to Lead at Toyota," Spear, Steven J., *Harvard Business Review*, (2004)

Selected Publications

- *Chasing the Rabbit: Why the World's Greatest Organizations Outrace Their Competition*, McGraw Hill, (Fall 2008)
- "Better Care for More People at Less Cost," with Don Berwick *Boston Globe* op-ed (October 2007)
- "Learning from the Masters: By learning from Toyota and Alcoa how to manage complex work processes, hospitals can improve performance," *Cerner Quarterly*, (2006).
- "Fixing Healthcare from the Inside: Teaching Residents to Heal Broken Delivery Processes As They Heal Sick Patients," *Academic Medicine*. (2006).
- "Using Real-Time Problem Solving to Eliminate Central Line Infections," with Richard Shannon and other co-authors. *Joint Commission Journal on Quality and Patient Safety*, (2006)
- "Operational Failures and Interruptions in Hospital Nursing Work," with Anita Tucker, *Health Services Research*, (2006).
- "The Health Factory," *New York Times* [op ed], (2005).
- (#) (*) "Fixing Healthcare from the Inside, Today," *Harvard Business Review* (2005).
- "Ambiguity and Workarounds as Contributors to Medical Error," with Mark Schmidhofer, *Annals of Internal Medicine* (2005).
- "Medical Education as a Process Management Problem," with Elizabeth Armstrong and Marie Mackey, *Academic Medicine* (2004).
- (*) "Learning to Lead at Toyota," *Harvard Business Review*, (2004)
- "Driving Improvement in Patient Care," with Debra Thompson and Gail Wolf, *Journal of Nursing Administration* (2003).
- (*) "The Essence of Just in Time," *Productivity, Planning, and Control*, (2002).
- (x) "When Problem Solving Prevents Organizational Learning," with Anita Tucker and Amy Edmondson, *Journal of Organizational Change Management*, (2002).
- (*) "Decoding the DNA of the Toyota Production System," with H. Kent Bowen, *Harvard Business Review*, (1999).

(#): McKinsey Award, One of top two articles in *Harvard Business Review*, 2005.
(*): Shingo Prize winning articles.
(x): Best paper proceedings, Academy of Management conference, 2001.



Speaker Profile

Steven Spear (DBA, MS, MS) is a researcher, writer, public speaker, educator, and consultant who works with organizations to create competitive advantage through the strength of their internal operations, managing complex design, production, and administrative processes for exceptional performance. The primary theme is strongly coupling doing work with learning how to do that work ever better, thereby achieving unmatchable combinations of quality, safety, responsiveness, efficiency, and flexibility.

His articles about Toyota have been award winners and best sellers, those about healthcare quality and medical education have appeared in Annals of Internal Medicine, Academic Medicine and other medical journals, and he is the author of many case studies. A book based on his research, *Velocity*, is to be published by McGraw Hill in Fall 2008.

For "Fixing Healthcare from the Inside, Today," Spear won a McKinsey Award as one of the best *Harvard Business Review* articles in 2005 and his fourth Shingo Prize for Excellence in Manufacturing Research. It showed the tremendous gains in performance enjoyed by hospitals that applied lessons from high performing industrial companies.

At MIT, Spear teaches an introduction to Lean Manufacturing and Six Sigma for students in the Leaders for Manufacturing and Systems Design and Management Programs. At the Institute for Healthcare Improvement, he has been involved in a number of projects to raise the quality of care by introducing systems management principles from non-healthcare exemplars. He also teaches in Harvard Medical School and School of Public Health programs. Previously, he was an assistant professor at Harvard Business School for six years.

Spear played an integral role in developing the Alcoa Business System and the Perfecting Patient Care program of the Pittsburgh Regional Healthcare Initiative. Alcoa's annual reports detailed hundreds of millions of dollars in savings and other gains, and Pittsburgh hospitals have generated reductions of 50% to 90% in afflictions such as hospital acquired infections with other gains in quality of care and quality of work. He has also tested his ideas in practice with other organizations such as Lockheed Martin, John Deere, Intel, Intuit, Brigham Women's Hospital, Massachusetts General Hospital, and Memorial Sloan Kettering Cancer Center, and he has worked as a consultant for the MacArthur Foundation.

Spear's doctorate is from Harvard Business School, his two masters degrees – in management and mechanical engineering – are from MIT, and his bachelors degree in economics is from Princeton. He worked for the investment bank Prudential-Bache, the US Congress Office of Technology Assessment, and the University of Tokyo. He and his wife, Miriam, an architect, live in Brookline MA with their three children.