

***PERFECTION IS OUR GOAL,
EXCELLENCE WILL BE TOLERATED***

THE PASSIONATE PURSUIT OF ~~PERFECTION~~

—LEXUS

PERFECTION MANAGEMENT

—MOTOROLA



**QUALITY, SPEED & RESULTS
CONTINUOUS IMPROVEMENT SYSTEMS & SOLUTIONS**



**CAN HOSPITAL
SERVICES MATCH
PRODUCTS IN THE
QUALITY GAME?**

**CAN WE BE A
"COMPELLING
EXAMPLE"?**

The Hi
In April
grant f
particip
Health
seven

American Family Physician

PUBLISHED BY THE AMERICAN ACADEMY OF FAMILY PHYSICIANS

OCTOBER 15, 1999

In Pursuit of Perfection: A Primary Care Physician's Guide to Body Image Disorder

D., and

Columbia School of Medicine, Columbia, Missouri

is an under-recognized chronic problem that is
preoccupation with an imagined or a minor defect
of a body part, resulting in decreased social,
functioning. Patients who have body

THE PURSUIT OF PERFECTION

THE PROMISE AND PERILS OF MEDICAL ENHANCEMENT

SHEILA M. ROTHMAN AND DAVID J. ROSEN

SCIENCE AND TECHNOLOGY

[Brookings](#) > [Governance Studies](#) > [Pew Forum / Religion and Civil Society](#)

Brookings/Pew Forum Briefing The Pursuit of Perfection: A Debate on the Ethics of Genetic Engineering

Wednesday, March 31, 2004
3:00pm - 5:00pm
Brookings Institution
Event Information

MICHAEL SANDEL: The topic of
genetic engineering and enhancement
as public policy forums go is admittedly
an arcane, even rarified, subject.

Presentation:
Michael Sandel
Anne T. and Robert M. Bass Professor
of Government, Harvard University;
Member, President's Council on
Bioethics

Moderated by:

E.J. Dionne, Jr.

ARE WE REALLY THE BEST HEALTH CARE SYSTEM?

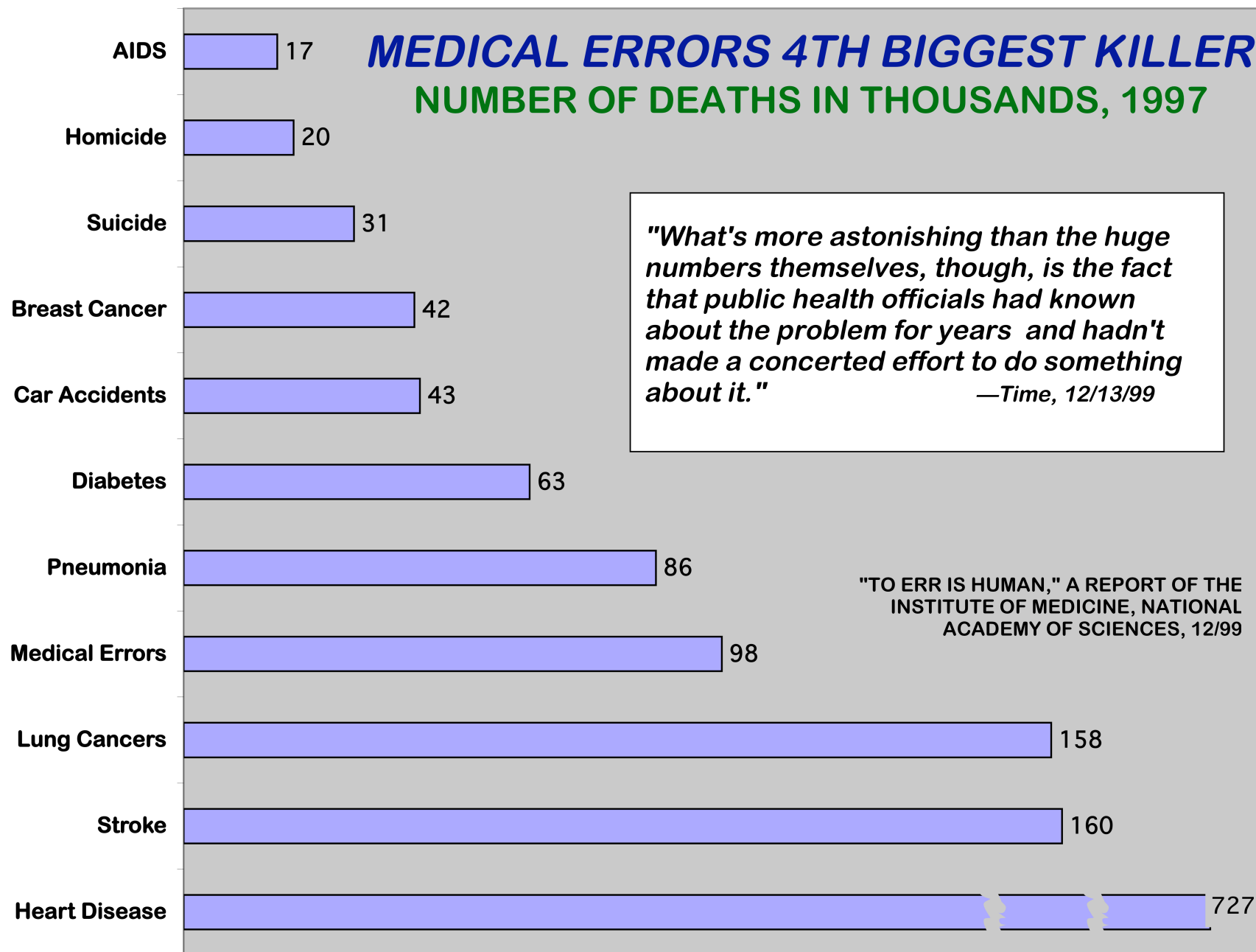
Rank	Country	Per capita spending
1	France	\$2,125
2	Italy	1,824
3	San Marino	1,301
4	Andorra	1,216
5	Malta	755
6	Singapore	750
7	Spain	1,211
8	Oman	334
9	Austria	1,960
10	Japan	1,759
11	Norway	1,700
12	Portugal	
13	Monaco	
14	Greece	
15	Iceland	1,757
16	Luxembourg	1,985
17	Netherlands	1,911
18	United Kingdom	1,193
19	Ireland	1,200
20	Switzerland	2,644

**"MEDICAL ERRORS
KILL 98,000" —Times**



MEDICAL ERRORS 4TH BIGGEST KILLER

NUMBER OF DEATHS IN THOUSANDS, 1997



"What's more astonishing than the huge numbers themselves, though, is the fact that public health officials had known about the problem for years and hadn't made a concerted effort to do something about it."

—Time, 12/13/99

"TO ERR IS HUMAN," A REPORT OF THE
INSTITUTE OF MEDICINE, NATIONAL
ACADEMY OF SCIENCES, 12/99

THE LIONESS SPEAKS

IT HAS TO BE RECOGNIZED THAT ORGANIZATIONS ROUTINELY COMMIT BLUNDERS FOR WANT OF KNOWLEDGE. GOOD INTENTIONS ARE ENOUGH, IT SEEMS TO BE THOUGHT. YET BLUNDERS, **ORGANIZED BLUNDERS**, DO MORE MISCHIEF THAN CRIMES. CARELESSNESS, INDIFFERENCE, WANT OF THOUGHT, WHEN IT IS **ORGANIZED INDIFFERENCE**, AS IN A FAMILY, AS IN A COLLEGE, AS IN AN INSTITUTION, (AS IN A HOSPITAL OR ARMY), AS IN A GREAT GOVERNMENT OFFICE, **ORGANIZED CARELESSNESS** IS FAR MORE HURTFUL THAN EVEN ACTUAL SIN, AS WE MAY HAVE OCCASION EVERY DAY TO FIND OUT.



—*Florence Nightingale*
Letter To Benjamin Jowett, Master Of Balliol College, August 8, 1871

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Top Stories

Researchers Review the Effectiveness of Computer-Assisted Decision Making in Health Care

Mar 10th, 2005

London, ON - For many health care executives, improving how health care practitioners make decisions is a top priority and computerized clinical decision-support systems (CDSSs) are increasingly being viewed as a solution.

A group of London researchers have reviewed over 100 existing computerized CDSSs to see if they result in improved practitioner performance and patient outcomes. The study, led by Dr. Amit Garg, a scientist at Lawson Health Research Institute and assistant professor at the Schulich School of Medicine at The University of Western Ontario, will be published in the March 9th issue of JAMA (The Journal of the American Medical Association).

According to Dr. Garg, CDSSs offer the potential to improve the quality of care and reduce the cost of care by influencing medical decisions at the time and place decisions are made. Characteristics of individual patients are matched to a computerized knowledge base and software algorithms generate patient-specific recommendations. Computer-generated recommendations are then delivered to the clinician through electronic medical record, by pager, or through printouts placed in a patient's paper chart. These systems may provide several modes of decision support, including alerts of critical values, reminders of overdue preventive health tasks, advice for drug prescribing, critiques of existing health care orders and suggestions for various active care issues.

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TREATMENT
MISDIAGNOS
INADEQUATE MONITORING

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PARTMENT

Gokturk

17%

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ated diagnosis



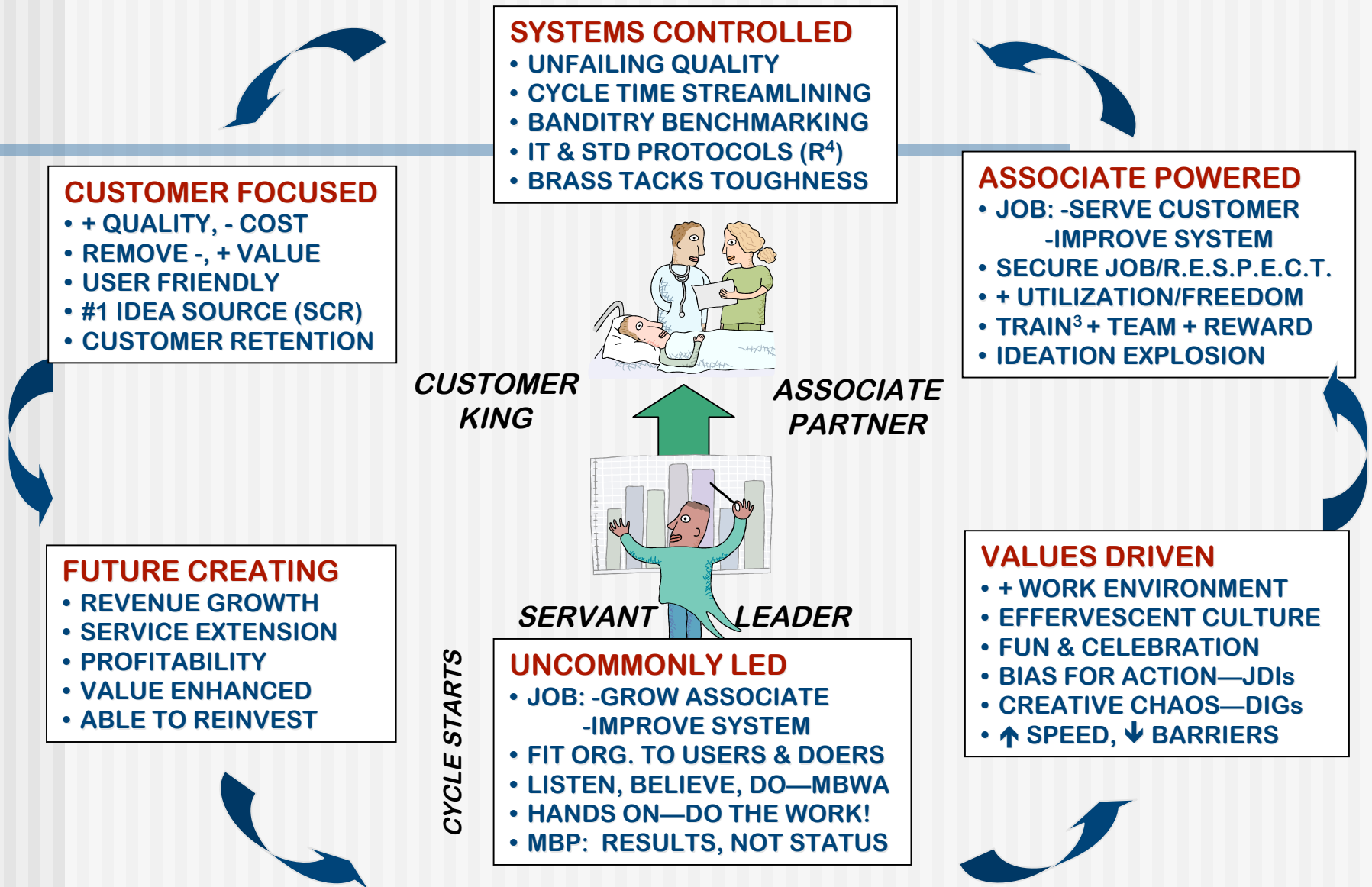
EXPECTED ERROR RATES

WHEN IS GOOD, GOOD ENOUGH?



1. EER (NORMAL MISTAKES) = **6/1000**
2. HOSPITALS' ERROR RATE = **40/1000** (4% OF ADMISSIONS)
 - 100,000 DEATHS AND 1,300,000 INJURIES
 - 100,000/350 SEATS = 285 BOEING 747 CRASHES/YR, 5+/WK
3. “NORMAL” EER FOR HOSPITALS WOULD BE:
 $UCL/LCL = X \pm 3 \sqrt{X} = 6 \pm 3 \sqrt{6} = 0 \text{ TO } 13.35/1000$
∴ SYSTEM IS “OUT OF CONTROL”
4. ZERO DEFECTS = **0/1000**
5. MOTOROLA DEFECTS (SIX SIGMA) = **.0034/1000**
OR 3.4/1,000,000 — (99.9999998% DEFECT FREE)

THE NEW AMERICAN HOSPITAL



PART A

THE WHAT & WHY OF ADVANCED PROBLEM SOLVING

QUALITY DEFINITIONS

“I know it when I see it!”

CUSTOMER SATISFACTION

- PERFORMANCE: DOES IT PRODUCE, GIVE RIGHT RESULTS?
- FEATURES: DOES IT PROVIDE EXTRAS?
- CONFORMANCE: MEET STANDARDS, EXPECTATIONS?
- SERVICEABILITY: SPEED, COURTESY, EASE OF USE?
- AESTHETICS: CLEAN, LOOK, IMPACT ON SENSES?
- PERCEIVED QUALITY: REPUTATION, IMAGE OF QUALITY?
- RELIABILITY:* CAN I COUNT ON IT TO WORK, NOT FAIL?
- DURABILITY:* HOW LONG WILL IT WORK?

STANDARDS OF PERFORMANCE

- WORLD CLASS, BENCHMARK, BEST ORGANIZATIONS
- JCAHO CLINICAL OUTCOMES
- NEW STANDARDS GROUPS

CONTINUOUS IMPROVEMENT

- NO UPPER LIMITS!
- ON KRAs: FASTER, BETTER, CHEAPER, MORE!

QUALITY STRATEGIES

Fig 1.2
Pg 1-3

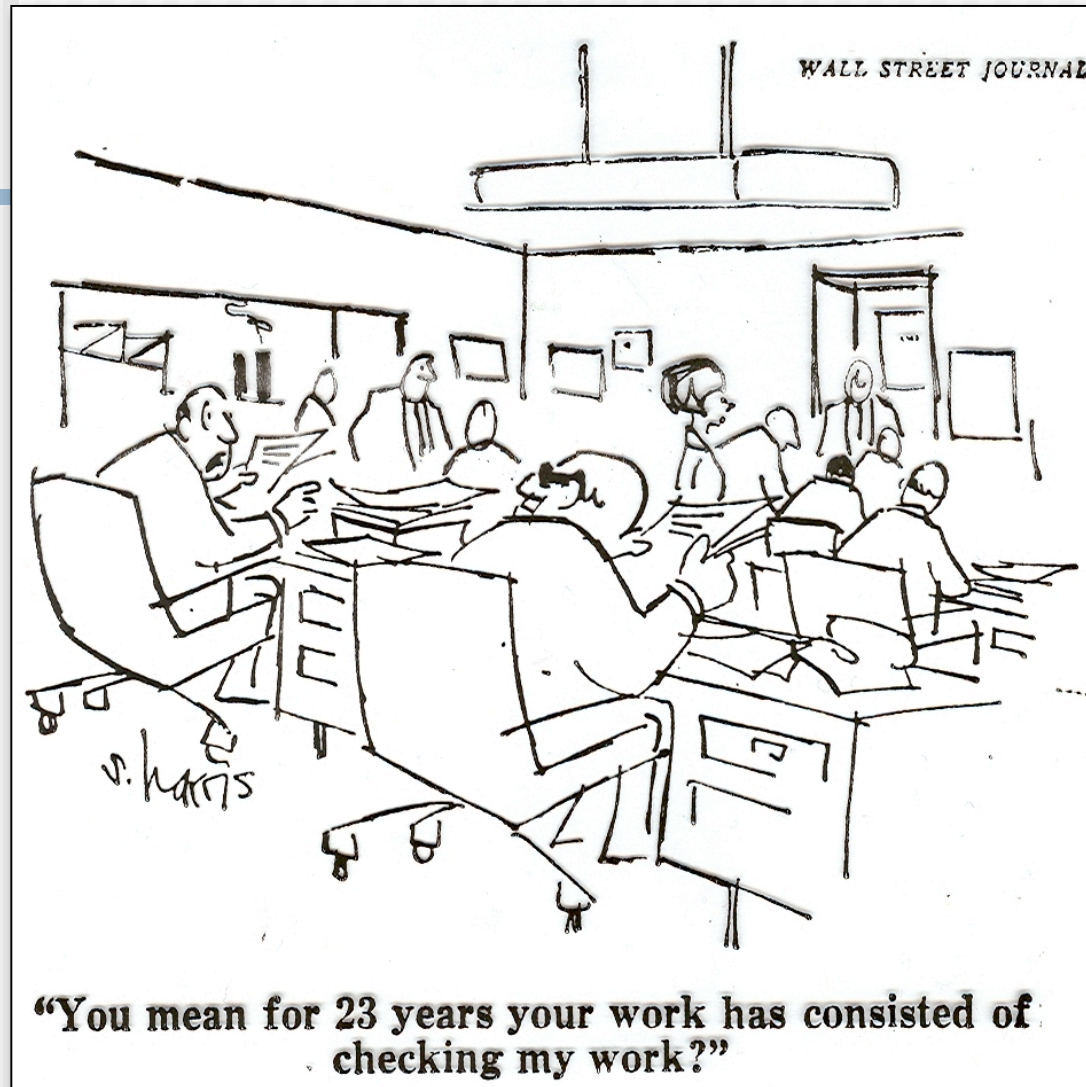
LEVELS

1. **ACCEPTABLE QUALITY LEVEL** —MINIMUM NUMBER/PERFORMANCE NEEDED TO MEET QUALITY STANDARDS, “GOOD ENOUGH”
2. **COMPETITIVE BENCHMARKING** —RATE ORGANIZATION’S PRACTICES & SERVICES AGAINST WORLD’S BEST & ACHIEVE SAME LEVEL
3. **BREAKTHROUGH BENCHMARKING** —MATCH BENCHMARK, THEN EXCEED BY % GOAL IN SET TIME. USE **ADDITIVE PROCESS** FOR IMPRESSIVE RESULTS

PRACTICES

1. **CUSTOMER IS QUALITY BOSS**, GUIDED BY STRATEGIC PLAN
 - THEIR AGENDA FIRST, THEN OURS → **ZERO DEFLECTIONS**.
 - **QUALITY FUNCTION DEPLOYMENT**—ACTIVITY NON CONTRIBUTIVE TO CUSTOMER WANTS IS WASTED
 - ADD VALUE AT EACH STEP THAT IS AFFORDABLE, REIMBURSABLE
2. **KRA CONTINUOUS IMPROVEMENT** —SEARCH CEASELESSLY FOR HIGHER QUALITY BY ISOLATING DEFECT SOURCES, GO FOR **ZERO DEFECTS** ON WORK THAT MATTERS. MANY BRAINS & GROUP PROCESSES USING CI POWER TOOLS
3. **CYCLE TIME REDUCTION** —DRAINS THE SWAMP & EXPOSES PROBLEMS
 - **JUST IN TIME**—CONTROLLING UPSTREAM, SUPPLIERS DELIVER MATERIALS & SERVICES AT MOMENT NEEDED—ELIMINATE INVENTORIES, COST, TIME, EFFORT
 - QUALITY IS SUPPLIER RESPONSIBILITY—FAULTY MATERIAL UNDETECTED
4. **DESIGN IN QUALITY** —PREVENT ANTICIPATED ERRORS
 - **POKA-YOKE**—MISTAKE PROOF WORK SO IT CAN BE DONE ONLY ONE WAY
 - **ROBUST DESIGN**—BUILD IN TOLERANCES FOR UNAVOIDABLE VARIABLES

THE INSPECTION FALLACY



"Cease reliance on mass inspection to achieve quality...by building quality into the product in the first place."

*—Deming
The 14 Points*

INPUT

SUPPLIERS

- DEPARTMENTS
- STAFF GROUPS
- VENDORS
- MANAGEMENT

PROCESS

DEPARTMENT

- MANPOWER
- MONEY
- MINUTES
- MISSION
- METHODS
- MATERIALS
- MACHINERY

OUTPUT

CUSTOMERS

- PATIENTS
- PHYSICIANS
- DEPARTMENTS
- VISITORS
- PAYERS

***PROCESS
FEEDBACK***

***CUSTOMER
FEEDBACK***

PROCESS & CUSTOMER FEEDBACK

- ADD CUSTOMER VALUE, CUT IRRITATIONS
- ZAP VALUES VIOLATIONS, TRIVIAL WORK
- STOP REDO, REWORK & PATCH
- WORK FOR CYCLE TIME REDUCTIONS

THE “WE KNOW BEST” FALLACY



INPUT

PROCESS

OUTPUT

SUPPLIERS

STEP 3:

- LIST SUPPLIERS
- SET REQS & EXPECTS
- ASSESS ADEQUACY
- CONNECT INPUT PROCESSES TO DEPT'S PROCESSES

DEPARTMENT

STEP 2:

- LIST WORK PROCESSES
- ID HI VOLUME, COST, VARIANCE, RISK
- FLOWCHART & STREAMLINE

CUSTOMERS

STEP 1:

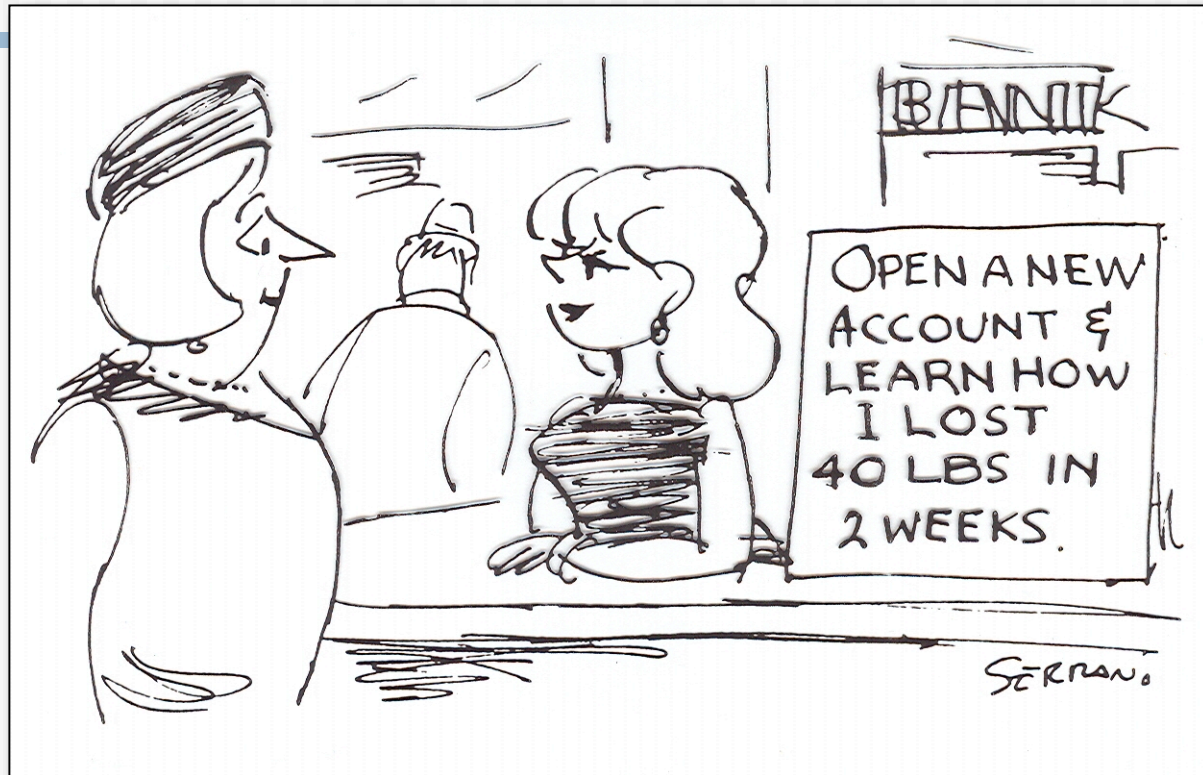
- LIST ALL CUSTOMERS
- ID SIZE & TYPE
- ID NEEDS/EXPECTS
- CORRECT MOT'S FIRST

*PROCESS
FEEDBACK*

*CUSTOMER
FEEDBACK*

PROCESS & CUSTOMER FEEDBACK

- ADD CUSTOMER VALUE, CUT IRRITATIONS
- ZAP VALUES VIOLATIONS, TRIVIAL WORK
- STOP REDO, REWORK & PATCH
- WORK FOR CYCLE TIME REDUCTIONS





NMH CHAIN OF INTERACTIONS

EVERY TOUCH & HANDOFF CREATES RISKS

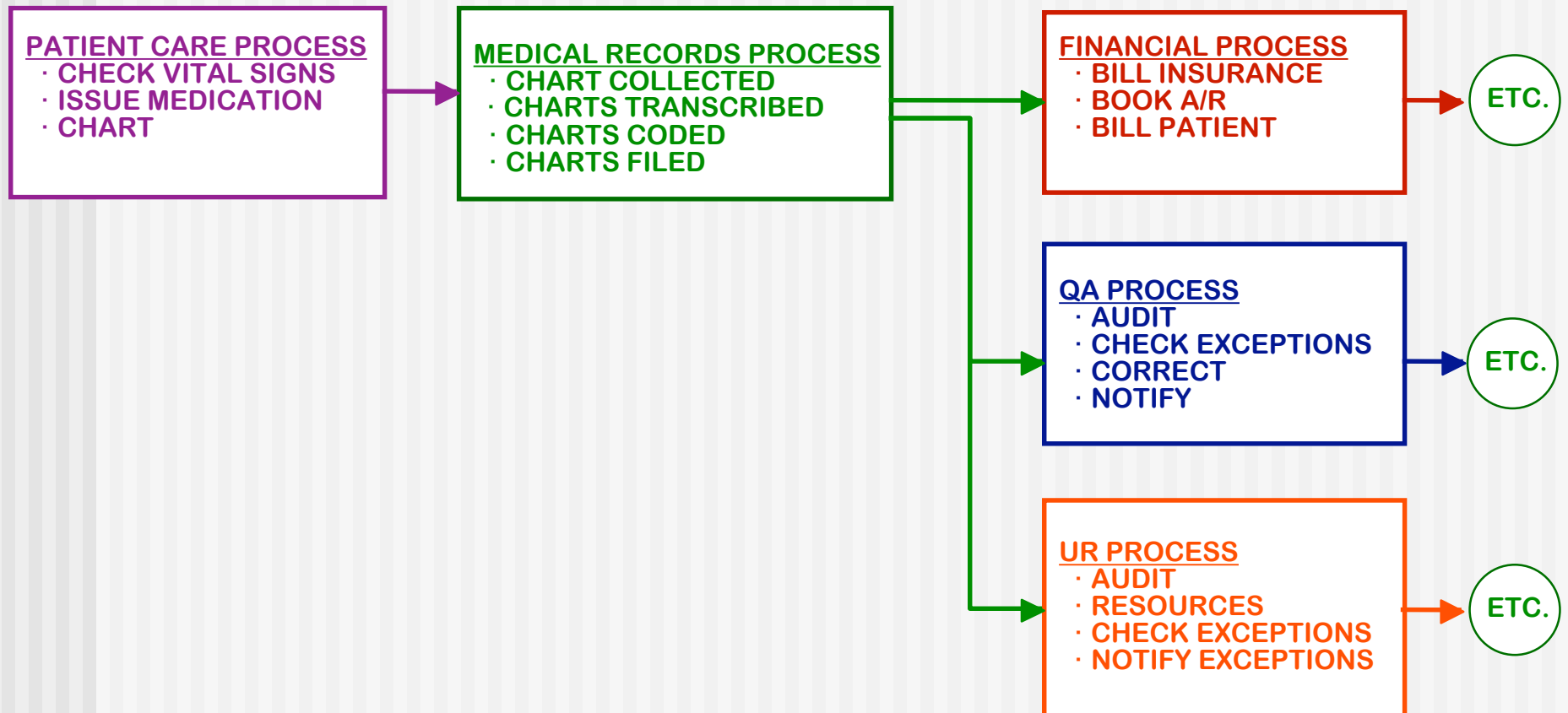
CI Rx:

- **REDUCE NUMBER OF TOUCHES**
- **INCREASE TRAINING/CAPABILITIES**
- **AUTOMATE WHEREVER POSSIBLE**

***DON'T LET YOUR UNIT BE
THE WEAK LINK IN THE CHAIN!***



SYSTEM = MANY PROCESSES

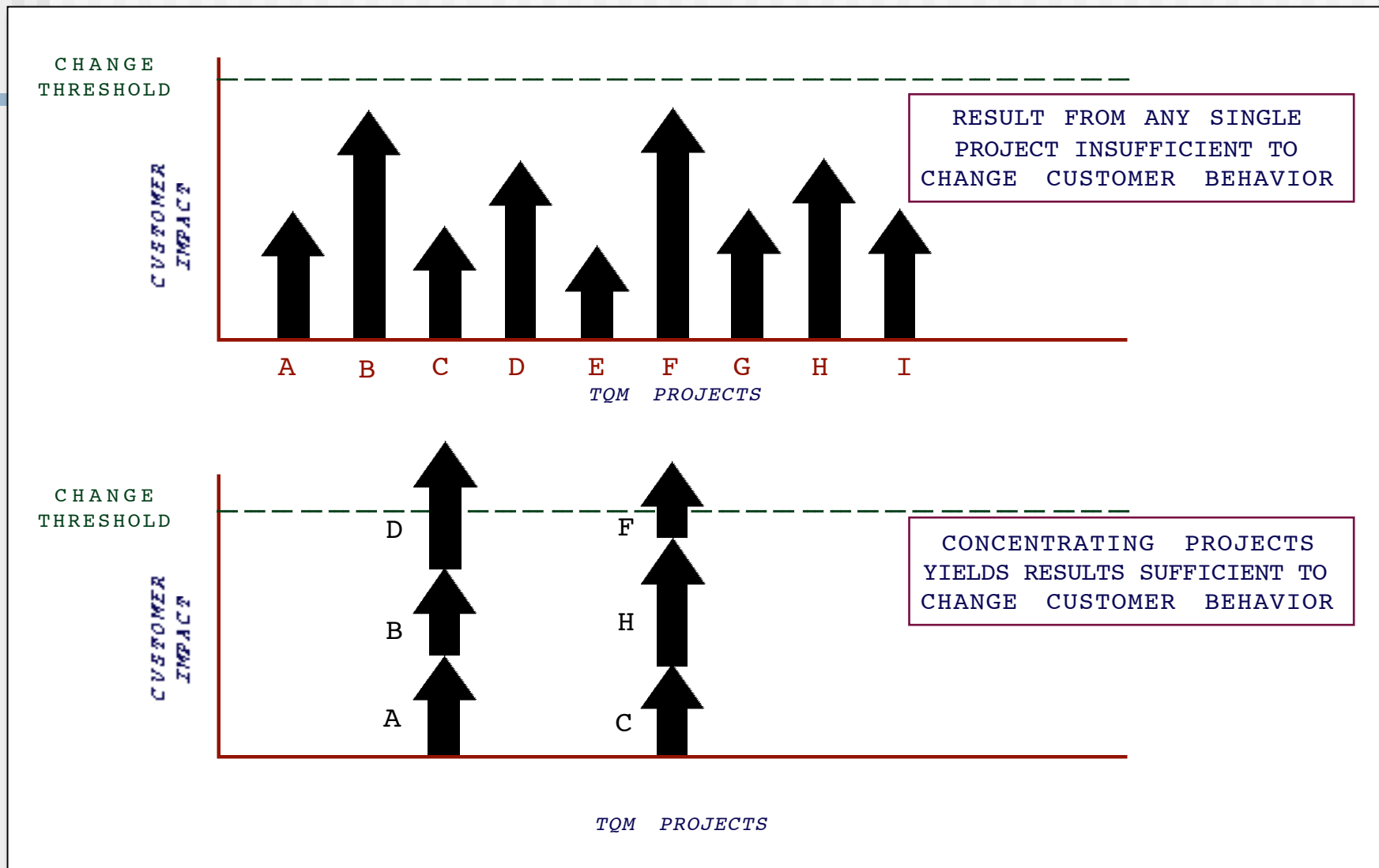


STEPS TO PROCESS IMPROVEMENT

1. DEFINE OUTPUT REQUIREMENTS —CUSTOMER 1ST!
2. DEFINE INPUT REQUIREMENTS WITH SUPPLIERS
3. DEFINE UNIT VALUE ADDED PROCESS CHANGES
4. FLOWCHART CURRENT ACTIVITIES/STEPS
5. ANALYZE VARIANCE & DESIGN SOLUTIONS
 - *QUALITY FUNCTION DEPLOYMENT STREAMLINING*
 - *ANALYZE CYCLE TIMES TO REDUCE WASTE (REWORK, EFFORT, SPACE, TRANSPORTATION, MATERIALS)*
6. CONFORM TO VALUES, SOPs & PRINCIPLES
7. DESIGN & IMPLEMENT NEW PROCESS
8. CONTINUOUSLY IMPROVE, IF SENSIBLE

WHAT'S BETTER?

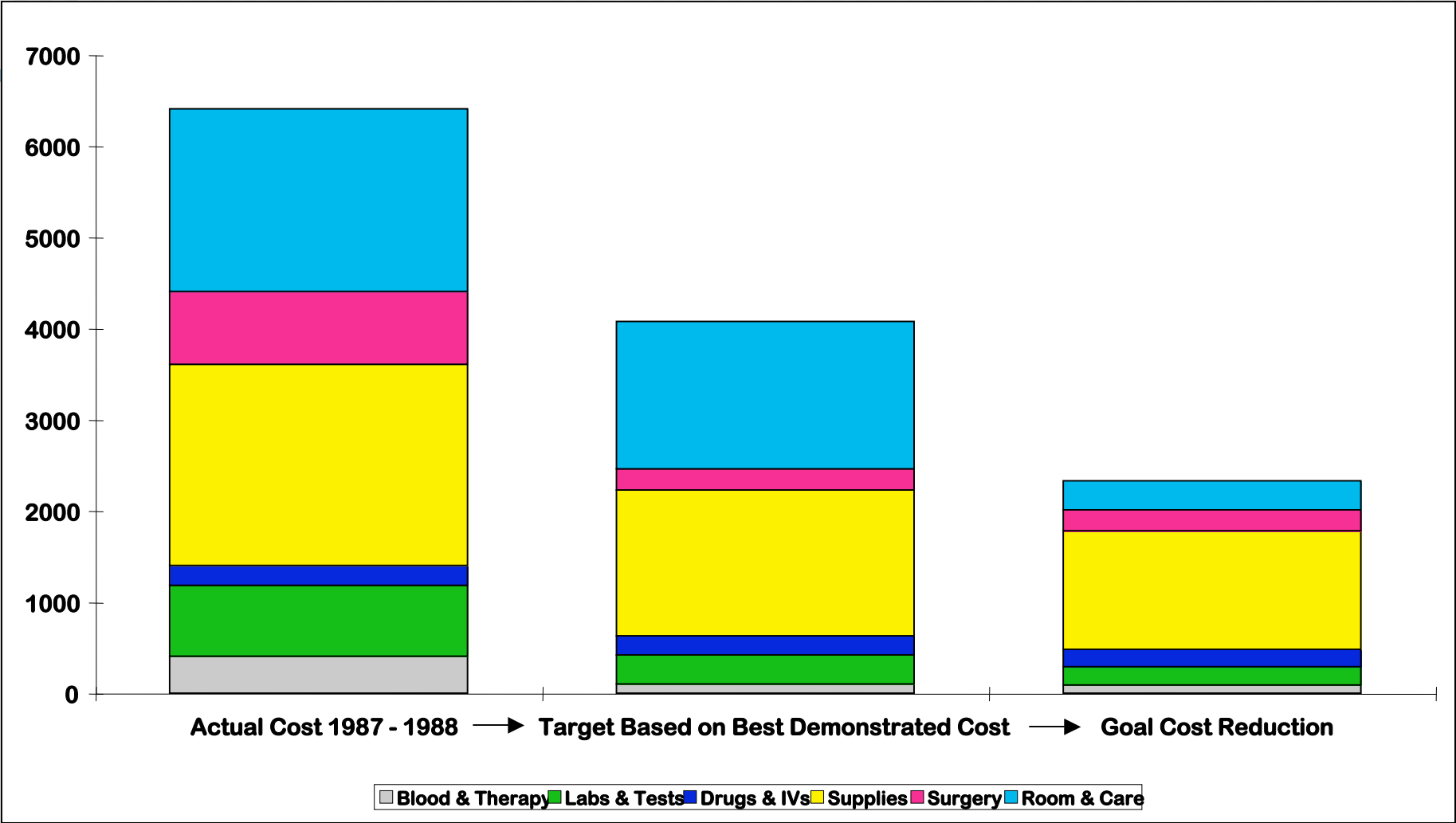
A THOUSAND SINGLES, OR A FEW HOME RUNS?



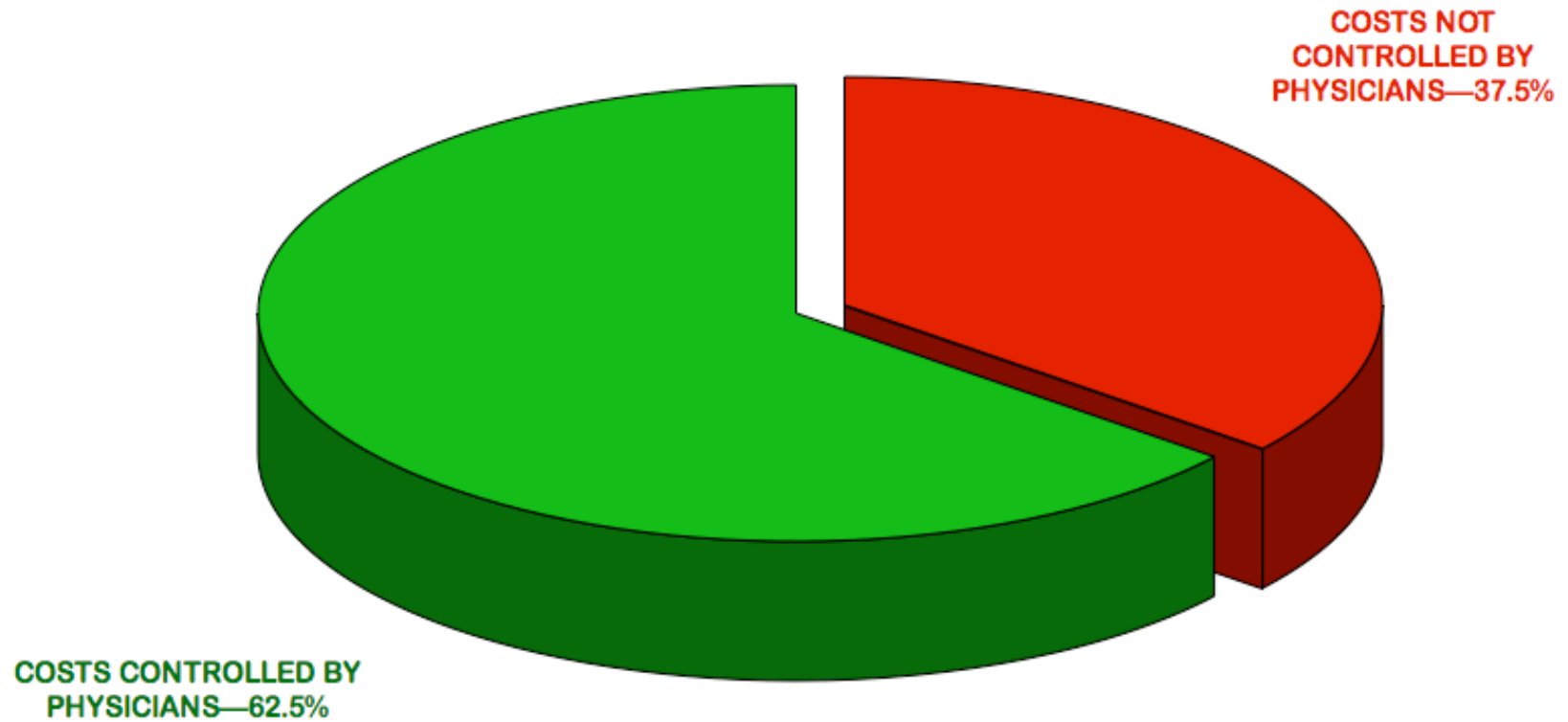
—Healthcare Advisory Board, *TQM: The Second Generation*

ADDITIVE PROCESS

TOTAL HIP REPLACEMENTS



PHYSICIAN COOPERATION ESSENTIAL
MAJORITY OF COSTS THROUGH SERVICES ORDERED



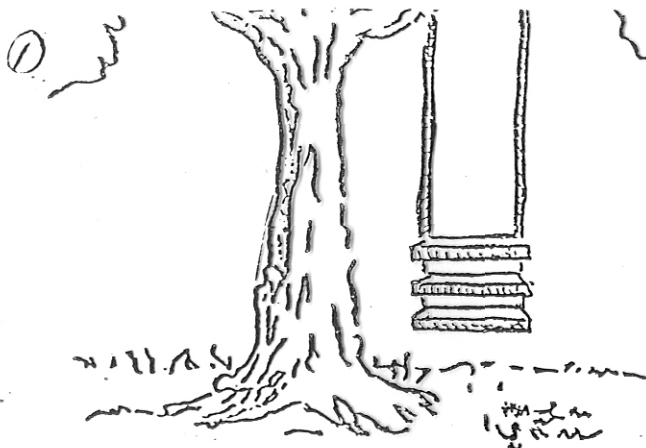
—KAISER PERMANENTE MEDICAL CARE PROGRAM, 2004 ANNUAL REPORT

NMH PRESENTATION

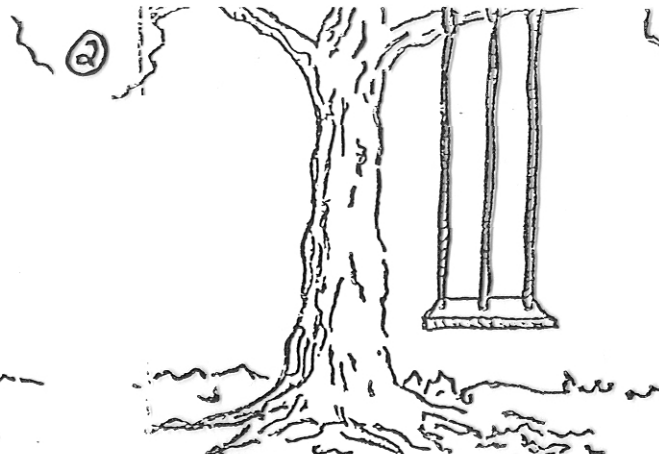
COMPARATIVE PHYSICIAN EXPENSES FOR SAME PROCEDURE

Clay
Insert B

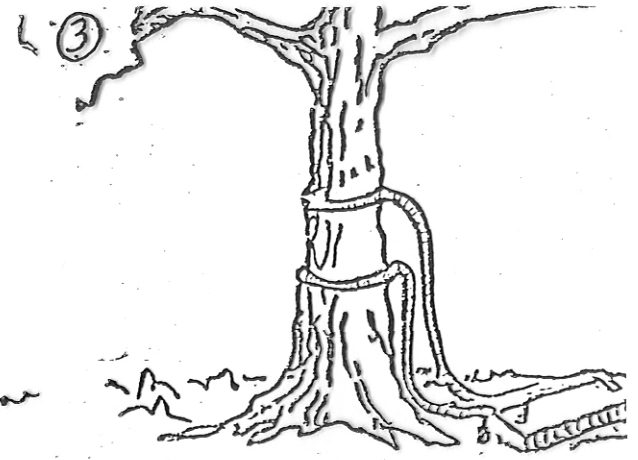




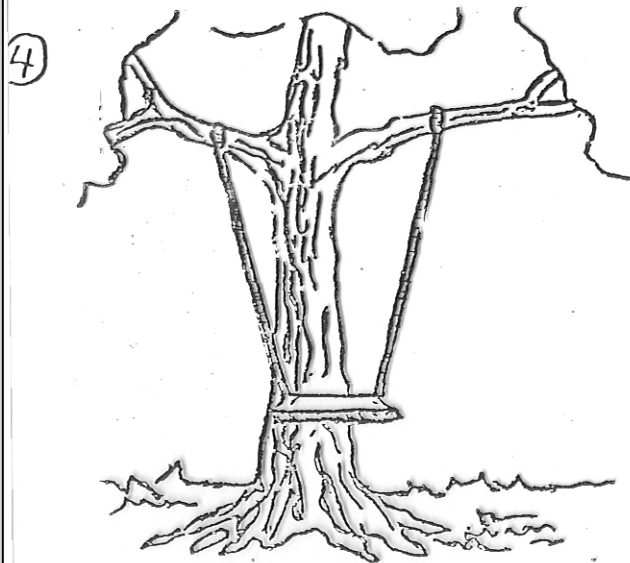
AS THE CONSULTANTS
RECOMMENDED IT.



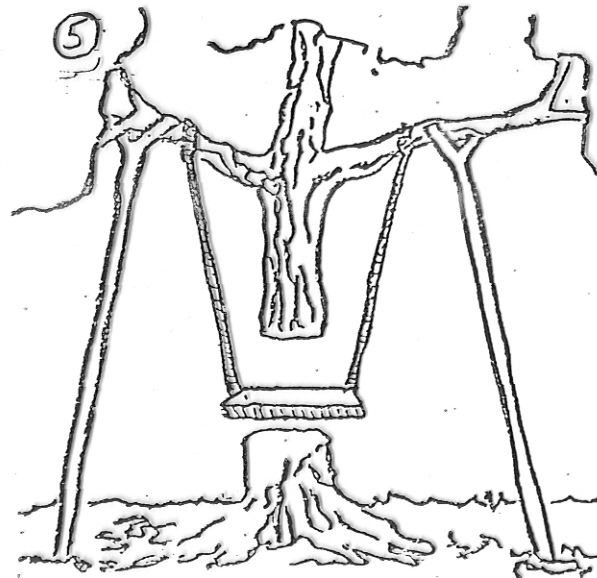
AS BOARD OF TRUSTEES
APPROVED IT.



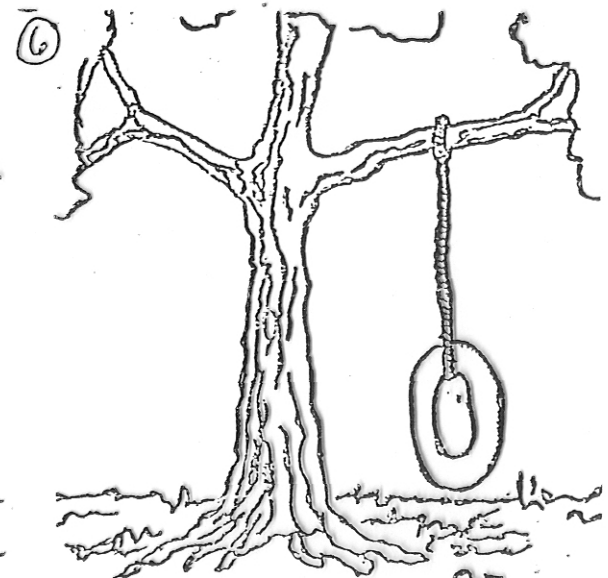
AS ARCHITECTS
DESIGNED IT.



AS ADMINISTRATION
IMPLEMENTED IT.



AS THE DOCTORS
MODIFIED IT.



WHAT THE HOSPITAL
NEEDED

HOW TO INTEGRATE MDs IN CI

1. IDENTIFY PROCESS TO BE IMPROVED
2. ASK FOR MD INVOLVEMENT & SUPPORT— REGARDLESS
3. CREATE THE NEW PROCESS
4. PRESENT IMPROVED PROCESS DATA
5. GET ADMINISTRATIVE APPROVAL
6. USE PEER MD PRESSURE COMPLIANCE
7. USE EXECUTIVE PRESSURE COMPLIANCE

FOR WHY WE HESITATE TO INVOLVE MDs

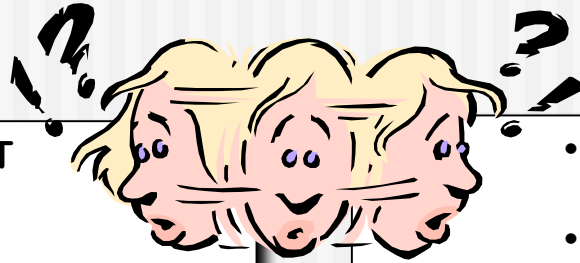
1. NO SYSTEM, NO TOOLS, NO ACCESS
2. FEAR OF FAILURE
3. FEAR OF ANGERING MDs
4. FEAR OF REJECTION
5. FEAR OF BURDENING BIGGEST CUSTOMER

PART B

THE CRAFTSMAN'S TOOLKIT

SIX SIGMA AND QUALITY METHODOLOGIES

DON'T GET SNOWED BY THE TERMINOLOGY EXPLOSION!



- ABC - ACTIVITY BASED COST ACCOUNTING
- ALPHA RISK, TYPE 1 ERROR
- AFFINITY DIAGRAMMING
- ANALYTICAL MODELING
- BALANCED SCORECARD
- BALDRIDGE
- BENCHMARKING
- BUSINESS PROCESS REENGINEERING (BPR)
- CAD/CAM
- CONCEPT ENGINEERING
- DEMING
- DOCUMENT CONTROL
- DMADV / NEW PRODUCT & SERVICE INTRODUCTION
- DMAIC / EXISTING PRODUCT OR SERVICE

- FINANCIAL ANALYSIS / COST OF QUALITY
- ISO 900
- LEAN, LEAN SIX SIGMA & LEAN MANUFACTURING MANAGEMENT
- METRICS
- PLAN, DO, CHECK, ACT - PDCA (DO-IT)
- PROCESS MANAGEMENT
- PROJECT SELECTION
- SIMULATION
- SIX SIGMA
- TAGUCHI METHODS
- TL 9000
- TOTAL QUALITY MANAGEMENT (TQM)
- TRIZ, THEORY OF INVENTIVE PROBLEM SOLVING
- WORK-OUTSOLVING
- WORK-OUT

BE AN EFFECTIVE ECLECTIC!

Quality Approaches for the New Millennium

CONSORTIUM BENCHMARKING STUDY
BEST-PRACTICE REPORT



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**SUMMARY OF FUTURE DIRECTION
FROM BEST QUALITY COMPANIES**

**NOT ALL APPROACHES
HAVE WORKED**

SO WHERE SHOULD I FOCUS? BEST BETS FOR SUCCESS

Section 1: Quality Tools and Approaches

1. Quality programs are expected to assume a more customer-inspired focus and orientation with regard to ongoing improvement efforts.
2. The three quality methodologies most commonly being piloted among the best-practice partners are benchmarking, self-assessment, and Six Sigma. Partners expect that these tools will be used more extensively in the new millennium.
3. Leading companies are experimenting with the use of training centers, institutes, and corporate universities to train employees in the application of leading-edge quality approaches and techniques.

Rx STRATEGY SUMMARY

- **FOCUS: CUSTOMER³**
- **BENCHMARKING—COPY THE GOLD STANDARD**
- **SELF/ORG ASSESSMENT—MEASURES²**
- **KRA CI (SIX SIGMA)**
- **LEARNING—INCREASE TEAM'S INTELLECTUAL CAPITAL**

PROBLEM SOLVING WITH DO-IT

DEFINE PROBLEM

1. ONE SENTENCE PROBLEM STATEMENT—SPECIFIC, EXACT
2. USE DATA & MEASURES
 - SYSTEM/CUSTOMER FEEDBACK—INPUT, PROCESS, OUTPUT
 - GRAPH MEASURES— **RUN & PARETO CHARTS, HISTOGRAM**
 - IDENTIFY STANDARD VARIANCES— **CONTROL CHART**
3. SELECT THE WORK TEAM

OUTLINE OPTIONS

1. ANALYZE PROBLEM/DATA—BEGIN WITH **BRAINSTORMING**
 - PINPOINT POSSIBLE PROBLEM CAUSES— **FISH-BONE**
2. IDENTIFY ROOT CAUSES & PUSH CONSENSUS
 - FIGURE WHY PROBLEM OCCURRED— **VARIANCE ANALYSIS**
 - DOCUMENT CURRENT PROCESS— **FLOWCHART**
3. CREATE POSSIBLE SOLUTIONS— **VARIANCE SOLUTION**
 - TEST CONCEPT, PILOT & CHOOSE BEST ANSWER

IMPLEMENT SOLUTIONS

1. CREATE ACTION PLAN & IMPLEMENTATION SCHEDULE— **GANTT CHART**
2. SELL PROPOSAL— **MANSYS GUIDELINES**
3. IMPLEMENT & ADDRESS CHANGE RESISTANCE

TRACK RESULTS

1. GET FEEDBACK ON HOW IT'S DOING— **TRACKING CHECKLIST**
2. DEAL WITH BUMPS IN THE ROAD
3. REFINING—HEART OF CI

WHERE & WHEN TO USE TOOLS

	DEFINE PROBLEM			OUTLINE OPTIONS			IMPLEMENT SOLUTIONS			TRACK RESULTS			PAGE #
	STATE PROBLEM	USE DATA SOURCES	SELECT PROJECT TEAM	ANALYZE PROBLEM DATA	IDENTIFY ROOT CAUSES	CONSIDER POSSIBLE SOLUTIONS	CREATE ACTION PLAN	SELL PROPOSAL	IMPLEMENT & MANAGE CHANGE	GET PERFORM FEEDBACK	DEAL WITH PROBLEMS	REFINE/ RECYCLE PROCESS	
CORE TOOLS													
BENCHMARKING	2	1									2	2	1-5
BRAINSTORMING	1		2	1		1	2				1	1	6-2
CONTROL CHART		1								1		2	5-17
COST/BENEFIT ANALYSIS						1	2	2			2	2	6-23
DECISION MATRIX						1					2	2	6-18
FISH BONE CHART				2	1						2	1	6-3
FLOWCHART				1	1	2	2					2	6-8
HISTOGRAM		1								1		2	5-6
MANSYS PROPOSAL GUIDE								1			2		7-1
PARETO CHART		1				2						2	5-8
RUN CHART		1								1		2	5-11
TRACKING CHECKLIST											1		9-1
WORK TRAFFIC DIAGRAM				1		1	2		2		2	2	6-15
SPECIAL USE TOOLS													
CUSTOMER PROXY	2	1								2		1	4-3
CYCLE TIME ANALYSIS	2			1		1	2		2		2	2	6-26
FOCUS GROUPS	2	1								2		1	4-4
GANTT CHART									1			2	7-3
INTERVIEWS	2	1								2		1	4-4
SAMPLING	2	1								1		1	4-4
STRATIFICATION					1						2	1	4-4
SURVEYS	2	1								2		1	4-4
VARIANCE ANALYSIS				1	1						1	1	6-31
VARIANCE SOLUTION						1					1	1	6-33
WORK SIMPLIFICATION				1		1					1	1	6-25

1 = Primary Application; 2 = Secondary; Blank = None/Rare.

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STEP 1—DEFINE PROBLEM

1. ONE SENTENCE STATEMENT—SPECIFIC, EXACT

2. USE DATA & MEASURES

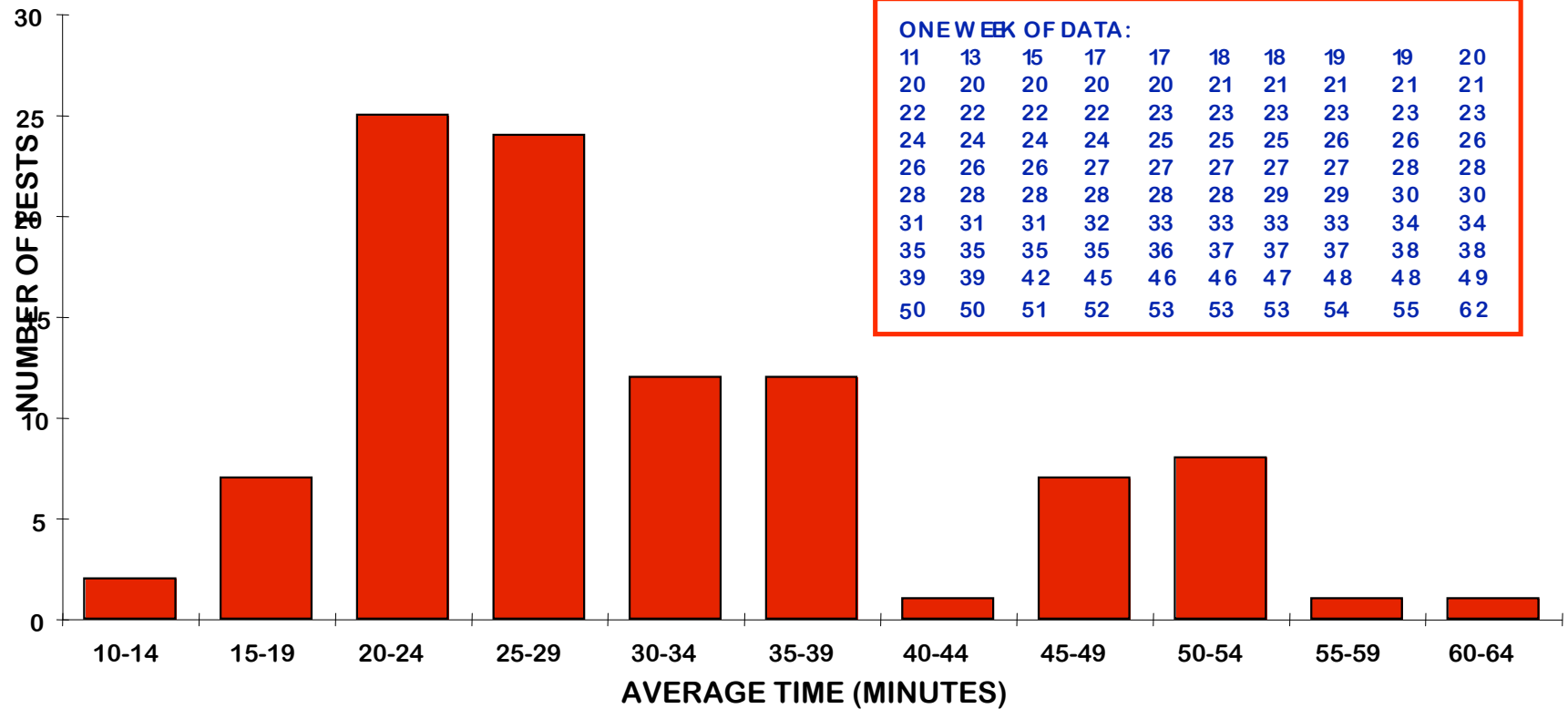
- SYSTEM/CUSTOMER FEEDBACK— *INPUT, PROCESS, OUTPUT*
- GRAPH MEASURES— *RUN & PARETO CHARTS, HISTOGRAM*
- IDENTIFY VARIANCES— *BENCHMARKING, CONTROL CHART*

3. SELECT THE WORK TEAM

SPECIAL USE TOOLS

- **FOCUS GROUPS & INTERVIEWS**
- **SAMPLING & SURVEYS**
- **DATA STRATIFICATION**

HISTOGRAM



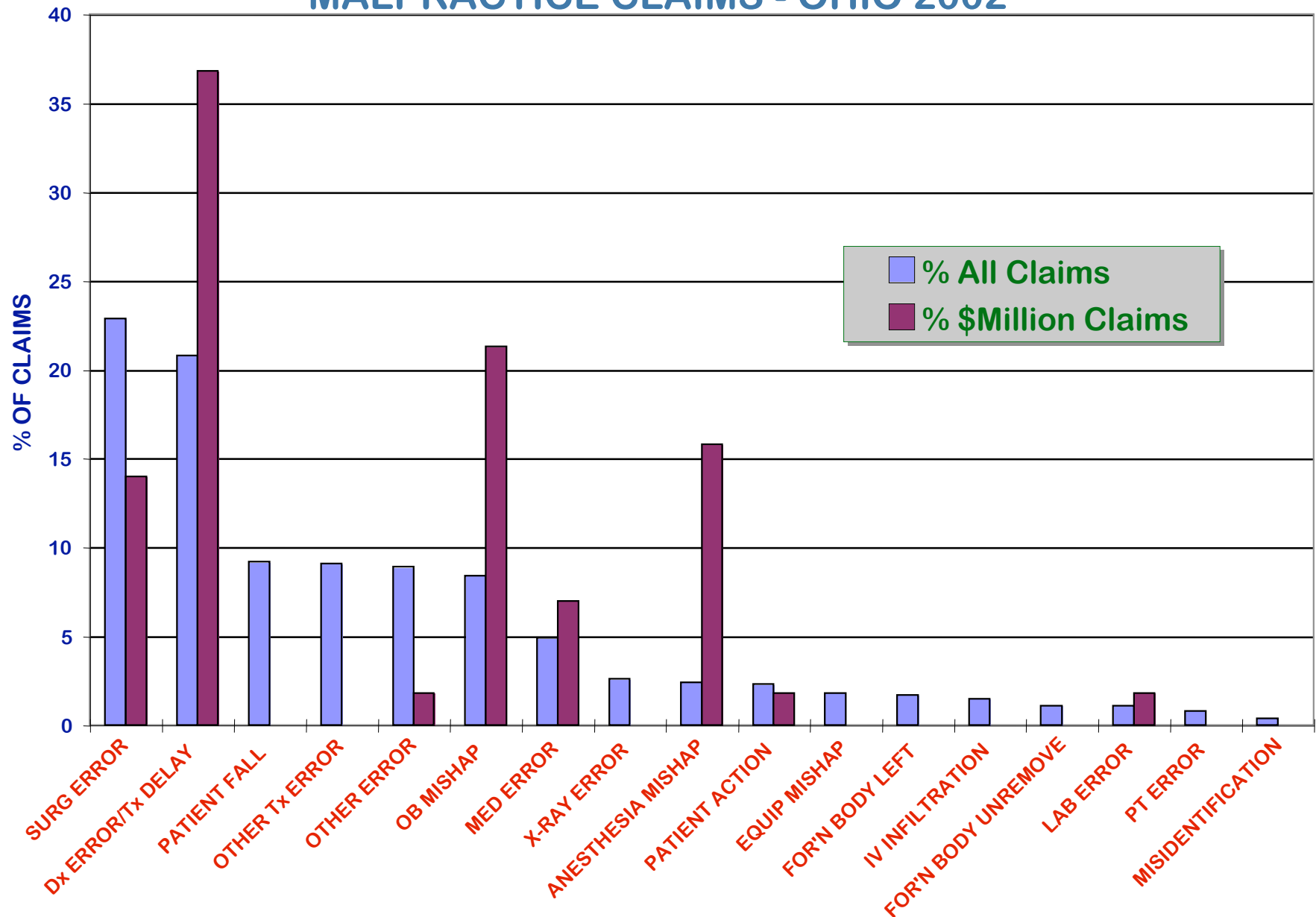
HISTOGRAMS ALLOW ANALYSIS OF DATA PATTERNS

EXAMPLE: LAB MINUTES FROM ORDER TO RESULTS DELIVERED

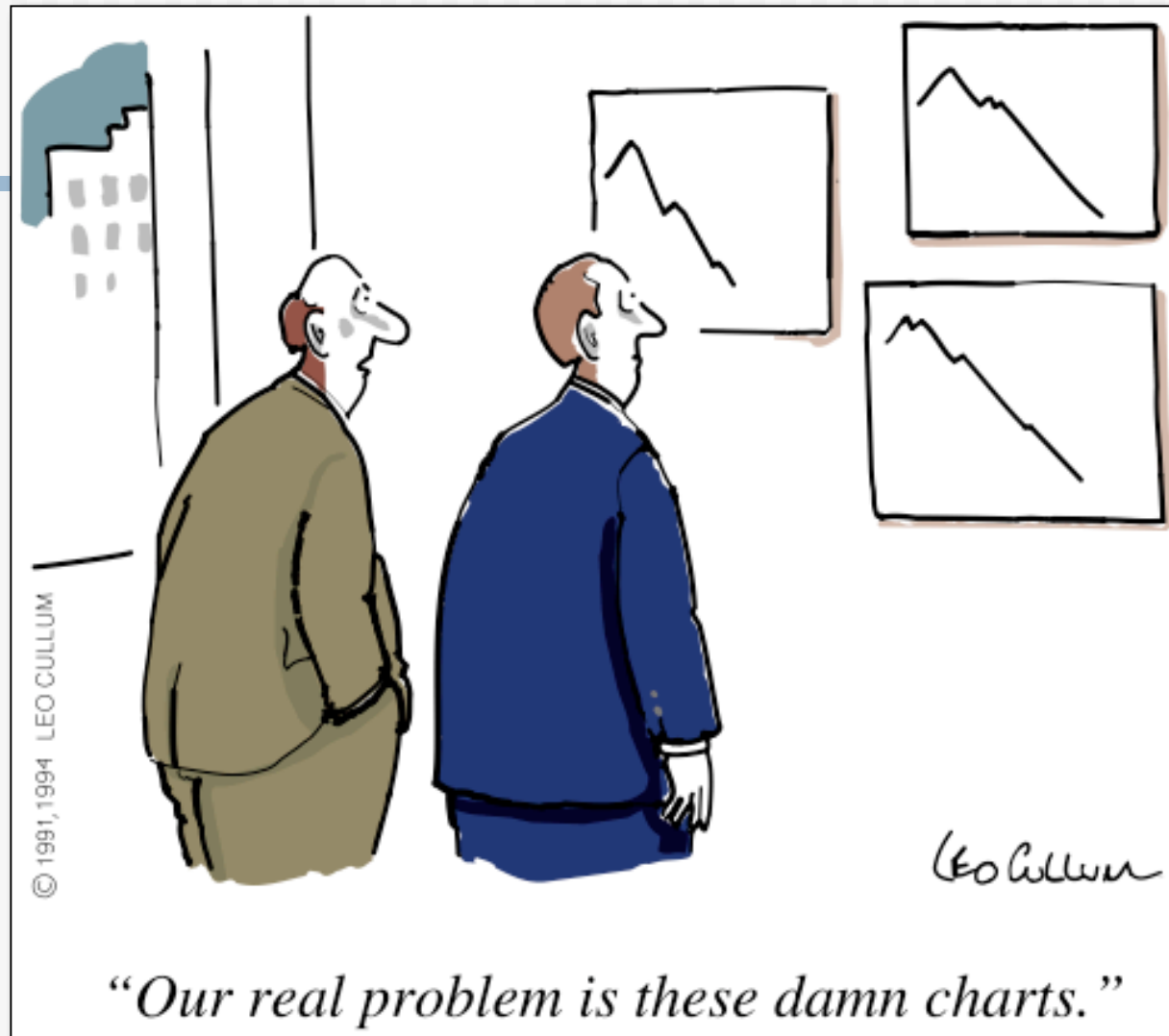
- HIGH VARIATION: 10 MINUTES - 1 HOUR
- MAJORITY IN 20 - 30 MINUTES
- FEW < 20 MINUTES, MANY > 30 MINUTES

CAUSES OF PATIENT INJURY

MALPRACTICE CLAIMS - OHIO 2002



THE “DATA IS MEANINGLESS” FALLACY



**FACTS
ARE
YOUR
FRIENDS
!**

PARETO PRINCIPLE

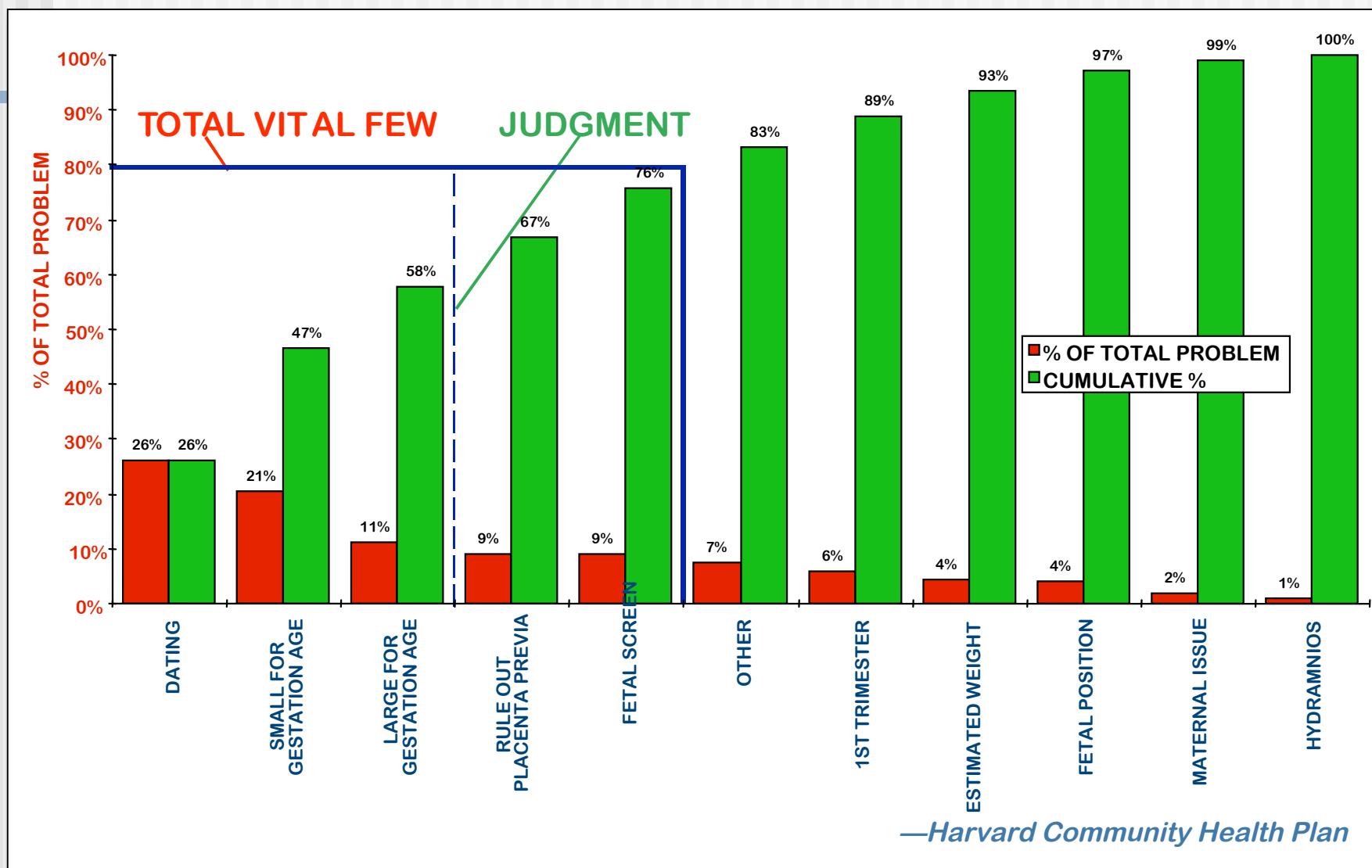
A FEW ITEMS, THE VITAL FEW, PRODUCE MOST RESULTS, GOOD OR BAD—THE 80-20 RULE

PARETO CHART

- 1. COLLECT DATA ABOUT THE PROBLEM**
- 2. DISPLAY DATA LARGEST TO SMALLEST**
- 3. CUT DATA WHERE SLOPE OF LINE FALLS OFF**
- 4. ANALYZE LARGEST PROBLEM CONTRIBUTORS**

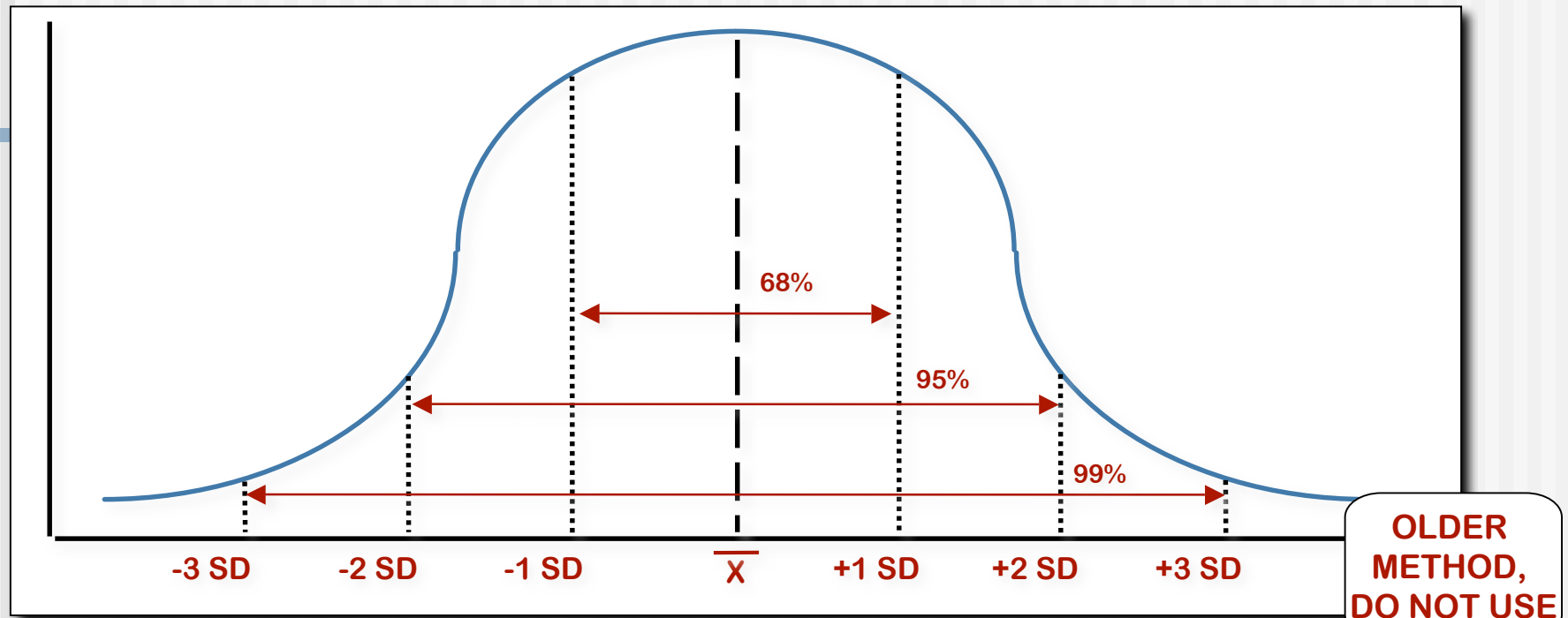
PARETO DIAGRAM

MATERNITY ULTRASOUNDS ORDERED



PREDICTING PROBLEMS

“VARIANCE IS BAD” WHEN NOT “CLOSE ENOUGH FOR JAZZ”



1. NEARLY ALL EVENTS SHOW A NORMAL DISTRIBUTION WITH MOST VARIANCE NEAR THE MEAN, & DECLINING AWAY FROM THE MEAN
2. VARIANCE CAN BE EXPRESSED AS STANDARD DEVIATION, WHERE: $SD = \sqrt{X}$ (A CALCULATED DISTANCE FROM THE MEAN)
3. THE AMOUNT OF VARIANCE UNDER THE CURVE IS DEPENDABLY:
 - BETWEEN ± 1 SD = 68.26% • BETWEEN ± 2 SD = 95.44% • BETWEEN ± 3 SD = 99.72%
4. HENCE, WE CAN “PREDICT WITH CONFIDENCE”, STATE WITH A HIGH DEGREE OF CERTAINTY, THAT ANY DATA POINT OUTSIDE THIS RANGE IS UNLIKELY
5. CONTROL LIMITS ARE USUALLY SET AT 2 OR 3 SD ABOVE & BELOW THE MEAN

HOW DO I CALCULATE CONTROL LIMITS?

MAKING A TEDIOUS JOB EASY

$$\text{UCL/LCL} = \text{MEAN} \pm 3 \text{ SD}$$

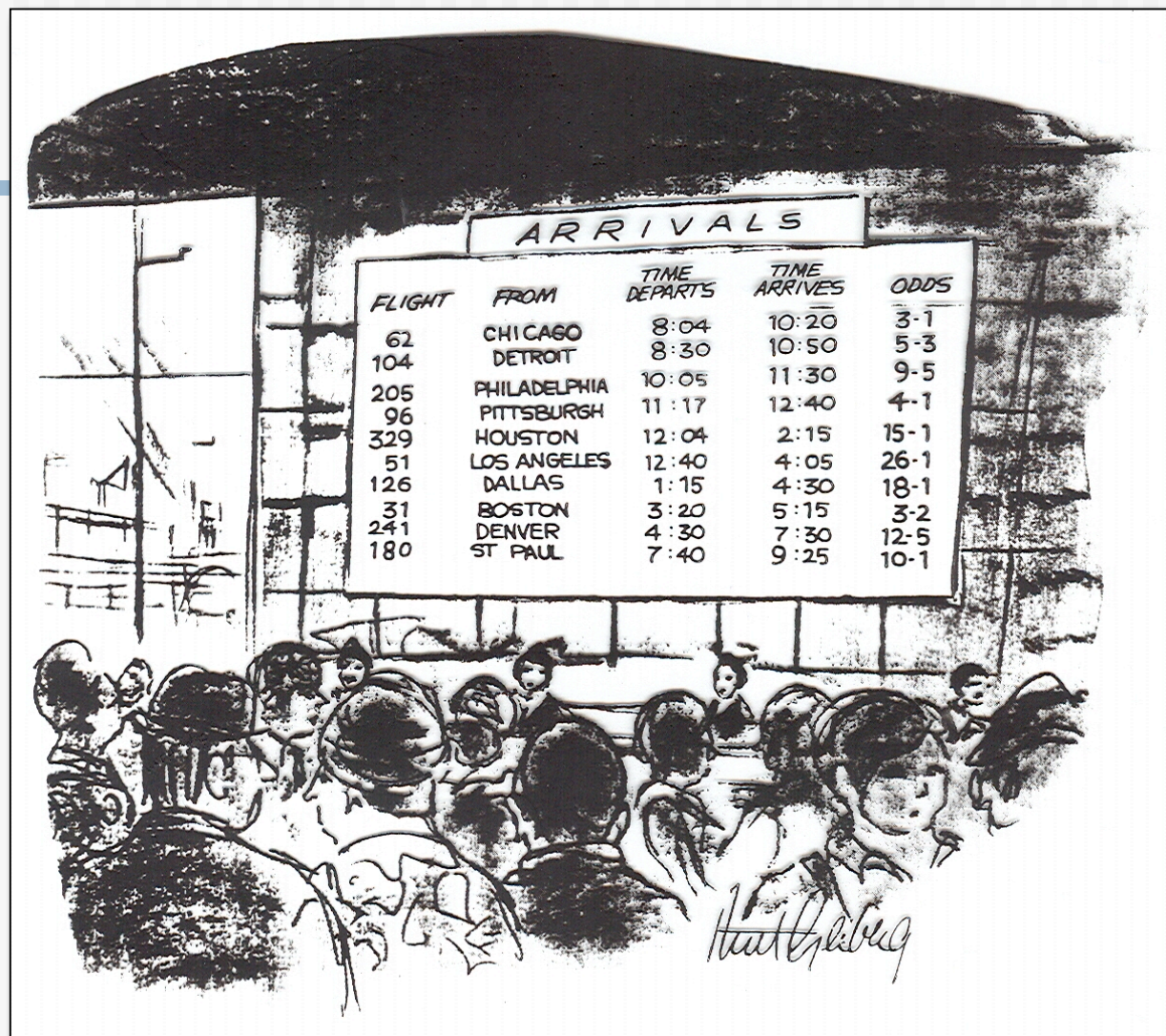
THE HARD PART WAS ALWAYS FIGURING OUT THE STANDARD DEVIATION

1. OLD QUICK & DIRTY METHOD: SD = SQUARE ROOT OF THE MEAN, DON'T USE ANY MORE
2. CAN DO IT ACCURATELY BY HAND, BUT LOTS OF CALCULATIONS, LOTS OF TIME USING THE FOLLOWING FORMULA
3. **BETTER IDEA: USE AN AUTOMATED CALCULATOR**
 - BUILT INTO EXCEL > TOOLS > CALCULATOR > STDEV
 - OR GET A SHAREWARE STATS CALCULATOR

$$s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{(n - 1)}}$$

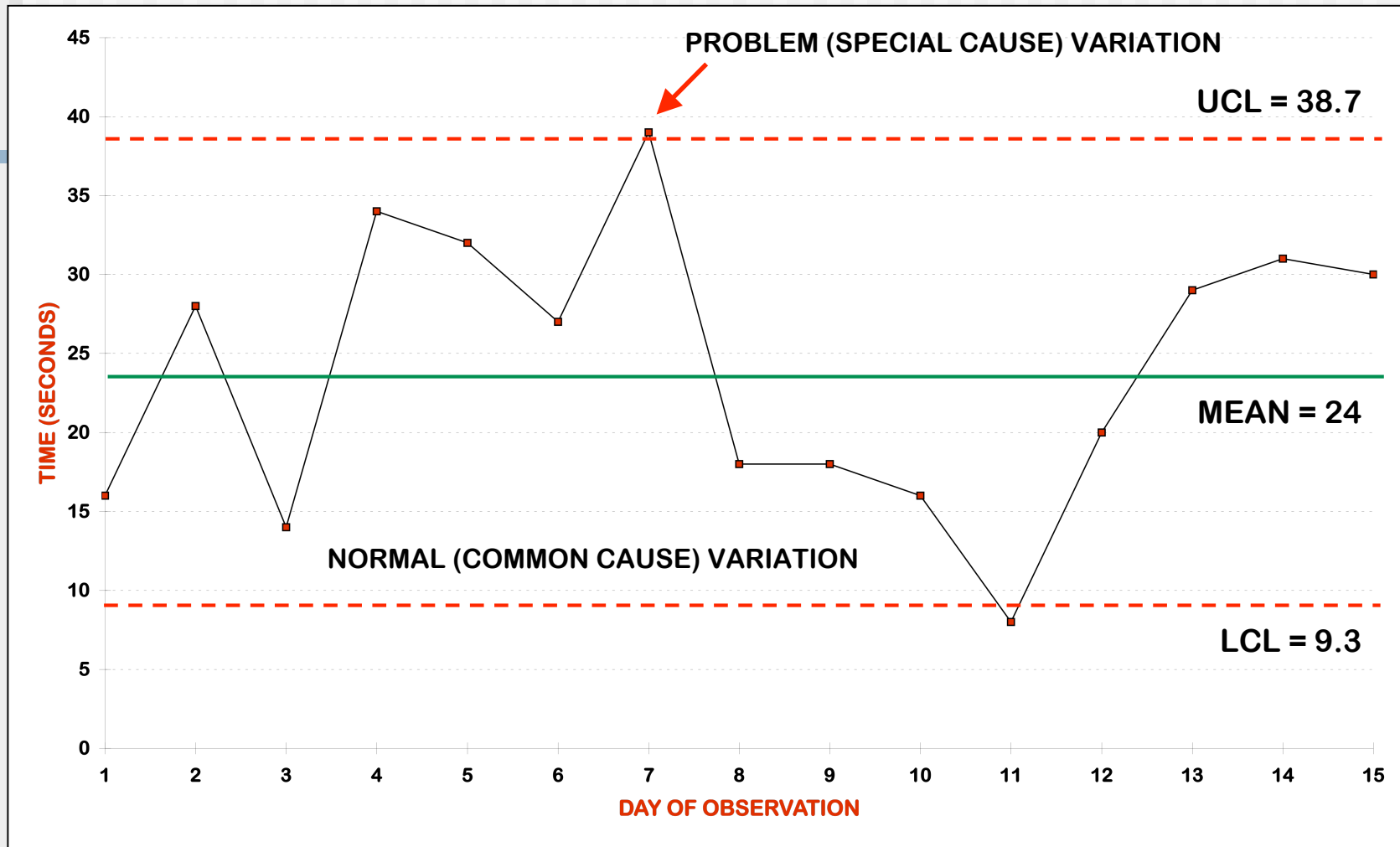
RUN CHART





CONTROL CHART

TIME RECEPTIONIST TAKES TO ANSWER PHONE 10:00 - 11:30



USE TO DETERMINE IF PROCESS IS STABLE:

1. PLOT ACTUAL PERFORMANCE = RUN CHART
2. CALCULATE AVERAGE PERFORMANCE & UCL/LCL
3. ID & FIX PROBLEM VARIATION
4. IMPROVE PROCESS—REDUCE NORMAL VARIATION/IMPROVE AVERAGE

PROCESS CONTROL CHART

SHOWS STABILITY & PREDICTABILITY OF PROCESS

- PURPOSE: DECIDE TO ACT OR LEAVE THINGS ALONE—ID'S WHEN UNNATURAL PATTERNS OCCUR
- COMPARES TO PAST & BENCHMARK PERFORMANCE
- STABILITY NOT ALWAYS = QUALITY: STABLE BELOW STANDARDS UNACCEPTABLE

TYPE OF VARIATION YIELDS CAUSE PREDICTION

- NORMAL: WITHIN PROCESS, CONTINUOUS IMPROVEMENT
- PROBLEM: OUTSIDE PROCESS, ALLOW STAFF TO STOP

COMMON ERROR IS TAMPERING

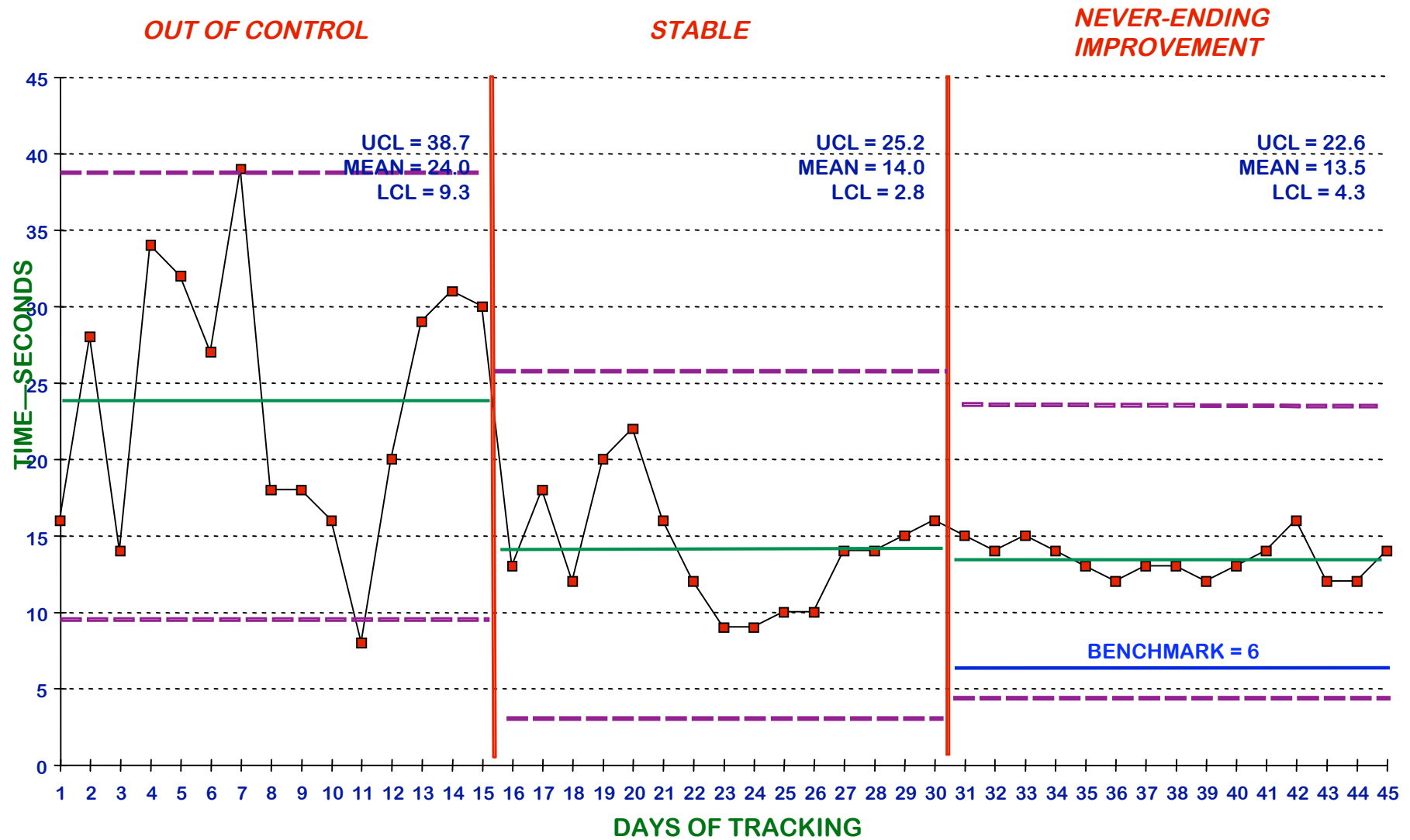
- TREAT “SPECIAL CAUSE” (PROBLEM) AS “COMMON CAUSE” (NORMAL) & VICE VERSA
- POOR RESULTS: COSTS, TIME, PRODUCTIVITY, MORALE

GOALS

- ELIMINATE PROBLEM VARIATION CAUSES
- REDUCE NORMAL VARIATION
- ADJUST UCL/LCL & MEAN TOWARD CUSTOMER STANDARDS

CONTROL CHART

Fig 5.8
Pg 5-19



HOW TO BUILD A CONTROL CHART

1. DETERMINE MEASUREMENT UNITS
2. DETERMINE TIME FRAME FOR MULTIPLE CYCLES
3. CALCULATE MEAN (AVERAGE) PERFORMANCE MEASUREMENT
4. CALCULATE UPPER & LOWER CONTROL LIMITS
5. PLOT ACTUAL MEASUREMENTS OVER TIME
6. ISOLATE ALL POINTS ABOVE UCL AND DETERMINE CAUSE. THESE ARE “SPECIAL CAUSE” (PROBLEM) VARIATIONS
7. REVIEW “COMMON CAUSE” (NORMAL) VARIANCE. IS IT DESIRABLE TO REDUCE CONTROL LIMITS FURTHER?
8. MAKE CHANGES TO PROCESS
9. MONITOR AGAIN—WERE IMPROVEMENTS MADE?

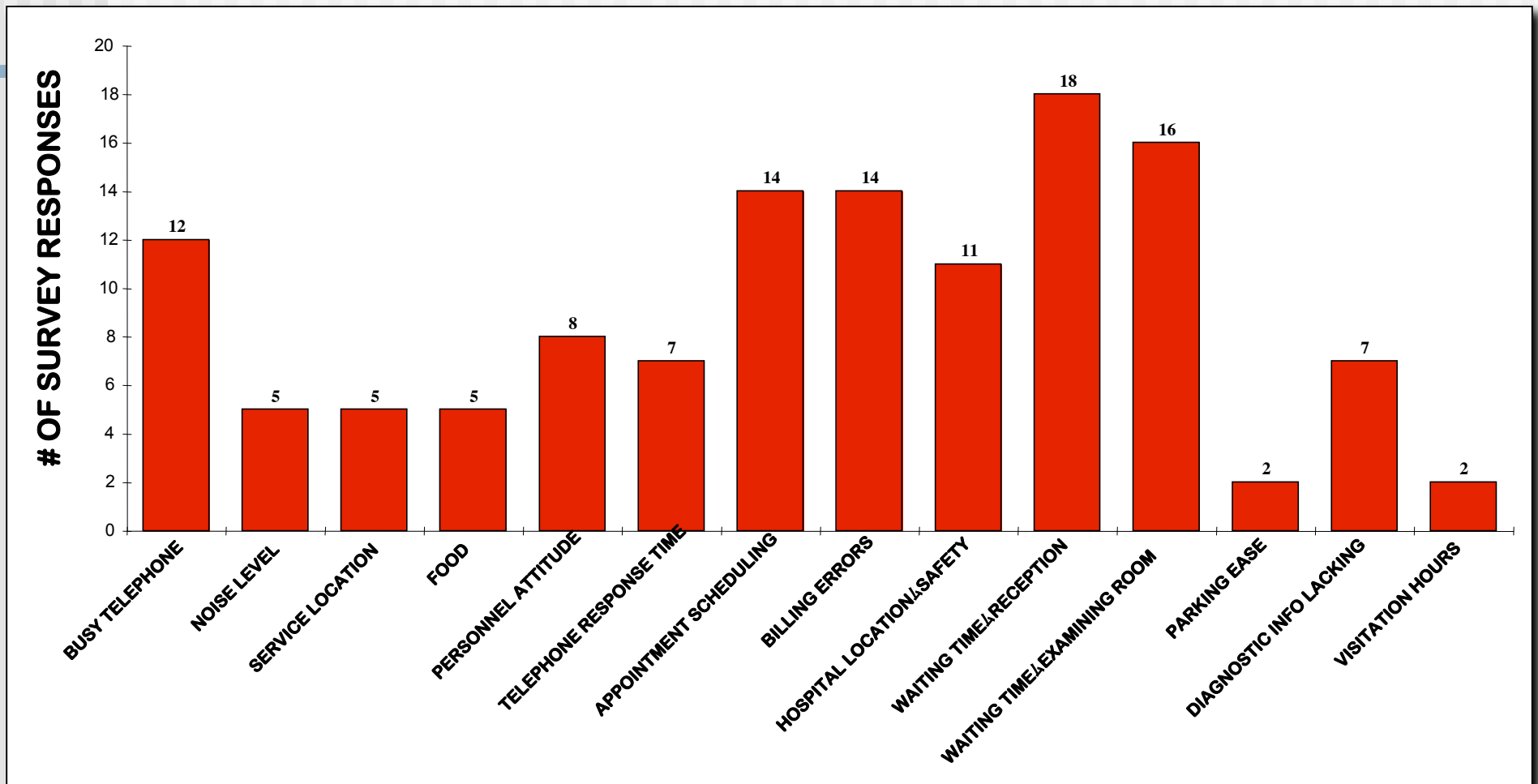
HOPE SPRINGS ETERNAL—PART A

**QUICKLY FORM GROUPS OF 4.
YOU HAVE ONLY 20 MINUTES TO CREATE A:**

- **HISTOGRAM**
- **PARETO CHART**
- **RUN CHART**
- **CONTROL CHART**

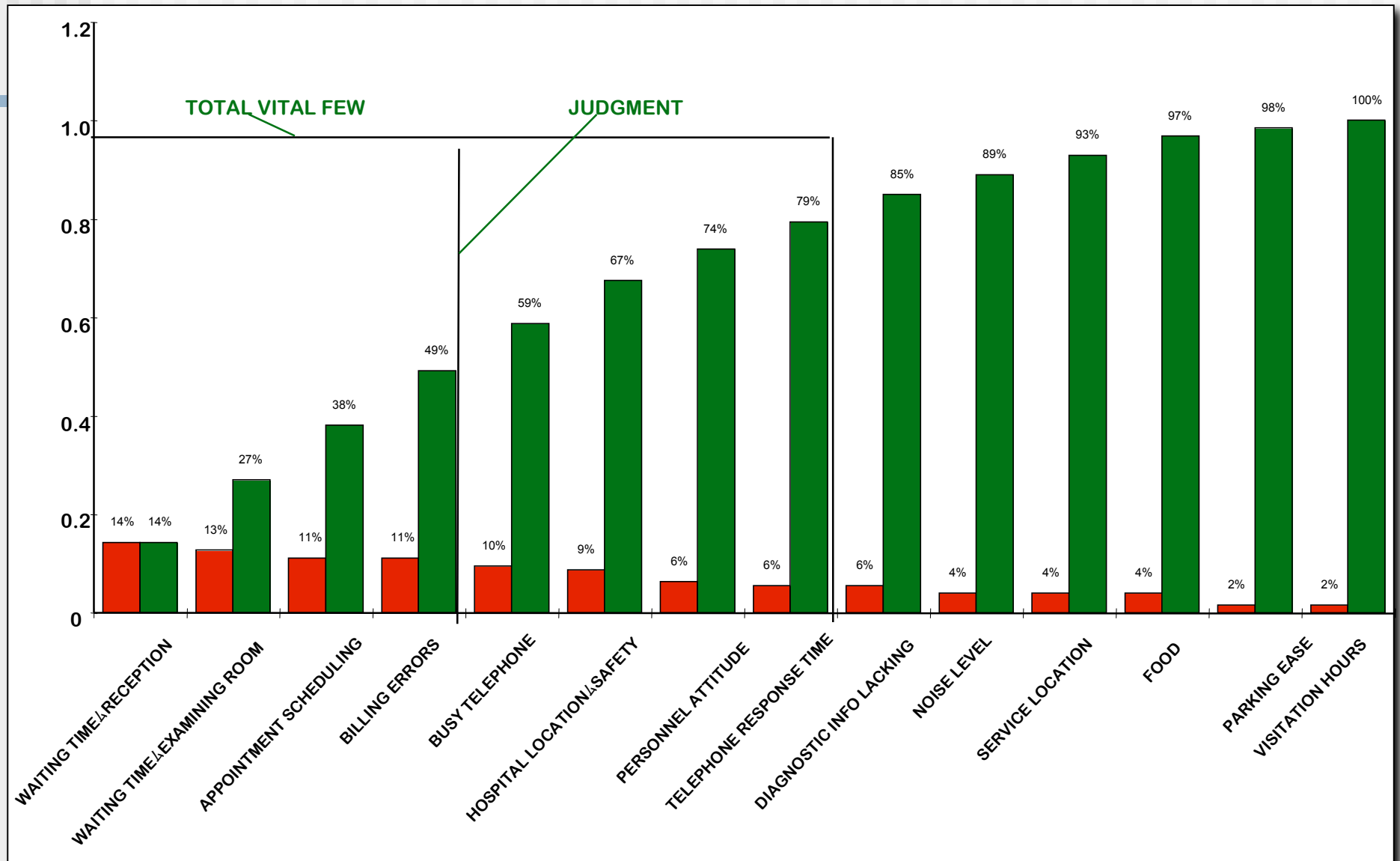
CASE: HISTOGRAM

REASONS FOR PATIENT DISSATISFACTION



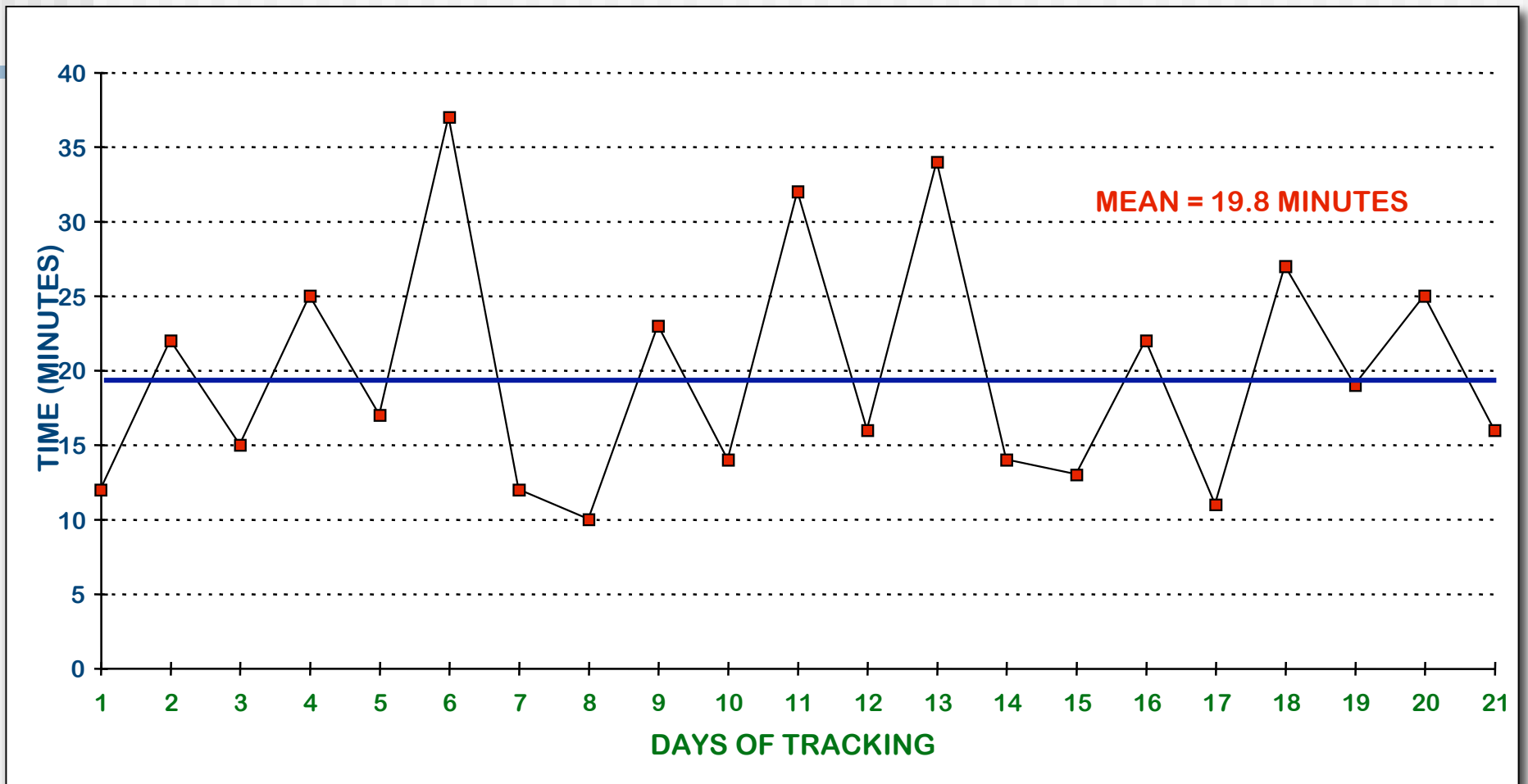
CASE PARETO CHART

PATIENT DISSATISFACTION



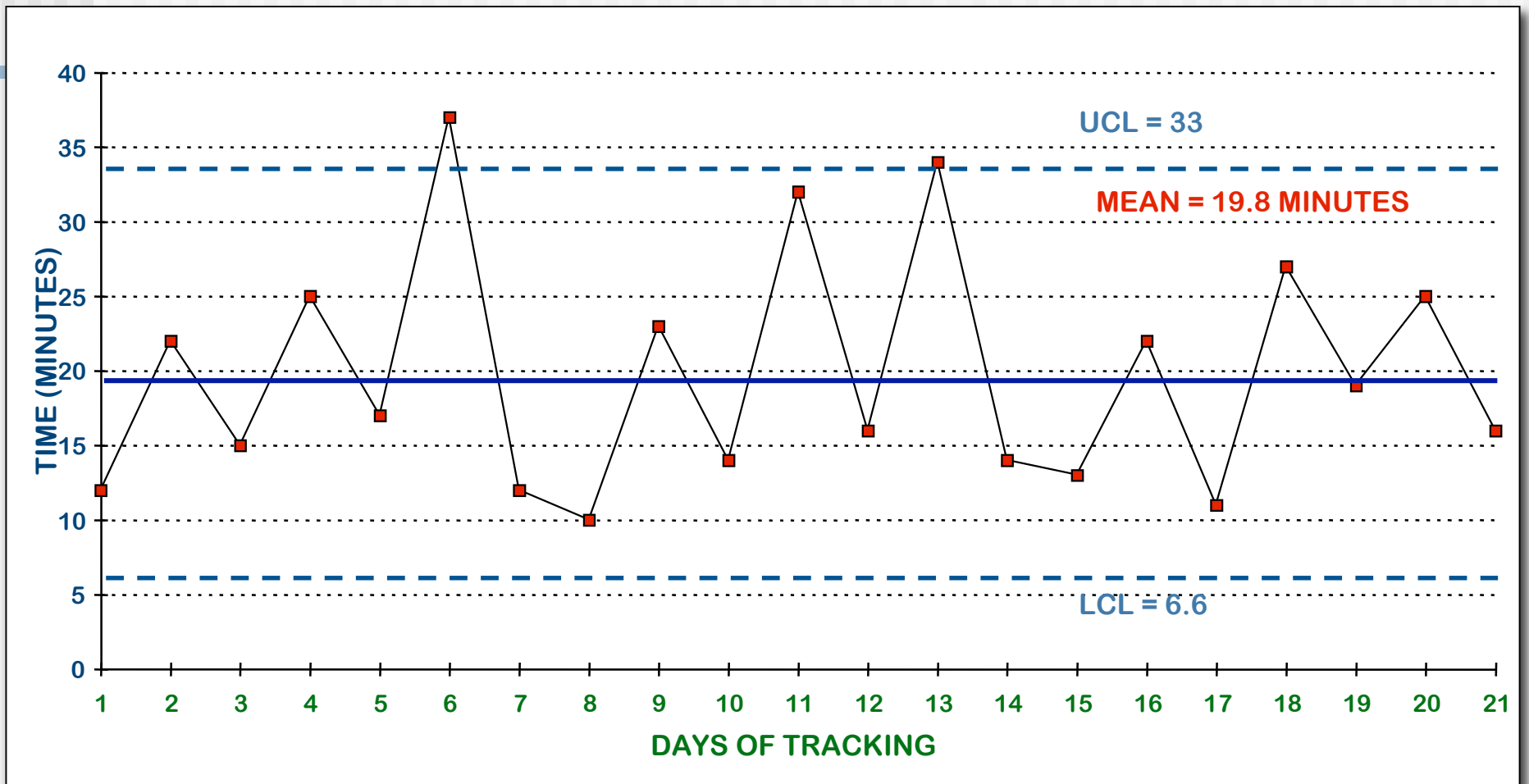
CASE: RUN CHART

PATIENT WAITING TIME



CASE: CONTROL CHART

PATIENT WAITING TIME



STEP 2—OUTLINE OPTIONS

1. ANALYZE PROBLEM DATA

- BEGIN WITH **BRAINSTORMING**
- PINPOINT POSSIBLE PROBLEM CAUSES— **FISH-BONE**

2. IDENTIFY ROOT CAUSES—PUSH CONSENSUS

- FIGURE OUT WHY PROBLEM OCCURRED— **VARIANCE ANALYSIS**
- DOCUMENT CURRENT PROCESS— **FLOWCHART, WORK TRAFFIC DIAGRAM**

3. CONSIDER POSSIBLE SOLUTIONS & CONTROLS

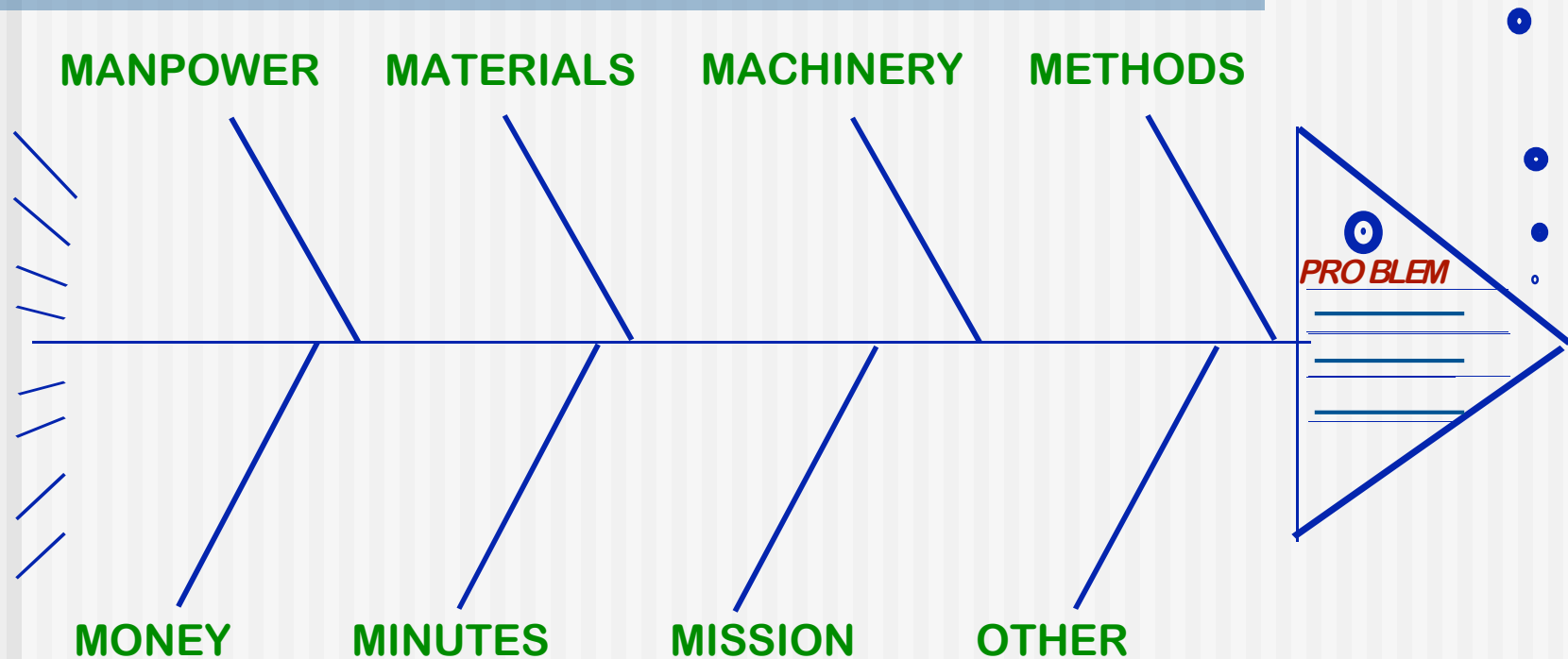
- GENERATE ALTERNATIVES— **VARIANCE SOLUTION**
- TEST CONCEPT: CHART, PILOT, CUSTOMER RESPONSE
- CHOOSE BEST ALTERNATIVE— **DECISION MATRIX, COST/BENEFIT ANALYSIS**

SPECIAL USE TOOLS

- WORK SIMPLIFICATION
- VARIANCE ANALYSIS/SOLUTION
- CYCLE TIME ANALYSIS
- STRATIFICATION

FISH BONE CHART

(CAUSE & EFFECT CHART)



USED TO ID CAUSES:

1. WRITE PROBLEM STATEMENT
2. LIST SOURCES OF PROBLEM
3. ID SPECIFIC POSSIBLE CAUSES
4. ID 1 OR 2 MOST LIKELY CAUSES

TYPICAL SYSTEM ERRORS

MANPOWER

- EXCESS LAYERS & BUREAUCRACY
- LACK EMPOWERMENT & TRAINING
- RIGID JOB STRUCTURES
- NO JIT STAFFING
- STAFF UNDERUTILIZATION

MACHINERY

- INFERIOR QUALITY
- DOWNTIME
- TOOL DEFICIENCY
- OUTPUT MISMATCH
- WRONG LOCATION

MINUTES

- BOTTLENECKS
- MISSING INFORMATION
- INCOMPATIBLE FORMATS
- DUPLICATE PAPERWORK
- STAFF-TIME UNDERUTILIZATION

MISSION

- DEADEND ASSIGNMENTS
- NO DIRECTION, AMBIGUOUS
- NO SUPPORT

MATERIALS

- INFERIOR QUALITY
- NO JIT—MORE LABOR, COST
- INCONVENIENT LOCATION

METHODS

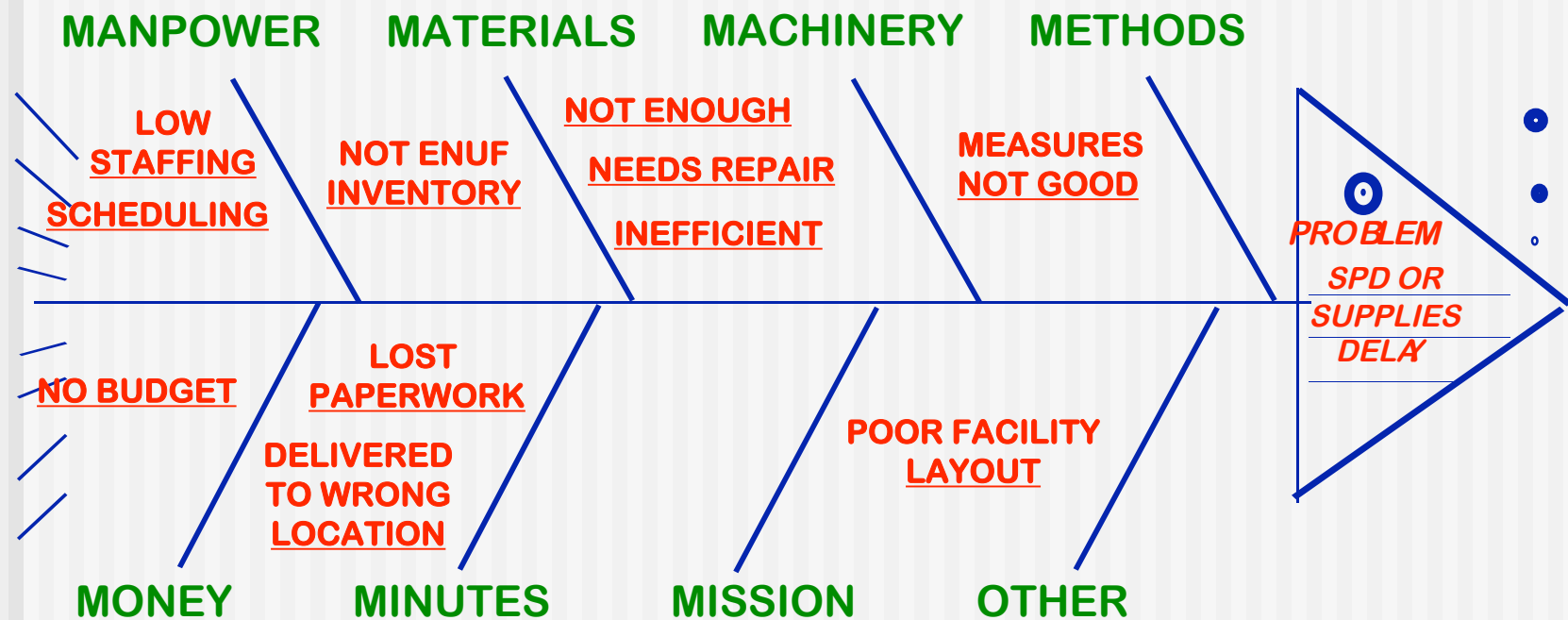
- VARIABLE OR UNSTABLE
- DON'T UNDERSTAND OUTPUT NEEDS
- NO DATA, POOR MEASURES
- NOT USING ANALYTICAL TOOLS

MONEY

- WORK DUPLICATION, WASTE
- REGULATIONS & POLITICS
- LOW SPENDING AUTHORITIES

FISH BONE CHART

(CAUSE & EFFECT CHART)



VARIANCE ANALYSIS WORKSHEET

PROJECT NAME:

PROBLEM STATEMENT:

1. SPECIFY THE PROBLEM			2. ANALYZE IS/IS NOT		3. ID ROOT CAUSES		
	PROBLEM IS	PROBLEM IS NOT	WHAT IS DISTINCTIVE ABOUT IS?	WHAT'S CHANGED ABOUT/AROUND THE IS?	POSSIBLE CAUSES/INPUTS (FROM FISH BONE)	A. MOST LIKELY CAUSE? B. HOW CAN THIS BE TESTED/VERIFIED?	A. WHO CONTROLS IT? B. WHO CAN FIX IT?
WHAT'S THE PROBLEM?						A. B.	A. B.
WHERE'S IT LOCATED?						A. B.	A. B.
WHEN DOES IT OCCUR?						A. B.	A. B.
WHO DOES IT AFFECT?						A. B.	A. B.
WHAT SIZE/ MAGNITUDE?						A. B.	A. B.

VARIANCE ANALYSIS WORKSHEET

PROJECT NAME: SPD DELIVERY

PROBLEM STATEMENT: SLOW DELIVERY SPD TO OR - 10+ MINUTES

1. SPECIFY THE PROBLEM			2. ANALYZE IS/IS NOT		3. ID ROOT CAUSES		
	PROBLEM IS	PROBLEM IS NOT	WHAT IS DISTINCTIVE ABOUT IS?	WHAT'S CHANGED ABOUT/AROUND THE IS?	POSSIBLE CAUSES/INPUTS (FROM FISH BONE)	A. MOST LIKELY CAUSE? B. HOW CAN THIS BE TESTED/VERIFIED?	A. WHO CONTROLS IT? B. WHO CAN FIX IT?
WHAT'S THE PROBLEM?	10+ MINUTE DELIVERY TIME, SPD TO OR ON STAT ORDERS	NORMAL DELIVERIES WITHIN OK TIME MARGIN	FAST DELIVERIES ONLY ONES AFFECTED	DEPT HEAD LEFT STAFF TURNOVER	LOW STAFFING SHORT SCHEDULING LACK EQUIPMENT LOST PAPERWORK	A. ADD HOURS? B. FILL VACANCIES	A. DEPT HEAD B. DEPT HEAD
WHERE'S IT LOCATED?	SPD	OTHER DEPTS OR O.R.				A. B.	A. B.
WHEN DOES IT OCCUR?	DAY SHIFT ON WEEKDAYS, ALL SHIFTS ON WEEKEND	EVENING & NIGHT SHIFTS DURING WEEK	STARTED 2 WEEKS AGO		WORK SCHEDULES ARE DIFFERENT DIFFERENT PEOPLE ARE INVOLVED IN SPD	A. PEOPLE DON'T KNOW ROPES B. ROTATE STAFF & TRAIN DAY CREW	A. DEPT HEAD B. DEPT HEAD
WHO DOES IT AFFECT?	DOCTORS, PATIENTS OR STAFF	SPD STAFF				A. B.	A. B.
WHAT SIZE/ MAGNITUDE?	50% OF TIME, 12 X PER DAY	NOT ALL THE TIME, EVEN DURING PROB PERIOD	UNKNOWN	UNKNOWN, MEET WITH OTHER DEPT		A. B.	A. B.

VARIANCE SOLUTION WORKSHEET

PROJECT NAME:

PROBLEM STATEMENT:

1. LIST CAUSES		2. POSSIBLE SOLUTIONS/CHANGES TO BE MADE					
VARIANCE CAUSE	INPUTS/ SUPPLIER (MATERIAL)	WORK PROCESS (METHODS)	TOOLS & EQUIPMENT (MACHINES)	CYCLE TIME REDUCTION (MINUTES)	HUMAN NEEDS (MANPOWER)	REDUCE WASTE (MONEY)	GOAL/ PURPOSE (MISSION)
A.							
B.							
C.							
D.							
E.							

VARIANCE SOLUTION WORKSHEET

PROJECT NAME: SPD DELIVERY

PROBLEM STATEMENT: SLOW DELIVERY SPD TO OR - 10+ MINUTES

1. LIST CAUSES		2. POSSIBLE SOLUTIONS/CHANGES TO BE MADE					
VARIANCE CAUSE	INPUTS/ SUPPLIER (MATERIAL)	WORK PROCESS (METHODS)	TOOLS & EQUIPMENT (MACHINES)	CYCLE TIME REDUCTION (MINUTES)	HUMAN NEEDS (MANPOWER)	REDUCE WASTE (MONEY)	GOAL/ PURPOSE (MISSION)
A. LOW STAFFING SHORT SCHEDULING				SPD TO RUN A CYCLE TIME ANALYSIS TO SPOT "WASTE"	REDO SCHED FOR WEEKDAYS AGGRESSIVE RECRUIT???		
B. NEW SPD STAFF, UNTRAINED		CREATE A VIDEO TAPE, CLEAN UP PROCEDURE MANUAL			BUDDY SYSTEM TO TRAIN NEWBIES		ROTATE SPD STAFF TO SEE WHY "STAT" IS SO URGENT
C. LACK OF EQUIPMENT	LOOK AT QUAL OF TOOLS WE ARE BUYING. SUPPLIER GOOD ENUF?			A. RECONDITION B. PURCH NEW C. LEASE EQUIP			
D. LOST PAPERWORK			A. ATTACH FORM TO ORDER B. EST "ORDERS IN PROCESS" FILE				
E.							

FLOWCHART SYMBOLS



INPUT/OUTPUT: SIGNIFIES WHEN SOMETHING ENTERS/LEAVES WORKFLOW



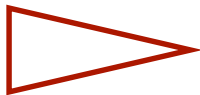
PROCESS



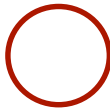
DECISIONS



DOCUMENT



INSPECTION



WAIT



TRANSPORT/MOVEMENT



FILE



CONNECTOR, CHART EXIT/ENTRY



OFFPAGE CONNECTOR



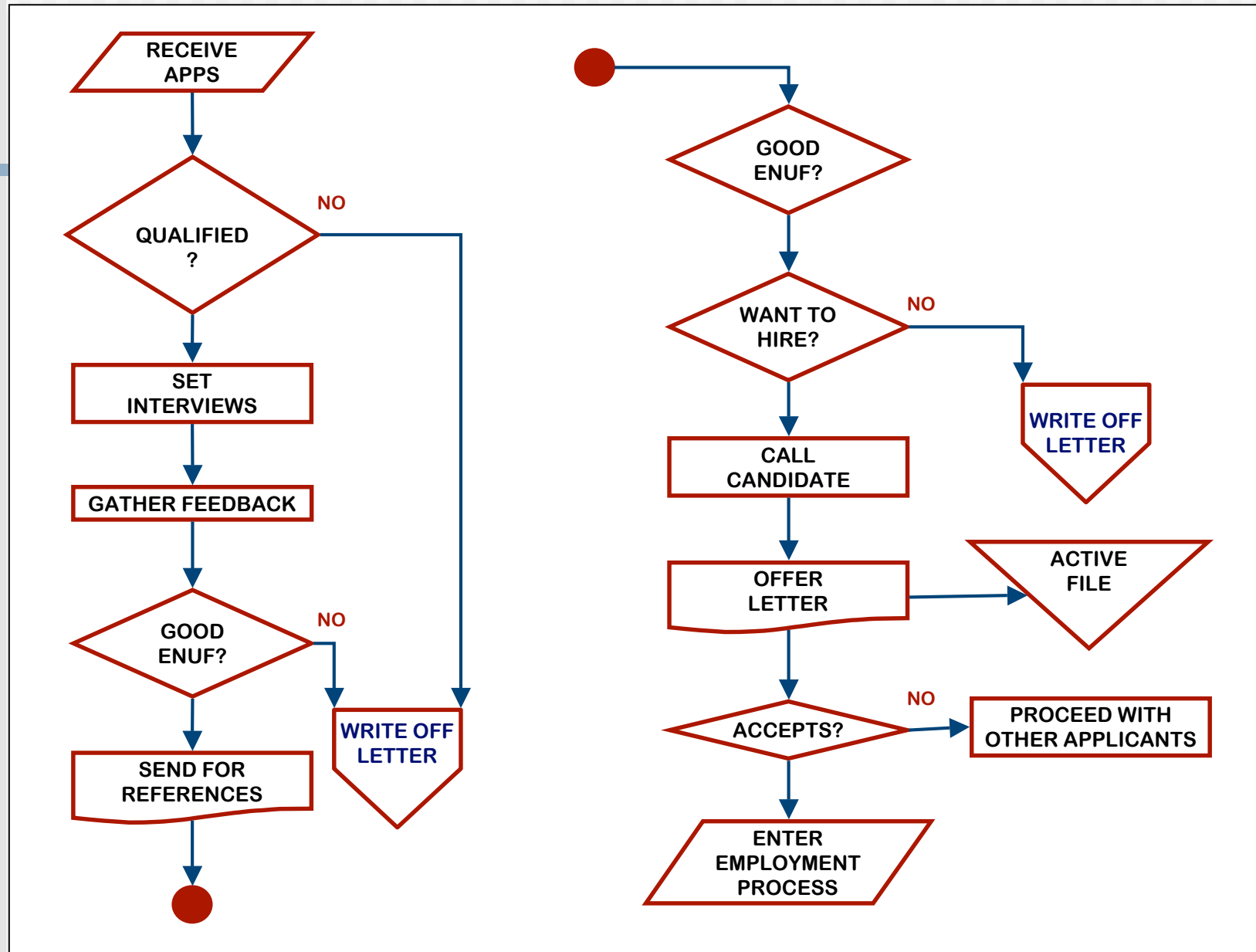
TERMINATION

PURPOSES:

- **MAKES PROCESS VISIBLE**
- **ALLOWS SIMPLIFYING**
- **SPOTS BOTTLENECKS**
- **BASIS FOR UNDERSTANDING**

HIRING A NEW ASSOCIATE

Fig 6.7
Pg 6-10

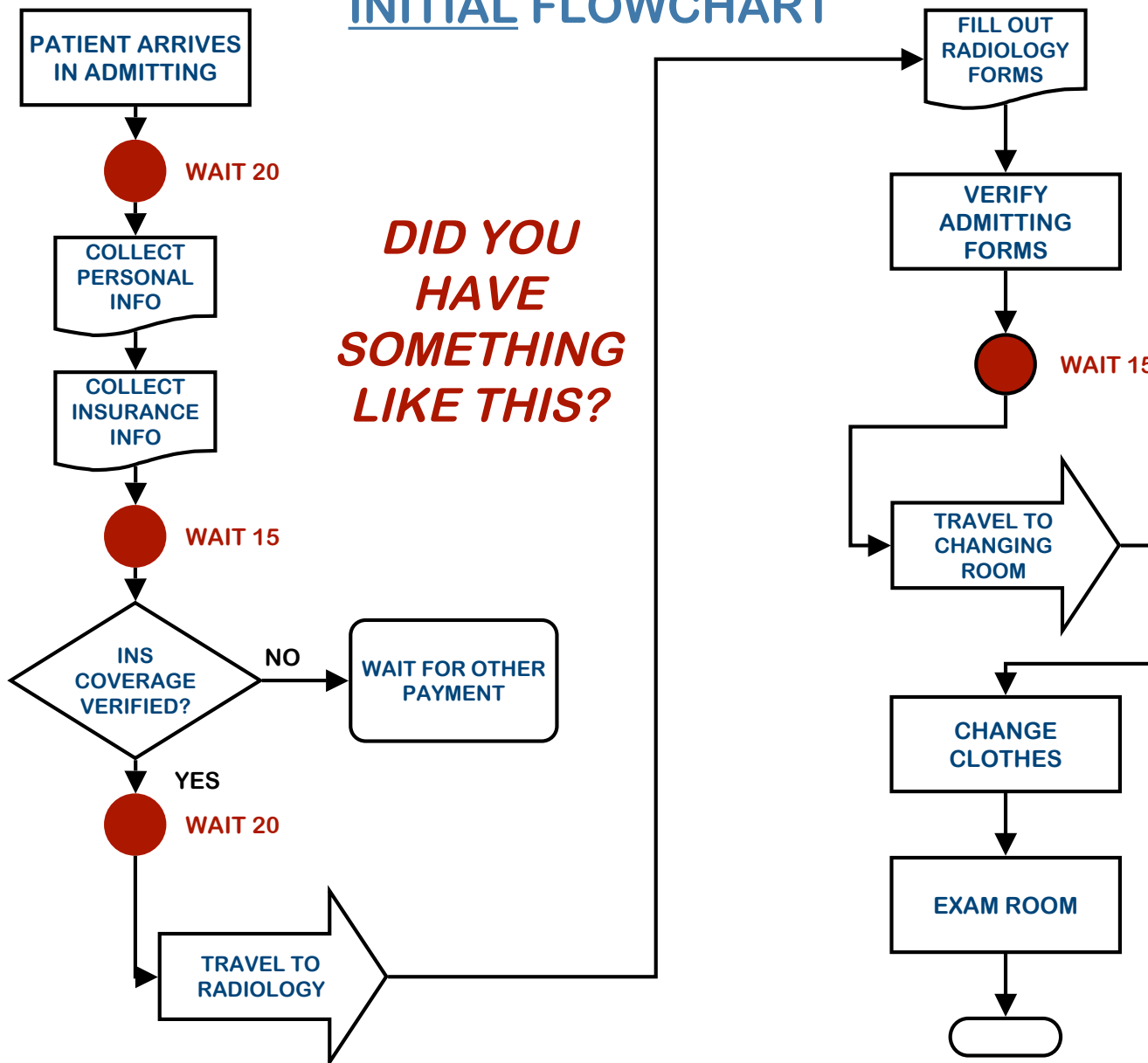


HOPE SPRINGS ETERNAL PART B

GROUPS OF 4—YOU HAVE 15 MINUTES

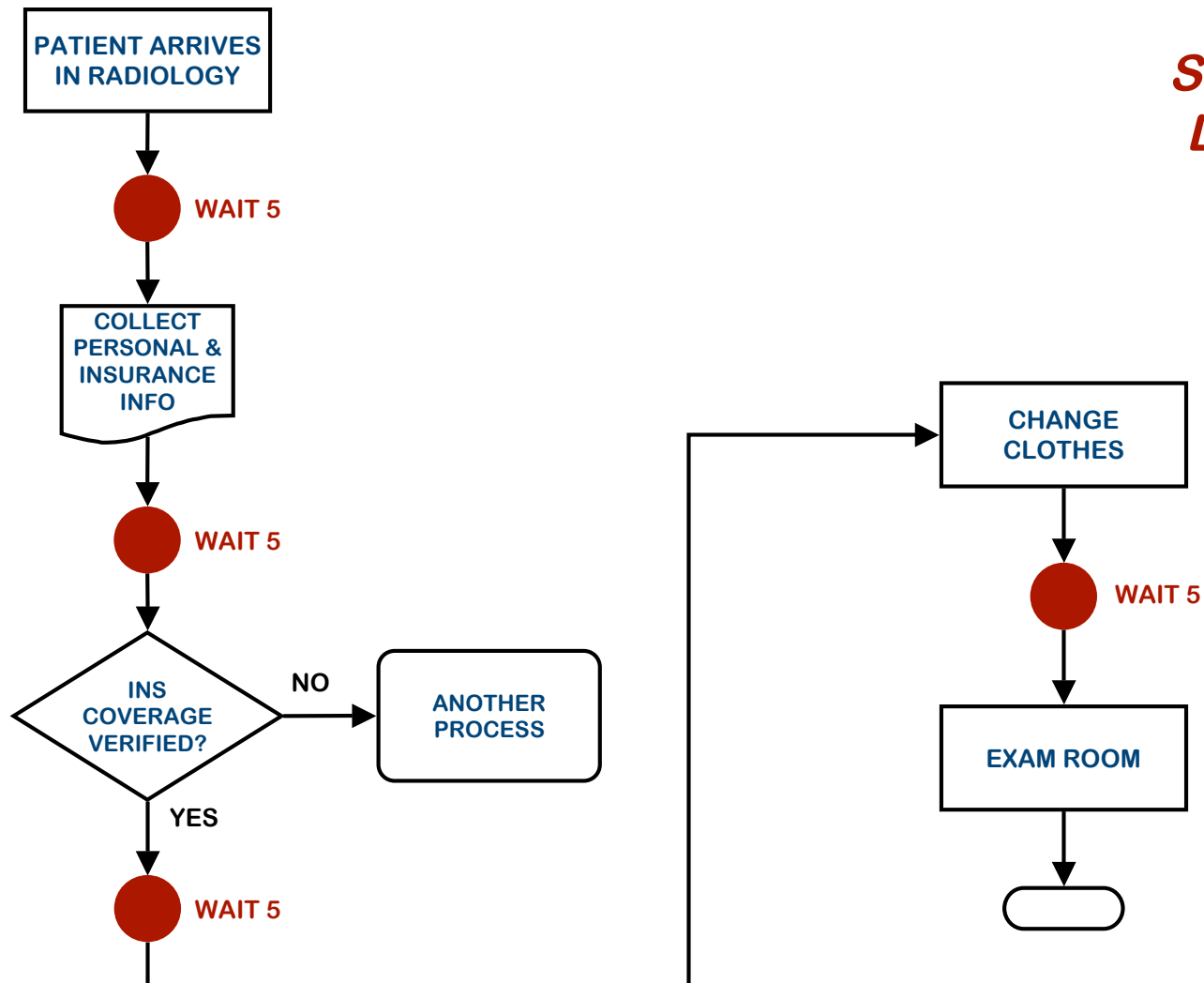
RADIOLOGY ADMITTING PROCESS

INITIAL FLOWCHART



RADIOLOGY ADMITTING PROCESS

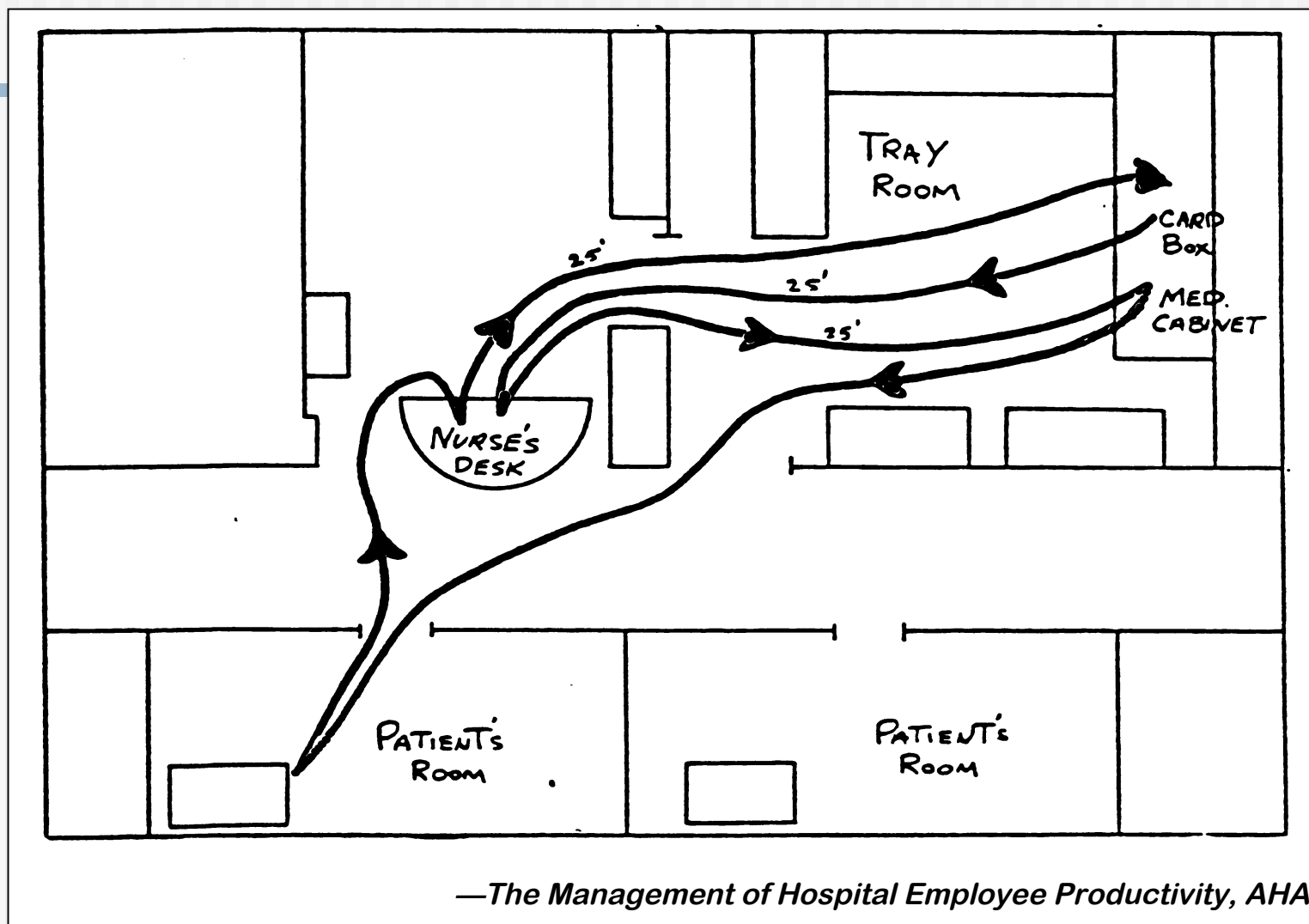
REVISED FLOWCHART



*REVISED
SOMETHING
LIKE THIS?*

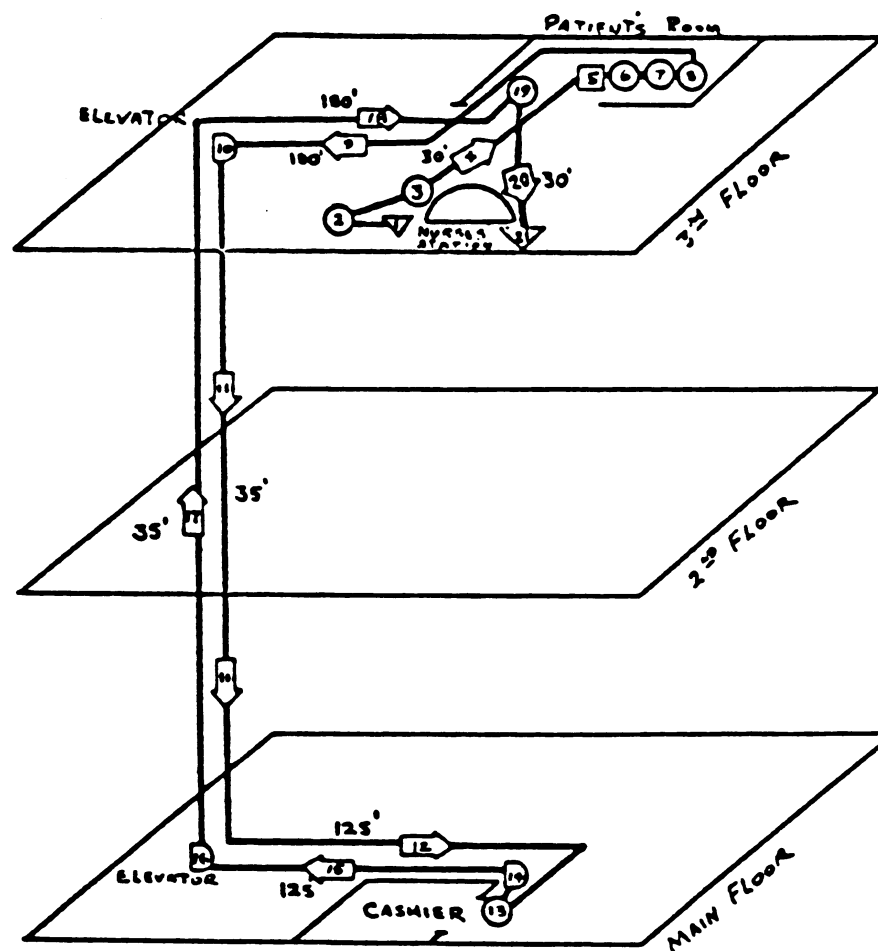
*FEWER
STEPS?*

WORK TRAFFIC DIAGRAM MEDICATION CARDS



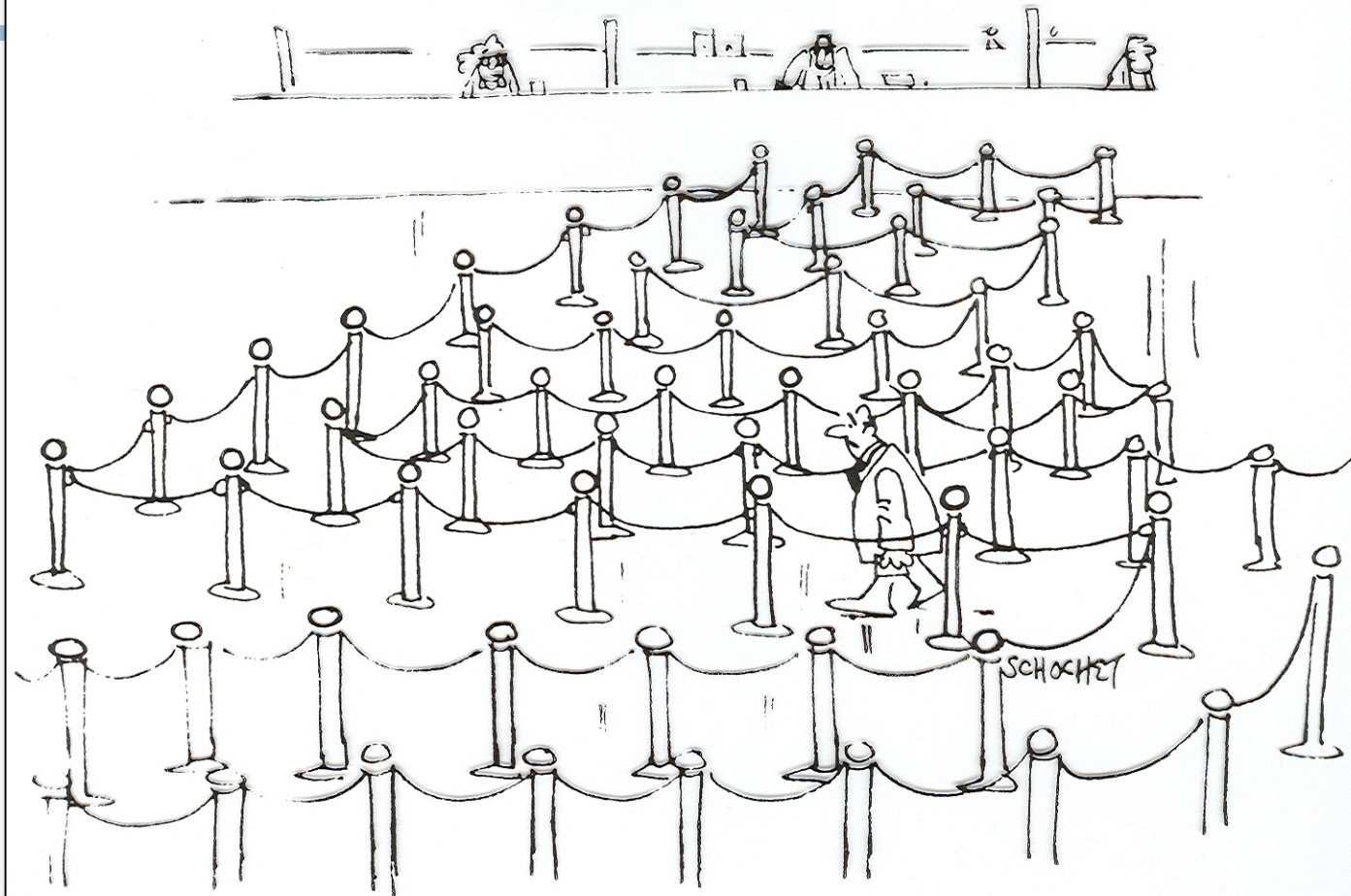
WORK TRAFFIC DIAGRAM

HANDLING OF PATIENTS' VALUABLES



—The Management of Hospital Employee Productivity, AHA

BANK



SCHUCHET

NMH PRESENTATION

AVAILABLE MAPS & DIAGRAMMING AIDS



CYCLE TIME ANALYSIS

PROJECT:

✓ PRESENT:

✓ REVISED:

START:

END:

QUAN/CYCLE:

QUAN/YEAR:

COST/UNIT:

1. WORK STEPS DESCRIPTION

2. PROCESS TIME IMPROVEMENT

[illegible]

Category	Item	Value
TOTALS	Sum of all items	100.00
	Sum of all items	100.00
	Sum of all items	100.00
	Sum of all items	100.00

LEGEND:  INSPECTION  DECISION  PROCESS  WAIT TIME  TRANSPORT

CYCLE TIME ANALYSIS

QUAN/CYCLE: 1

PROJECT: MEDICATION STOCKING

✓PRESENT: XXX

START: PHARMACY

QUAN/YEAR: 365

✓REVISED:

END: NURSING UNIT

COST/UNIT: \$90 TIME/CYCLE

1. WORK STEPS DESCRIPTION

STEP DESCRIPTION	STEP #	TIME TYPE/ SYMBOLS	TOTAL MINUTES	DISTANCE TRAVELLED
Pharmacy receives order from RN	1	▷ ◇ □ ⊗ ⇒	15	100
Fill it now or later?	2	⊗ ◇ □ ○ ⇒	4	0
Give order to Pharmacy tech to fill	3	▷ ◇ □ ⊗ ⇒	5	15
Order waits in queue	4	▷ ◇ ⊗ □ ○ ⇒	15	0
Pharm tech fills order	5	▷ ⊗ ◇ □ ○ ⇒	8	10
Order goes to QC for checking	6	▷ ◇ □ ⊗ ⇒	5	15
Order waits in queue	7	▷ ◇ ⊗ □ ○ ⇒	30	0
Pharmacist checks order	8	▷ ⊗ ◇ □ ○ ⇒	5	0
Order goes to delivery file	9	▷ ◇ □ ⊗ ⇒	5	20
Order waits for next delivery	10	▷ ◇ ⊗ □ ○ ⇒	120	0
Order goes to nursing floor	11	▷ ◇ □ ⊗ ⇒	15	100
Order waits for nurse to check-in	12	▷ ◇ ⊗ □ ○ ⇒	15	0
Order is checked in by RN	13	▷ ⊗ ◇ □ ○ ⇒	5	0
Order is put away	14	▷ ⊗ ◇ □ ○ ⇒	10	20
		▷ ◇ □ ○ ⇒		
		▷ ◇ □ ○ ⇒		
		▷ ◇ □ ○ ⇒		
		▷ ◇ □ ○ ⇒		
		▷ ◇ □ ○ ⇒		
		▷ ◇ □ ○ ⇒		
		▷ ◇ □ ○ ⇒		
		▷ ◇ □ ○ ⇒		
TOTALS	14		247	260

2. PROCESS TIME IMPROVEMENT

CAN STEP BE ELIMINATED OR COMBINED?	CAN STEP BE SIMPLIFIED OR RESEQUENCED?	CAN STEP BE COMPLETED FASTER?
		✓
✓		
		✓
		✓
		✓
✓		
		✓

LEGEND ▷ INSPECTION ◇ DECISION □ PROCESS ○ WAIT TIME ⇒ TRANSPORT

CYCLE TIME ANALYSIS

QUAN/CYCLE: 1

PROJECT: MEDICATION STOCKING

✓ PRESENT:

START: PHARMACY

QUAN/YEAR: 365

✓REVISED: XXX

END: NURSING UNIT

COST/UNIT: \$30 TIME/CYCLE

1. WORK STEPS DESCRIPTION

2. PROCESS TIME IMPROVEMENT

STEP DESCRIPTION	STEP #	TIME TYPE/ SYMBOLS	TOTAL MINUTES	DISTANCE TRAVELLED	CAN STEP BE ELIMINATED OR COMBINED?	CAN STEP BE SIMPLIFIED OR RESEQUENCED?	CAN STEP BE COMPLETED FASTER?
Satellite pharm rec order from RN	1		15	35			
Fill order now or later	2		2	0			
Order waits in queue to be filled	3		10	0			
Pharmacist fills order	4		8	15			
Order waits in queue for OC	5		5	0			
Order is checked	6		8	0			
Order goes to delivery file	7		5	5			
Order waits in delivery queue	8		10	0			
Order is delivered	9		5	35			
Order waits for RN to check in	10		15	0			
Order is checked in	11		5	0			
Order is put away	12		10	20			
TOTALS	12		88	90			

LEGEND

▷ **INSPECTION** ◊ **DECISION** □ **PROCESS** ○ **WAIT TIME** ➡ **TRANSPORT**

NMH PRESENTATION

WHAT WOULD HAPPEN IF OUR PROCESS WORKFLOWS WERE IMPROVED?

DRG COSTS & VOLUME COMPARED TO COMPETITION

Clay
Insert D



NMH PROCESS WORKFLOWS

ASSIGNMENT

EACH DEPT TO DIAGRAM 3 PROCESS WORKFLOWS

- **HI VOLUME**
- **HI COST**
- **HI RISK**

GOAL: IMPROVE PRODUCTIVITY 25% BY *REDUCING* TIME AND SUPPLIES, OR *INCREASING* THROUGHPUT (OUTPUT/TIME)



DECISION MATRIX


DECISION STATEMENT:


OBJECTIVES		ALTERNATIVES											
		A.		B.		C.		D.		E.		F.	
REQUIRES:		GO/NO GO		GO/NO GO		GO/NO GO		GO/NO GO		GO/NO GO		GO/NO GO	
DESIRES:	WEIGHT	SCORE	TOTAL	SCORE	TOTAL	SCORE	TOTAL	SCORE	TOTAL	SCORE	TOTAL	SCORE	TOTAL
	1 to 10	1 to 10	W x S	1 to 10	W x S	1 to 10	W x S	1 to 10	W x S	1 to 10	W x S	1 to 10	W x S
TOTALS													

DECISION MATRIX

DECISION STATEMENT: *PICK THE BEST POSSIBLE PET FOR OUR FAMILY & CIRCUMSTANCES*

OBJECTIVES		ALTERNATIVES												
		A. FISH		B. BIRD		C. DOG		D. CAT		E. HORSE		F. HARLEY		
REQUIRED:		GO/NO GO		GO/NO GO		GO/NO GO		GO/NO GO		GO/NO GO		GO/NO GO		
SMALL, LESS THAN 15#		GO		GO		GO		GO		NO GO		NO GO		
NOT MORE THAN \$200		GO		GO		GO		GO		GO		NO GO		
NO ALLERGY		GO		GO		GO		GO		GO		GO		
		WEIGHT	SCORE	TOTAL	SCORE	TOTAL	SCORE	TOTAL	SCORE	TOTAL	SCORE	TOTAL	SCORE	TOTAL
DESIRED:		1 to 10	1 to 10	W x S	1 to 10	W x S	1 to 10	W x S	1 to 10	W x S	1 to 10	W x S	1 to 10	W x S
SOFT & FURRY		7	1	7	7	49	10	70	10	70				
SNUGGLY		2	1	2	4	8	6	12	10	20				





HOPE SPRINGS ETERNAL—PART C

READ & DO ON YOUR OWN, 5 MINUTES

DECISION MATRIX

DECISION STATEMENT: PICK THE BEST POSSIBLE OPTION TO REDUCE PATIENT DISSATISFACTION

[illegible]

DECISION MATRIX

DECISION STATEMENT: PICK THE BEST POSSIBLE OPTION TO REDUCE PATIENT DISSATISFACTION

OBJECTIVES		ALTERNATIVES											
		A. + STAFF		B. NEW PROC		C. + EQUIP		D.		E.		F.	
REQUIRED:		GO/NO GO		GO/NO GO		GO/NO GO		GO/NO GO		GO/NO GO		GO/NO GO	
POSITIVE ROI		GO		GO		GO							
CAN DO IT NOW		GO		NO		GO							
DESIRED:	WEIGHT	SCORE	TOTAL	SCORE	TOTAL	SCORE	TOTAL	SCORE	TOTAL	SCORE	TOTAL	SCORE	TOTAL
	1 to 10	1 to 10	W x S	1 to 10	W x S	1 to 10	W x S	1 to 10	W x S	1 to 10	W x S	1 to 10	W x S
NO CAPITAL EXPENSE	10	10	100			3	30						
SHORT TRAINING TIME	3	5	15			10	30						
HAS OTHER BENEFITS	8	7	56			5	40						
TOTALS			171				100						

**CASE PART C:
DID YOU HAVE
SOMETHING
LIKE THIS?**

COST/BENEFIT ANALYSIS

ID'S RELATIONSHIP BETWEEN COSTS & BENEFITS. BEST RATIO MAY NOT BE THE BEST DECISION. USE TO EVALUATE ALTERNATIVES & PREPARE FOR FINANCIAL NEEDS.

COSTS

TANGIBLE = \$

INTANGIBLE

- **MORALE, ATTITUDES**
- **LABOR MARKET IMPACTS**
- **POLITICAL COSTS**
- **INDIRECT COSTS**
- **RESISTANCE APATHY**
- **CUSTOMER DISAFFECTION**

BENEFITS

TANGIBLE = \$

INTANGIBLE

- **MORALE, ATTITUDES**
- **LABOR MARKET IMPACTS**
- **POLITICAL BENEFITS**
- **INDIRECT SAVINGS**
- **WHAT'S IN IT FOR ME?**
- **CUSTOMER SATISFACTION**

CALCULATION

1. DETERMINE RATION OF TANGIBLE COSTS/BENEFITS
2. SPECIFY \$ RETURN IN FIRST YEAR OF IMPLEMENTATION
3. LIST EXPECTED + & - INTANGIBLES — ANY MEASURES?

HOPE SPRINGS ETERNAL—PART D

GROUPS OF 4, 15 MINUTES

***ANSWERS AVAILABLE FOR A
SMALL CHARGE!***

COST/BENEFIT ANALYSIS

HOPE SPRINGS ETERNAL—PART D ANSWERS

TANGIBLE

1. 126 DISSATISFIED PATIENTS
79% IS VITAL FEW & REPRESENTS 96 PATIENTS
5% OF 96 = FIVE LOST PATIENTS
2. GROSS INCOME (5 X \$5500) = \$27,500
@ 40% = \$11,000 GROSS PROFIT
\$11,000 - \$3750 = \$7250 NET PROFIT
3. TANGIBLE COST/BENEFIT = \$3750/\$11,000 OR \$1/\$2.93

INTANGIBLE

INTANGIBLE COSTS

- TIME TO BRING ON-STREAM
- TIME TO LEARN CHANGES

INTANGIBLE BENEFITS

- CUSTOMER SATISFACTION
- IMPROVED QUALITY
- IMPROVED EFFICIENCIES

SIMPLIFY, SIMPLIFY

—THOREAU

OUT OF CLUTTER, FIND SIMPLICITY

—Einstein's Work Rule #1

**TIS THE GIFT TO BE SIMPLE,
TIS THE GIFT TO BE FREE,
TIS THE GIFT TO COME DOWN
WHERE WE OUGHT TO BE.**

—Shaker Hymn

**QUALITY, SPEED & RESULTS:
POWER TOOLS: SAVING TIME, MONEY & EFFORT**

WORK IMPEDIMENTS COST \$60 BILLION

- \$60 BILLION SAVINGS POSSIBLE IN STREAMLINING, JOB REDESIGN, IMPROVING COMMUNICATION & COOPERATION
- 60% OF TOTAL IS IN WASTED TIME: POOR COMMUNICATION & UNNECESSARY PAPERWORK. 20% IN OPERATING INEFFICIENCIES
- HOSPITAL SPENDING PER \$100 OF DIRECT PATIENT CARE:

	<i>AVERAGE</i>	<i>BETTER RUN</i>
• CLERICAL & COMMUNICATIONS	\$53	\$21-42
• ADMINISTRATION	\$25	\$8-15

- CHANGE TO BETTER PRACTICES = 31% DECREASE (\$210 B) IN TOTAL LABOR COST.
- COMPLEXITY COMPARISON: HOSPITALS > 20 X MANUFACTURING

—Modern Healthcare, June 22, 2002

TOP 100 HOSPITAL IMPLICATIONS

IF ALL U.S. ACUTE CARE HOSPITALS PERFORMED AT THE LEVEL OF THE TOP 100 BENCHMARK HOSPITALS, RESULTS WOULD BE DRAMATIC

- **AVERAGE LENGTHS OF STAY WOULD DECREASE BY NEARLY HALF A DAY**
- **INPATIENT MORTALITY AND COMPLICATIONS WOULD EACH DROP BY 22%**
- **PROFITABILITY, GROWTH IN EQUITY, AND RETURN ON ASSETS WOULD EACH INCREASE SIGNIFICANTLY OVER CURRENT LEVELS**
- **EXPENSES WOULD BE REDUCED BY AN AGGREGATE \$24.5 BILLION A YEAR**
- **CHARGES WOULD BE REDUCED BY AN AGGREGATE OF \$43 BILLION/YEAR**

—HCIA-MERCER



***HIGHER STANDARDS LEAD TO BETTER
QUALITY OUTCOMES AND LOWER COSTS***

Heart bypass twice as costly in U.S. as in Canada: study

Coronary artery bypass graft surgery costs about twice as much, on average, in a U.S. hospital than in a Canadian hospital, \$20,673 vs. \$10,373, with no difference in clinical outcomes, according to a study in the *Archives of Internal Medicine*. Adjusting for clinical and demographic differences, the U.S. cost was 74.8% higher than the cost in Canada. The difference may largely reflect higher administrative overhead in the U.S. healthcare system, with its multiple payers, than in the single-payer Canadian system, said Mark Eisenberg, a physician at Jewish General Hospital in Montreal who helped lead the study. Defensive medicine and higher across-the-board costs in general also may be factors, Eisenberg said, adding that gauze pads cost twice as much in the U.S. as in Canada. The researchers compared outcomes and treatment costs for 4,698 bypass patients at five U.S. hospitals and 7,319 bypass patients at four Canadian hospitals.

—*Modern Healthcare* 7/11/05



WHO IS LEAPFROG?

WHY CONSIDER THEIR STANDARDS?

WHERE'S JCAHO? WHO CARES!

WHO: FOLLOWING IOM REPORT, BUSINESS ROUNDTABLE ESTABLISHED LEAPFROG GROUP IN 2002 TO PUT PURCHASING MUSCLE OF CORPORATIONS TO WORK. ORIGINALLY 6, NOW 150, FORTUNE 500 CORPORATIONS. THEIR HEALTH PLANS CURRENTLY INSURE 34M AMERICANS AND REPRESENT \$62 BILLION IN BUSINESS

MESSAGE: MEET THESE STANDARDS IF YOU WANT OUR BUSINESS. PAY MORE TO PROVIDERS WHO COMPLY, INCENTIVES TO EMPLOYEES TO CHOOSE THOSE PROVIDERS, HEALTH PLANS PUT ON NOTICE

FOCUS: THE LEAPFROG GROUP INITIATIVE IS ABOUT PATIENT KNOWLEDGE, PATIENT CHOICE AND PATIENT SAFETY. REFLECTS APPROACH TO PURCHASING BASED ON:

- EVIDENCE BASED MEDICINE (BEST PRACTICES) APPROACH WILL PREVAIL
- WHAT END-USERS/CONSUMERS CAN READILY APPRECIATE & ASSESS
- PATHS TO BREAKTHROUGH IMPROVEMENTS REACHED OVER TIME & THROUGH MARKET INCENTIVES, MANAGEMENT FOCUS & SYSTEMATIC PROCESS IMPROVEMENT
- GOALS THAT WELL-MANAGED HEALTH CARE PROVIDERS CAN REACH (HOSPITALS CAN BE SURVEYED & GET 4 STAR AWARD IF THEY PASS)



LEAPFROG GROUP STANDARDS

PURCHASERS FOCUS ON FOUR SAFE PRACTICES

1. COMPUTER PHYSICIAN ORDER ENTRY (CPOE)

COMPUTERIZED PRESCRIPTIONS IN HOSPITALS. SERIOUS MEDICATION MISTAKES REDUCED BY UP TO 86 PERCENT. DOORWAY TO CONTROLLING MANY OTHER WORK PROCESSES VIA I.T. BACKBONE

2. EVIDENCE-BASED HOSPITAL REFERRAL (EHR)

SELECT EXPERIENCED HOSPITALS WITH PROVEN OUTCOMES FOR SPECIFIC HIGH-RISK CONDITIONS. BEST WAY TO DETERMINE—KNOW ACTUAL RESULTS PATIENTS EXPERIENCE WITH ALL STATES REPORTING INFO PUBLICLY. KNOWN RELATIONSHIP BETWEEN HOSPITAL'S ANNUAL NUMBER OF HIGH-RISK TREATMENTS & PATIENT OUTCOMES

3. ICU PHYSICIAN STAFFING (IPS)

"INTENSIVISTS," PHYSICIANS SPECIALLY TRAINED TO CARE FOR CRITICALLY ILL PATIENTS SHOULD STAFF ICUS. FOUR MILLION ICU PATIENTS ANNUALLY, 500,000 ICU DEATHS ANNUALLY—10% OF DEATHS CAN BE AVOIDED IF ICU INTENSIVISTS PRESENT AT LEAST EIGHT HOURS PER DAY

4. NQF SAFE PRACTICES (LEAPFROG QUALITY INDEX)

NATIONAL QUALITY FORUM-ENDORSED 30 SAFE PRACTICES COVER A RANGE OF PRACTICES THAT REDUCE THE RISK OF HARM IN CERTAIN PROCESSES, SYSTEMS OR ENVIRONMENTS. 27 OF THESE PRACTICES MAKE UP THE *LEAPFROG QUALITY INDEX*

**FIRST 3 STANDARDS ALONE ESTIMATED TO SAVE
59,544 LIVES & \$9.7 BILLION ANNUALLY**

WORK SIMPLIFICATION

FIND SIMPLER & BETTER WAYS TO DO THINGS

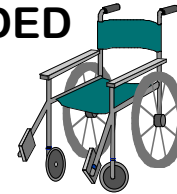
IMPROVE WORKPLACE

- ENVIRONMENTAL CONDITIONS: LIGHT, HEAT, SOUND
- ORGANIZE: REDUCE CLUTTER & FINDING TIME



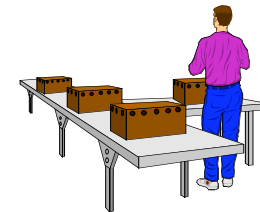
TOOLS

- NEAR WORK STATION, ALL TOOLS NEEDED ARE PROVIDED
- NO SHARING TOOLS, RESPONSIBLE FOR OWN



PRINCIPLES OF MOTION

- PREPOSITION WORK/SUPPLIES—A FIXED PLACE
- SHORTEN TRANSPORT DISTANCE
- WORK WITHIN ARM'S LENGTH
- DO SIMILAR WORK IN BATCHES WHENEVER POSSIBLE
- SAFETY FIRST: LIFT WITH LEGS; SLIDE INSTEAD OF CARRY



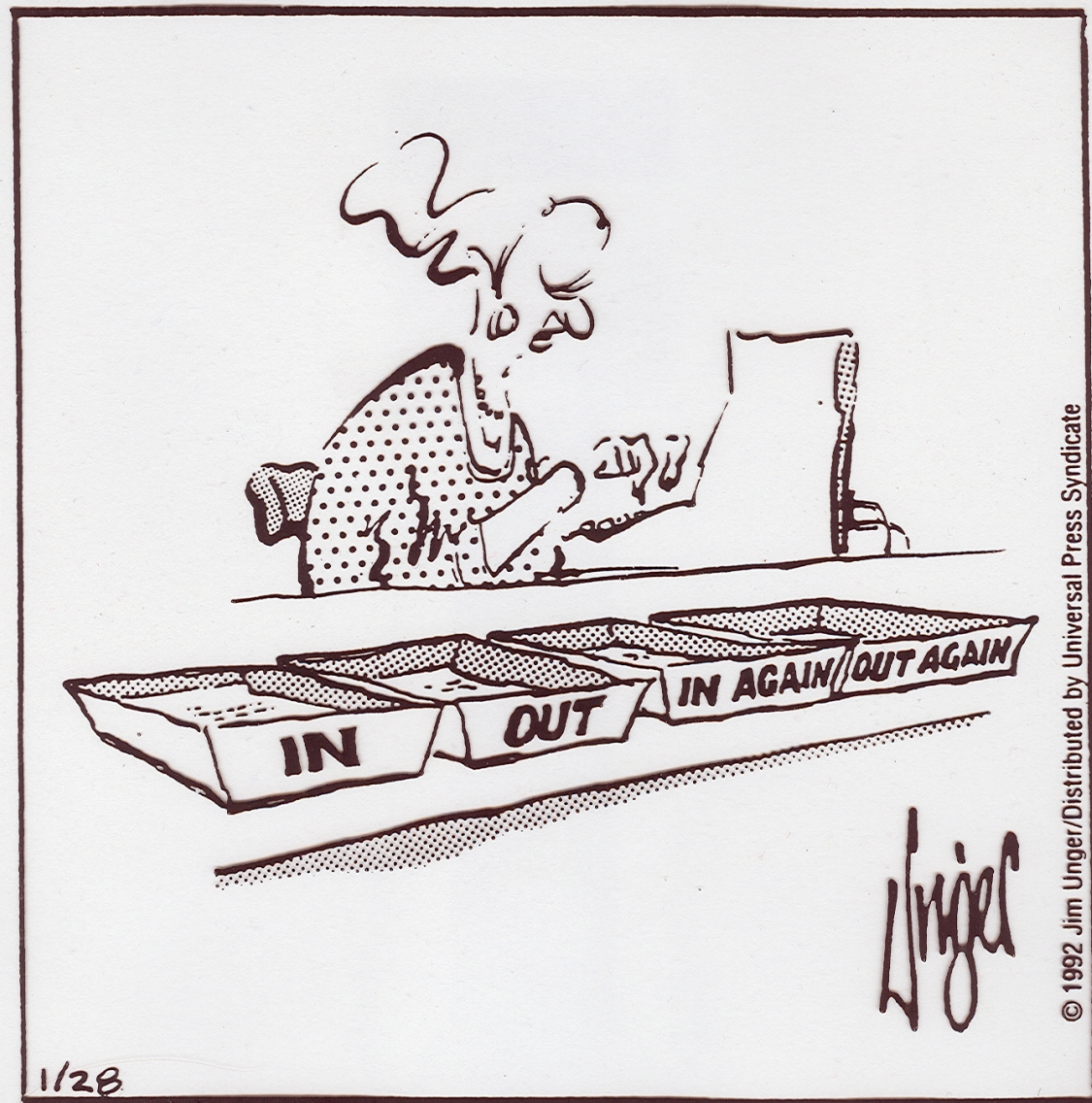
WORK MANAGEMENT

- NO RE-DO'S, DO IT RIGHT THE FIRST TIME
- DON'T DO SAME PIECE OF WORK OVER & OVER
- AUTOMATE TASKS/SYSTEMS WHEREVER POSSIBLE
- ASSIGN TO LOWEST POSSIBLE WORKER LEVEL
- IMPROVE PROCESSES—REDUCE VARIATION, COSTS, CYCLE TIMES



THE “RE-DO” FALLACY

NEVER TIME TO DO IT RIGHT, ALWAYS TIME TO DO IT OVER



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STEP 3—IMPLEMENT SOLUTIONS

1. TEST FOR SOLUTION WORTHINESS
2. SELL YOUR SOLUTION— ***MANSYS GUIDELINES***
3. CREATE ACTION PLAN & IMPLEMENTATION SCHEDULE— ***GANTT CHART***
4. IMPLEMENT & ADDRESS CHANGE RESISTANCE

SPECIAL USE TOOLS

- ***GANTT CHART***

IS YOUR PROPOSAL WORTHY?

$$\text{EDM} = Q + A$$

- ✓ FIT WITH VALUES & MISSION?
- ✓ FIT WITH KRAs?
- ✓ DOES IT PROVIDE A COMPETITIVE ADVANTAGE?
- ✓ WILL OTHER PROJECTS BE DELAYED?
- ✓ FIT TODAY'S ORGANIZATION EMPHASIS?
- ✓ HOW IMPORTANT TO THE FUTURE?
- ✓ DOES IT COST A LOT?
- ✓ HAVE ALL DEPARTMENTS BEEN CONSULTED?
- ✓ HOW WILL CHANGE FACTORS BE MANAGED?
- ✓ IS POLITICAL WIRING ACCOMPLISHED?

SELLING YOUR SOLUTIONS

✓ BE CONCISE, CALM, COOL & COLLECTED

- REHEARSE—DON'T RAMBLE OR APPEAR SCATTERED
- ORGANIZED—VISUALS, HANDOUTS, FLIPCHARTS
- ALWAYS PRESENT COMPLETED STAFF WORK

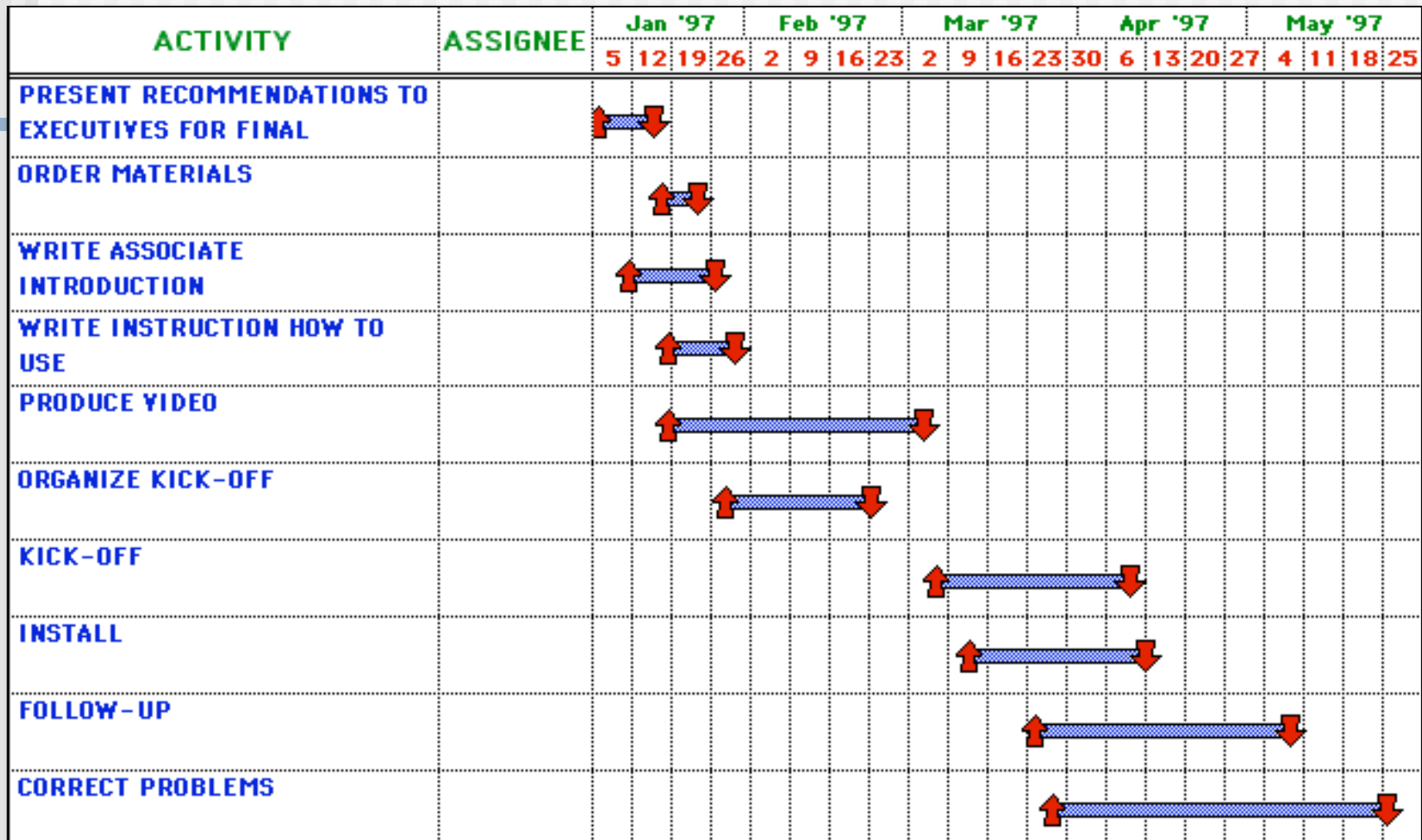
✓ FOLLOW ORGANIZATION PROPOSAL FORMAT

- STATEMENT OF THE PROBLEM & OBJECTIVE
- ASSUMPTIONS MADE
- SUMMARY DATA FINDINGS & MEASUREMENTS
- COST/BENEFIT & ROI ARGUMENTS
- ALTERNATIVES IDEAS CONSIDERED
- PLAN FOR IMPLEMENTATION
- BENEFITS OF RECOMMENDATION
- POTENTIAL PROBLEM AREAS
- ACCOUNTABILITIES



✓ CLOSE: Q&A, REQUEST APPROVAL

GANTT CHART



GANTT CHART

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STEP 4—TRACK RESULTS

1. GET FEEDBACK ON HOW IT'S TRACKING

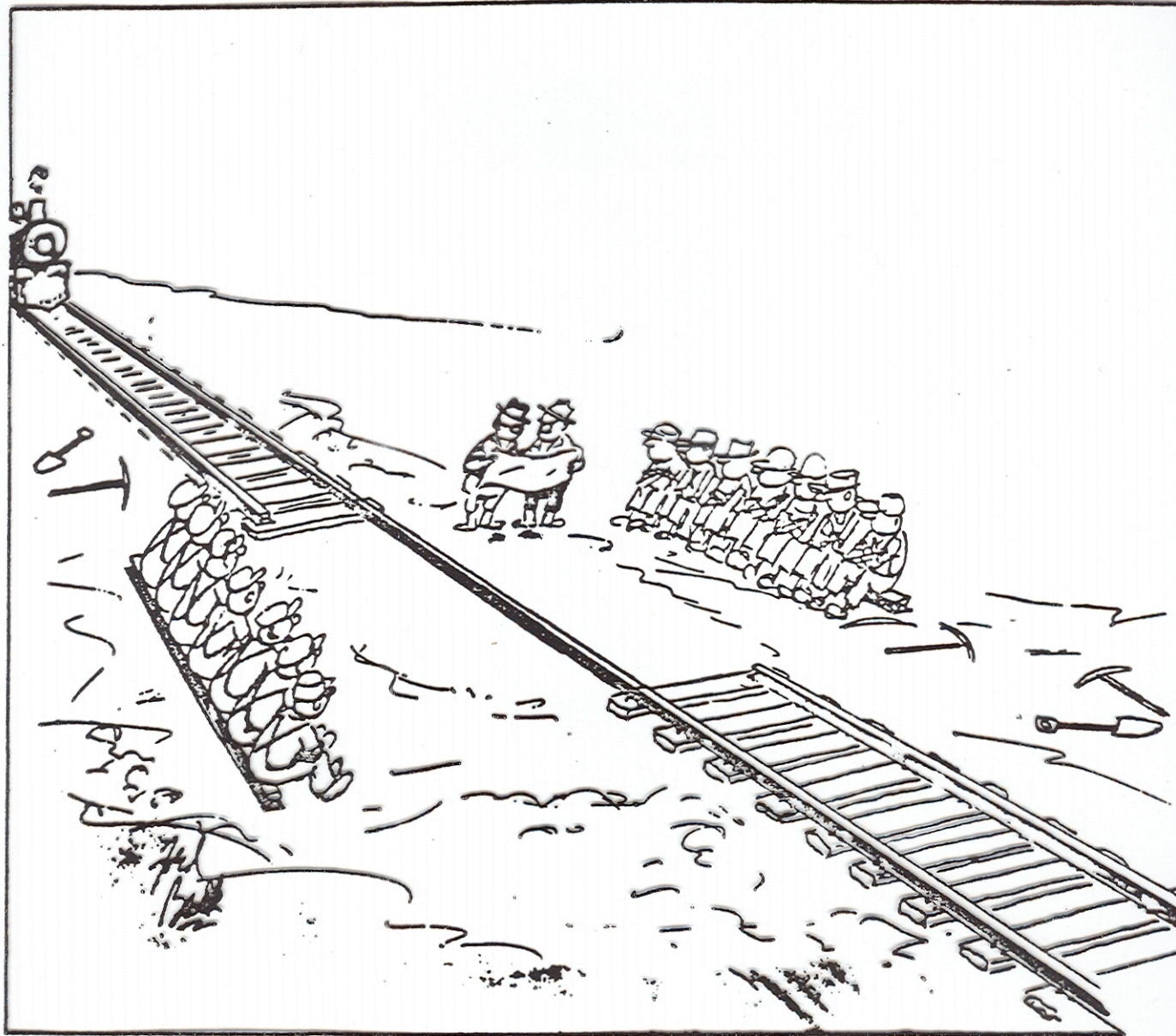
- DECIDE DATA NEEDS: BY WHOM, HOW OFTEN, HOW REPORTED & TO WHO?— **TRACKING CHECKLIST, HISTOGRAM**
- USERS' SUBJECTIVE OPINIONS—ASSIGN STEWARD MONITOR
- WHAT DO VARIANCE MEASURES REVEAL? WHAT PROBLEMS SHOW UP ON PARETO & CONTROL CHARTS?

2. DEALING WITH BUMPS IN THE ROAD

- SMOOTH FEATHERS, DON'T BLAME, RECONVENE GROUP
- MISTAKES—SUCCESS AT LEARNING WHAT WON'T WORK
- DEFINE THE BUMP—WAS IT ANTICIPATED
- WHAT'S MISSING? $\Delta = D \times M \times P > \text{COSTS}$
- DECIDE WHETHER TO PATCH OR RECYCLE DO-IT

3. REFINING—HEART OF CI

- SOLUTIONS INVARIABLY REVEAL NEW PROBLEM PIECES
- FIRST ROUND ADEQUATE, SOMETIMES INSUFFICIENT
- OTHER TOOLS & BRAINS: SURVEYS, INTERVIEWS, FOCUS GROUPS



Get it right the first time!

TRACKING RESULTS CHECKLIST			
PROJECT NAME:		DATE:	
IMPLEMENTATION 1 All steps of plan carried out? 2 Project done on time & in budget? 3 All affected by the change involved? 4 Were all parties communicated with? 5 Was follow through adequate?	YES	NO	NOTES:
CUSTOMER FEEDBACK 1 Is the Customer happy? 2 What expectations not yet met? 3 What do measures show? 4 What quantitative measures needed?	YES	NO	NOTES:
SYSTEM FEEDBACK 1 What do Associates report? 2 What do suppliers suggest? 3 Who needs a report on progress? 4 What quantitative measures needed?	YES	NO	NOTES:
SOLUTION PROBLEMS 1 Was the timing acceptable? 2 What problems still exist? 3 What do variances reveal? 4 Are variances acceptable? 5 Was Solution adequate? 6 If not, can it be improved now?	YES	NO	NOTES:
HUMAN FACTORS/PROBLEMS 1 Any people barriers in the way? 2 3-Rs provided to support change? 3 What political barriers need attention?	YES	NO	NOTES:
MEASUREMENT OF VALUE/ROI 1 What tangible pay off has provided? 2 What is the estimated \$pay off 3 What intangible benefits? 4 Was the result worth the work?	YES	NO	NOTES:
CONCLUSION 1 Was the change beneficial? 2 Should solution be left as is, or revised? 3 Who should be included in this decision? 4 Should results be communicated?	YES	NO	NOTES:

WHERE & WHEN TO USE TOOLS

	DEFINE PROBLEM			OUTLINE OPTIONS			IMPLEMENT SOLUTIONS			TRACK RESULTS			PAGE #
	STATE PROBLEM	USE DATA SOURCES	SELECT PROJECT TEAM	ANALYZE PROBLEM DATA	IDENTIFY ROOT CAUSES	CONSIDER POSSIBLE SOLUTIONS	CREATE ACTION PLAN	SELL PROPOSAL	IMPLEMENT & MANAGE CHANGE	GET PERFORM FEEDBACK	DEAL WITH PROBLEMS	REFINE/ RECYCLE PROCESS	
CORE TOOLS													
BENCHMARKING	2	1									2	2	1-5
BRAINSTORMING	1		2	1		1	2				1	1	6-2
CONTROL CHART		1								1		2	5-17
COST/BENEFIT ANALYSIS						1	2	2			2	2	6-23
DECISION MATRIX						1					2	2	6-18
FISH BONE CHART				2	1						2	1	6-3
FLOWCHART				1	1	2	2					2	6-8
HISTOGRAM		1								1		2	5-6
MANSYS PROPOSAL GUIDE								1			2		7-1
PARETO CHART		1				2						2	5-8
RUN CHART		1								1		2	5-11
TRACKING CHECKLIST											1		9-1
WORK TRAFFIC DIAGRAM				1		1	2		2		2	2	6-15
SPECIAL USE TOOLS													
CUSTOMER PROXY	2	1								2		1	4-3
CYCLE TIME ANALYSIS	2			1		1	2		2		2	2	6-26
FOCUS GROUPS	2	1								2		1	4-4
GANTT CHART									1			2	7-3
INTERVIEWS	2	1								2		1	4-4
SAMPLING	2	1								1		1	4-4
STRATIFICATION					1						2	1	4-4
SURVEYS	2	1								2		1	4-4
VARIANCE ANALYSIS				1	1						1	1	6-31
VARIANCE SOLUTION						1					1	1	6-33
WORK SIMPLIFICATION				1		1					1	1	6-25

1 = Primary Application; 2 = Secondary; Blank = None/Rare.

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PART C

IMPROVING GROUP DYNAMICS AS A PROCESS

CREATIVITY CLOG

CREATIVITY & VOLUME LEVEL

GROUP DYNAMICS

- MEMBERSHIP NON SELECTIVE, DYNAMICS UNSOUND
- LACK OF OWNERSHIP, WISHY-WASHY COMMITMENT
- GROUP PARTICIPATION UNREWARDED
- STAGNANT THINKING; POOR GROUP MECHANICS

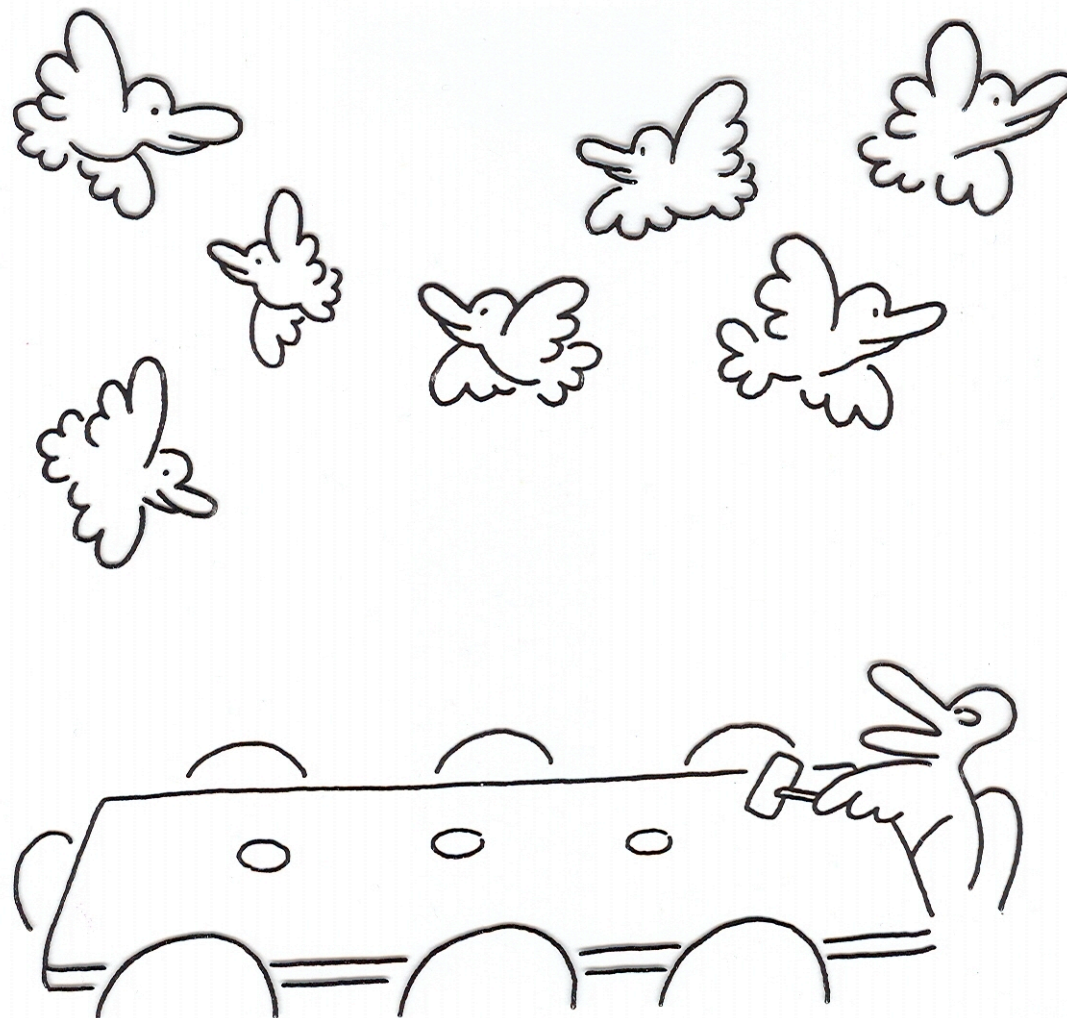
PROBLEM APPROACH

- DON'T UNDERSTAND PROBLEM—NEED MORE DATA, MEASURES
- PIECEMEAL VS WHOLE PROBLEM—NO SYSTEM PERSPECTIVE
- UNSOUND SOLUTIONS—NO BUSINESS SENSE, NO FACTS
- PROBLEM TOO DIFFICULT, NEED NEW PS/DM TOOLS

IMPLEMENTATION

- NO IMPLEMENTATION PLAN—PUT ON HOLD
- POOR FOLLOWUP AND FOLLOW THROUGH—HOLD GROUP ACCOUNTABLE FOR SUCCESSFUL IMPLEMENTATION

TIME



C. Barzotti

"The meeting will come to order."

IMPROVING SMALL GROUP PROCESS

SOLVE TIME RELEASE PROBLEM

- SPECIFY #HR/DAY FOR GROUP WORK
- SPECIFY DAYS FOR GROUP WORK
- DO NOT DISTURB SIGNS, BEEPER RULES
- HIRE FLOATERS, MANAGER SUBBING
- MONITOR ROI, DEMONSTRATE VALUE

IMPROVE GROUP SELECTION & DYNAMICS

- DON'T SELECT DEADHEADS, DON'T KEEP NON PERFORMERS
- 3-R GOOD GROUP/INDIVIDUAL PERFORMANCES
- STOP PROJECT WORK & FIRST "GET GOOD GROUP" DYNAMICS

TRAINING IN PROCESS & TOOLS

- MEMBER ROLE ASSIGNMENT & TRAINING; FACILITATOR TRAINING
- MANDATORY USE OF FLIP CHARTS
- FACILITATOR & GROUP PERFORMANCE FEEDBACK
- NO MORE SHOOTING FROM THE HIP—USE THE TOOLS!

IMPROVING SOLUTION RATE

- NON TRADITIONAL THINKING, OUTSIDE THE BOX
- BETTER MANAGEMENT OF IMPLEMENTATIONS
- MEASURE: DID IT SOLVE THE PROBLEM
- SOLUTION RE-EVALUATION BY DIG

EXECUTIVE SUPPORT

- FAST FEEDBACK, RAPID APPROVALS
- MONETARY SUPPORT, PUSH FOR CHANGE
- POLITICAL BARRIER BOMBER

BRAIN-STORM

PURPOSE: GENERATE MANY & ZANY IDEAS

- AVOID SMALL, TUNNEL, ONLY ONE ANSWER THINKING

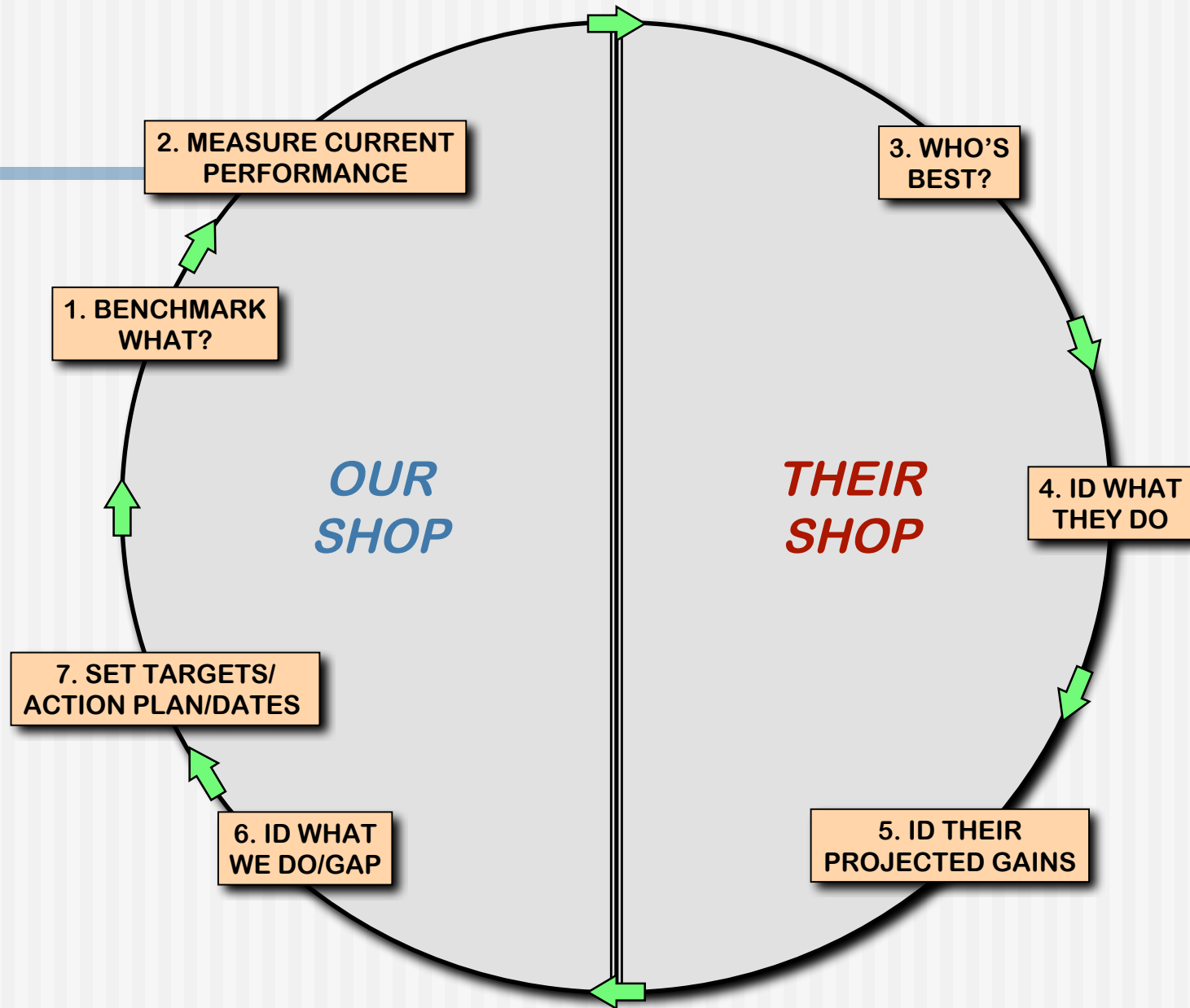
RULES

- ALWAYS VISUAL ON FLIPCHARTS
- CREATE OPTIONS FURIOUSLY, PRAISE ALL IDEAS
- NO CRITICISM, NO ANALYSIS, NO DISCUSSION
- DO CRITICAL THINKING LAST—DO IDEAS FIT THE FACTS?

TECHNIQUES

- RANDOM—MOST COMMON
- ROUND ROBIN—CONTROLS CONTRIBUTION & DOMINANCE
- PAPER SLIPS—LEAST THREATENING
- NOMINAL GROUP TECHNIQUE = PAPER SLIPS + DISCUSSION + GROUP RANKING

BENCHMARKING IMPROVEMENT CYCLE



BENCHMARKING ASSIGNMENT

IN THE NEXT 90 DAYS...

- **IDENTIFY A PROCESS TO BENCHMARK**
- **CONTACT AN OUTSIDE ORGANIZATION THAT REPRESENTS A “BEST PRACTICE”**
- **GO AND SEE WHAT THEY DO**
- **MAKE CHANGES BACK HOME**
- **SET UP A SCHEDULE FOR REGULAR “OUTLOOKS”**

CI: SYSTEMS & SOLUTIONS

DISCUSSION TOPICS

1. HOW CAN WE IMPROVE DIGs/JDI's CHANGE PROCESS? WHAT NEEDS FIXING IN TERMS OF PROJECT SELECTION, MESHING NEW CI TOOLS WITH KNOWN DO-IT STEPS, APPROVAL TIMELINES, IMPLEMENTATION? HOW REV IT UP OR REFINE?
2. CI PROBLEM SELECTION STRATEGY: ID ITEMS RELATED TO MARKET OR CUSTOMER NEEDS THAT ARE HIGH COST, HIGH VOLUME, OR HIGH IN RESULTS VARIATION. WHAT PROCESSES/SYSTEMS NOT WORKING RIGHT? ID TOP 1-3 TO ATTACK:
 - CLINICAL CARE PROCESSES/SYSTEMS
 - CUSTOMER PROCESSES/SYSTEMS
 - STAFF PROCESSES/SYSTEMS
 - MANAGEMENT PROCESSES/SYSTEMS
3. INTERDEPARTMENTAL PROBLEMS: WHAT'S NEEDED IN ADDITION TO CI TOOLS TO MAKE INTEGRATION OF CI EFFECTIVE IN THE REAL WORLD? (POLITICS, RESOURCES, PRIORITIES). HOW DEAL WITH BLOCKAGES THAT CURRENTLY IMPEDE REFINING WORK PROCESSES?
4. WHAT NAH CHANGE WORK IS NOT DONE AND MAY TRIP UP NEW CI EFFORT? HUMAN RESOURCES, CUSTOMER STUFF, LACK OF MANAGER POWER, PAST HISTORY. WHERE WILL MORE ADVANCED IDEAS BE AT RISK BECAUSE FOUNDATIONS ARE WEAK?
5. MANAGER FREAKOUT—IN INCREASING OUR MANAGEMENT SOPHISTICATION CREATING MORE PROBLEMS THAN IT'S WORTH? CAN WE KEEP UP? DO WE NEED CI?
6. ASSOCIATE NEEDS: RELEASE TIME FOR TRAINING & PARTICIPATION, LACK OF NAH ORIENTATION & UNDERSTANDING, PERCEIVED THREAT OF CHANGE? WHAT'S NEEDED TO FREE UP ASSOCIATE TIME & MOTIVATION FOR WORK ON DIGs & CI?

WHAT ARE YOU DOING HERE?

EXCELLENCE: n, STATE OF EXCELLING; SUPERIOR MERIT, VIRTUE, EMINENCE; TRANSCENDENCE, EXTRAORDINARY, WORTHY, CHOICE, ADMIRABLE, FIRST RATE, REMARKABLY GOOD.



IF YOU DON'T DO IT EXCELLENTLY,
DON'T DO IT AT ALL. BECAUSE IF IT'S
NOT EXCELLENT, IT WON'T BE
PROFITABLE. IF IT'S NOT EXCELLENT
IT WON'T BE FUN; AND IF YOU'RE NOT
IN BUSINESS FOR FUN OR PROFIT,
WHAT THE HELL ARE YOU DOING
HERE?

—Robert Townsend