Stretch Targets, Small Experiments: Engaging Clinicians in Quality Improvement

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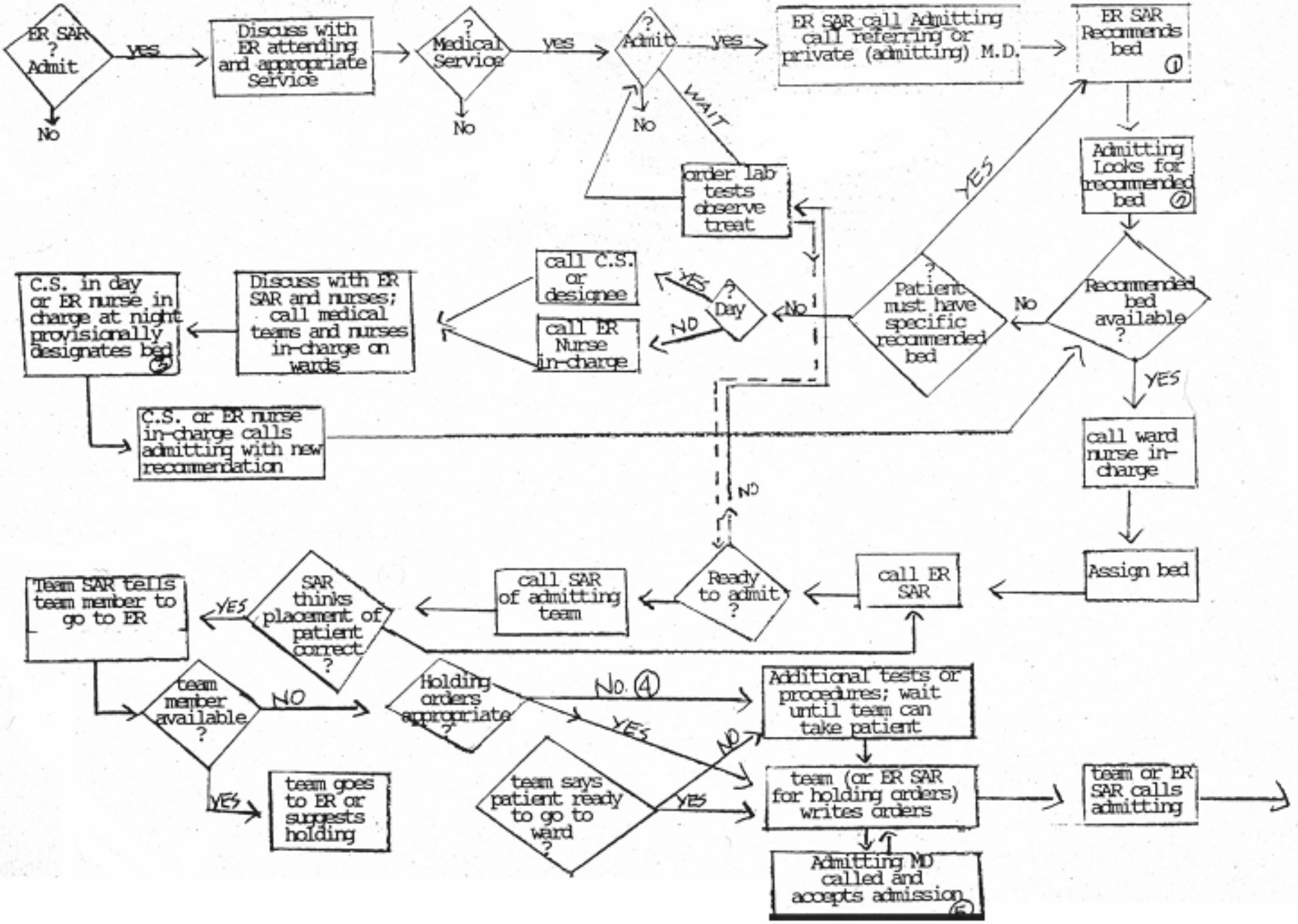
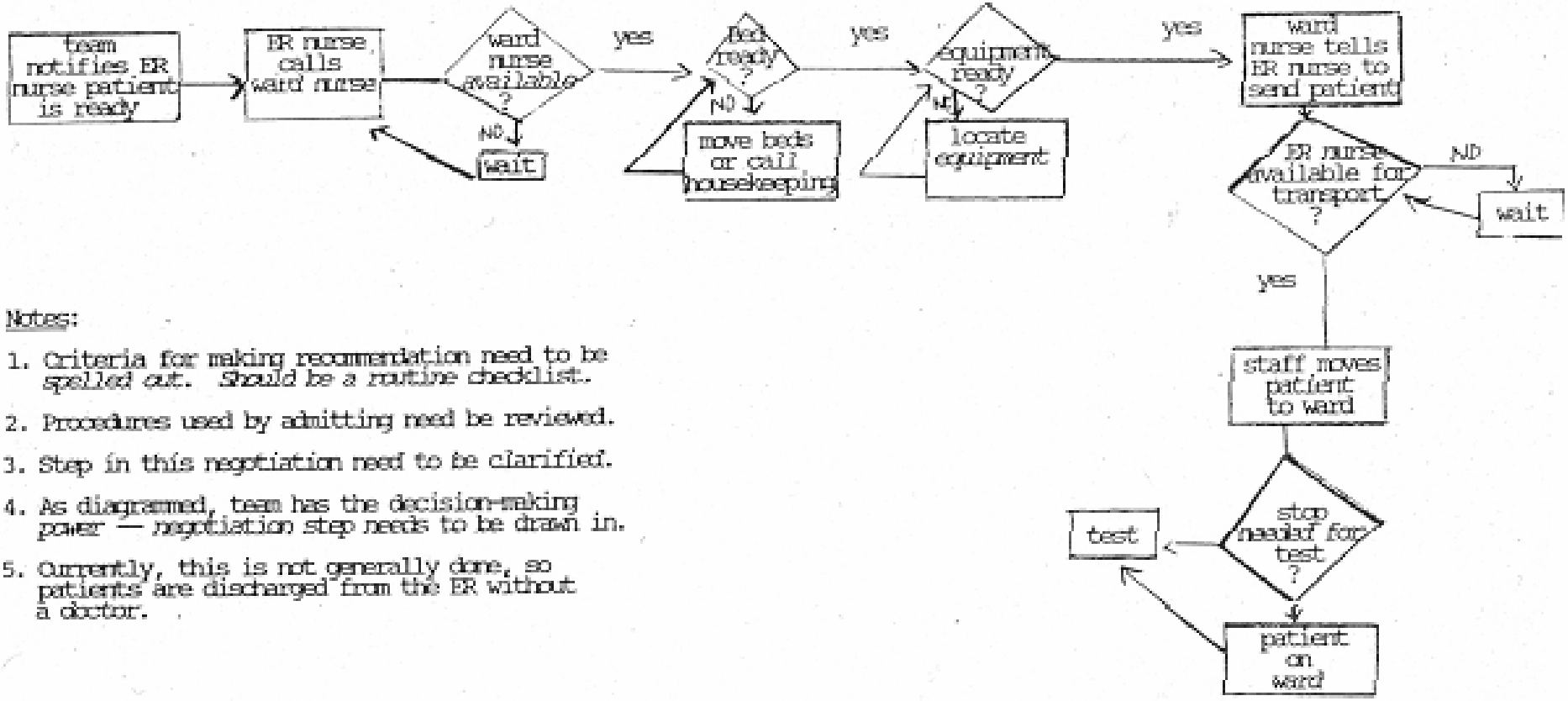
A Personal Journey

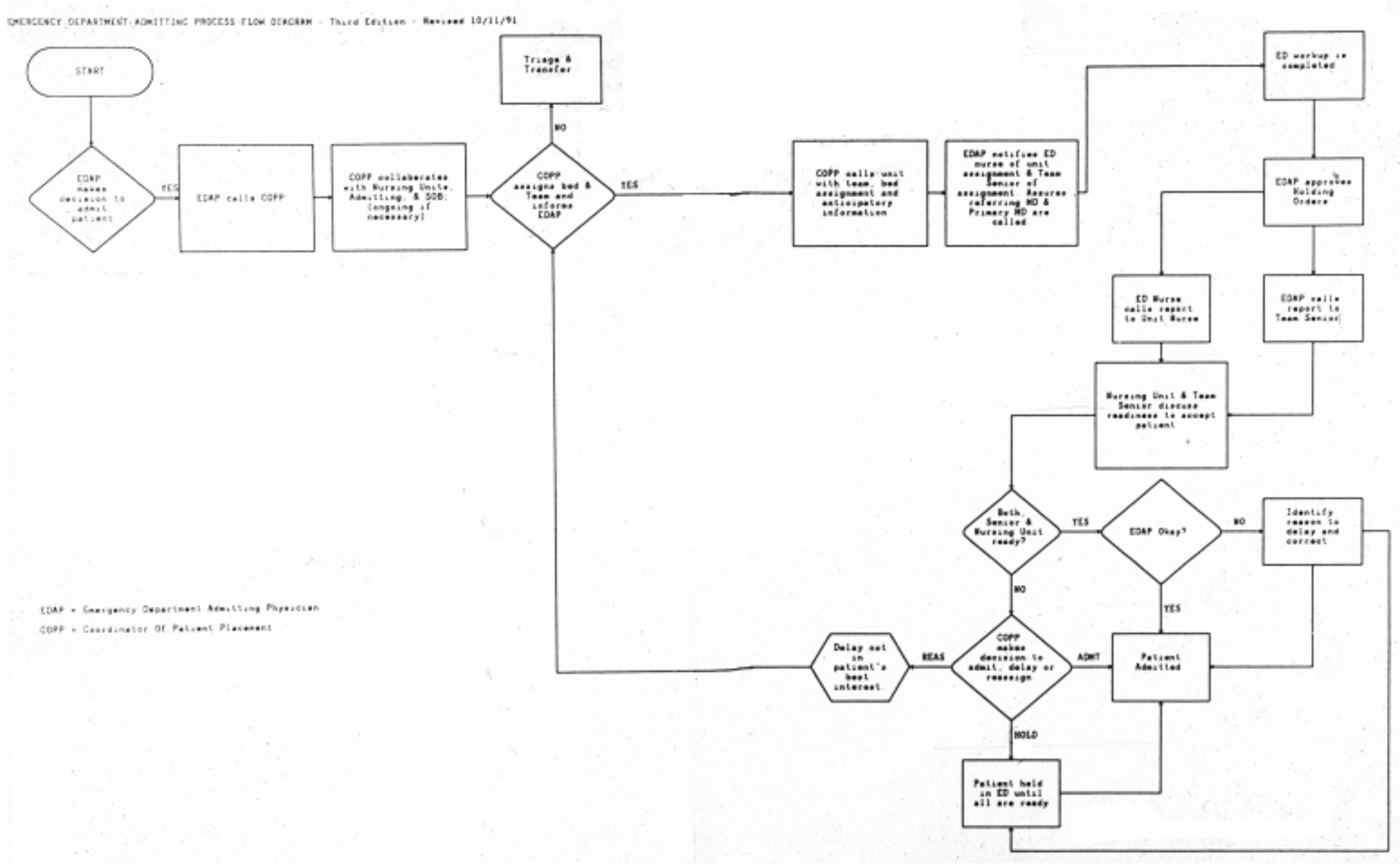

ER SAR ? Admit
yes
No
Discuss with ER attending and appropriate Service
? Medical Service
yes
No
? Admit
yes
No
WAIT
order lab tests observe treat
ER SAR call Admitting call referring or private (admitting) M.D.
ER SAR Recommends bed ①
Admitting Looks for recommended bed ②
? Patient must have specific recommended bed
YES
No
Recommended bed available ?
No
YES
call ward nurse in-charge
Assign bed
call ER SAR
Ready to admit ?
ND
call SAR of admitting team
SAR thinks placement of patient correct ?
YES
Team SAR tells team member to go to ER
team member available ?
NO
YES
team goes to ER or suggests holding
Holding orders appropriate ?
No. ④
YES
ND
Additional tests or procedures; wait until team can take patient
team says patient ready to go to ward ?
YES
team (or ER SAR for holding orders) writes orders
team or ER SAR calls admitting
Admitting MD called and accepts admission ⑤
call C.S. or designee
call ER Nurse in-charge
YES
? Day
ND
No
Discuss with ER SAR and nurses; call medical teams and nurses in-charge on wards
C.S. in day or ER nurse in charge at night provisionally designates bed ③
C.S. or ER nurse in-charge calls admitting with new recommendation



Notes:

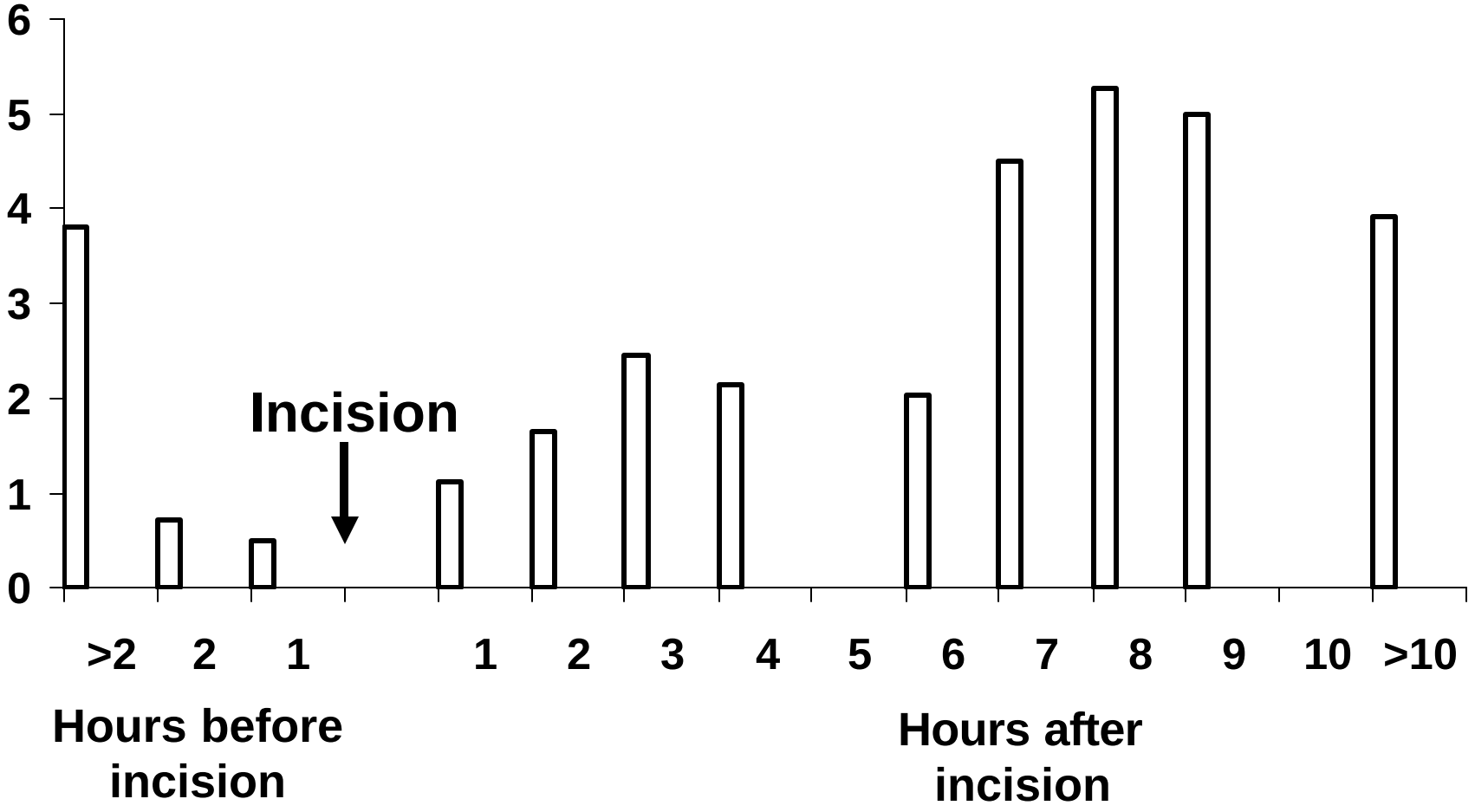
1. Criteria for making recommendation need to be *spelled out. Should be a routine checklist.*
2. Procedures used by admitting need be reviewed.
3. Step in this negotiation need to be clarified.
4. As diagrammed, team has the decision-making power — *negotiation step needs to be drawn in.*
5. Currently, this is not generally done, so patients are discharged from the ER without a doctor.

EMERGENCY DEPARTMENT ADMITTING PROCESS FLOW DIAGRAM - Third Edition - Revised 10/11/91



I believed in epidemiology, but epidemiology can take you just so far….

Timing of Perioperative Antimicrobial Prophylaxis



Classen et al. The timing of prophylactic administration of antibiotics and the risk of surgical-wound infection. N Engl J Med 1992;326:281.

Timing of Perioperative Antimicrobial Prophylaxis

Classen et al. The timing of prophylactic administration of antibiotics and the risk of surgical-wound infection. N Engl J Med 1992;326:281.

Hospitalization Rates for Selected Conditions

Condition	Boston	New Haven	Rochester	RR*
Toxic ingestion	16.2 **	7.9	2.7	6.1
Head trauma	19.0	19.4	7.3	2.6
Asthma	**102.9**	**61.5**	**26.9**	**3.8**
Meningitis (bacterial)	3.7	3.5	2.8	1.2
Appendectomy	8.9	7.9	8.0	1.1
Other abdominal pain	12.4	7.4	2.7	4.5

*** Relative Risk Boston: Rochester**

**** Admissions per 10,000 population**

From NEJM 320: 1183, 1989

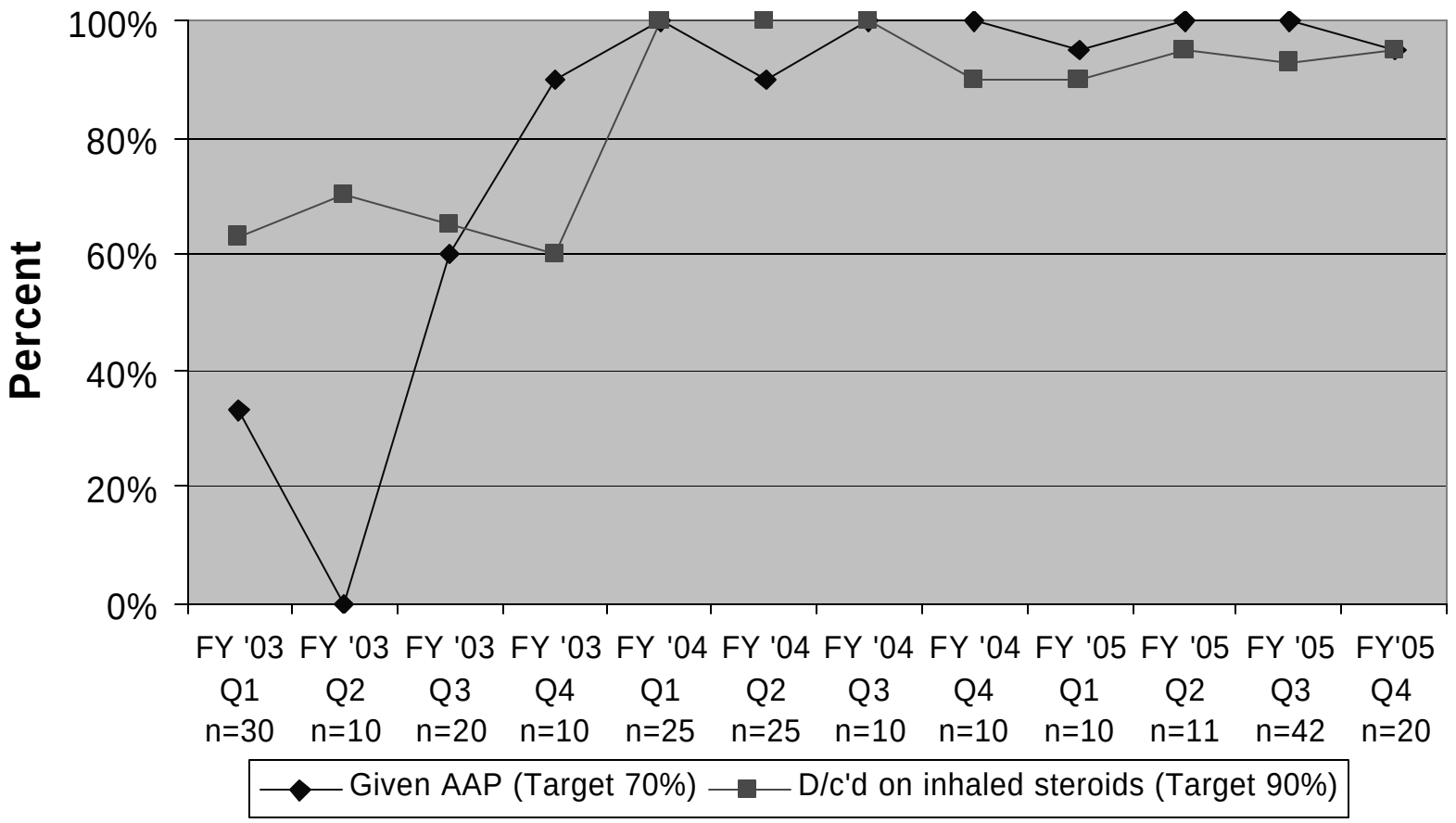
Asthma Treatment Before Hospitalization

	Boston	New Haven	Rochester	OR *
Cromolyn/Inhaled Steroids	11 %	19 %	33 %	0.38
Any Beta-agonist	78 %	84 %	79 %	0.99
Inhaled Beta-agonist	30 %	51 %	58 %	0.52
Oral Steroids (“rescue” Rx)	5 %	19 %	15 %	0.18

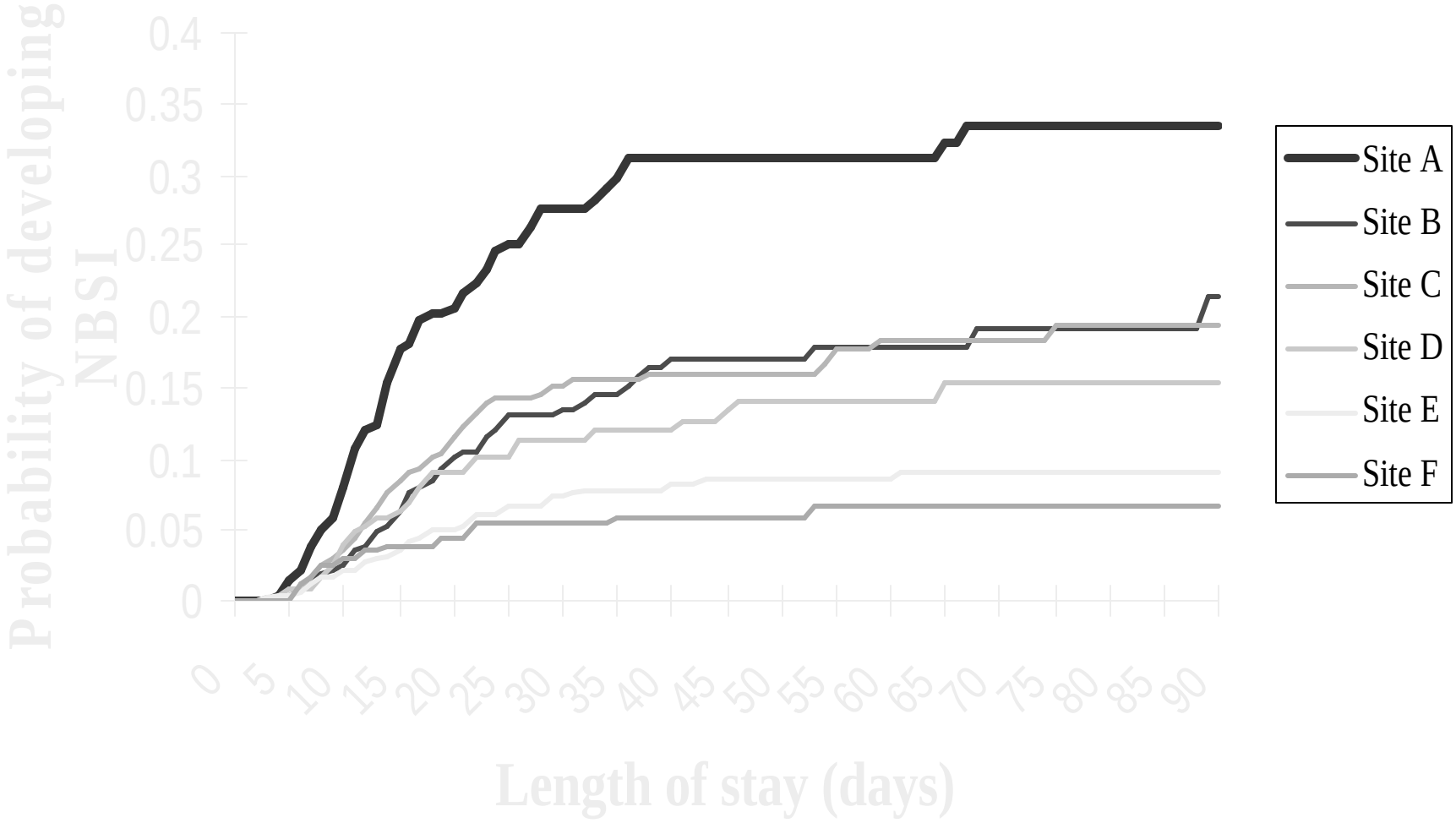
***Odds ratio Boston:Rochester**

From Pediatr 98: 18, 1996

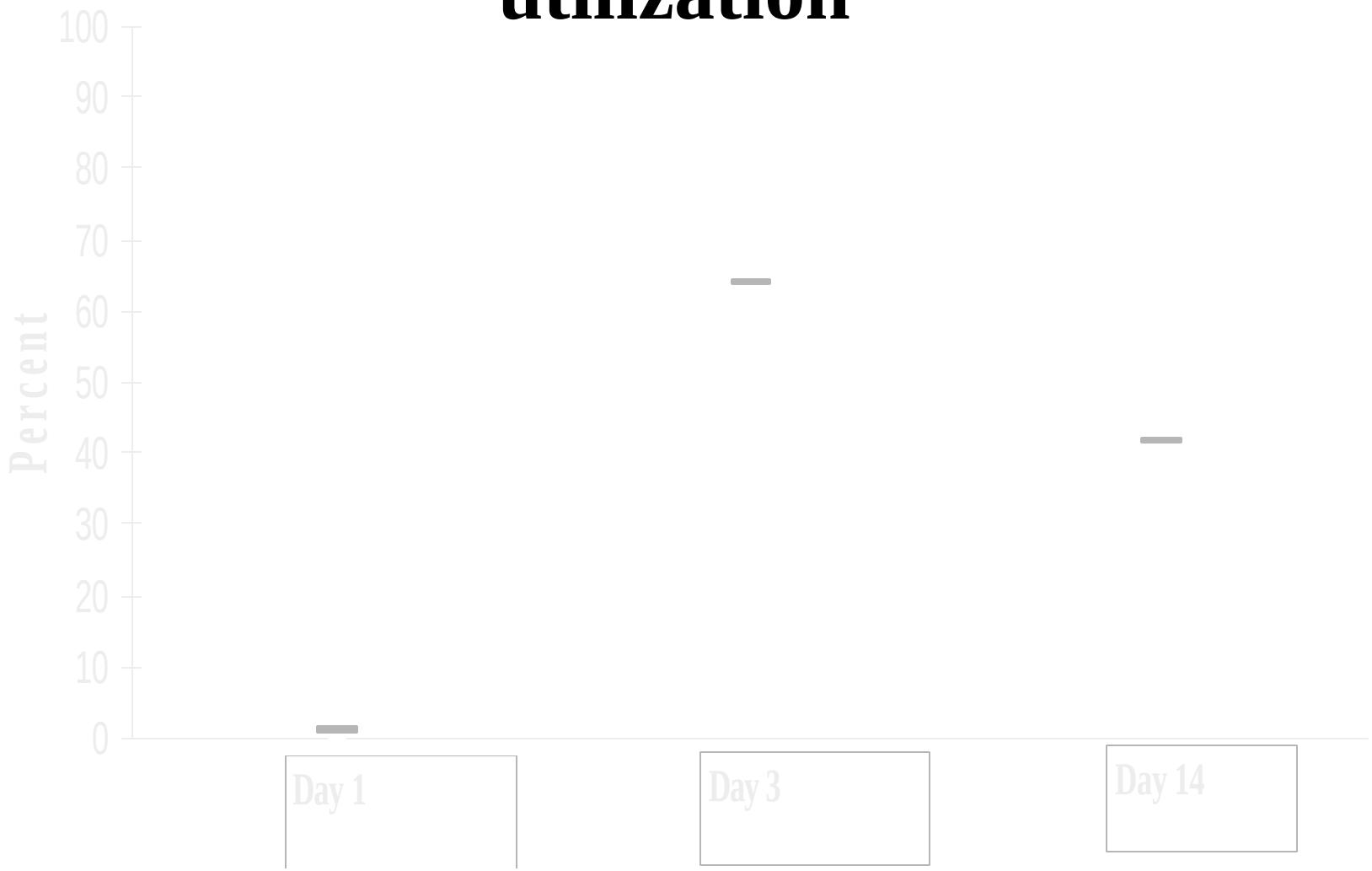
Inpatient Asthma Measures
Clinical Practice Guidelines



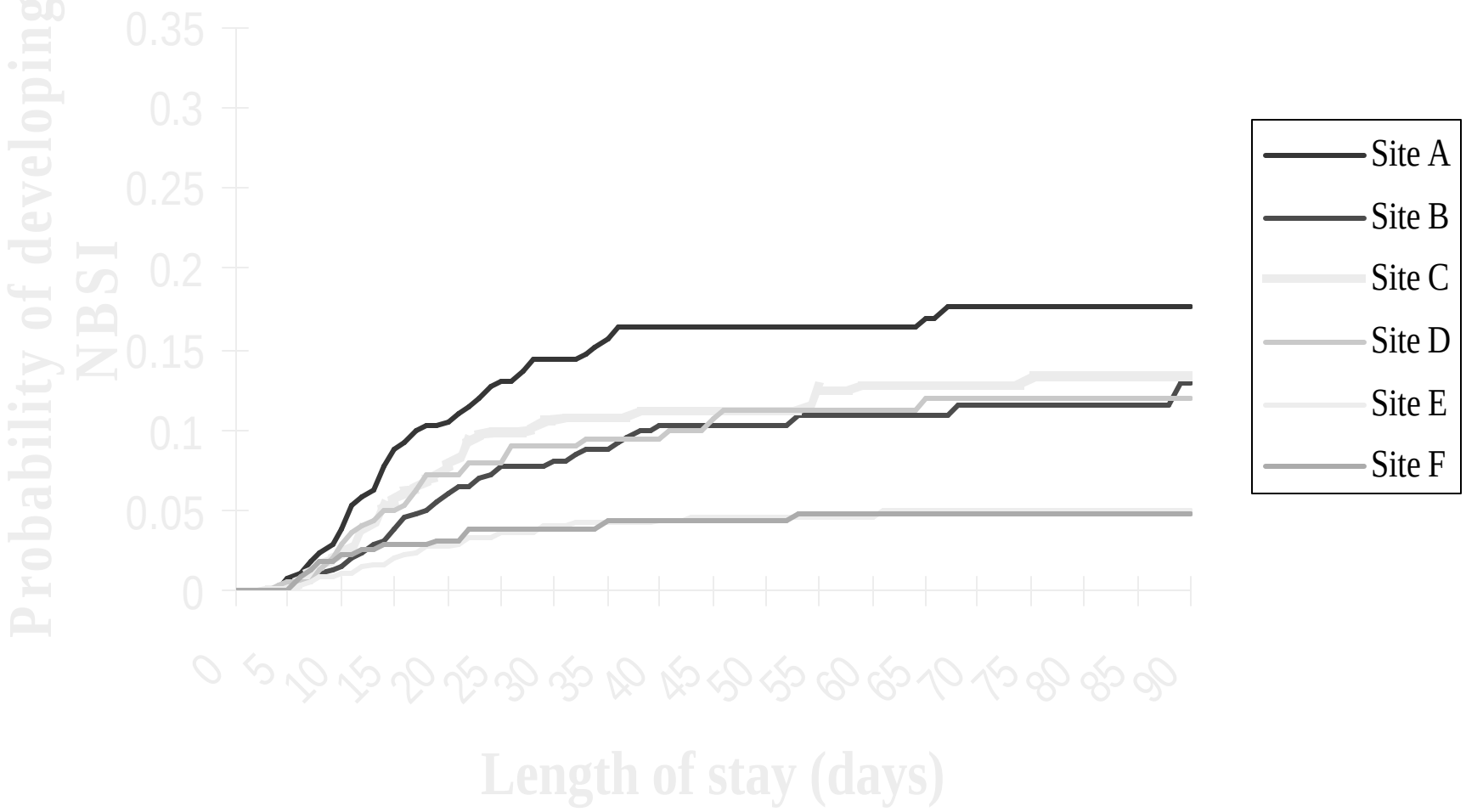
Cox model including only patient-related variables as covariates



Variation in parenteral nutrition utilization



Cox model including patient- and treatment-related variables as covariates



Selected Evidence-Based Gaps in Health Care Quality (IOM)

- Overuse of health care services
  - Major surgery (hysterectomy, CABG)
  - Antibiotics (viral infections, bronchitis)
  - Ear tubes
  - Chiropractic manipulation
- Underuse of health care services
  - Beta blockers post-MI, anti-depressants, analgesics
  - Pneumococcal and influenza vaccines
  - Community-acquired pneumonia care (O_2 sat, blood cultures)
  - Diabetes control and screening (eyes, kidney, feet)
- Disparities by gender, race, ethnicity, socioeconomic status (African American have amputations 2X as often as whites)
- Medical errors

Sources of Information of Quality Gaps and Variation

- AHRQ National Quality Report
- Commonwealth Fund Chart Books
- Dartmouth Atlas

Why Clinicians Are Skeptical About QI

- Many associate QI with old-style, punitive QA
- QI gurus overemphasize the industrial origins of QI and its “religious” aspects
- QI experts tend to focus on non-clinical processes and outcomes
- Teams trying to do QI “by the book” get bogged down in tedious process and settle for small incremental improvements

Why Clinicians are Skeptical About QI

- QI leaders are not up front about the fiscal agenda
- QI experts do not emphasize the academic aspects of QI
- QI programs do not provide clinicians with the data they need to improve

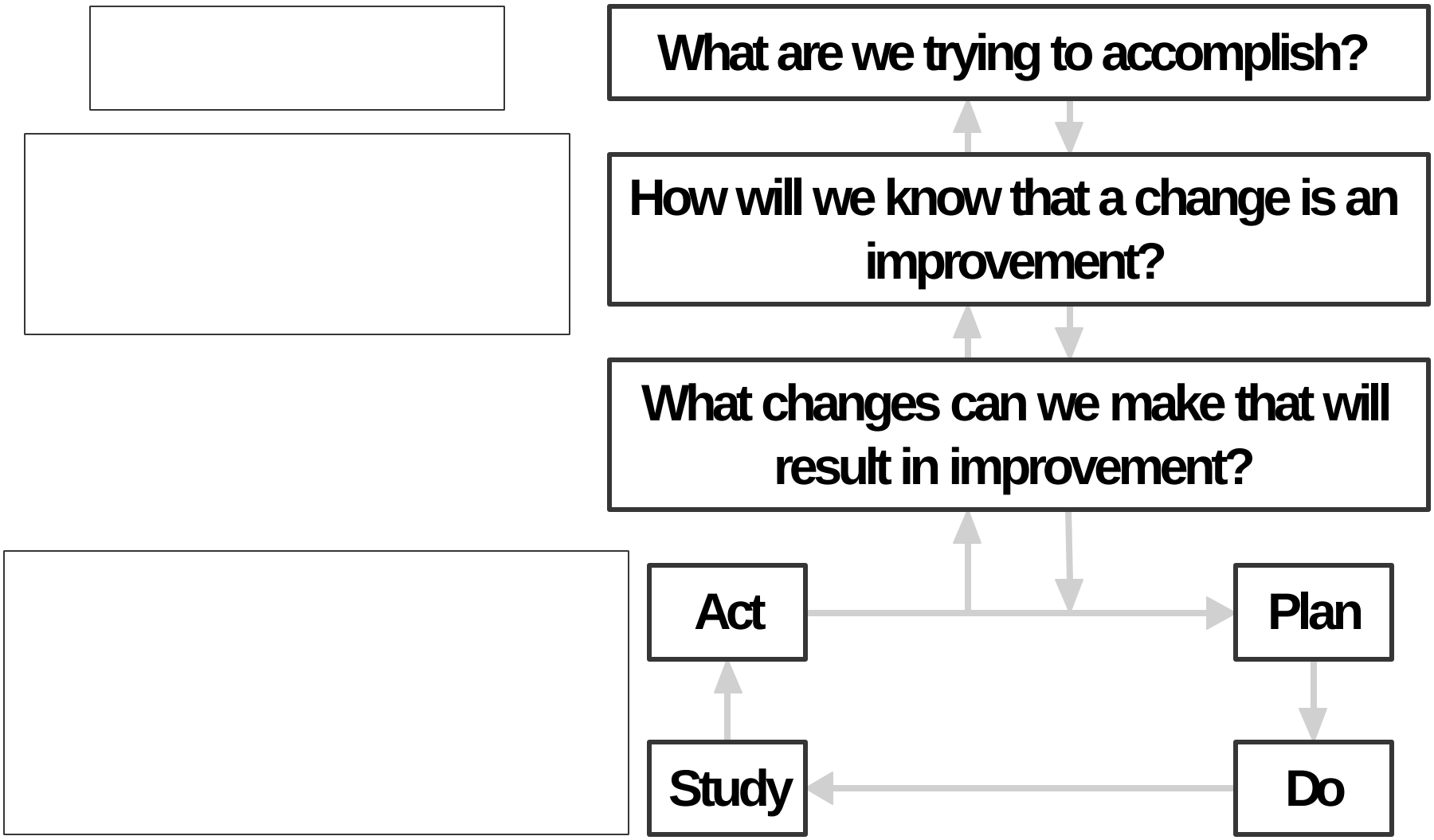
First Order Change

- Changes that occur within a system that itself remains invariant
- Changes that are required to keep a system stable

Second Order Change

- Change required to improve a system beyond historical levels

Model for Improvement



Langley GJ, Nolan KM, Nolan TW. The foundation of improvement. API Publishing, 1992.

Aims should be:

- Strategic, important, “stretch”
- Actionable
- Measurable

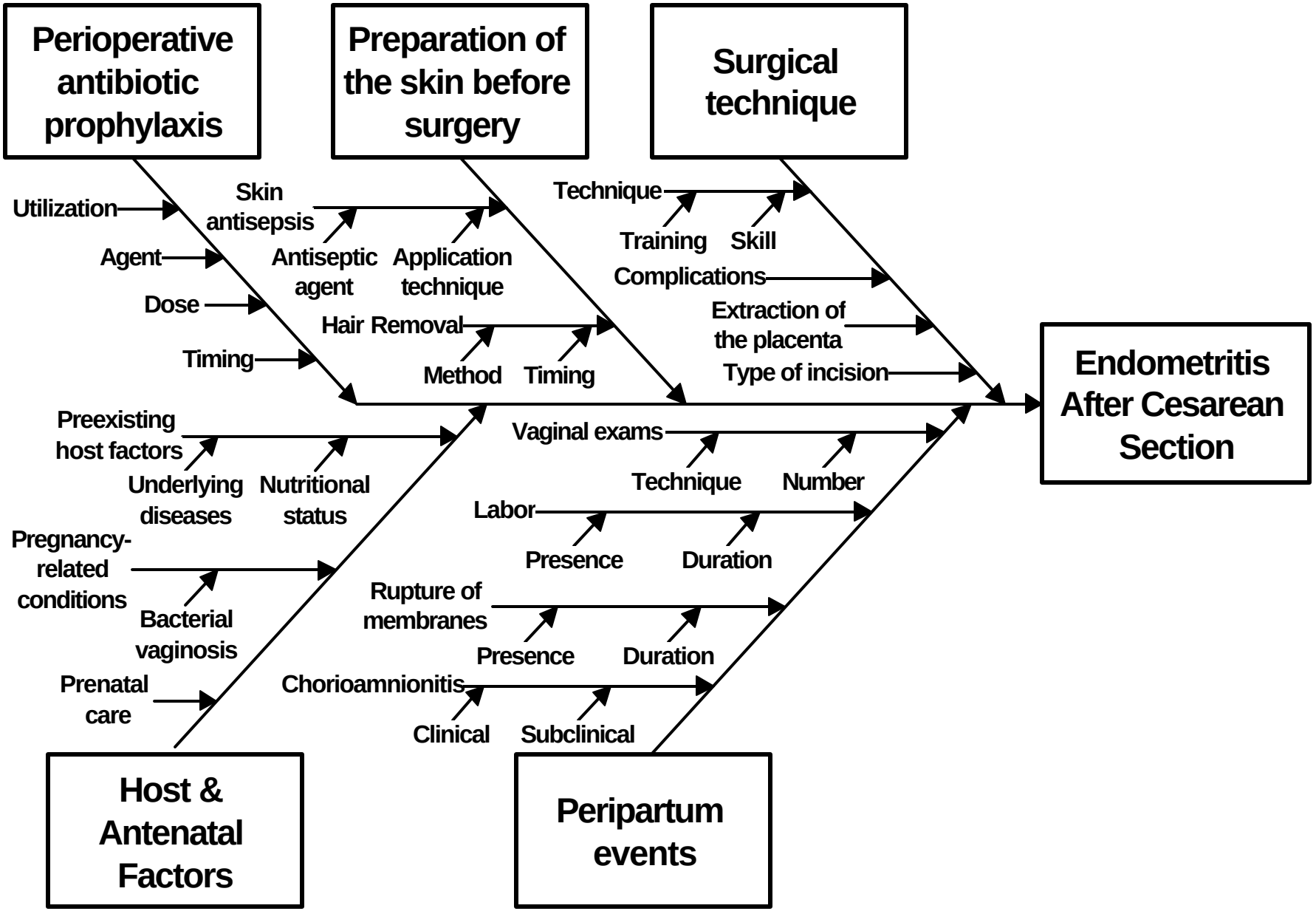
Measures should be:

- Simple
- Digestible
- Graphic
- Possible to collect as part of routine work

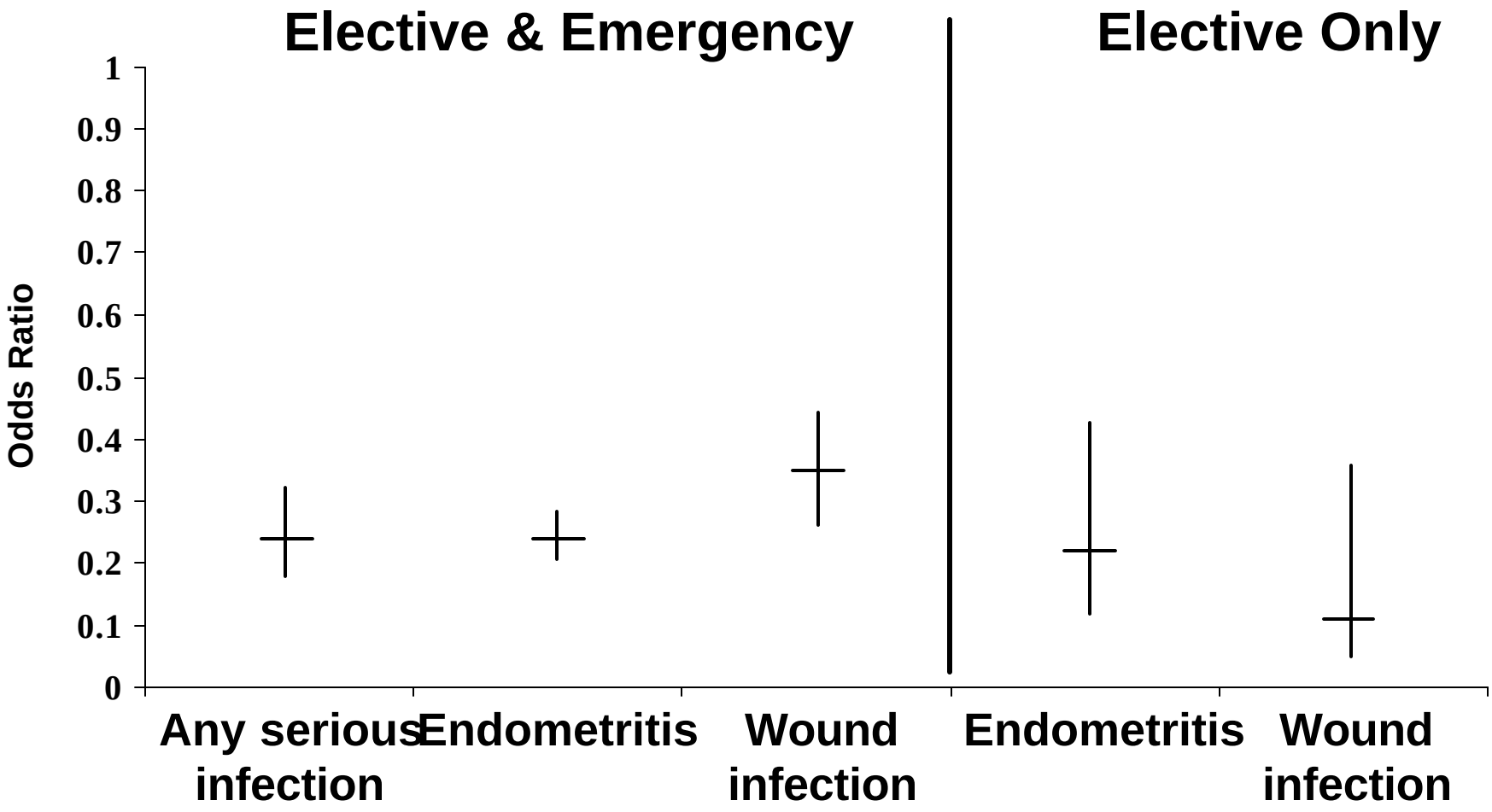
If they can do it in Bogata…

Reducing Post-Caesarian Infections

Cause and Effect Diagram



Meta-Analysis the Effect of Antibiotic Prophylaxis on Infection Rates after Cesarean Section

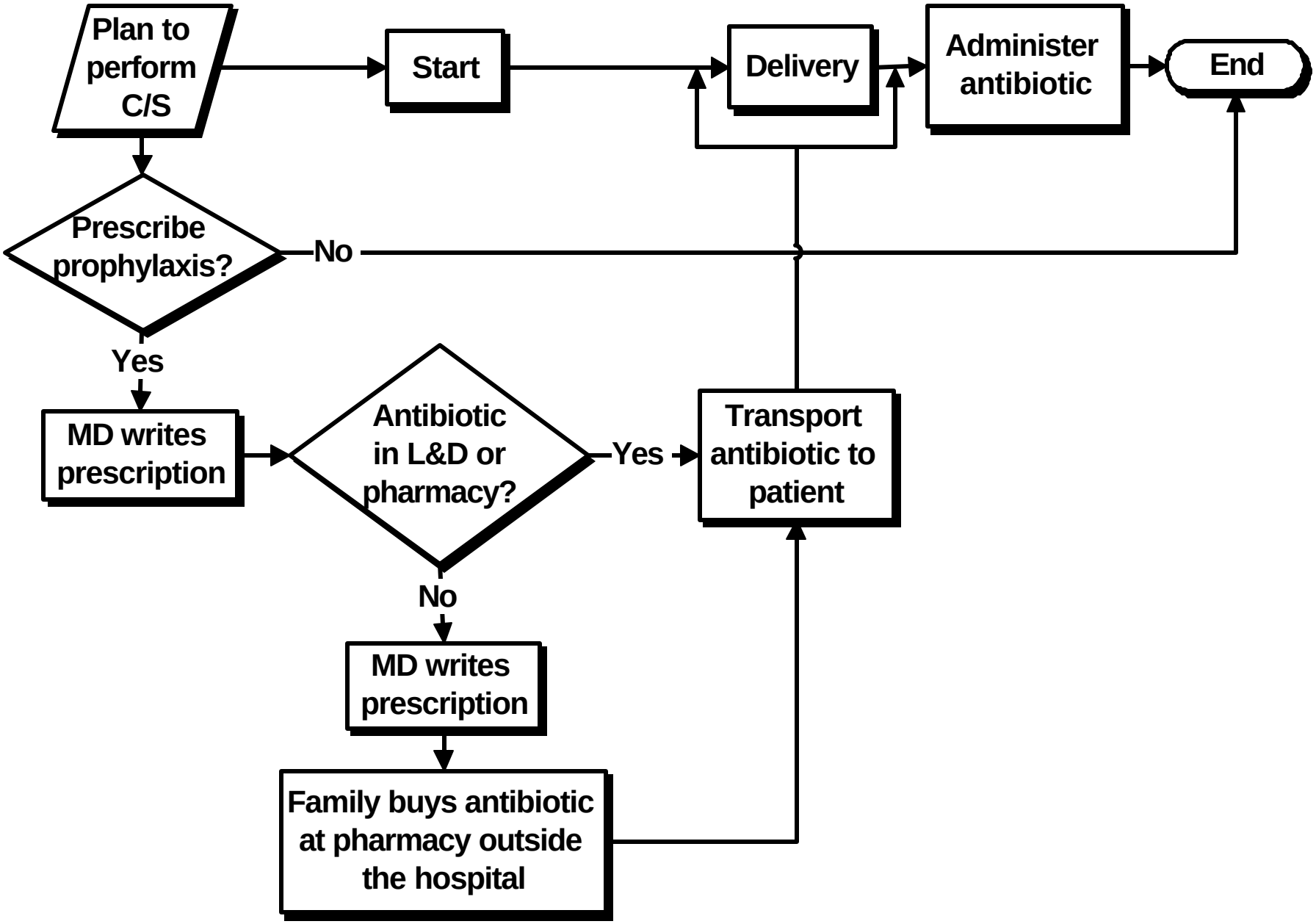


Enkin M, et al. Prophylactic antibiotics in association with cesarean section. In: Chalmers, Enkin, Keirse eds. Effective care in pregnancy and childbirth.

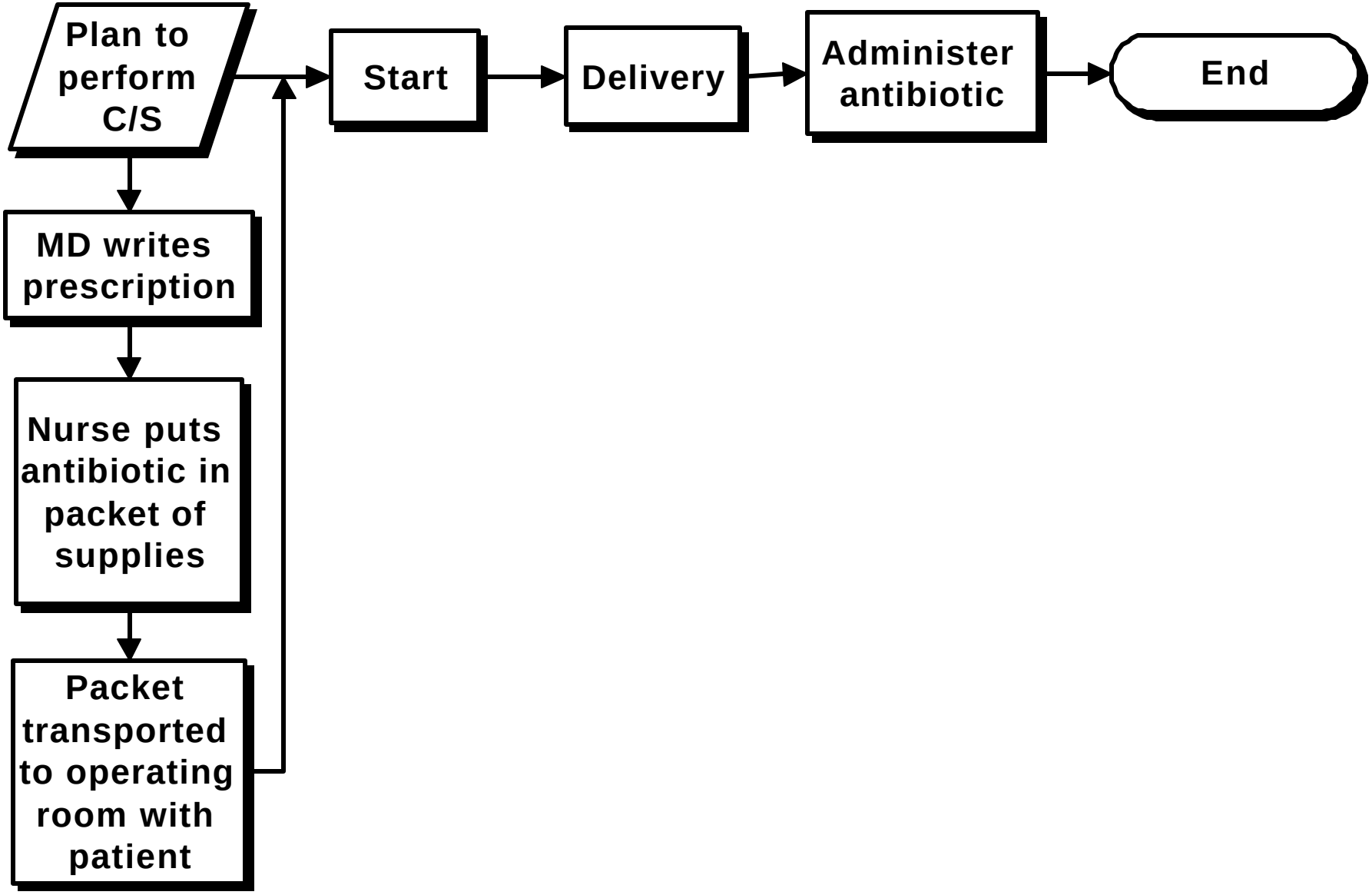
Priority Matrix

Utilization and Timing of Antibiotic Prophylaxis for Cesarean Section

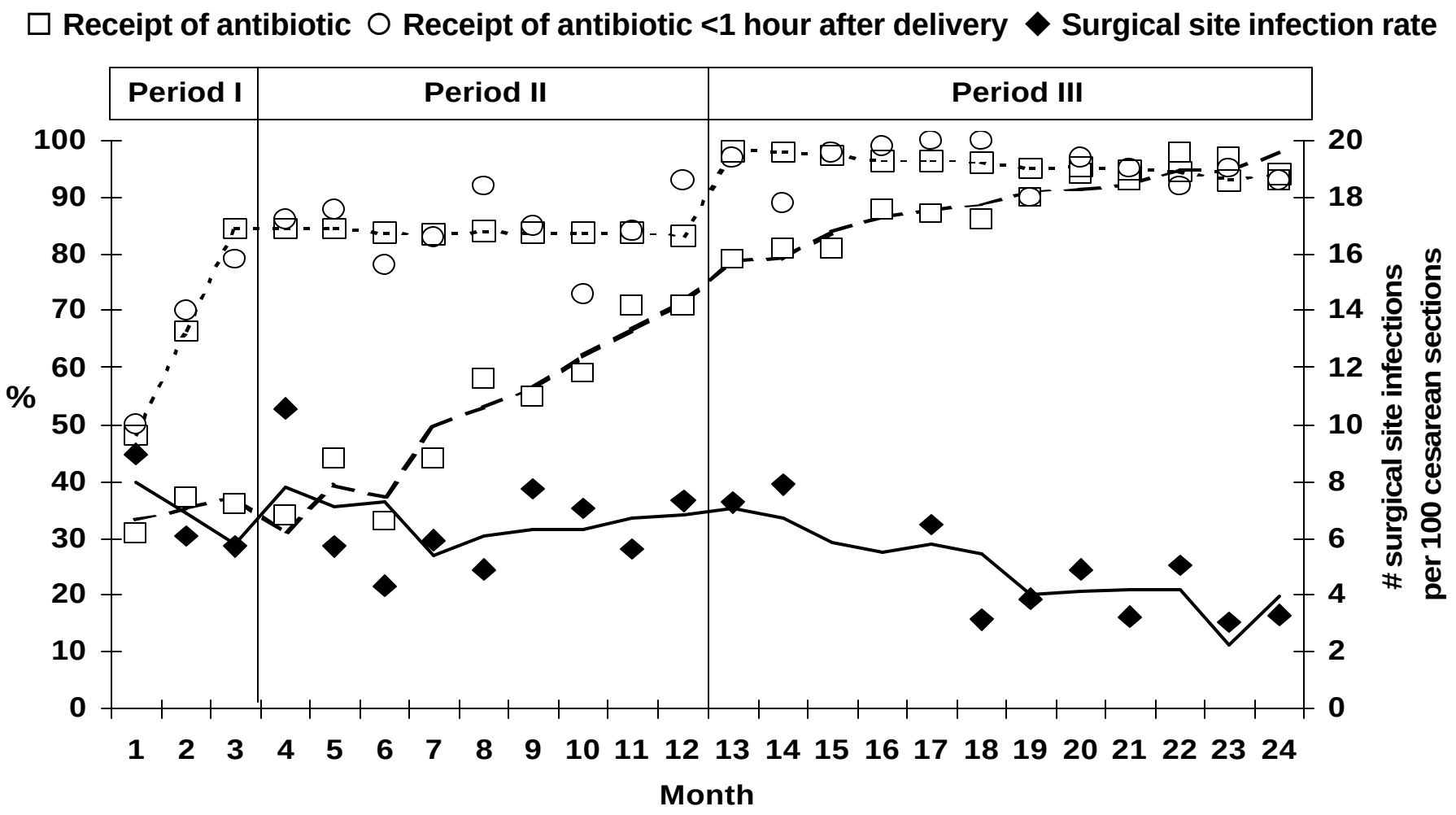
Hospital A: Existing System



Hospital A: Revised System



Utilization and Timing of Perioperative Antibiotic Prophylaxis & Surgical Site Infections After Cesarean Section



Weinberg M, et al. Arch Intern Med 2001

Other Surgical Issues Addressed during the Project

- Excessive vaginal exams during labor
- Manual exploration of the uterus after delivery
- Shaving of the skin before surgery
- Infection-prone incision type
- Excessive repeat cesarean section

Institute of Medicine (IOM) “Crossing the Quality Chasm” 2002

IOM 6 Key Quality Improvement Aims

Health care should be:

- Safe
- Effective (providing services based on scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit)
- Patient-centered
- Timely (reducing waits and potentially harmful delays)
- Efficient (avoiding waste of equipment, supplies, ideas, energy)
- Equitable (regardless of gender, ethnicity, geography, socioeconomic status)

JCAHO Core Measures

- Acute myocardial infarction/coronary artery disease
- Heart failure
- Community-acquired pneumonia
- Pregnancy and newborn and maternal care
- Surgical procedures and complications
- Now consolidated with CMS

Implemented July 2002

National Quality Forum (NQF) Draft Indicators

- Heart failure
- Community-acquired pneumonia
- Acute coronary syndrome
- Surgical complication
- Diabetes
- Maternal & neonatal care
- Pediatric asthma, immunizations
- Smoking cessation
- CVA-corotid endarterectomy
- Many others

A pathway to CMS and pay-for-performance

Consumer Perspectives on Health Care Needs	Components of Health Care Quality			
	Safety	Effectiveness	Patient Centeredness	Timeliness
Staying healthy				
Getting better				
Living with illness or disability				
Coping with the end of life				

FIGURE 1 Classification matrix for measures for the National Health Care Quality Report.

CMS 7th Scope of Work

- Targeted Diagnoses
  - Community-Acquired Pneumonia
  - Acute Myocardial Infarction
  - Heart Failure
  - Surgical Infection Prevention
- Measures consistent with JCAHO (and IHI 100K Lives Campaign)

8th Scope of Work Now Released – Transformation of Care facilitated by QIOs
Pay-for-performance inevitable

CMS/JCAHO/NQF

- Expanding set of core process measures
- Measurement criteria well defined and standardized
- Tracked nationally
- Benchmarking possible

Care in U.S. hospitals--the Hospital Quality Alliance program
Jha AK, Li Z, Orav EJ, Epstein AM
N Engl J Med. 2005;353(3):302-4

Quality of care in U.S. hospitals as reflected by standardized measures, 2002-2004.
Williams SC, Schmaltz SP, Morton DJ, Koss RG, Loeb JM.
N Engl J Med. 2005;:255-64.

Leapfrog Group

- Intensive care unit staffing – 24/7
- Computerized physician order entry
- Minimum numbers of certain surgical procedures and patient categories per year
- Numerous standards from National Quality Forum

Health Plan Employer Data Information Set (HEDIS) National Committee for Quality Assurance (NCQA)

HEDIS

- Transforming ambulatory care
- Hard to “game” as more measures become available
  - But still limited by what is easy to measure
- Increasingly used to evaluate/benchmark managed care plans
- Pay-for-performance beginning

Create a Report Card - Netscape

e Edit View Go Communicator Help

Bookmarks Location: http://hprc.ncqa.org/frameset.asp

Back Forward Reload Home Search Guide Print Security Stop

Web2 Results Clinician's

NCQA *Measuring the Quality of America's Health Care*

ncqa home | about ncqa | about accreditation | about certification

Star Ratings	★★★★	★★★	★★	★	○
HMO/POS Accreditation	**EXCELLENT**	**COMMENDABLE**	**ACCREDITED**	**PROVISIONAL**	**DENIED**

- *Print Worksheet*
- *New Search*

Health Plan	Product Line/Product	Doctors/ Hospitals Review each plan directory. Are your doctors and hospitals included?	Benefits Does the plan cover the benefits that are most important to you?	Costs Are the annual costs, deductibles and co-payments for each plan affordable?	Health Plan Report Card Quality Information					
					Access & Service	Qualified Providers	Staying Healthy	Getting Better	Living with Illness	Accreditation Outcome
Fallon Community Health Plan	Medicare / HMO				★★★★	★★★★	★★★★	★★★★	★★★★	EXCELLENT
Harvard Pilgrim Health Care, Inc.	Commercial/ HMO/POS Combined				★★★	★★★★	★★★★	★★★★	★★★★	COMMENDABLE

- *Print Worksheet*
- *New Search*

Updated as of 11/30/00

Back <<

Document: Done

Do Top HEDIS Performers Have Better Patient Satisfaction?

- Members of top 25% of Health Plans (high HEDIS scores) were more likely to give their health plans ratings of 8-10/10 than those with the lowest scores
  - 63% v. 53% highly satisfied
- But little evidence that public reporting influences choice of plans or doctors
  - Many find choices confusing
  - Implications for medical savings plans and healthcare “stock funds”

Dangers of Benchmarking

———	Number of Special Inmates on the 8th April, 1861.	Average Number of Inmates in each Hospital.	Number of Deaths registered in the Year 1861.	Mortality per Cent. on Inmates.
In 106 Principal Hospitals of England	12709	120	7227	56·87
24 London Hospitals	4214	176	3828	90·84
12 Hospitals in Large Towns ...	1870	156	1555	83·16
25 County and Important Provincial Hospitals	2248	90	886	39·41
30 Other Hospitals	1136	38	457	40·23
13 Naval and Military Hospitals ...	3000	231	470	15·67
1 Royal Sea Bathing Infirmary (Margate)	133	133	17	12·78
1 Dane Hill Metropolitan Infirmary (Margate)	108	108	14	12·96

Internet Quality Ratings for AMI -- HealthGrades.com

- Uses publicly available administrative data from Medicare to calculate risk-adjusted mortality rates for AMI and other conditions
- Hospitals rated 1-5 stars (5 lowest mortality); now reduced to 1,3 and 5 stars; proprietary system, no peer-reviewed papers.
  - A rating of 1 means “actual performance was worse than predicted and the difference was statistically significant”
- NASDAQ-traded; 1 million visitors to website last year; partnership with Leapfrog Group

Evaluation of HealthGrades.com using Cooperative Cardiovascular Project Data

- In *aggregate*, the higher the number of stars, the lower the mortality rate
- Trend towards lower ASA use on admission and discharge and B-blocker use on admission in lower rated hospitals
- Very poor ability to predict *individual* hospital mortality rates

Krumholz et al. JAMA2002;287:1277

Problems with Administrative Data

- Insufficient clinical information
- Imprecision of administrative diagnoses, misclassification
- Over- and under-coding by hospitals
- Risk-adjustment based on administrative data often results in misclassification, compared to adjustment based on high quality data
- Avoidance of sick, complex patients

Consider *Internal* Benchmarking Over Time

- Keep your eye on outcomes
- Processes of care are easier and cheaper to track
  - Processes should be evidence-based and tightly linked to outcomes
    - Controller medications for asthma
    - Aspirin to prevent acute myocardial infarction

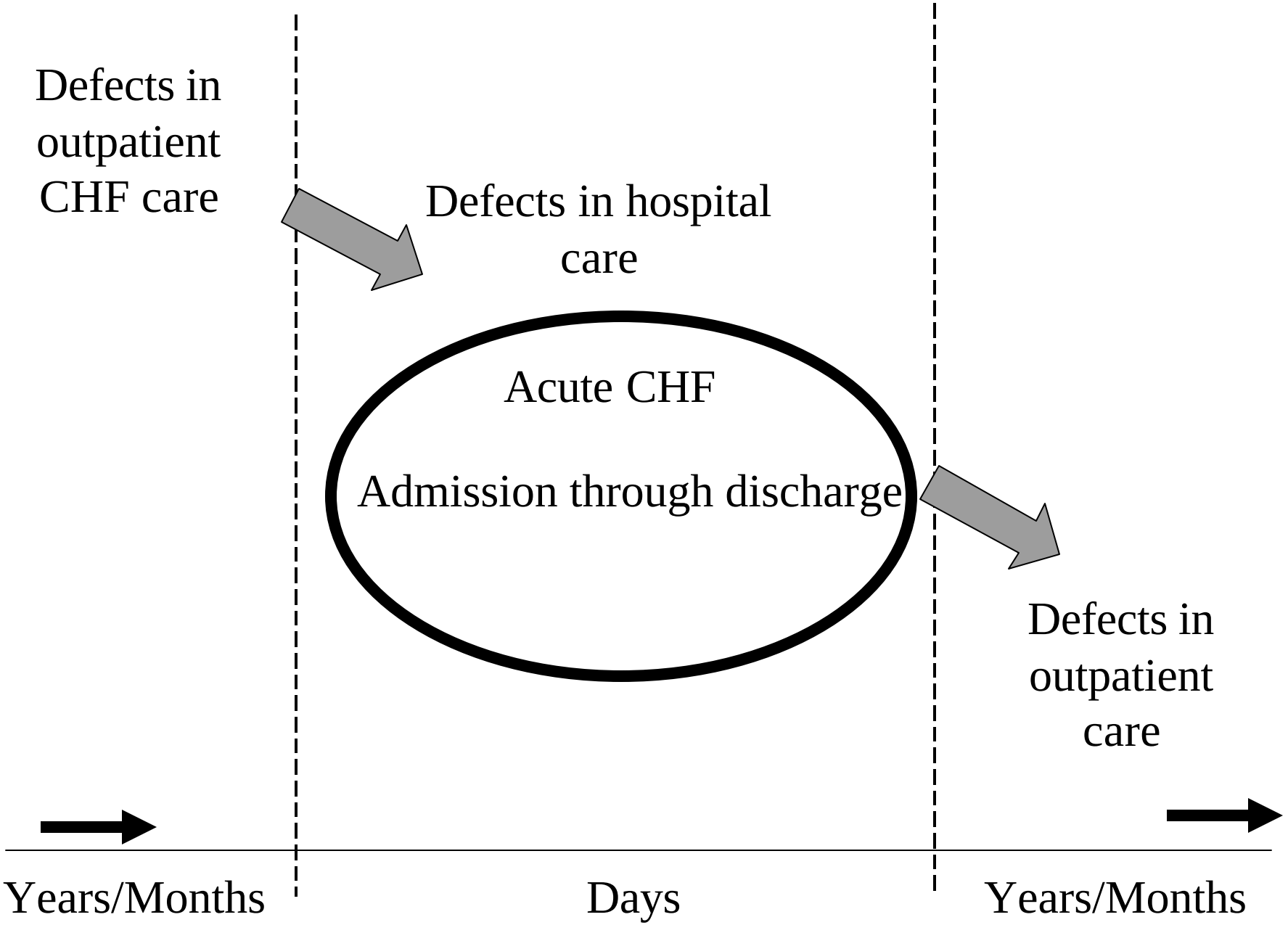
Reliability Science

- Health care is riddled with defects
  - 40% compliance with hand hygiene!!??
  - What happens at Intel….
- From the patient's point of view, it's "all or nothing"
- Reliability science offers robust approaches to reducing defects and harm in health care

Component vs. Composite: Treatment of Pneumonia in Medicare Patients

- ***COMPONENT:* 63.1%** receive first dose of antibiotics within four hours of hospital arrival
- ***COMPONENT:* 67.9%** receive an antibiotic choice consistent with current guidelines
- ***COMPONENT:* 81%** have blood cultures collected before treatment
- ***COMPOSITE:* 26%** get all three of these

Reliability is failure free operation over time from the viewpoint of the patient



Defect free care overtime from the patients viewpoint

Levels of Reliability

- Chaotic process: Failure in greater than 20% of opportunities
- 10^{-1}: 80 or 90 percent success: 1 or 2 failures out of 10 opportunities (no consistent articulated process)
- 10^{-2}: 5 failures or less out of 100 opportunities (process is articulated by front line)
- 10^{-3}: 5 failures or less out of 1000 opportunities
- 10^{-4}: 5 failures or less out of 10,000 opportunities

10^{-1} Performance
Intent, Vigilance and Hard Work

- Audit and feedback of compliance data
- Exhortation to work harder
- Awareness, education and training
- Common equipment, standard order sheets, multiple choice protocols, and written policies/procedures
- Personal check lists

10^{-2} Performance Emphasis on Systems

- Design sophisticated failure prevention, identification, and mitigation systems
  - Decision aids and reminders built into the system
  - Desired action the default (based on evidence)
  - Redundant processes
  - Taking advantage of habits and patterns
  - Standardization of process based on clear specification and articulation

Reliability in Healthcare

- Remember, it's "all or nothing" – not compliance with each individual component of "best practice"
- Most institutions do fairly well with individual components of bundles, but performance drops dramatically with "all or nothing"
- We are trying to decrease the "defect rate" and to achieve a reliability of performance to the 10^{-2} level (at least 95% compliance with the entire bundle)

“Defect rates” of 60-80% are not tolerable

Applying Reliability Science, Hazard Analysis, Evidence, and Quality Improvement to Dramatically Reducing Central Venous Catheter Infections

Guidelines v. Bundles

- Guidelines tend to be long, all-inclusive, and confusing
  - Many potential interventions are supported by some evidence
- Guidelines are difficult to translate into action and often are ignored by clinicians
- What if just a few key, actionable interventions, supported by strong evidence, were culled from the guidelines?

What Is a Bundle?

- A grouping of best practices with respect to a disease process that individually improve care, but when applied together result in substantially greater improvement
- The science behind the bundle is so well established that it should be considered standard of care
- Bundle elements are dichotomous and compliance can be measured: yes/no answers
- Bundles eschew the piecemeal application of proven therapies in favor of an “all or none” approach

Hazard Analysis: Critical Control Points in CVC Care

- CVC insertion with hand hygiene and maximal barrier precautions
- Skin prep with 2% chlorhexidine (or other agent)
- Care of administration system connections and ports
  - Sterile field
  - Hub prep
  - Injection port prep
- D/C of lipids and catheters as soon as possible

CVC Bundle Elements

- Hand hygiene before inserting a catheter or manipulating the system and catheter site
- Maximal barrier precautions for line insertion
  - Hand hygiene
  - Non-sterile cap and mask
  - Sterile gown and gloves
  - Large sterile drape
- Antiseptic prep used for catheter insertion as per hospital protocol
  - 2% chlorhexidine supported by evidence but FDA warning for neonates

Quality Improvement for Catheter Insertion

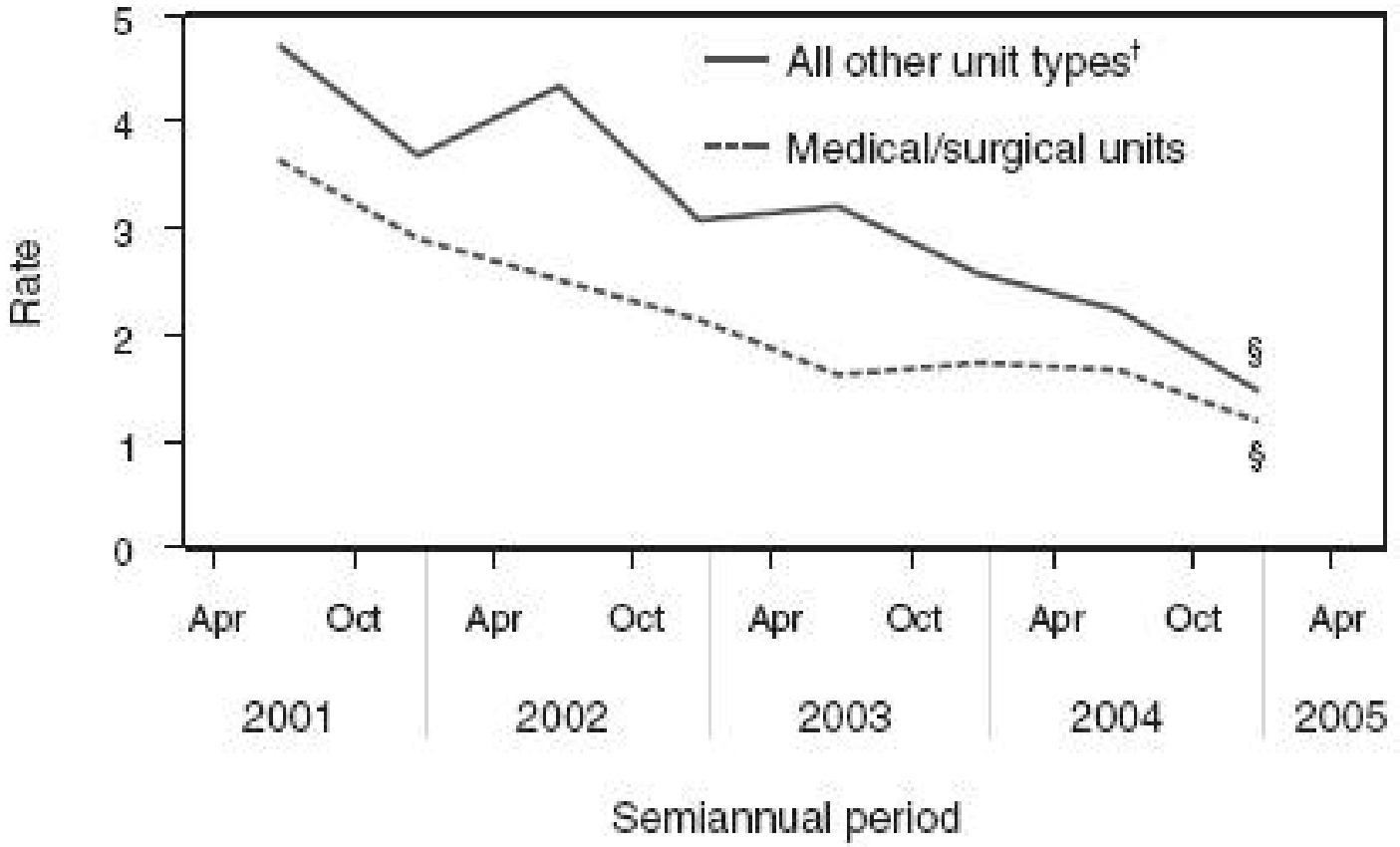
- Train all who will insert catheters and check *competency*
- Put all needed supplies in a standard, readily available pack on a cart
- Use a checklist to insure all components are completed correctly
- Empower nurse to stop procedure if mistakes are made (“matron’s charter”)
- Feedback data (e.g., days between CVL-associated infections) in graphic format

CVC Infections are not a right of passage

Dramatic improvement is possible

Some ICUs have gone months without a CVC infection (or a ventilator-acquired pneumonia)

Central line-associated bloodstream infection rate in 66 ICUs, Southwestern Pennsylvania, April 2001-March 2005



Centers for Disease control and Prevention.

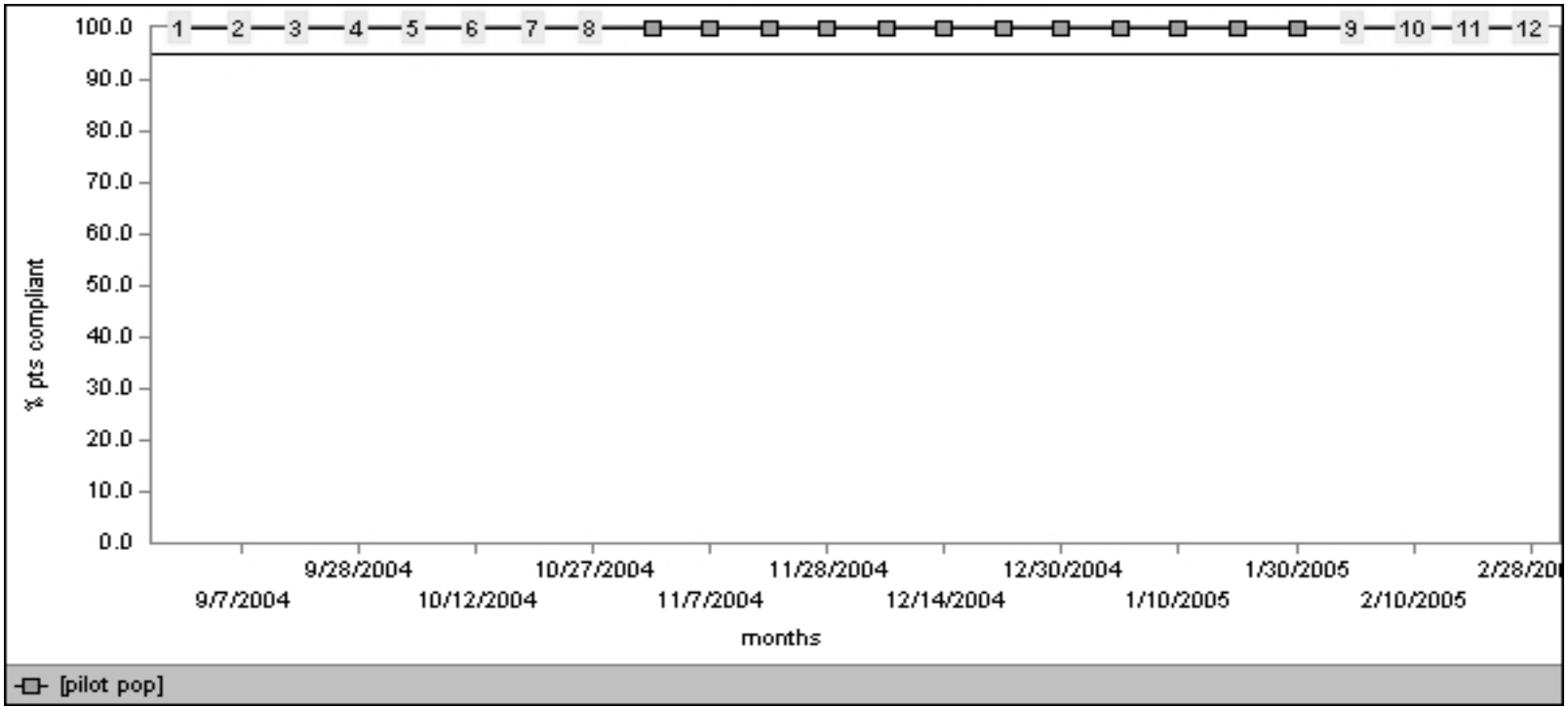
Ventilator Bundle Elements

- Elevation of the head of the bed to between 30 and 45 degrees
- Daily “Sedation Vacation” and daily assessment of readiness to extubate
- Peptic ulcer disease (PUD) prophylaxis
- Deep vein thrombosis (DVT) prophylaxis (unless contraindicated)

Our Lady of Lourdes

Began working in March 2004;

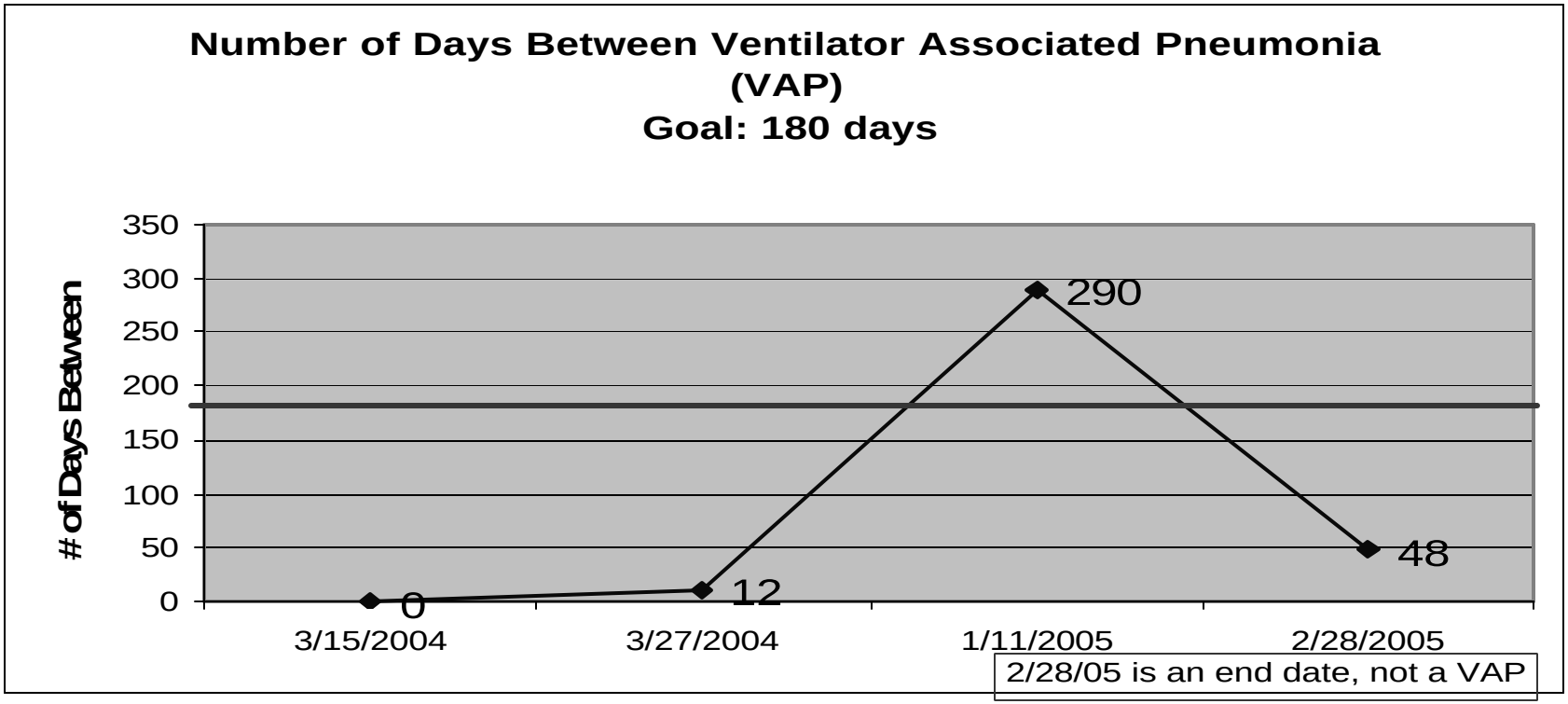
Ventilator Bundle Compliance 9/1/2004 - 2/28/2005



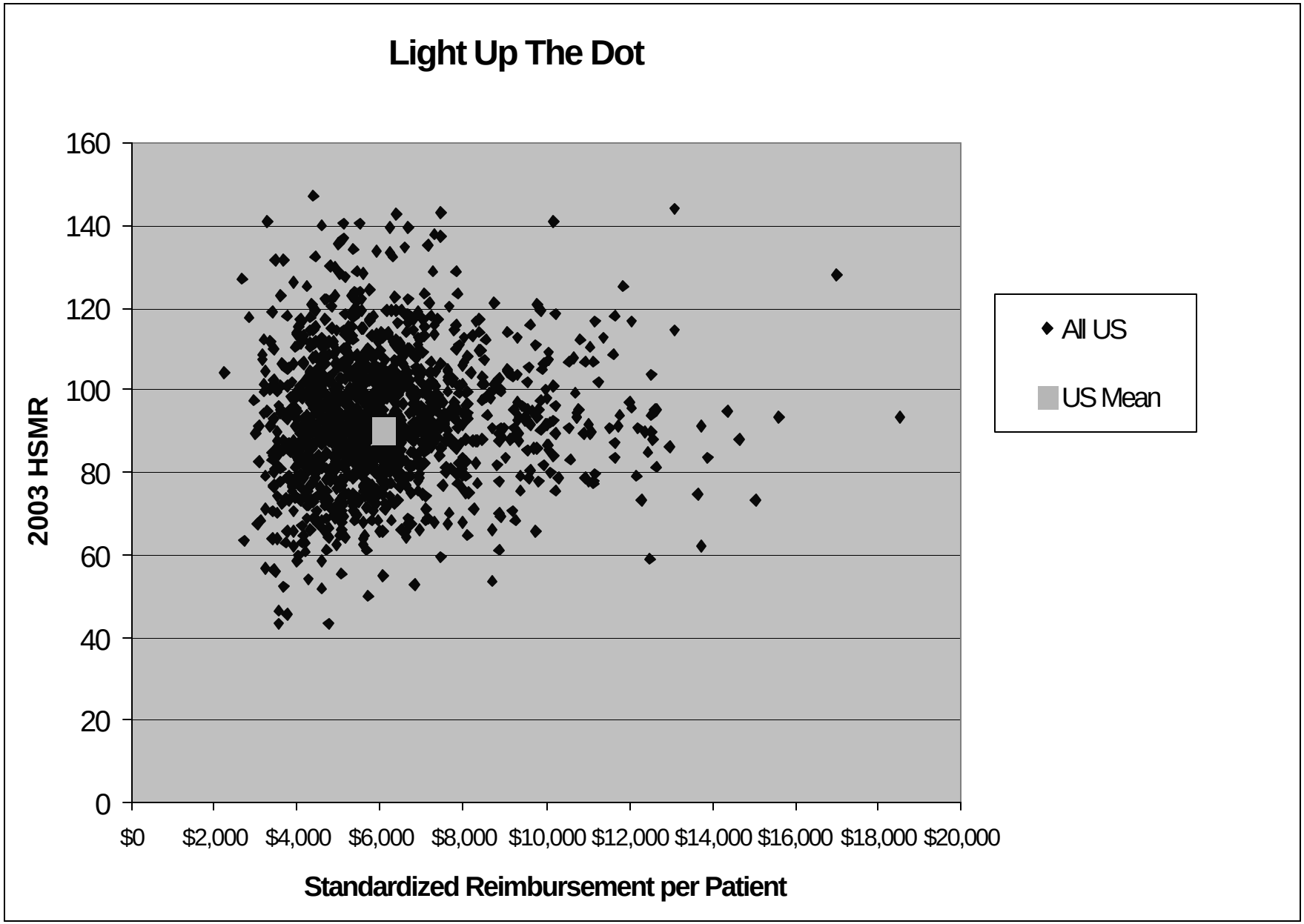
Do Bundles Work?

Our Lady of Lourdes, Binghamton, NY

As of 1/11/2005, this hospital had gone 290 days without a VAP. As of 2/28/2005, they have gone 48 days.



Moving the “Big Dots”


Light Up The Dot
160
140
120
100
80
60
40
20
0
2003 HSMR
$0
$2,000
$4,000
$6,000
$8,000
$10,000
$12,000
$14,000
$16,000
$18,000
$20,000
Standardized Reimbursement per Patient
All US
US Mean

Institute for Healthcare Improvement (IHI)

A small not-for profit organization with controlled growth and lots and lots of great collaborators….

What We Will Accomplish

We will improve the lives of patients, the health of communities, and the joy of the health care workforce.

We work with health care providers and others to accelerate the measurable and continual progress of health care systems throughout the world toward safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity.

IHI's "No Needless" List

No needless deaths

No needless pain

No helplessness

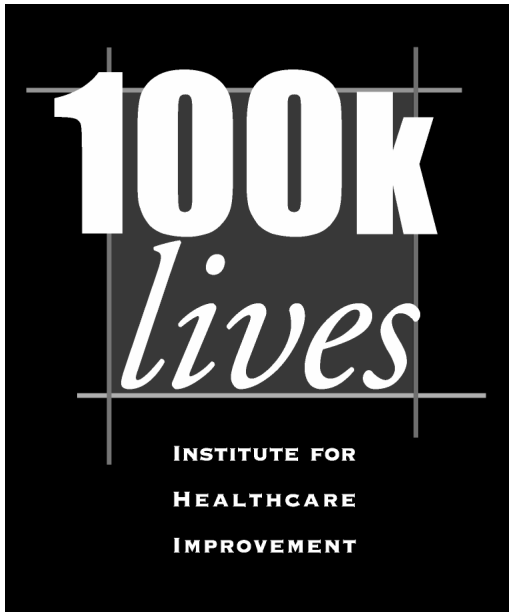
No unwanted waiting

No waste

…for anyone

Raising the Bar

- Establish the will to go beyond “we are doing OK” performance
- Set aims that raise the bar, reaching beyond what has been achieved in health care thus far
- Measure performance at this higher level
- Develop and test changes that can bring an organization to a new level of performance
- Learn from the changes and spread the benefits to the entire organization



100,000 Lives Campaign Update

Some Is Not a Number… Soon Is Not a Time

The Number:

100,000 Lives

The Time:

June 14, 2006 – 9 a.m. ET

Campaign Objectives

- Save 100,000 Lives
- Enroll more than 2,000 hospitals in the initiative
- Build a reusable national infrastructure for change

Six Changes That Save Lives

- **Deployment of Rapid Response Teams**…at the first sign of patient decline
- **Delivery of Reliable, Evidence-Based Care for Acute Myocardial Infarction**…to prevent deaths from heart attack
- **Prevention of Adverse Drug Events (ADEs)**…by implementing medication reconciliation
- **Prevention of Central Line Infections**…by implementing a series of interdependent, scientifically grounded steps called the “Central Line Bundle”
- **Prevention of Surgical Site Infections**…by reliably delivering the correct perioperative antibiotics at the proper time and taking several other associated actions
- **Prevention of Ventilator-Associated Pneumonia**…by implementing a series of interdependent, scientifically grounded steps called the “Ventilator Bundle”

Campaign Status

- Over 2,900 hospitals enrolled in all 50 states
- Over 80% of U.S. hospital beds
- Over 50 field offices (“nodes”) and supportive national partners
- Significant change in national standard of care
- Thousands on national calls
- Free tools: stat calls, getting started kits, web material, bus tour, site visits, etc.
- Related campaigns forming globally
- Thousands already submitting data (over 70% of hospitals have submitted mortality data)
- Estimated 30,000 lives saved by participating hospitals through December 2005