

# *Leadership for Reliable Systems*

August 21, 2006

## *The Quality Colloquium*



Stephen R. Mayfield

Senior Vice President

[smayfield@aha.org](mailto:smayfield@aha.org)

Visualize  
Success:

*We Don't all SEE the Same Thing*

# Seeing Differently

- De Kalb, Illinois
- DeKalb, Georgia

# Leaders Create the Vision and Set Direction

*“Would you tell me please which way I ought to go from here?” asked Alice.*

*“That depends a good deal on where you want to get to,” said the cat.*

*“I don’t much care,” said Alice.*



*“Then it doesn’t matter which way you go,” said the cat.*

# Leaders Create Expectations

- Leaders ->

Values ->

Behaviors ->

Culture ->

Performance

# Leaders Must

- Eliminate Preventable Harm
- Develop Highly Reliable Systems
- Improve Outcomes Year-to-Year
- Reduce Costs of Care Year-to-Year

# Unceasing Efforts to :

- Remove Waste
- Eliminate Defects
- Reduce Variability

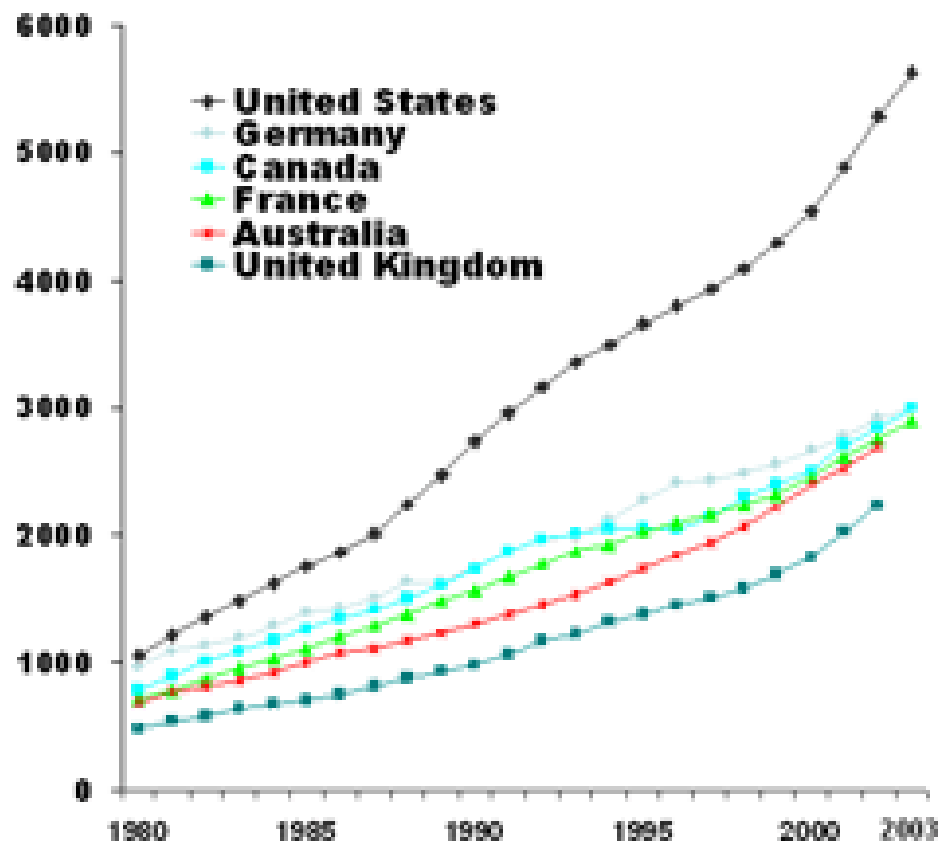
“All work is a system, every system has processes and every process has waste and variability.”

# Relentless Pursuit of Waste

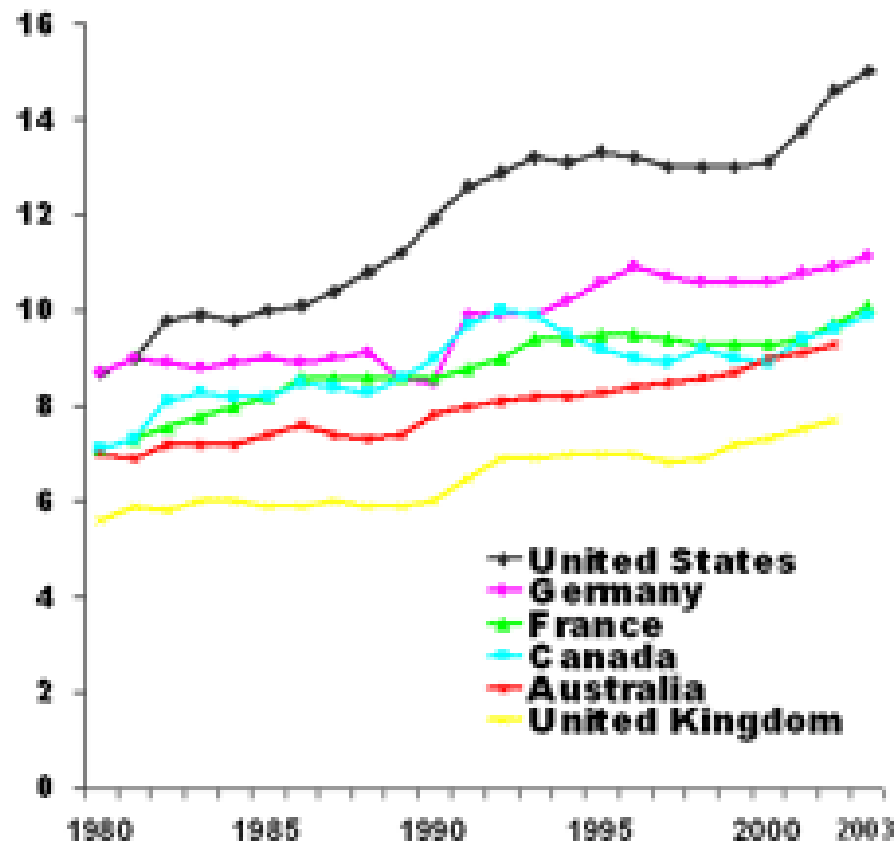
- Public perception, the Camry Effect and Community Contribution

# Figure 1. International Comparison of Spending on Health, 1980–2003

## Average spending on health per capita (\$US PPP\*)



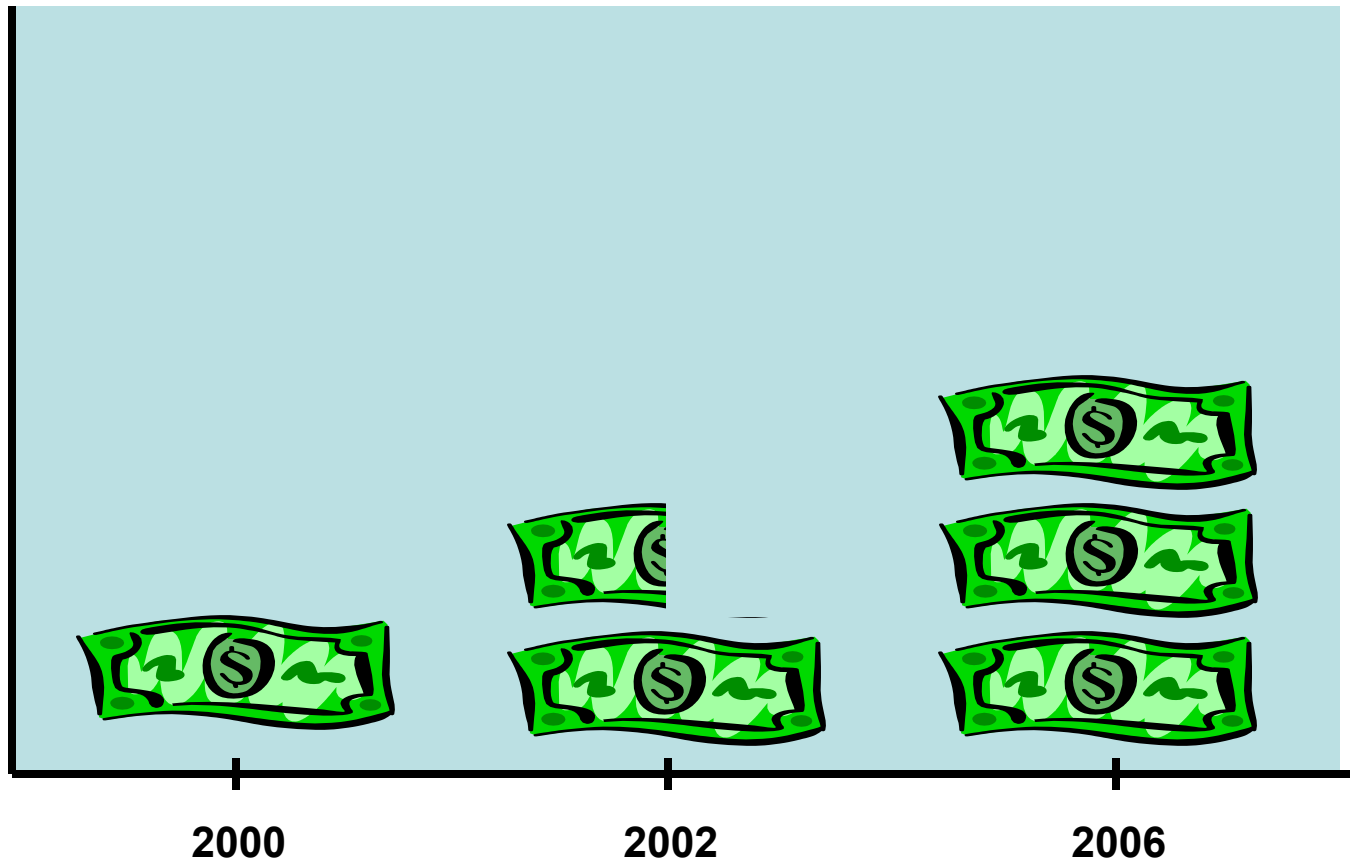
## Total expenditures on health as percentage of GDP



\* PPP = Purchasing power parity — an estimate of the exchange rate required to equalize the purchasing power of different currencies, given the prices of goods and services in the countries concerned.

Source: Organisation for Economic Co-operation and Development (OECD) Health Data, 2004.

# Change in Cost of Insurance Premiums and Co-Pays

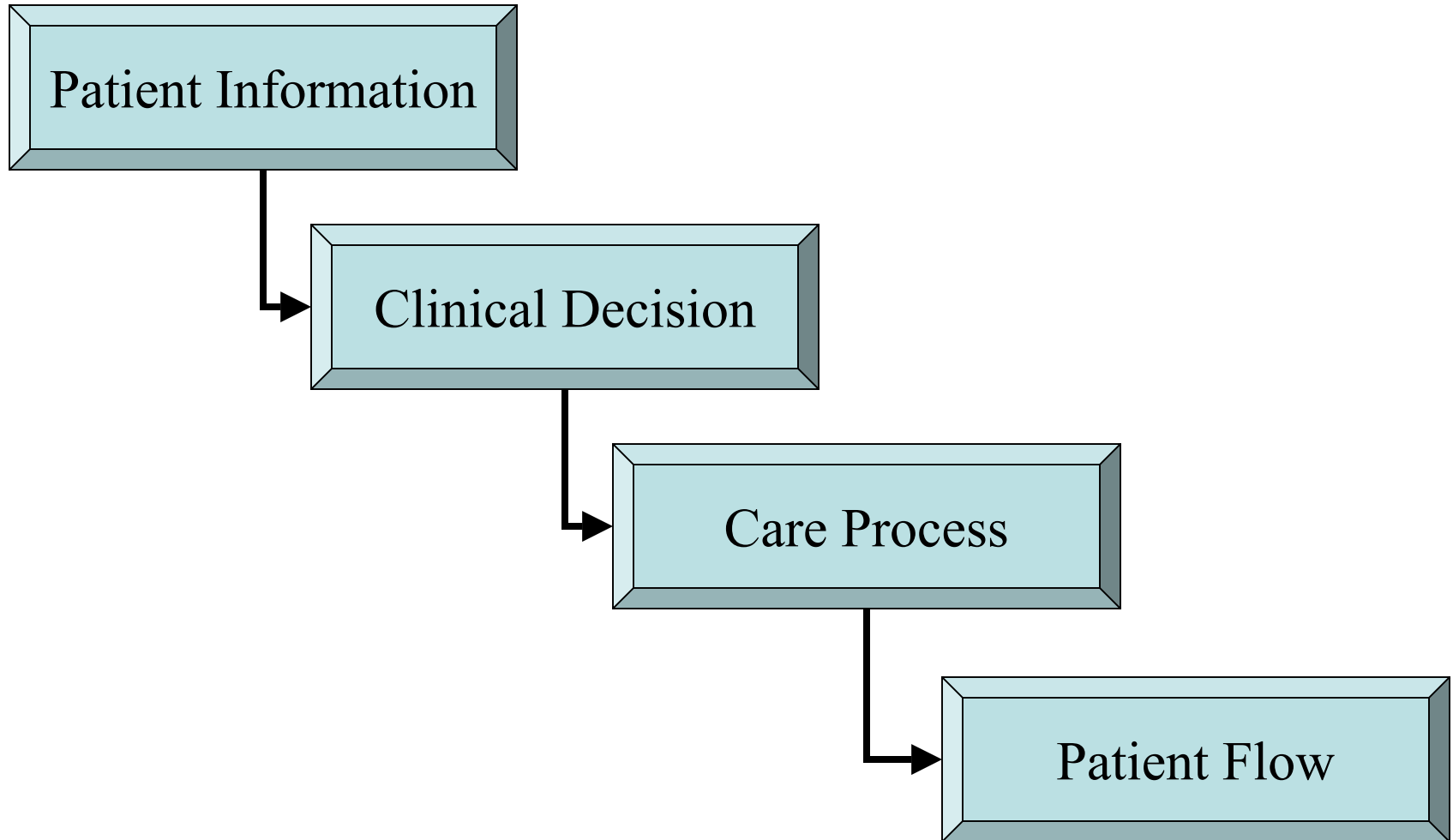


# The Camry Effect

## Other Approaches Exist

- Juran: “There is 30% waste in most healthcare processes”
- Dartmouth study: “Providers in Salt Lake are number one, if all providers emulated their efficiency CMS could save 30% in expenditures”.

# Reliability and the Four Components of Care Delivery



Visualize  
Success:

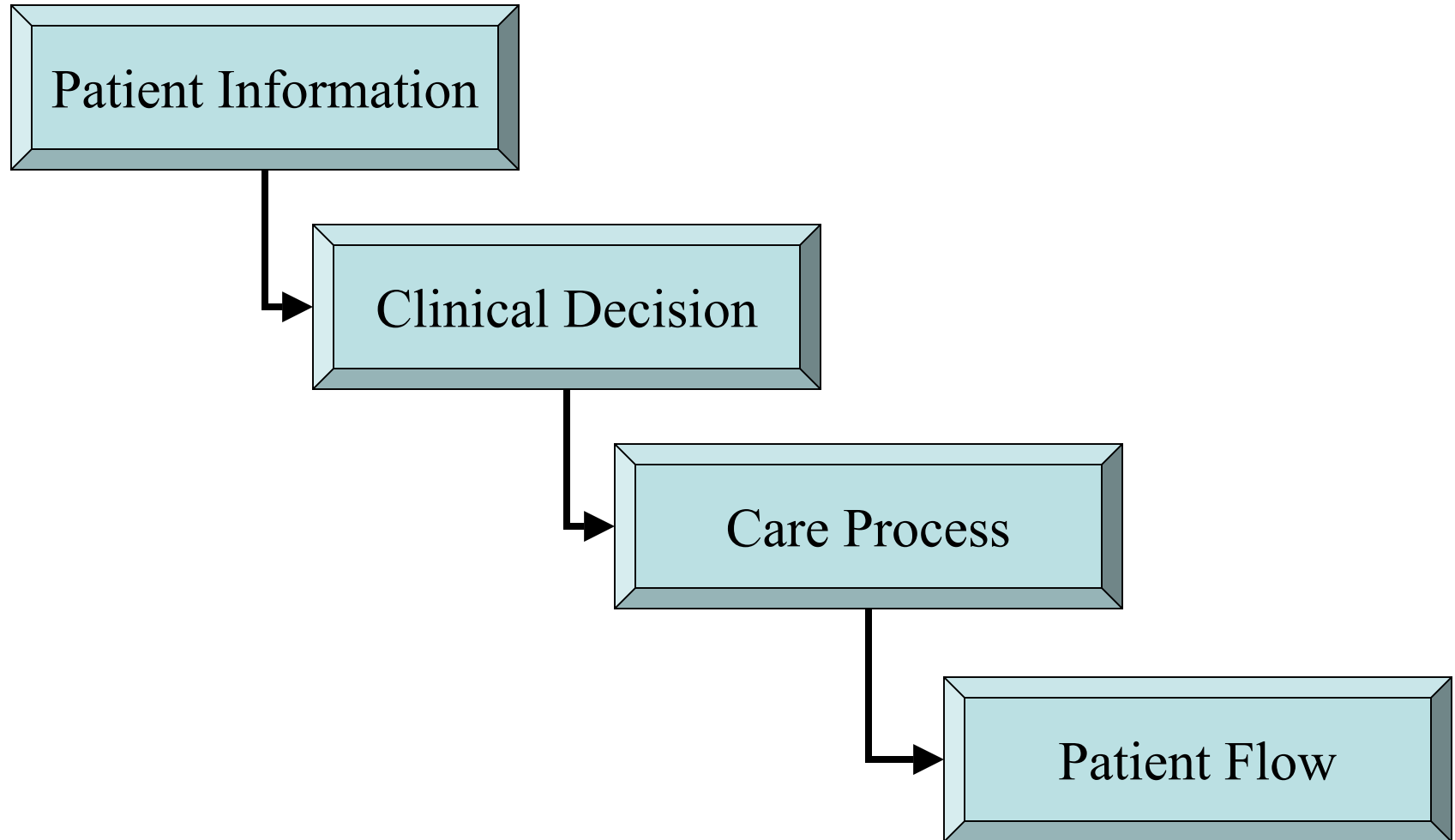
*We Need to SEE our Processes*

# Our Approach to Date is not Yielding Desired Rate of Change

- We have believed that –
- If we have *enough* of the *right* data –
- Analysis will indicate *compelling* need to change –
- Change will therefore *occur*

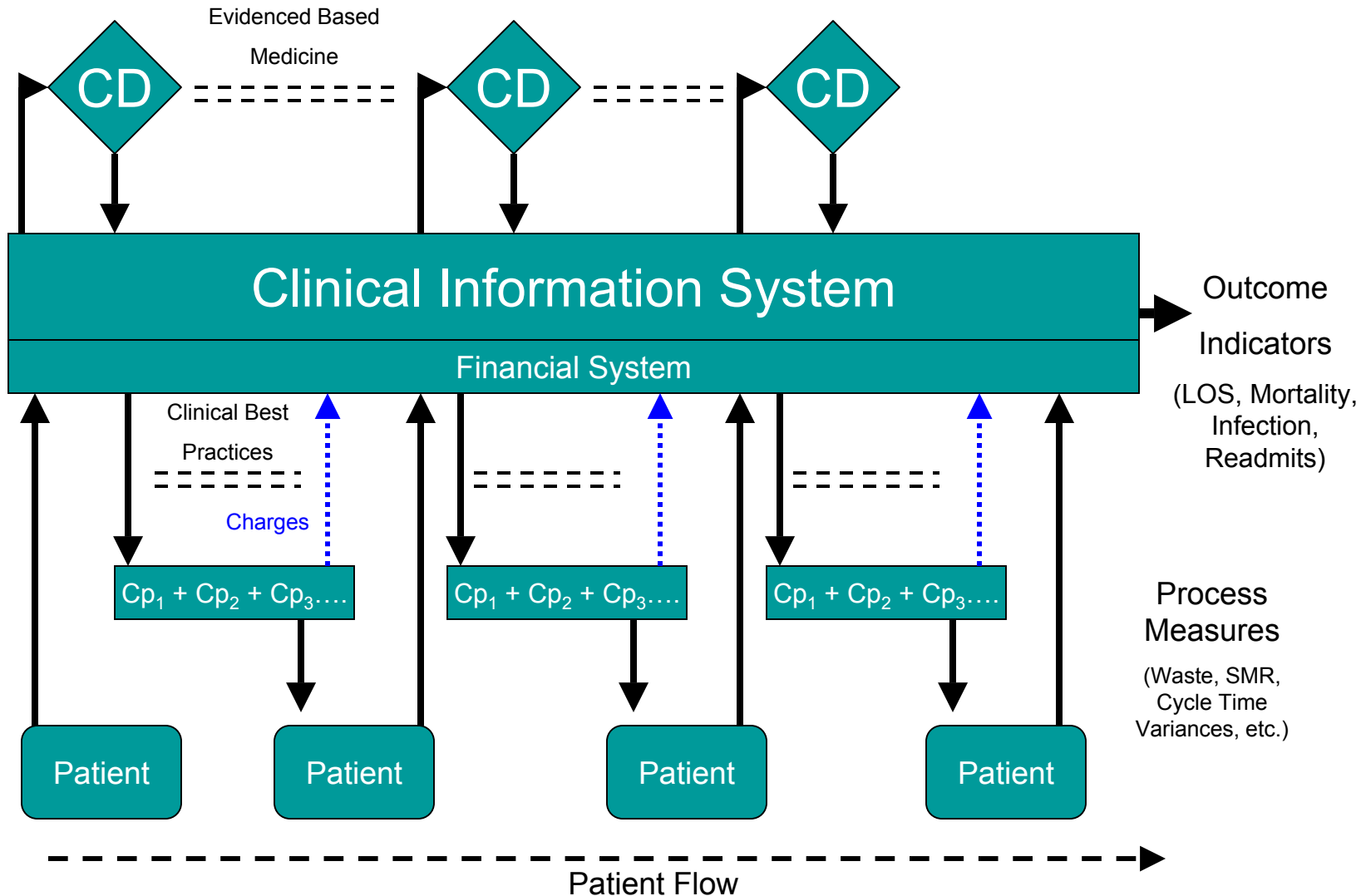
We need to *Learn* to  
see our processes  
in a different light

# Reliability and the Four Components of Care Delivery

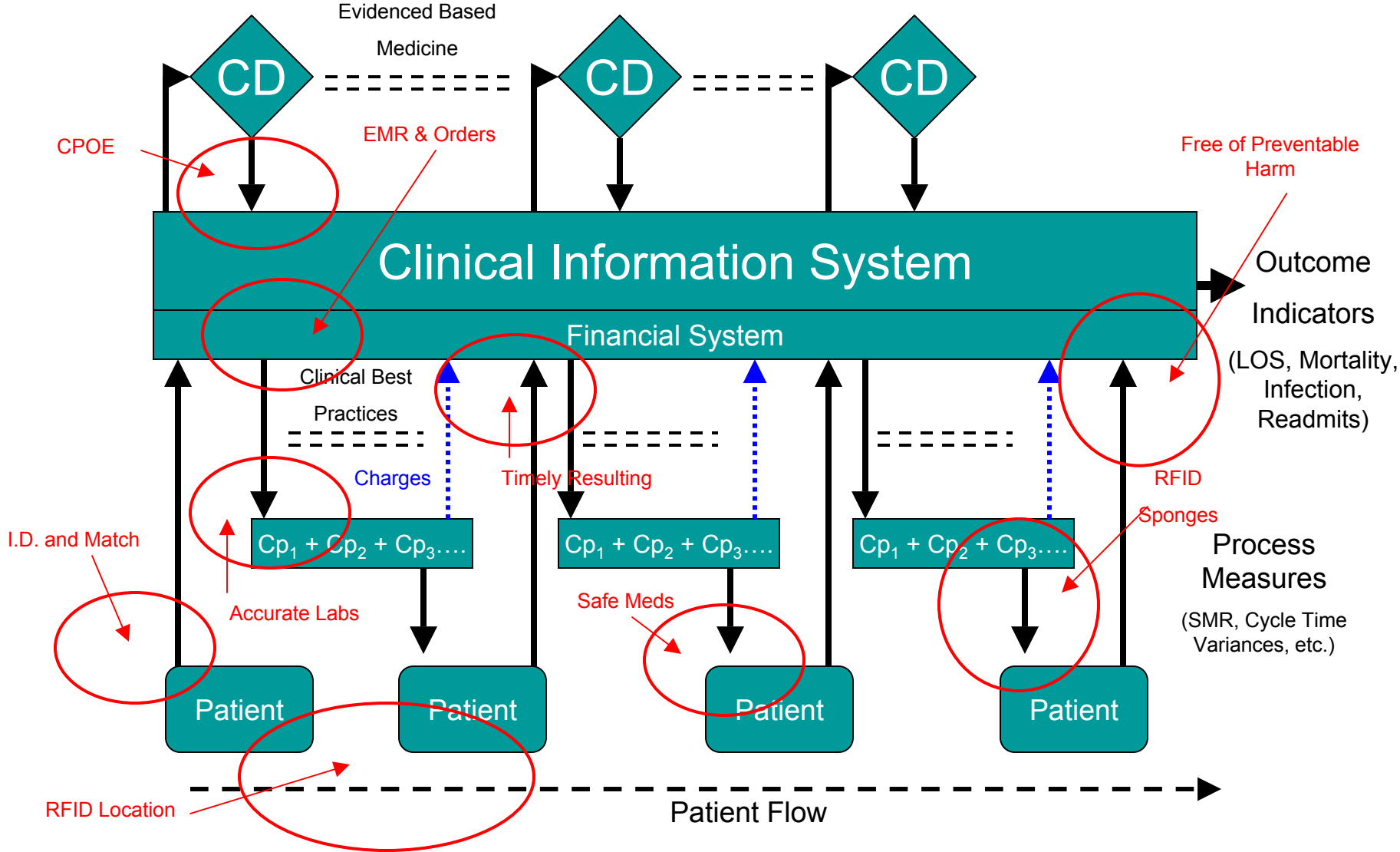


# Systems of Care and Simple Metrics

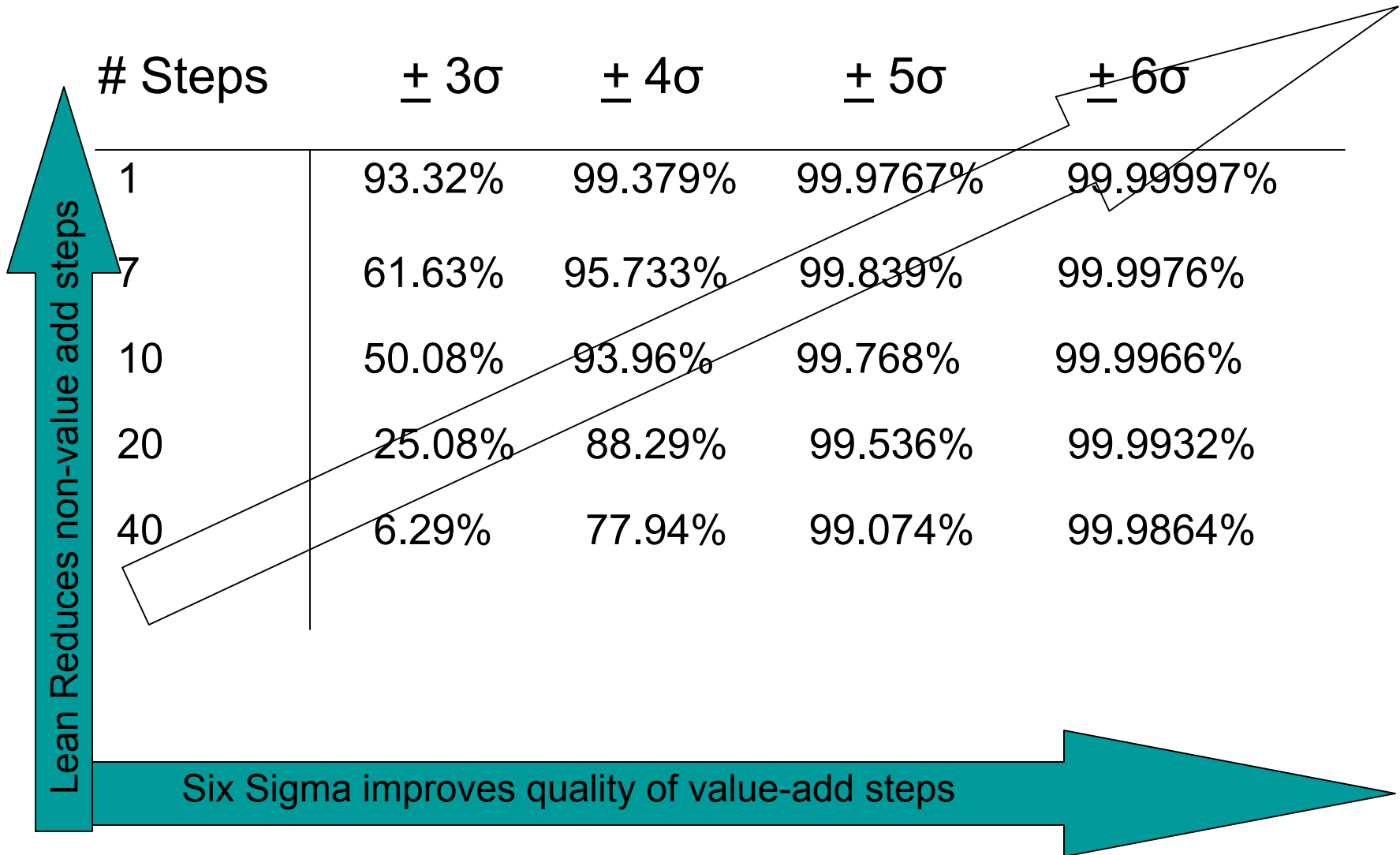
Information -> Clinical Decisions -> Care Processes -> Patient Flow



# Innovation in Reliable Care



# Lean + Six Sigma = More Value



Lean Reduces non-value add steps

Six Sigma improves quality of value-add steps

# Leaders Must

- Eliminate Preventable Harm
- Develop Highly Reliable Systems
- Improve Outcomes Year-to-Year
- Reduce Costs of Care Year-to-Year

# Unceasing Efforts to :

- Remove Waste
- Eliminate Defects
- Reduce Variability

“All work is a system, every system has processes and every process has waste and variability.”

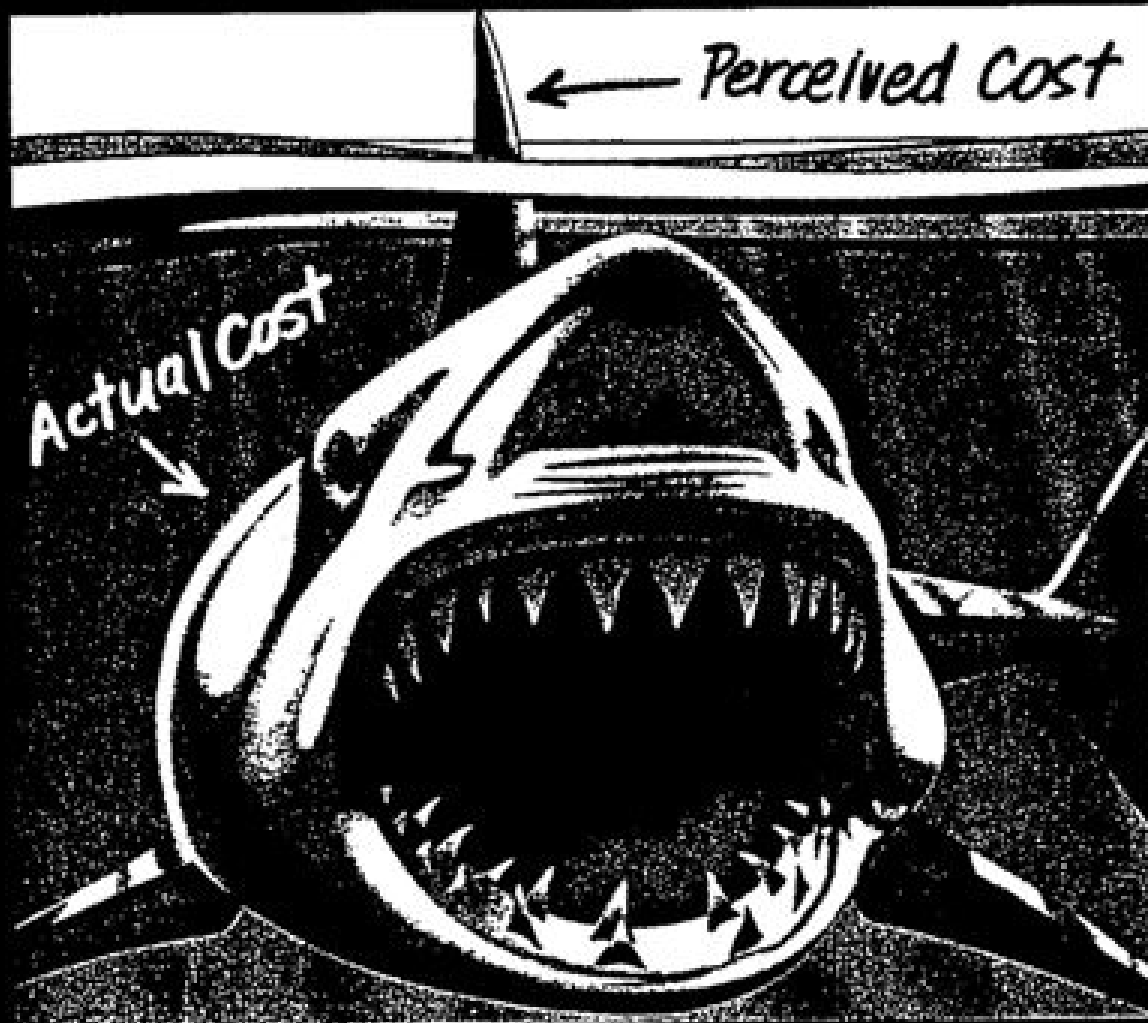
# Cost of Poor Quality and Defects

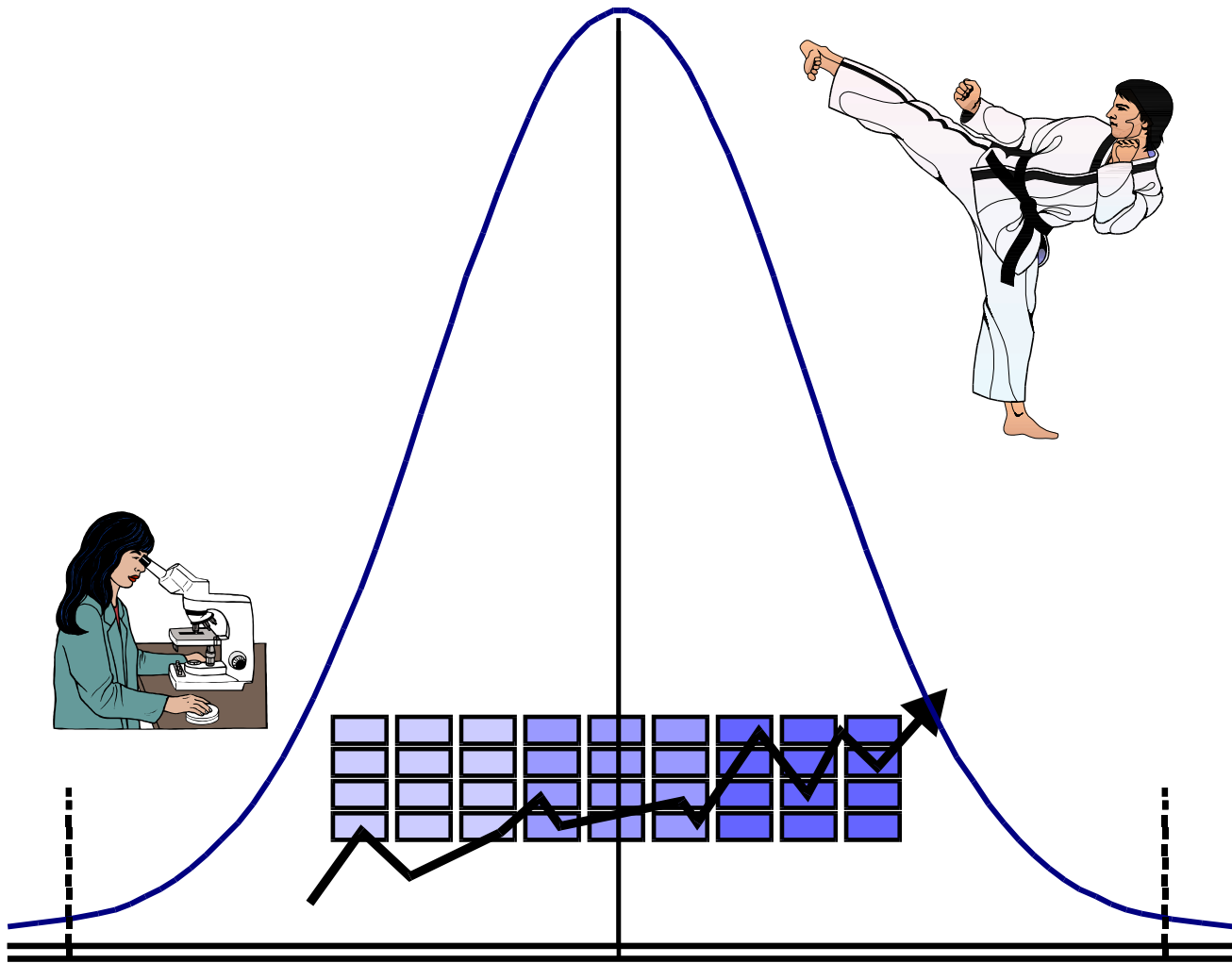


# The 8 Deadly Wastes

- Overproduction
- Waits/Delays
- Transport
- Process
- Movement
- Inventory
- Defects
- Underutilization

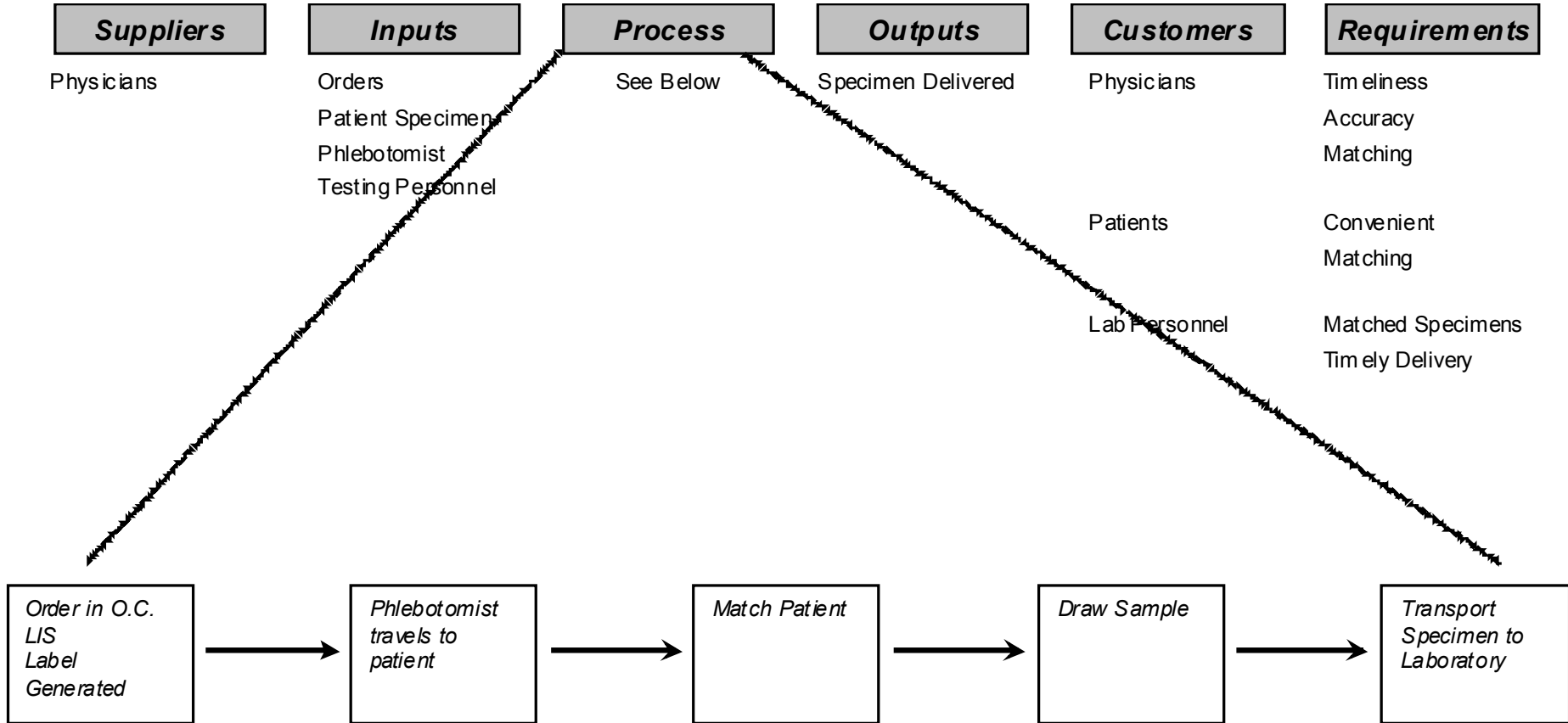
# Hidden Waste Will Eat You Alive





**Laboratory Improvements: Six Sigma Methods**

# Laboratory



# High Level Phlebotomy Flow



# Detailed Phlebotomy Flow



# Data Collection

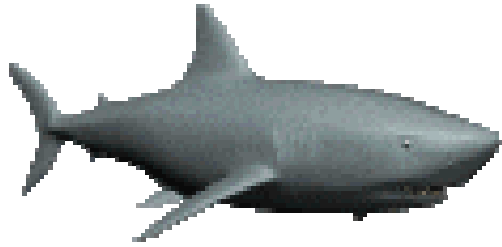
- Design instrument
- Develop plan
- Collect Information
- Found 3 Problems: *Matching, Batching Attaching*

# Over 40 specific defects identified in 6 classes:

- Label defects (unlabeled, misplaced, wrong patient labels, misaligned, etc.)
- Patient ID band defects ( improper matching, no label, wrong label, etc.)
- Unsuccessful draw (not first stick, second phlebotomist required)
- Unacceptable specimen/recollect (wrong tube, clotted, hemolyzed, insufficient quantity, contaminated, overfilled, etc.)

# Surrounded by Defects !





Prevention – Appraisal – Failure:  
Visible Defects and  
Direct Costs are  
The Tip of the Iceberg!



# Total Visible Direct Costs

\$163,795

Label Defects

ID Band Defects

Unsuccessful Draws

Recollects

Order Entry Defects

**Visible  
Direct Costs**

**Hidden Costs**

Clinical Staff Dissatisfaction

Rework

Increase LOS

Delay Clinical Decision

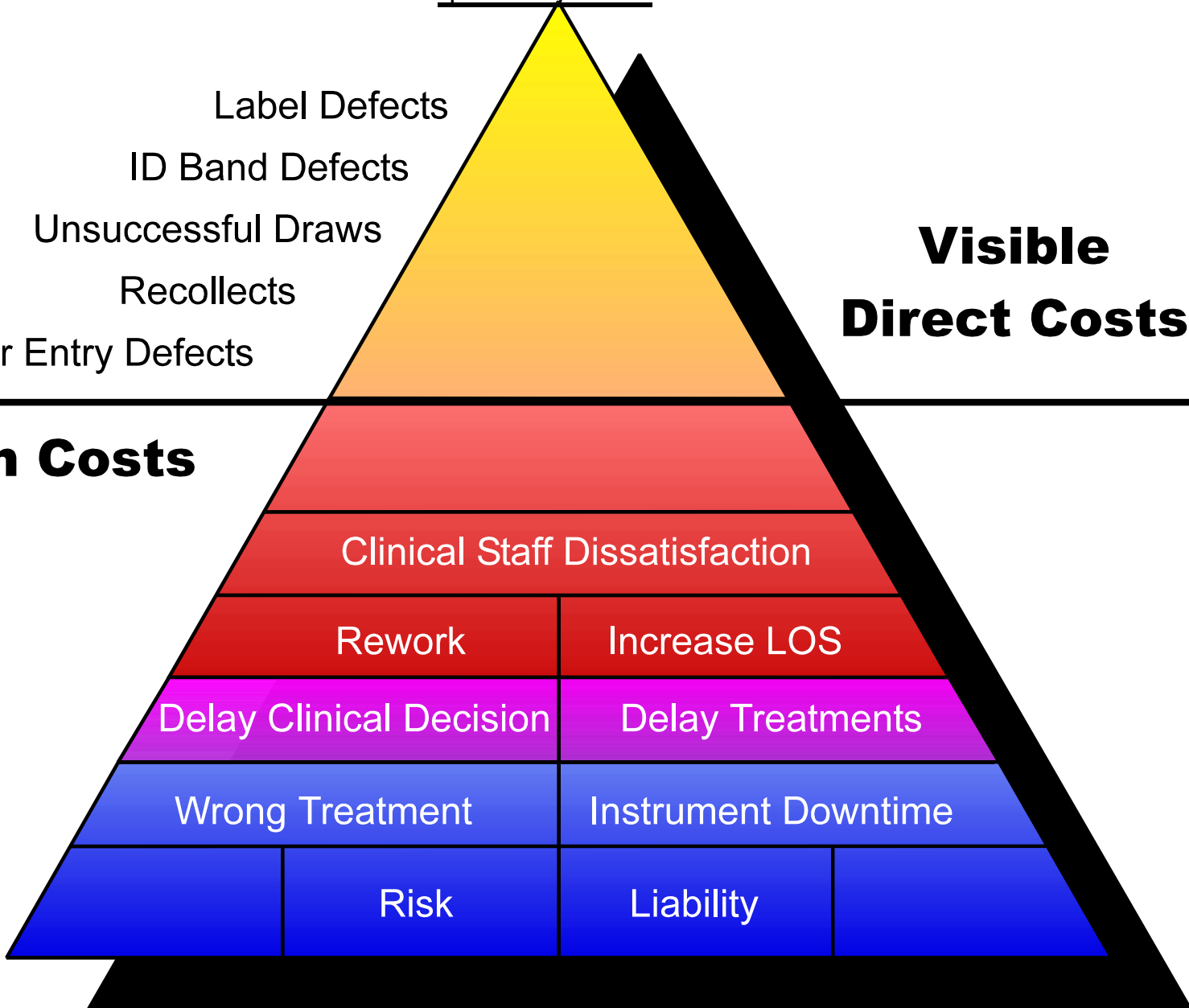
Delay Treatments

Wrong Treatment

Instrument Downtime

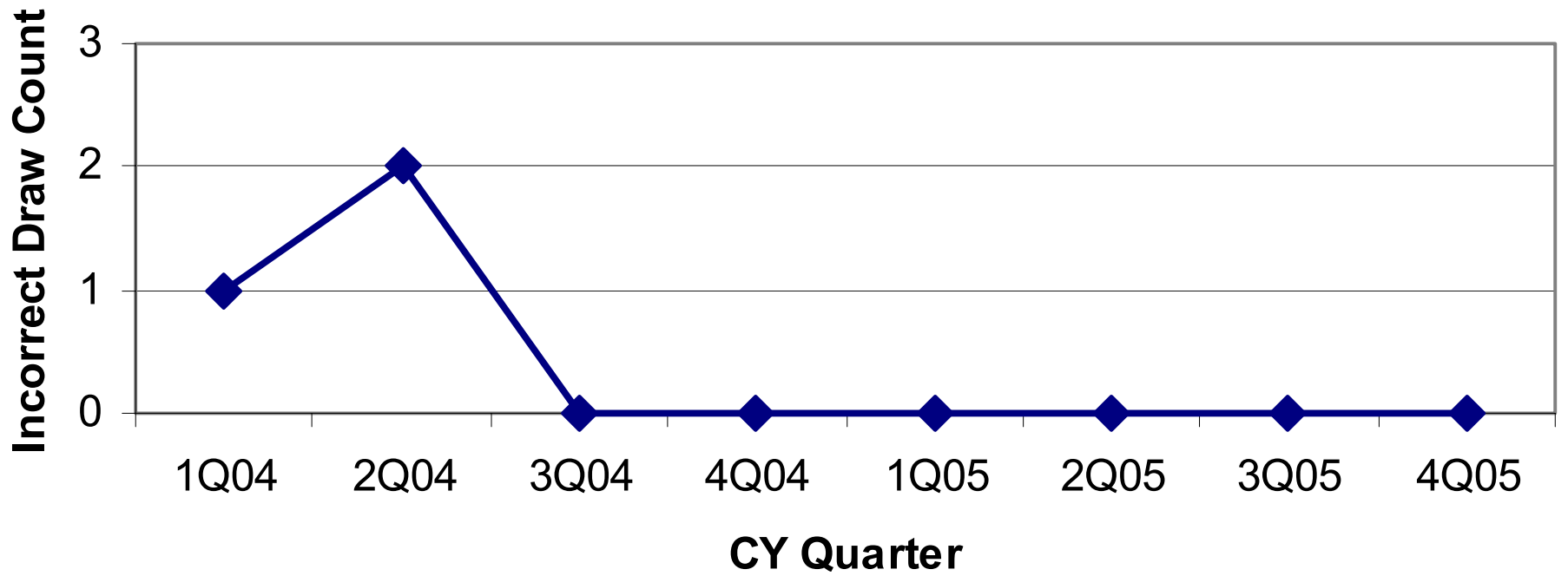
Risk

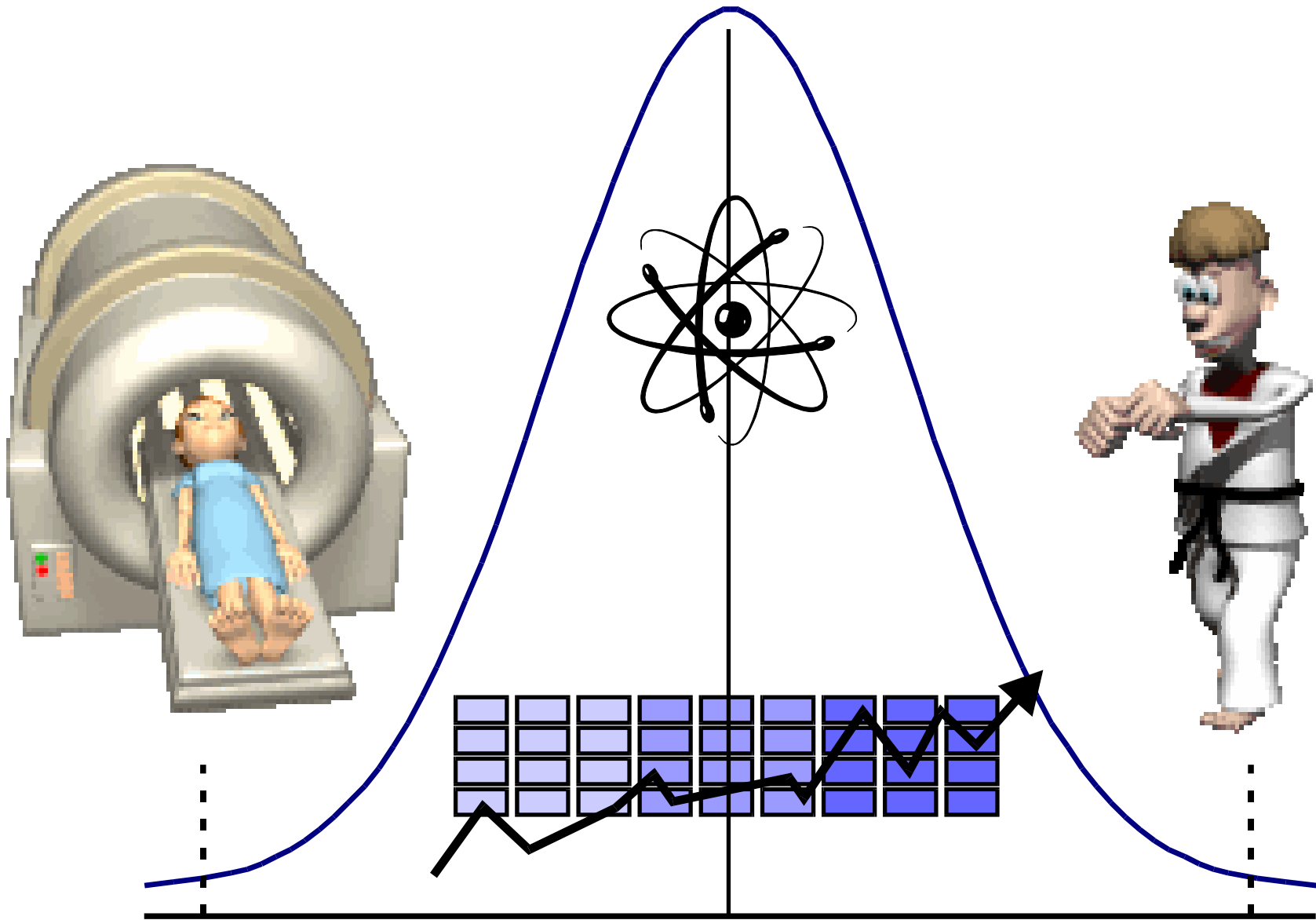
Liability



# Defect Rate Driven to Zero!

Error Incidence for Patient Identification and Lab Draws





Improving Interventional Flow with Lean Six Sigma

# SIPOC Interventional Scheduling

**Suppliers**

**Inputs**

**Process**

**Outputs**

**Customers**

**Requirements**

Physicians

Orders  
Patient Information  
Schedule Information  
Capacity  
Staffing

See Below

Completed Procedure  
Specimen Obtained  
Results in System

Physician

Convenient  
Accurate Results  
Timely On Demand

Patient

Convenient  
Clear expectations  
Timely Results

Radiologist

Results  
Previous Exam  
Good History  
Convenient Schedule

Pathology/Lab

H&P  
Accurate Scheduling

Nursing/ I.P.  
Registration

Completed record  
Demographic info  
Payer info  
ICD 9

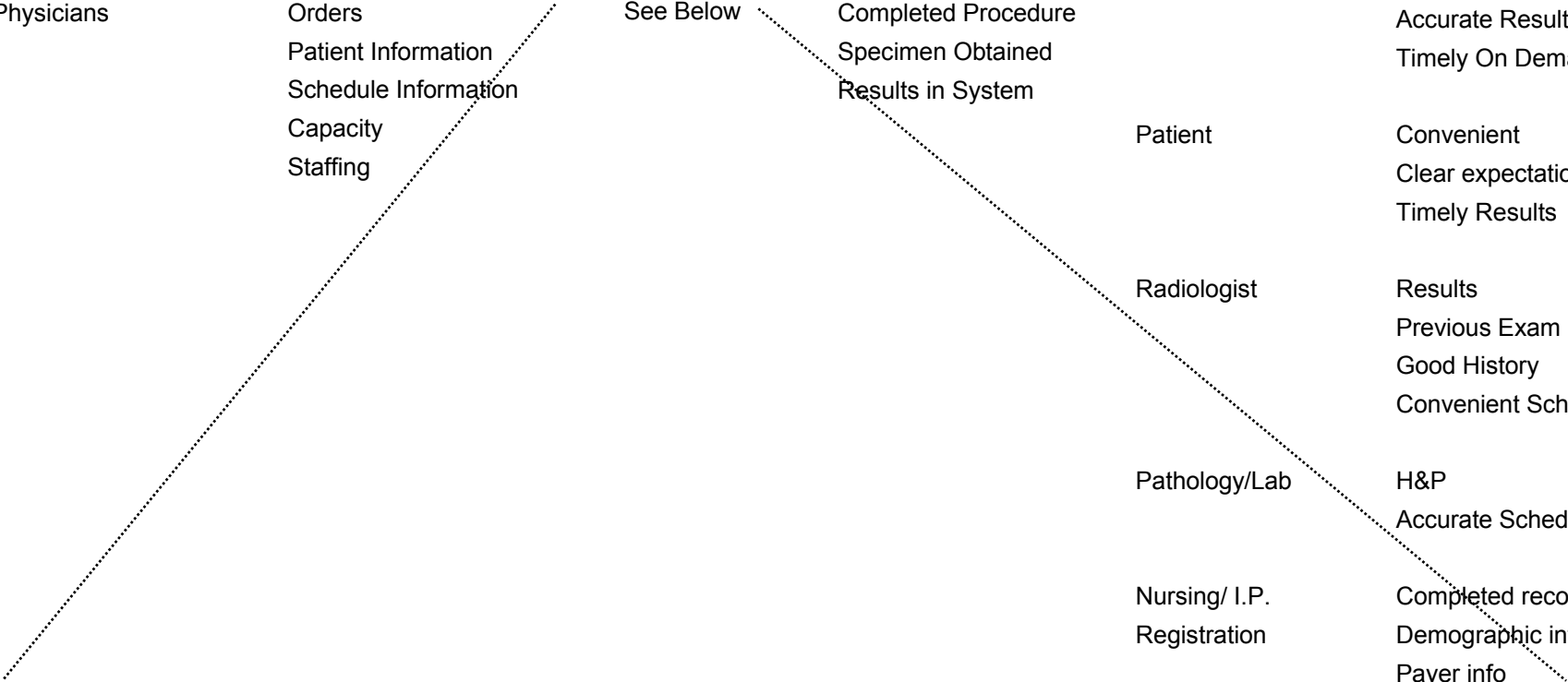
*Receive call from Physician for Interventional test*

*Approve Test*

*Contact ordering Physician, Schedule test*

*Patient enters our "system" ("Orders, Labs, H&P")*

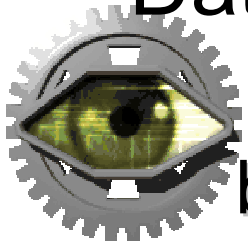
*Administer and complete test*



# Detailed Flow Chart

# Data Collection

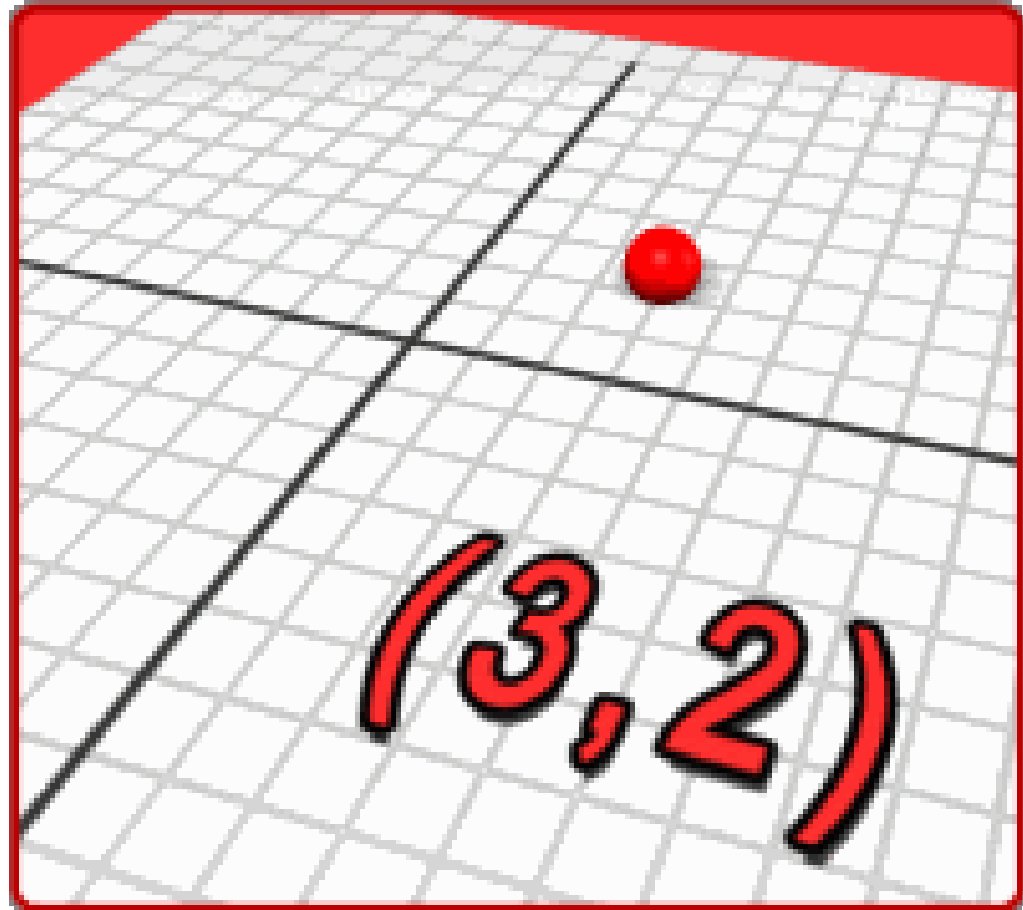
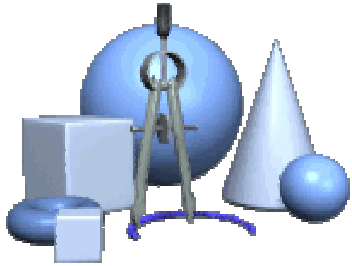
- Data Collection



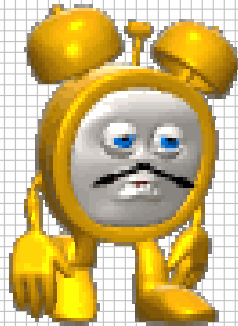
Observing the Process



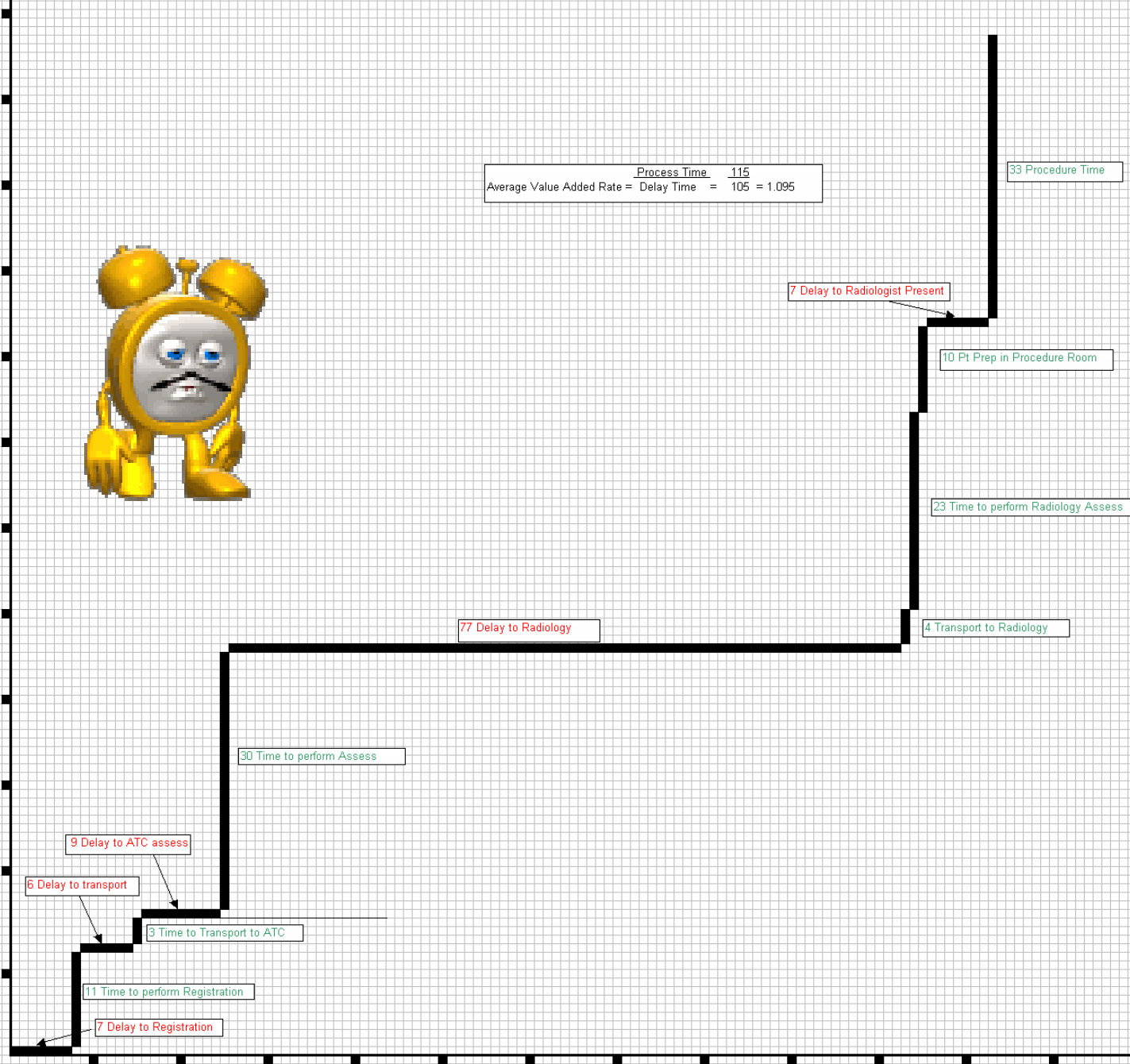
# Analysis



# Current Process vs. Delay



$$\text{Average Value Added Rate} = \frac{\text{Process Time}}{\text{Delay Time}} = \frac{115}{105} = 1.095$$

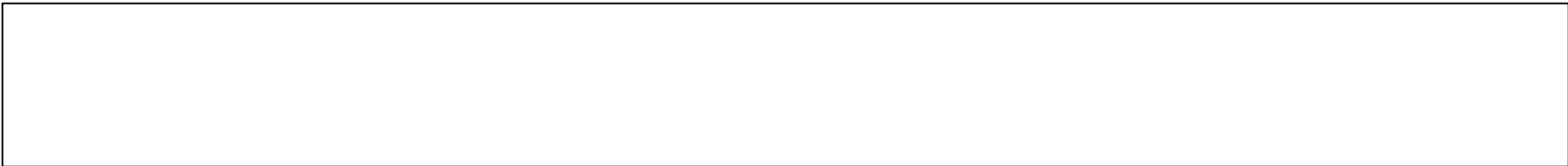


█ Average   
 █ Min Conf Level   
 █ Max Conf Level

**Delay**   
 █ Equals ten (10) minute interval, width of line is one minute bitmap

Patients arrive on average 30 minutes prior to ST appt, with 90% CI of between 23 and 37 min

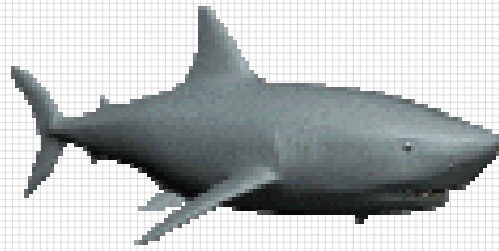
# Effect of Inpatient inserted in Schedule



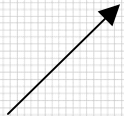
Y In	Y Out	Anova: Single Factor						
298	224	Of data where complete from Arrival Time to Finish Time which defines Y						
194	181	SUMMARY						
350	186	<hr/>						
274	127	<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>	<hr/>	
204	219	Y In interjected	9	2441	271.2222	5324.944444		
200	230	Y Out interjected	8	1609	201.125	1662.410714	<hr/>	
294	260	ANOVA						
403	182	<hr/>						
224		<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
		Between Groups	20810.628	1	20810.63	5.7555	0.0299	4.5431
		Within Groups	54236.431	15	3615.762			
		Total	75047.059	16				
		<hr/>						
		F stat is greater than F crit so reject that means could be same						

Sometimes the System Just Gets You

Min  
Max

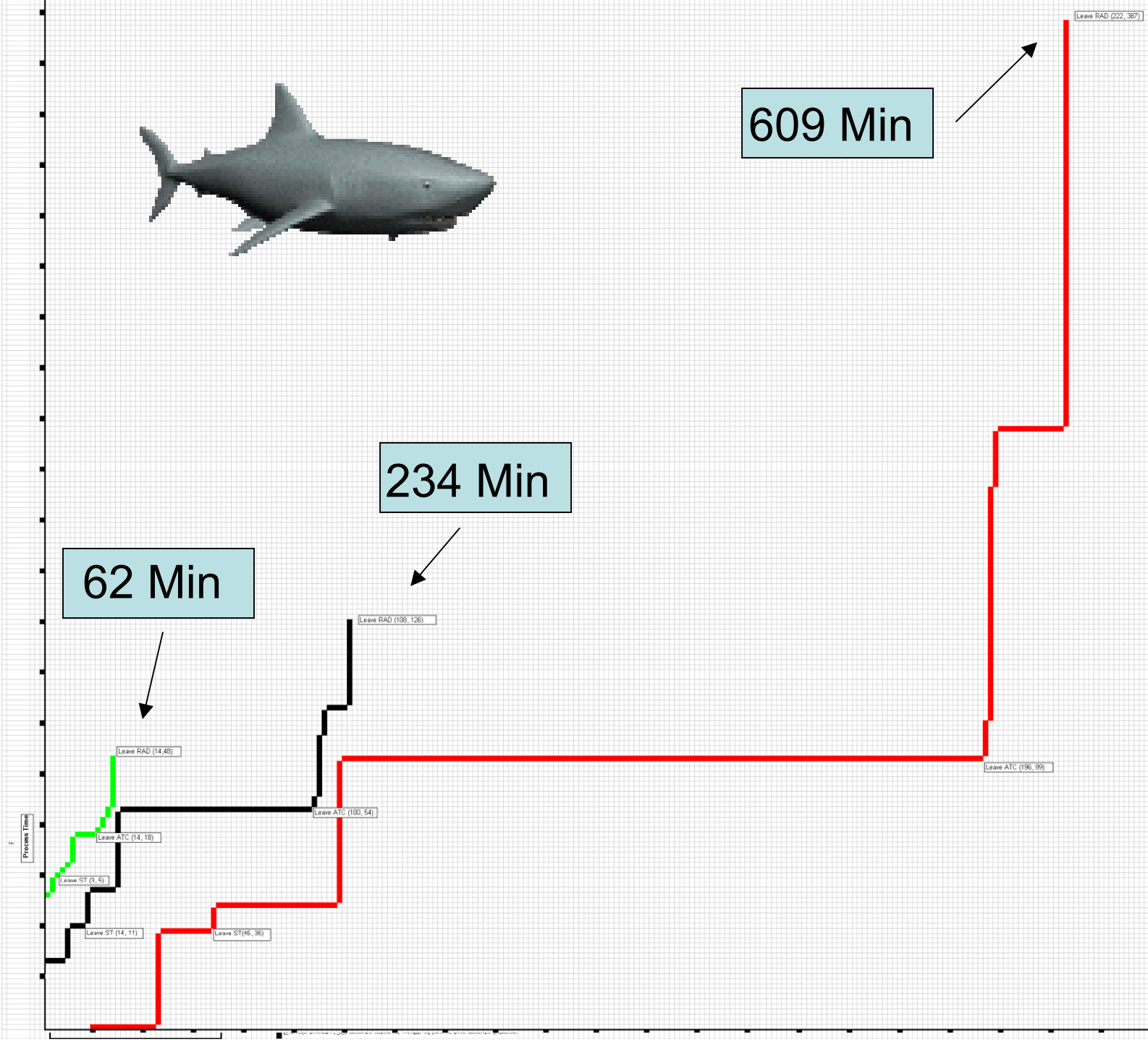


609 Min



234 Min

62 Min



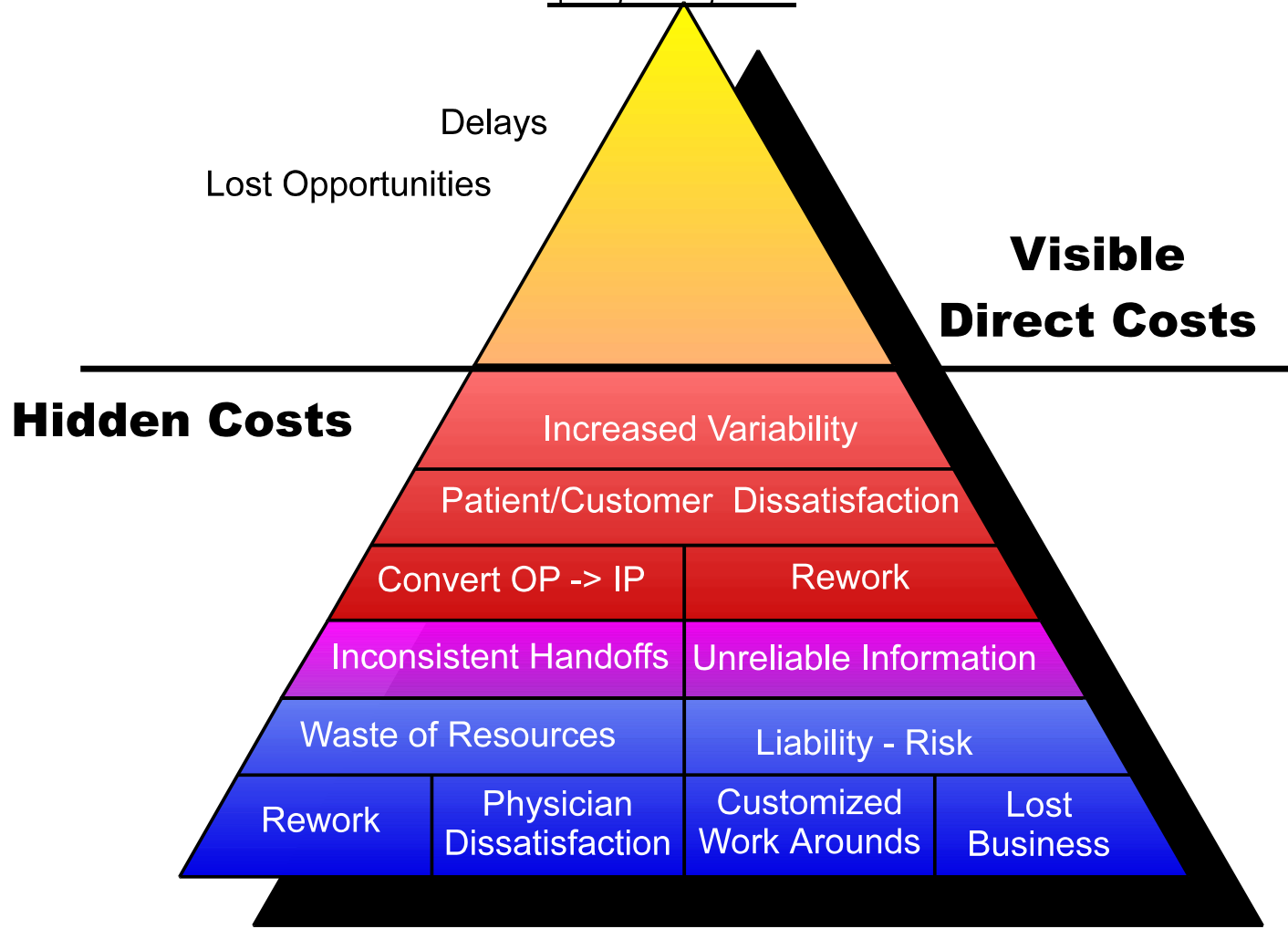
# Costs of Poor Quality



# Visible Defects and Hidden Costs

COPQ: Flow of Patients

\$ 2,487,198



# The 8 Deadly Wastes

- Overproduction
- Waits/Delays
- Transport
- Process
- Movement
- Inventory
- Defects
- Underutilization

# One Hospital's Approach:

Latent Costs

Identified Opportunities

Realized Gains

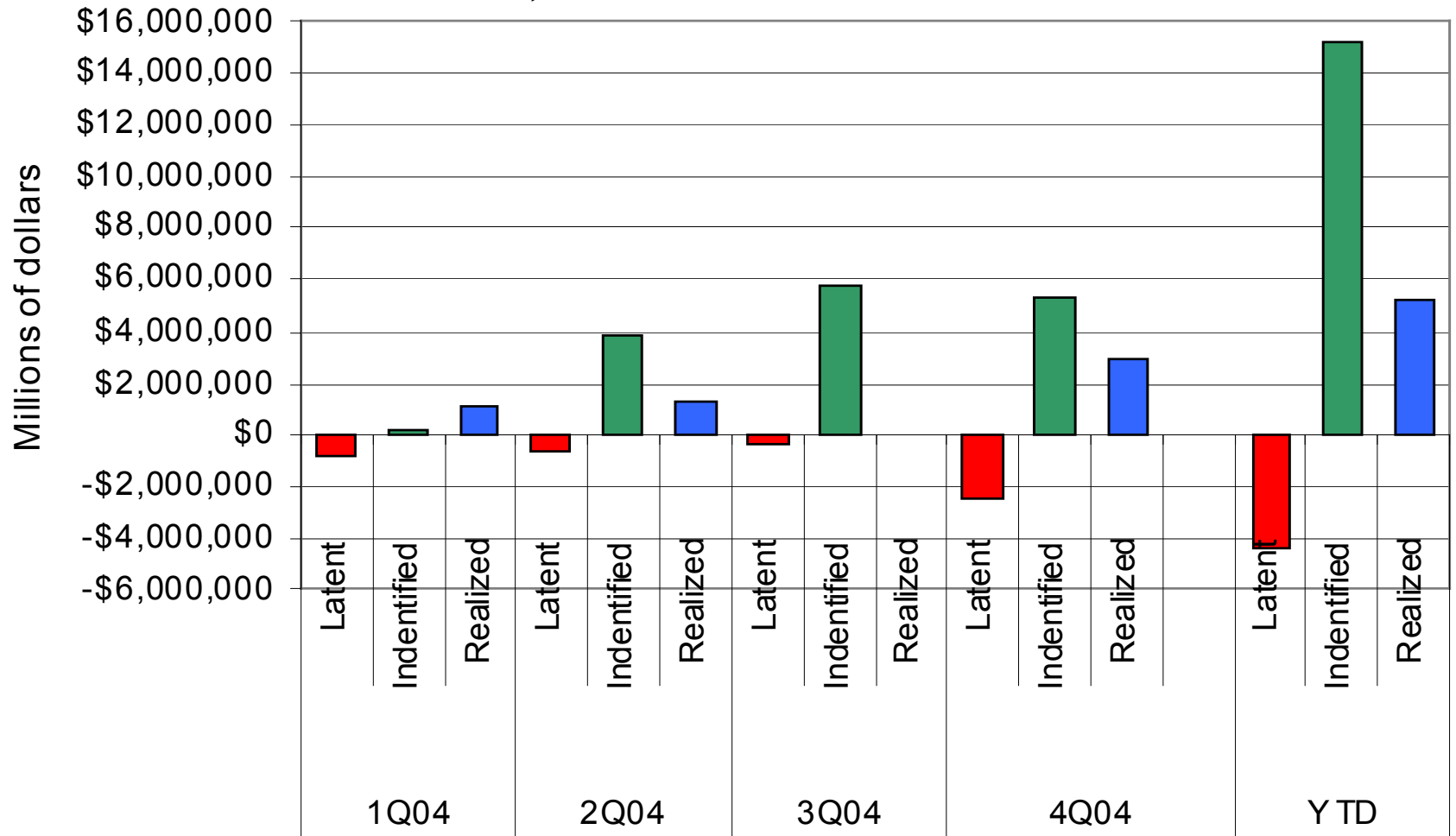
# One Example of Latent Costs

	4Q04 Targets	Weight
Mortality	1	20
Length of Stay	1	10
CVC infections	3.6	5
VAP infections	6	5
Med Safety Rate	1	20
*Readmit Rate	4.55	10
*Safety (falls)	0.37	10
*Returns to OR	1.19	10
Continuous Readiness Index	90	10

# It Can Be done – One Example

## Growth Pillar:

*Latent Costs, Identified and Realized Gains*



Visualize  
Success:

*We Need to SEE our Processes*



*Pursuing Excellence by  
Improving Care and Increasing Affordability*

# Our Mission

- The AHA Quality Center™ is a resource of the AHA designed to help providers **accelerate** their quality improvement processes to achieve better outcomes for patients and improve organizational performance.
- In collaboration with leading quality improvement stakeholders, it provides access to leading practices, tools and resources that support providers to achieve better patient **outcomes**, improved operational **performance**, enhanced **safety** and increased **satisfaction**.

# Increasing Pressure on Hospitals & Providers

- Need for accurate patient I.D. and Matching.
- Increasing numbers of older and more acute patients.
- Increased volumes through the E.D.
- Increasing incidence of HAI.
- Pay for Performance initiatives.
- Reduced reimbursements.
- Pressure for public reporting.
- Medication errors and harm.
- Patient falls.
- Poor handoffs.
- Delays, queues, bottlenecks.
- Incomplete information for decisions.
- Rework.
- Staffing and resources.
- Pressure to define and assess “Quality.”

# The Quality Center will support the continuum of care:

- Improve throughput and reduce LOS.
- Reduce readmissions.
- Improve patient identification and matching.
- Reduce Healthcare associated infections (HAI).
- Improve medication safety.
- Reduce incidence of falls.
- Improve top clinical processes.
- Reduce mortality.
- Improve financial performance (C/Adj/DC).

# Unceasing Efforts to :

- Remove Waste
- Eliminate Defects
- Reduce Variability

“All work is a system, every system has processes and every process has waste and variability.”

# Some Wicked Questions

- What are we trying to accomplish with respect to our performance?
- What level of quality and safety are we pursuing?
- How do we measure it?
- How is our performance changing?
- What are we doing to improve it?
- What are our latent costs?
- What are our Costs of Poor Quality?
- How is the CFO involved?

# Leaders Must

- Eliminate Preventable Harm
- Develop Highly Reliable Systems
- Improve Outcomes Year-to-Year
- Reduce Costs of Care Year-to-Year

We need to *Learn* to  
see our processes  
in a different light

# *Leadership for Reliable Systems*

August 21, 2006

## *The Quality Colloquium*



Stephen R. Mayfield

Senior Vice President

[smayfield@aha.org](mailto:smayfield@aha.org)