

Engaging Physicians (and Care Teams) in Providing Evidence Based Care

Don Goldmann, MD
Chief Medical and Scientific Officer
Institute for Healthcare Improvement
Clinical Professor of Pediatrics
Harvard Medical School
@DAGoldmann
dgoldmann@ihi.org



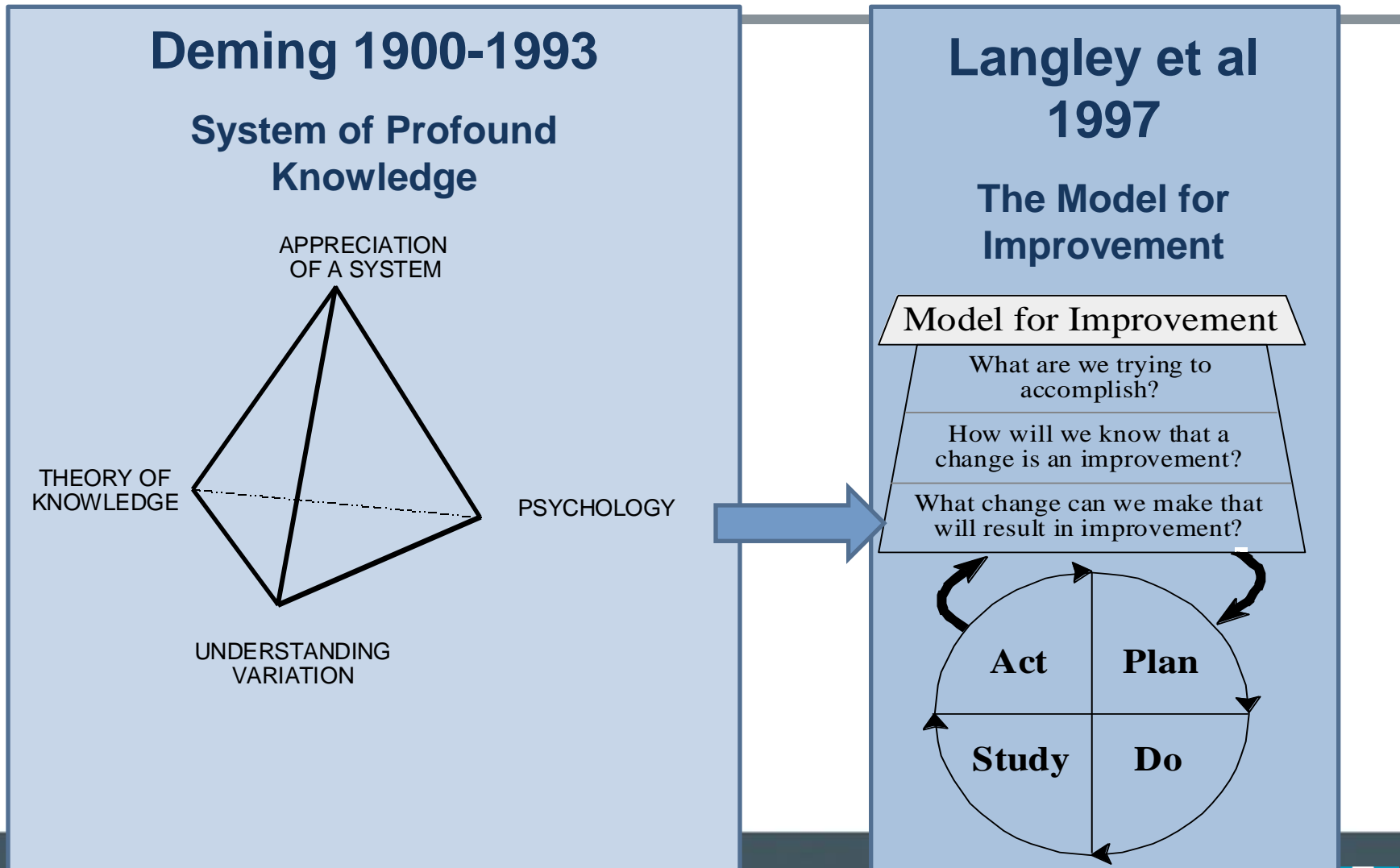
November 10, 2015

My Personal Take on the “Science of Improvement”

- **Scientific** regardless of name:
 - Science of improvement
 - Health care delivery science
 - Implementation science
 - Systems strengthening
 - Systems engineering
- **Scientific methods** include
 - “Model for improvement” promulgated by IHI
 - Lean
 - Six Sigma
 - Lean Six Sigma
 - DMAIC (Design, Measure, Analyze, Improve and Control)
 - Value stream maps



The Model for Improvement Simplified



Key Attributes of Improvement Science (Model for Improvement Methodology)

- Clear, measurable aim
- A measurement framework in support of reaching the aim
- Clear description of the ideas (content) and how these ideas are expected to impact results (the causal pathway from changes to desired outcomes, and their attributable effect)
 - Conceptual or logic model, or “driver diagram”
- Clear description of the implementation strategy (execution)
 - What will be done to ensure reliable adoption of the content
- Dedication to rapid testing (PDSA) - prediction and learning from tests
- Understanding/describing/visualizing systems (process map, value stream)
- Learning from variation and heterogeneity
 - Use of time-ordered data to detect special cause and improvement
 - Understanding why results differ by ward, organization, region
- Application of behavioral and social sciences



Why Physicians who Understand Laboratory and Translational Science Should be Comfortable with Rigorous QI

- My ten years working with a PhD scientist to develop a Staphylococcus vaccine...
- The “experimental method,” mice, theories/hypotheses, and PDSAs
 - While the “context” of lab work is far less complex than the “context” of the hospital or clinic, behavioral and contextual issues do come into play



Kirkpatrick Framework

1) Experience	What was the participants' experience? Did the participants have an excellent experience working on the improvement project?
2) Learning	What did participants learn? Did they learn improvement methods and begin testing?
3) Process/Behavior	Did participants modify their behavior? Did they work differently and see change in their process measures?
4) Outcomes	Did the organization improve its performance (via outcome measures)?



Why Emphasize Science, Rigorous Design, Implementation and Learning?

- Dedicating time to poorly designed projects wastes will, ideas, and time – a graveyard for intrinsic motivation (“heart”)
- Performing poorly designed projects from which nothing can be learned is (I think) unethical
- Projects that do not rigorously anticipate and monitor unintended consequences can harm patients

BUT, rigor does not mean that a project has to be complex, take forever to design, require unusual expertise, or be intended for peer-review publication!



Why Clinicians (Especially Physicians*) Are Skeptical About QI

- Many associate QI with old-style, punitive QA (profiling, pay-for-performance)
- QI gurus overemphasize the industrial quasi-”religious” origins of QI and use unfamiliar jargon
- QI experts tend to focus on non-clinical processes and outcomes rather than clinical outcomes of interest to clinicians
- Teams try to do QI “by the book” and get bogged down in tedious process and settle for small incremental improvements
- QI leaders are not up front about the fiscal agenda (“QI is free”)
- QI programs do not provide clinicians with the data they need to improve
- QI experts do not emphasize the academic potential of QI research

* I emphasize physicians because like it or not, improvement in clinical care requires that they be engaged



What to Do

- Leaders must not lose touch with work at the front line
 - Understand that clinicians have limited **capacity (time and energy)** to take on new QI projects and little **capability (skills)** in QI methodologies
 - A 'work smarter, not harder' approach to improving healthcare quality. Hayes CW, Batalden PB, Goldmann D;BMJ Qual Saf. 2015;24:100-2*
 - Clinician “burn out” is increasing, and generally additional time and payment are not provided for QI responsibilities
- Find and address the pain points – “what frustrates you the most?”
 - A personal story – Visits to radiology and the emergency department



What to Do

- Teamwork is essential
 - QI is inherently inter-professional, yet clinicians generally are not trained to work in teams, nurse-physician tensions remain, and work patterns and schedules are hard to synchronize
 - A gulf remains between clinicians at the bedside and critical support personnel, such as pharmacists, physical therapists, and social workers
- Imbed QI, including **data collection**, in real work – not separate and added on



How to Implement Credible QI Projects...

Without large grants

....By leveraging inter-professional
knowledge and skills

....As part of routine work
while learning and even having fun

....Regardless of (or because of) the job
descriptions of team members



Personal Experience



Experiential Learning – Making Rigorous QI Part of Routine Work at the Point of Care



Monitoring Patient Safety

- Voluntary event reporting
- Morbidity and mortality conferences/reports
- Chart auditing
 - IHI Global Trigger Tool
- Automated data mining
 - Patient Safety Indicators (AHRQ PSIs)
 - Automated trigger tools
- **Random Safety Audit**



Random Safety Audit

- Translated from industry (banking and random process audits *via* Paul Plesk)
- Real time by the front line
- Data and feedback virtually immediate
 - Reliability of key safety processes evident immediately
 - Motivating, enabling, reinforcing; builds self-efficacy and social norms (key elements of behavioral change theory)
- Combines audit and feedback with iterative PDSAs
 - Even better than “what can I try by next Tuesday”



Random Safety Audit

- Systematically monitors a subset of error-prone points in the system that have the potential to harm patients
- Items selected randomly to be addressed either
 - On multi-disciplinary rounds (provider input required)
 - Any time during day (provider input not needed)
- Deck can be “packed”
- 20 items developed by expert consensus for testing in NICU (21st item added later)
- 4X6 “cards” include yes/no data form; trivia question on back



Staff Perceptions of the Random Safety Audit

- 84% of staff participated in rounds on which audit performed
- 100% agreed or strongly agreed that this improved quality and safety
- 95% agreed/strongly agreed that it increased knowledge of clinical guidelines and safety goals
- Only 9% agree with statement “asking a safety question of rounds took up too much time”



Even 3rd-5th Grade Students Can Be Engaged

- Sandora TJ, Shih MC, Goldmann DA. Pediatrics. 2008 121:e1555-62. *Reducing absenteeism from gastrointestinal and respiratory illness in elementary school students: a randomized, controlled trial of an infection-control intervention.*
- Young students can make their own run charts and do tests of change...as in a school improvement project in Chile related to nutrition and obesity..





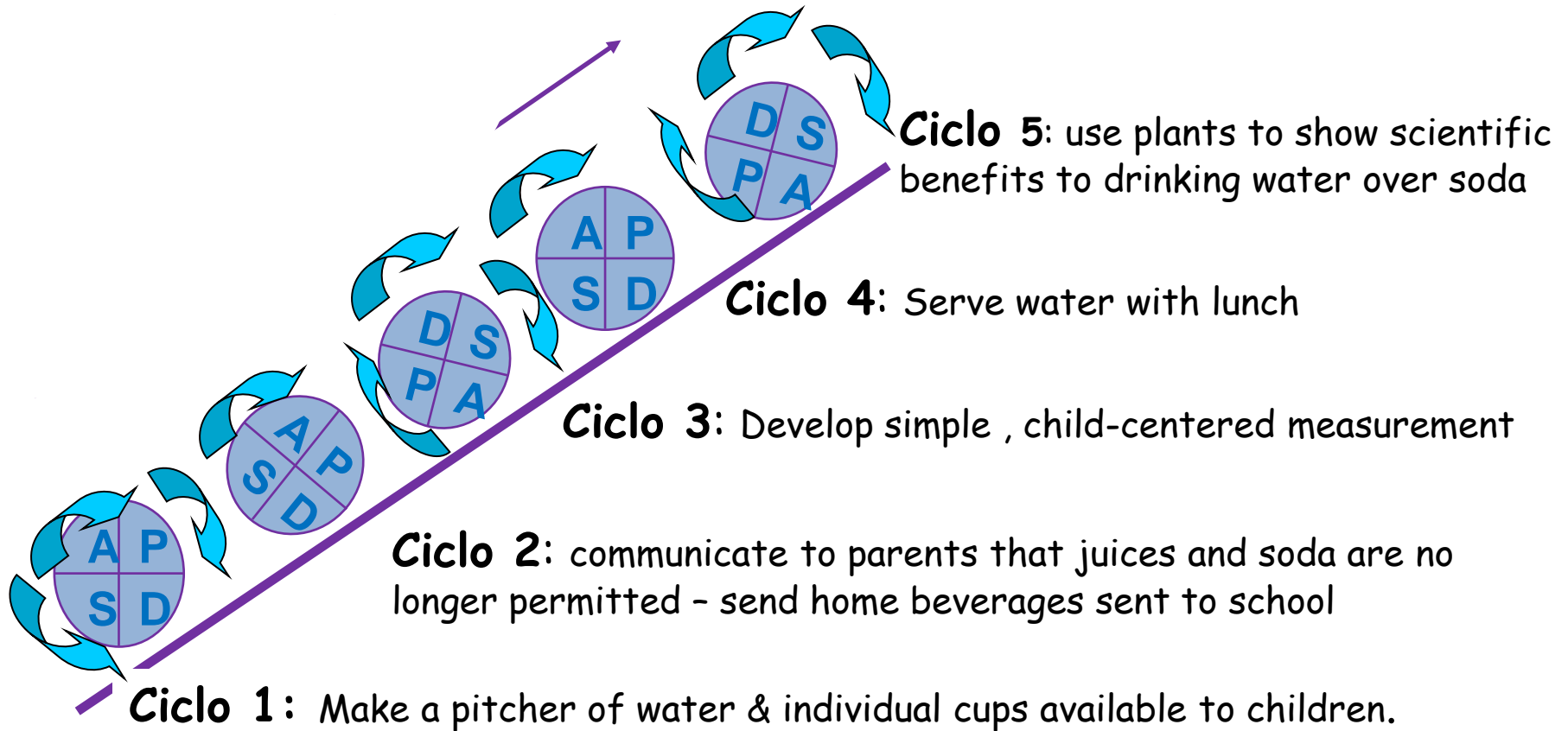
OBESITY PREVENTION

Goal: To eliminate sugar-sweetened beverages and increase water consumption in preschool classrooms



PDSA Health – Obesity prevention
Classroom Centro Parvulario

Goal: To eliminate sugar-sweetened beverages and increase water consumption in preschool classrooms



Prueba de
Cambiar "Agua"



Agua



Nada



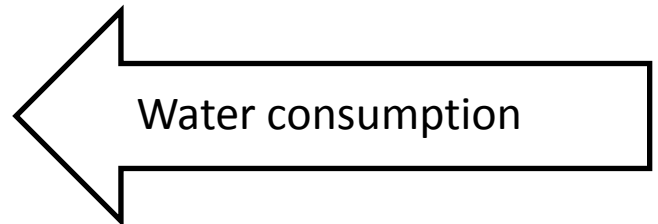
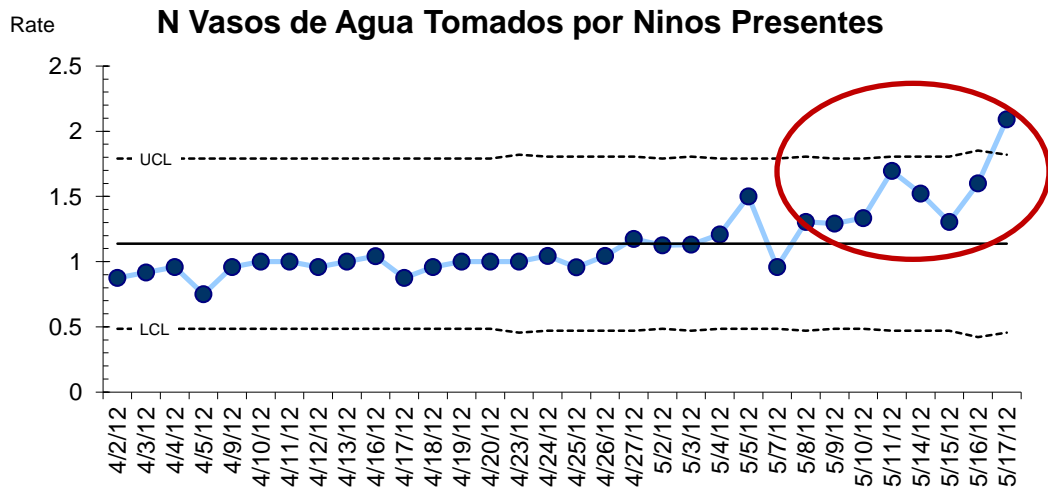
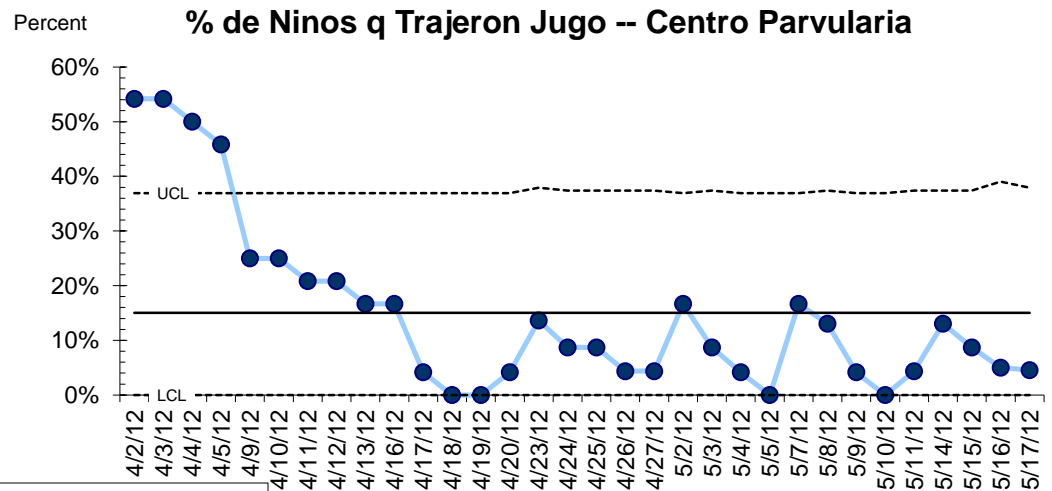
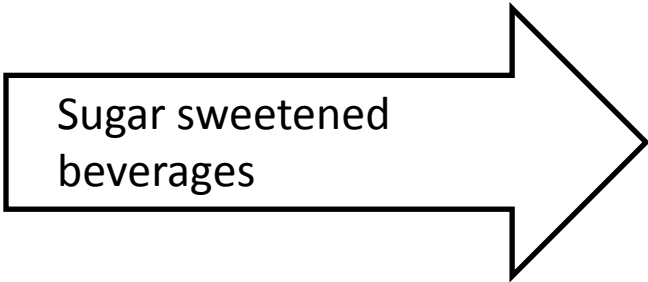
Bebida



rio.
ha estaba llena
ntos roncando.
na desierta.

PDSA Health – Obesity prevention Classroom Centro Parvulario

Goal: To eliminate sugar-sweetened beverages and increase water consumption in preschool classrooms



Three Simple Examples of Interprofessional QI Involving Junior Doctors

- Do you know who your doctor is?
- Understanding drug usage and reducing unnecessary prescriptions
- Learning how to look for medical errors as part of routine work



Try Something Yourself

- At work – “You are always late for rounds!”
- At home – avoiding the weed whacker
(<http://www.ihl.org/education/IHIOpenSchool/resources/Pages/Activities/PDSACyclesFromCLABSIsToCucumbers.aspx>)



<http://www.ihl.org/education/IHIOpenSchool/resources/Pages/Activities/PDSACyclesFromCLABSIsToCucumbers.aspx>

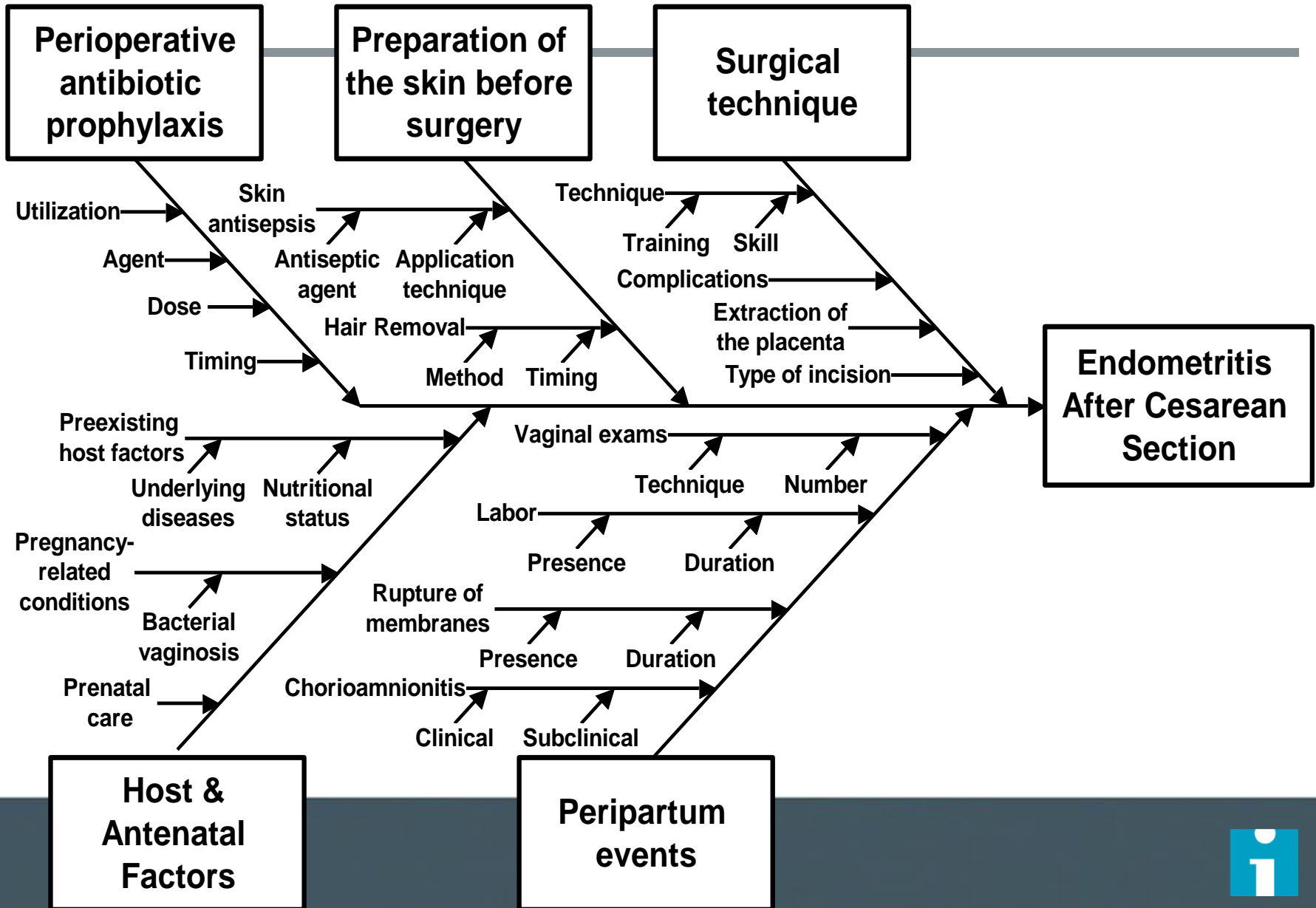


If They Can Do It in Bogotá during
Civil Conflict with Constrained
Resources...

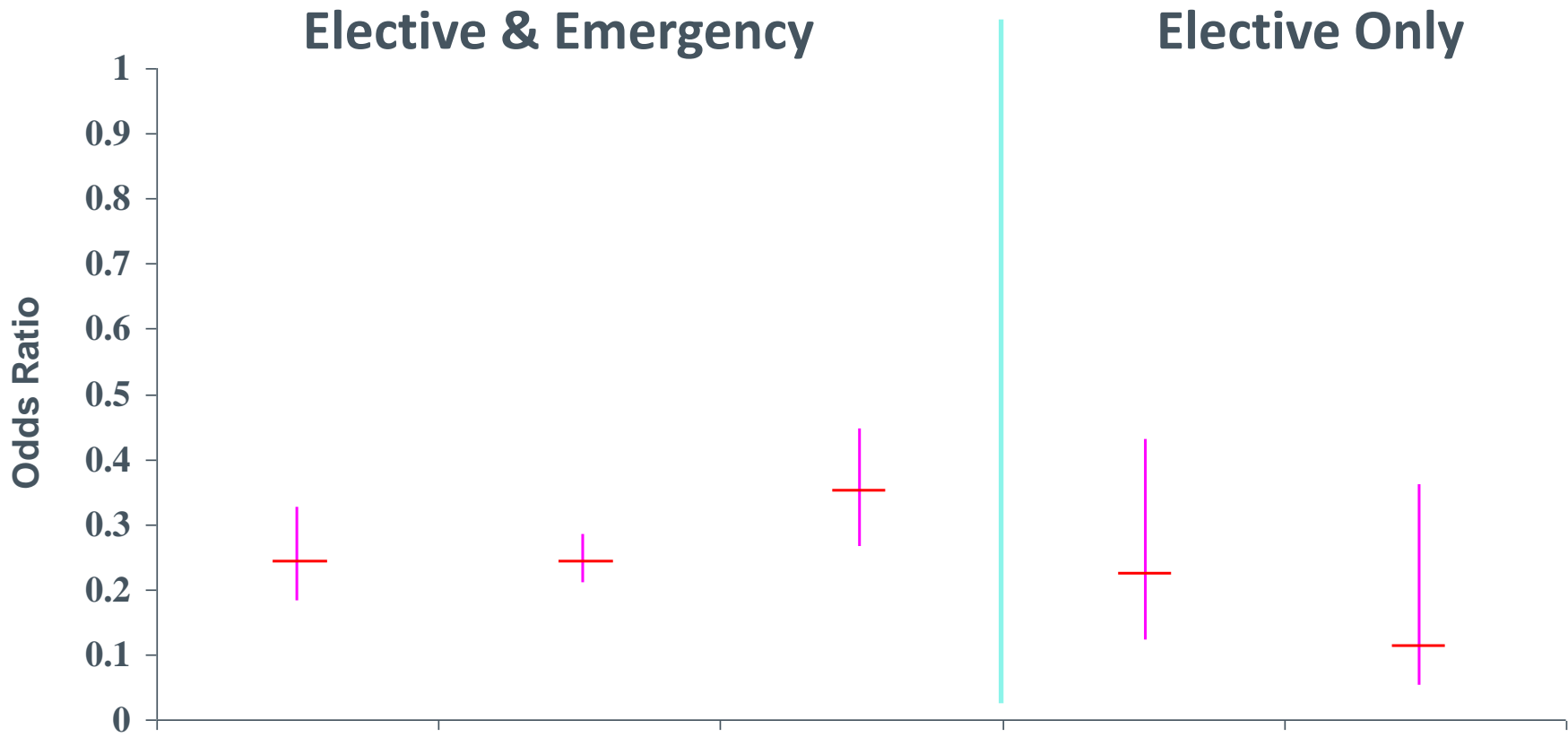
Reducing Post-Caesarian Infections



Cause and Effect Diagram



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



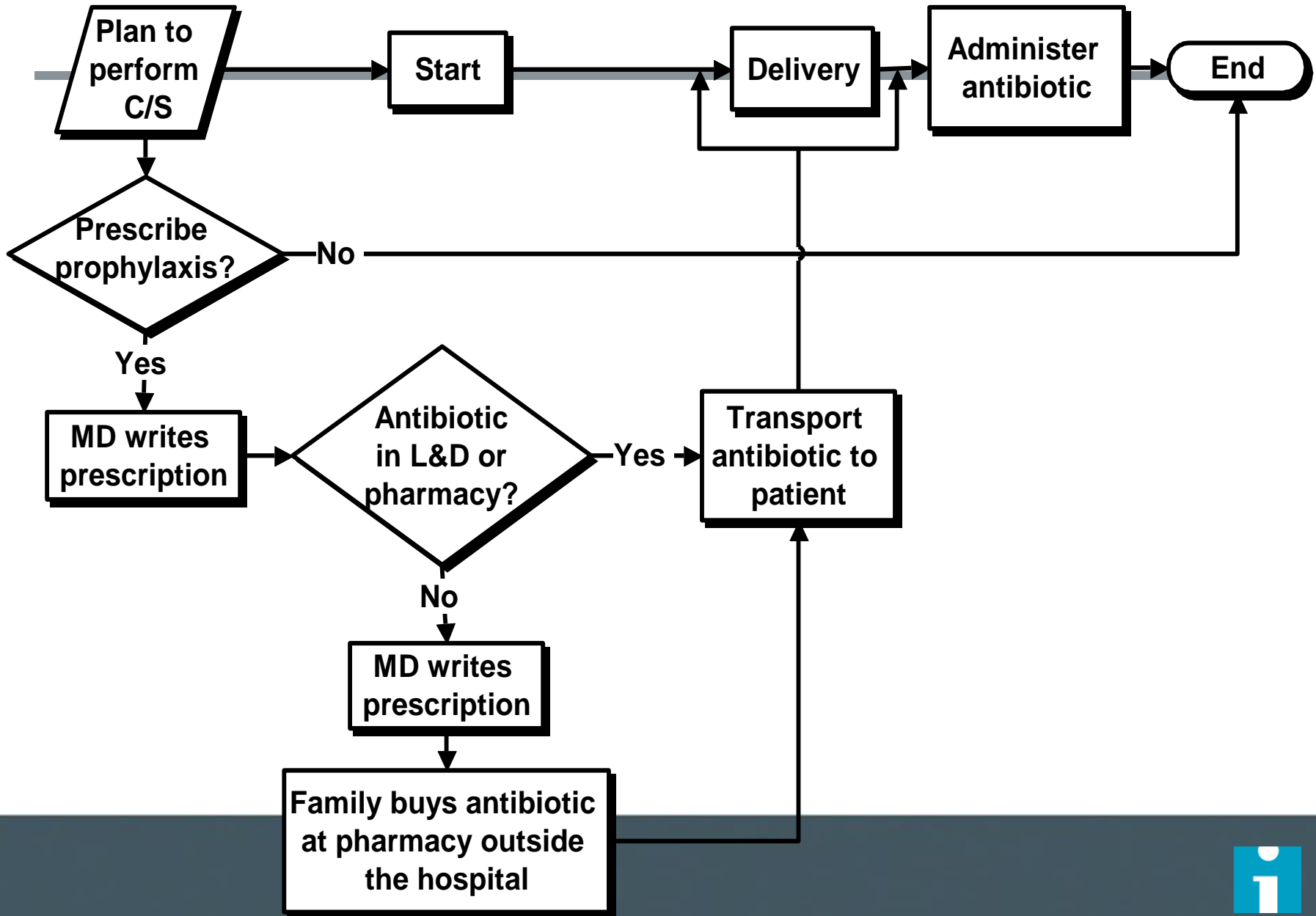
Priority Matrix

Factor	Importance	Within the capacity of hospital personnel to improve	Timeframe for improvement
Antibiotic prophylaxis	4	4	short
Skin preparation	3	4	short
Surgical technique	4	4	medium
Antenatal factors	3	1	long
Peripartum events	4	2	medium

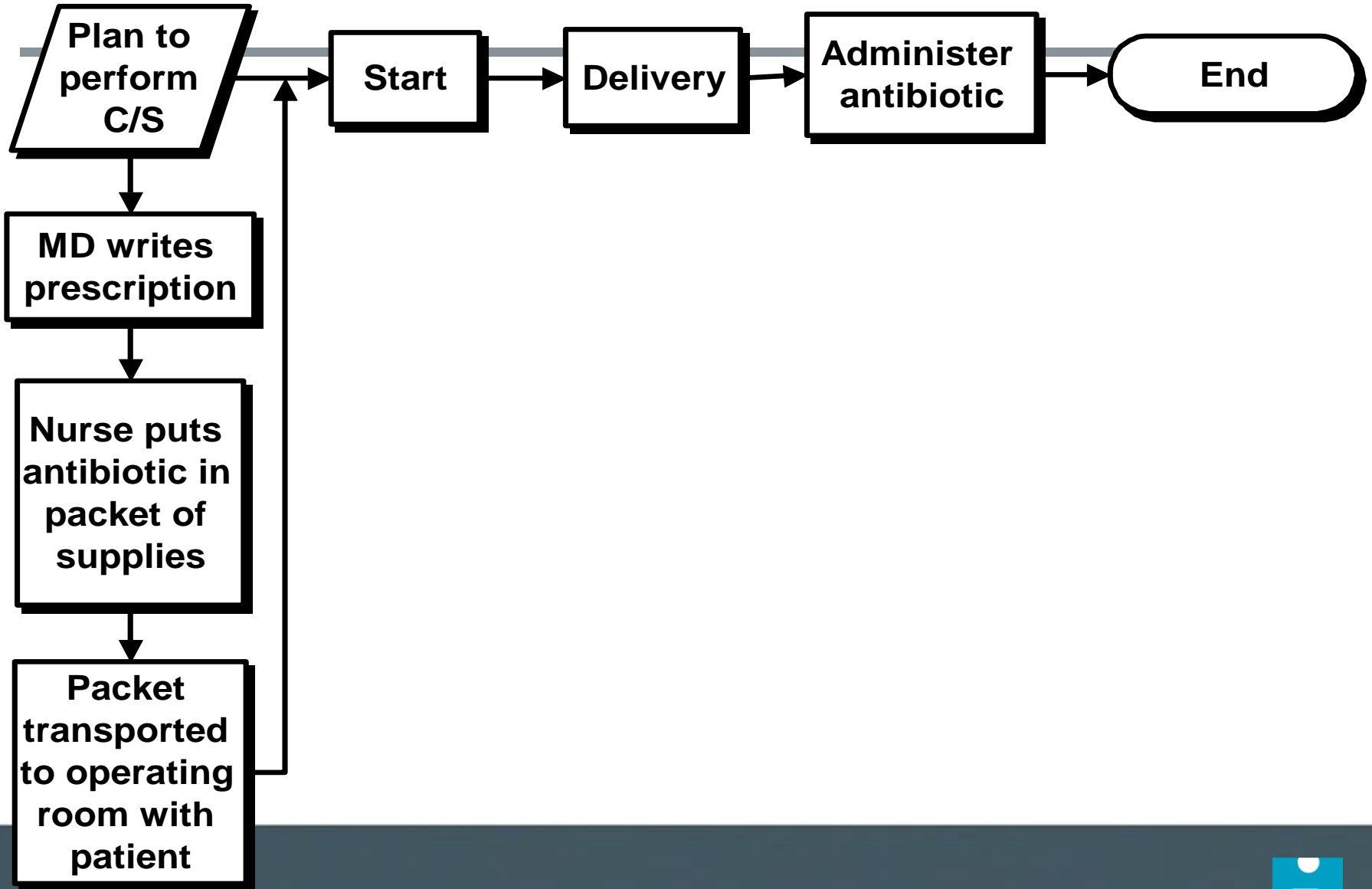
Utilization and Timing of Antibiotic Prophylaxis for Cesarean Section

	% receiving prophylaxis	% receiving prophylaxis ≤ 1 hour after delivery
Hospital A	70%	31%
Hospital B	32%	70%

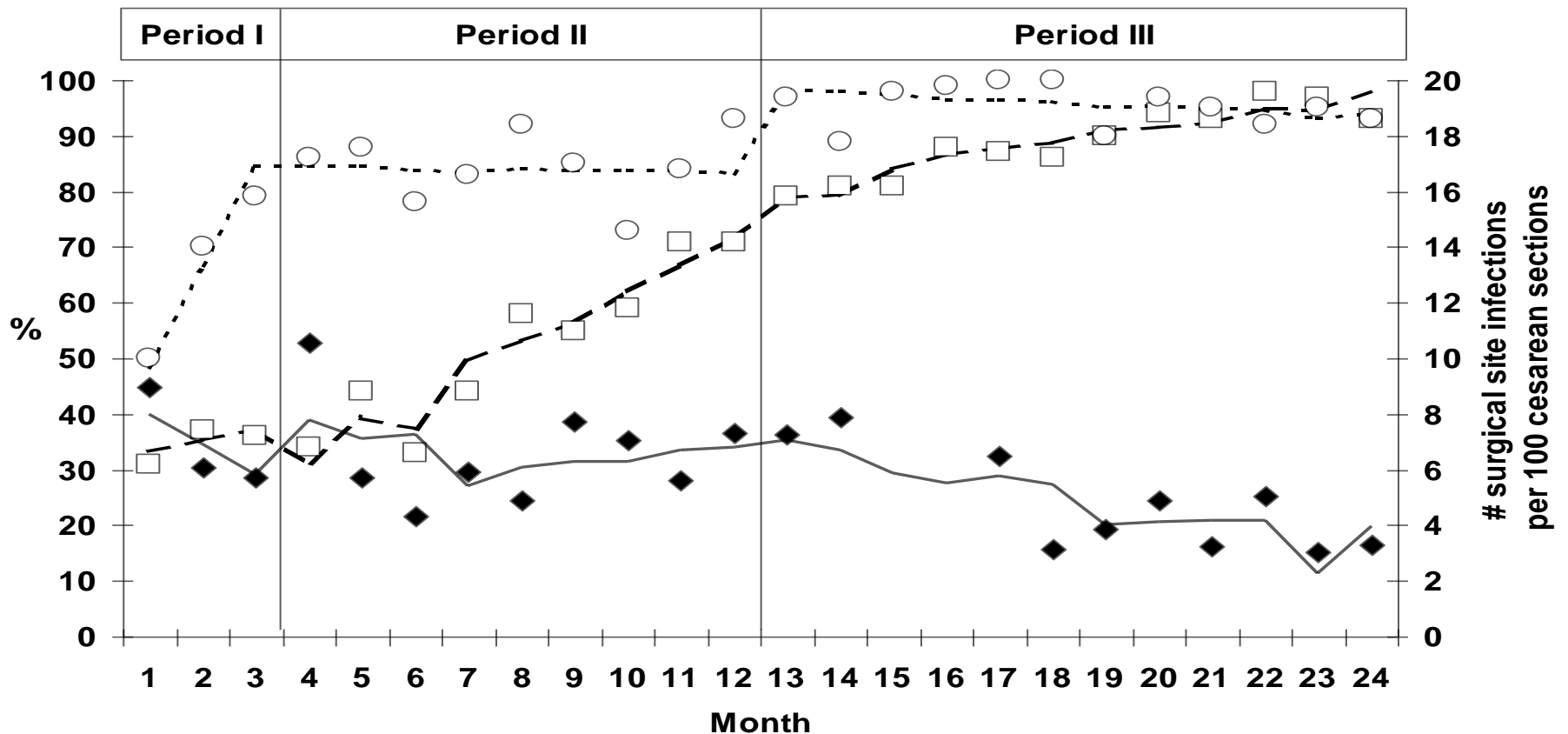
Hospital A: Existing System



Hospital A: Revised System



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



Ten Tips for Incorporating Rigorous Quality Improvement into Everyday Work

BMJ Qual Saf. 2011 Apr;20 Suppl 1:i69-72



Tip 1

- Select projects that really will make a difference to providers and patients
 - Focus on clinically relevant projects that substantially improve those processes of care that are tightly linked to the outcomes of interest to providers and patients
 - Think of a headline the CEO or CMO would want to feature on the organization's website



Tip 2

- Set bold, clear, measureable aims and a specific timeline for achieving them
 - Think of fundamental advances that will measurably impact care and outcomes and engage clinical staff



Tip 3

- Assemble a multi-disciplinary team including providers, stakeholders, and methodologists, tailored to the specific aim of the project
 - Be agnostic with respect to disciplines and titles when assigning roles and rewards
 - If publication is anticipated, define roles and authorships very early on
 - Giving appropriate first authorships to non-MDs does not jeopardize publication in leading journals



Tip 4

- Be creative in recruiting experts
 - Behavioral scientists, sociologists, economists, epidemiologists, statisticians, qualitative researchers, and other experts often are looking for opportunities to partner with clinical researchers, especially if there is a prospect of co-authorship



Tip 5

- Adopt the most rigorous study design possible without disrupting routine work unduly
 - Incorporate data collection into usual activities of professional staff (eg: infection control, clinical pharmacists)



Tip 6

- Do everything possible not to sacrifice data quality and completeness
 - Develop simple data collection tools that also simplify and increase reliability of daily work
 - Checklists and standardized order sets are especially useful



Tip 7

- Take advantage of emerging certification requirements for clinical staff and make improvement academically viable
 - MOC requirements can be satisfied by improvement activities (eg: Vermont Oxford's NICQ collaborative)
 - Morph “good citizen” work, such as CPG development and evaluation, into publications and other CV-worthy work products



Tip 8

- Do not assume that substantial external grant funding is required to perform credible quality improvement work
 - Leverage institutional resources
 - Encourage development of institutional small grant awards for quality improvement
 - Consider support from payers, industry, and professional societies
 - Look for “free” hands, such as graduate students



Tip 9

- Pay careful attention to the ethics of quality improvement work, but try to craft projects that are unlikely to require formal IRB approval
 - Remember
 - Poorly designed projects are unlikely to yield useful knowledge and arguably are not ethical
 - Patients have a right to expect that unexpected consequences will be considered and monitored



Tip 10

- Anticipate publication
 - Apply the SQUIRE guidelines
 - Right a “dummy” abstract and construct “dummy” tables and figures
 - Be clear about authorships
 - Make the most of “negative” studies

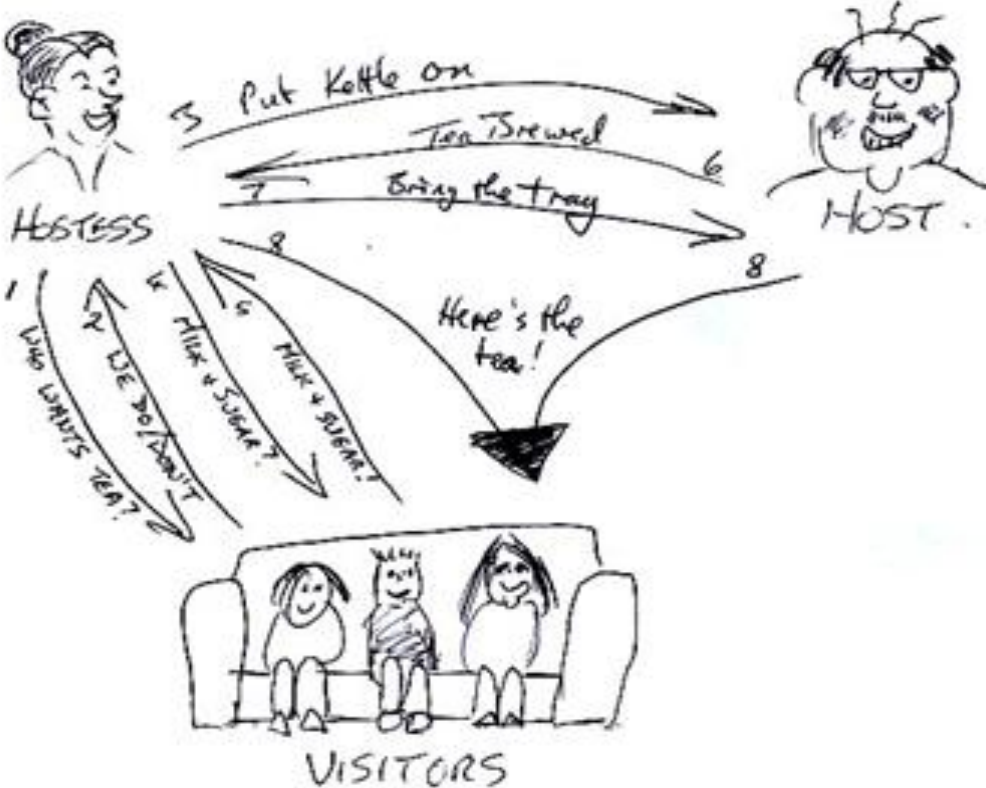


Conceptual Models

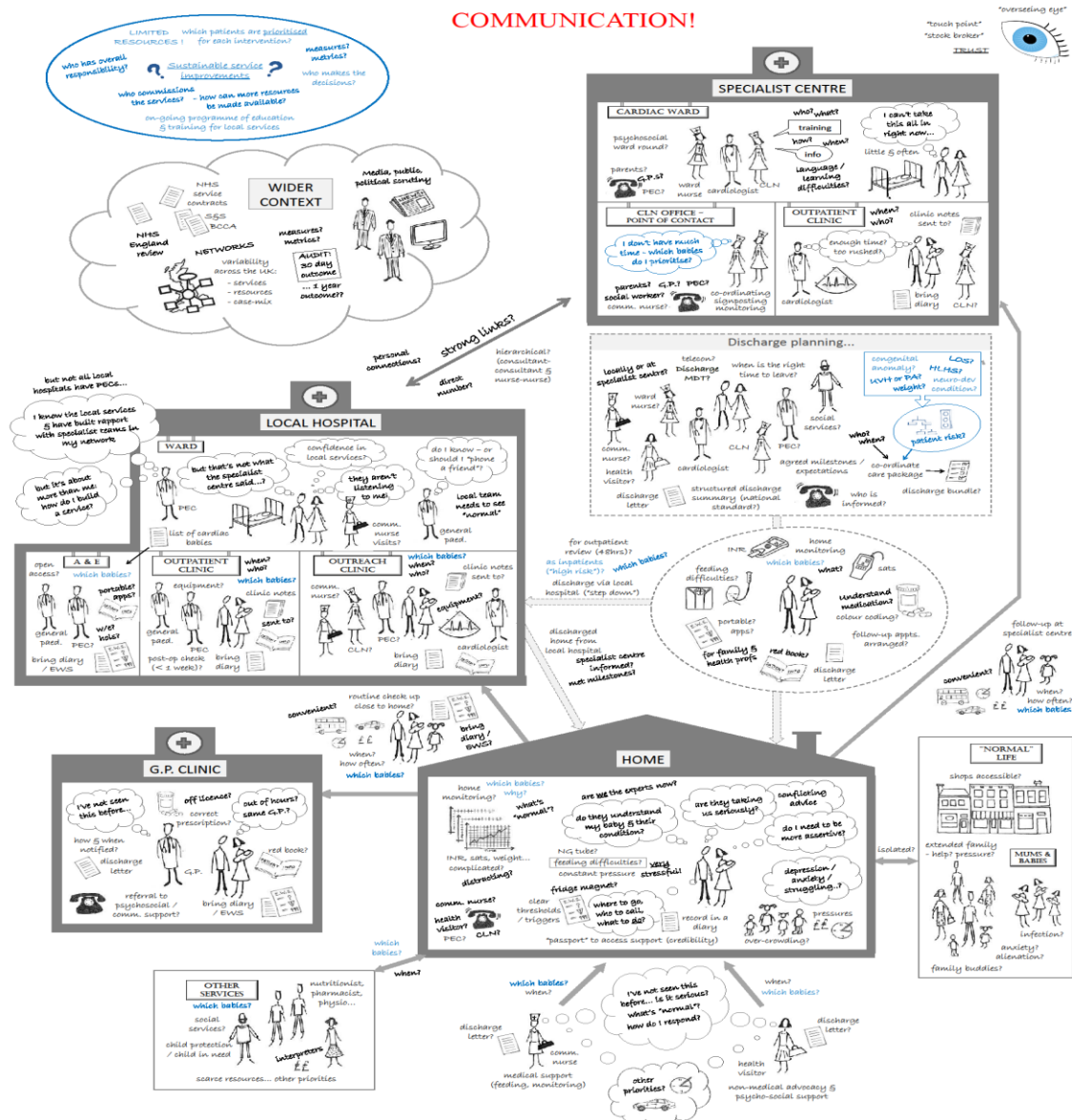
- Show dynamic interaction of multiple personal and environmental factors
- Generally take a broader theory-based view of a problem than logic models or driver diagrams
- Unlike logic models and driver diagrams, facilitate non-linear display of the interaction of factors that influence an outcome or behavior
- Most commonly used in sociology and behavioral science, but is a staple of health services research and can be adapted for any theory and outcome



Rich Pictures



COMMUNICATION!



Created by Dr Sonya Crowe, 2014 (sonya.crowe@ucl.ac.uk)

Infant Heart Study

Courtesy of Sonya Crowe, University College London



Planned Care Conceptual Model*

Community

Health System

Resources and Policies

Organization of Health Care

Self-
Management
Support

Delivery
System
Design

Decision
Support

Clinical
Information
Systems

**Informed,
Activated
Patient**

**Productive
Interactions**

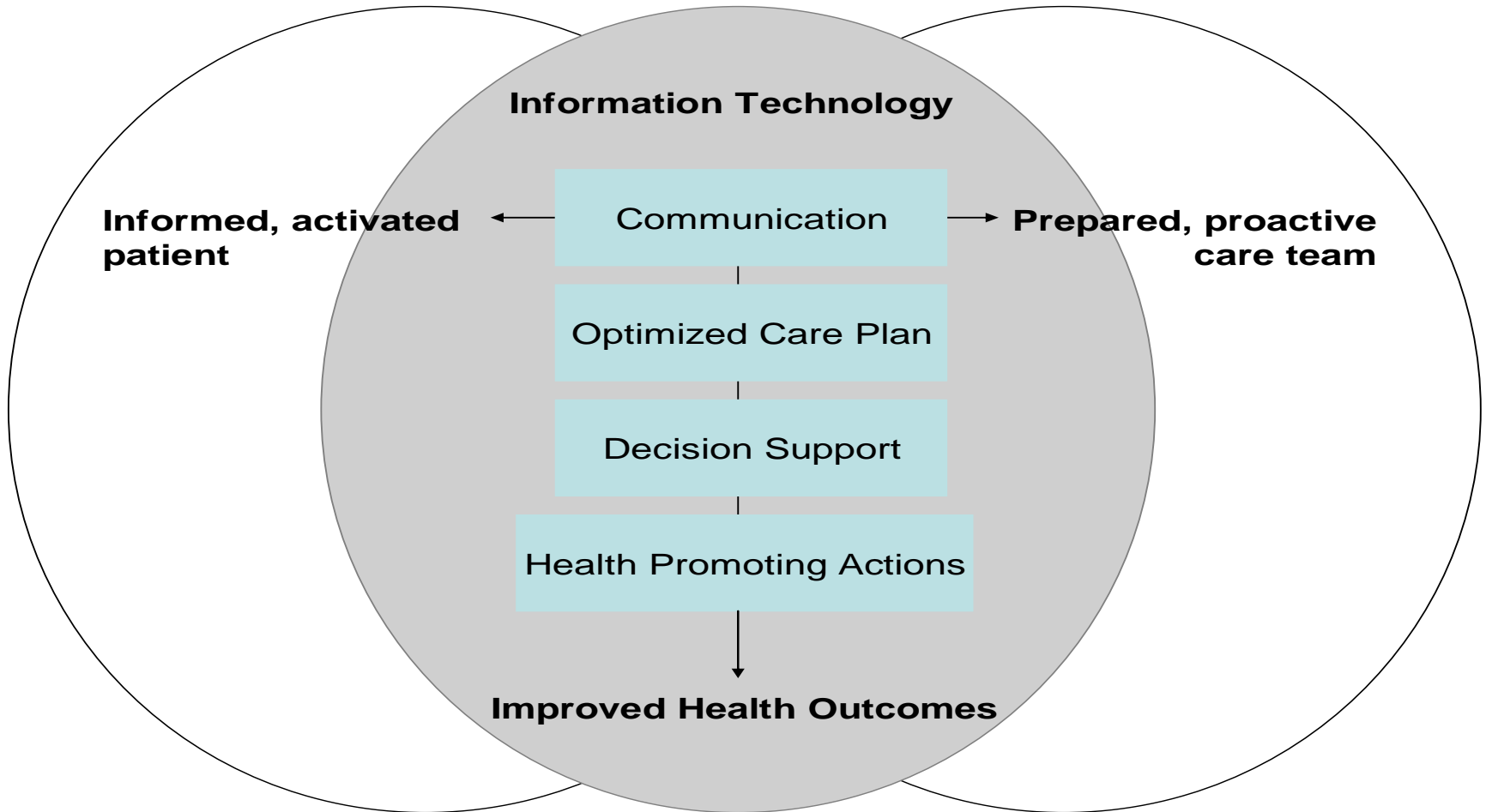
**Prepared,
Proactive
Practice Team**

* Some note that this is mainly a list of elements that does not show interactions

Functional and Clinical Outcomes



HIT/PHR – Oriented Planned Care Model

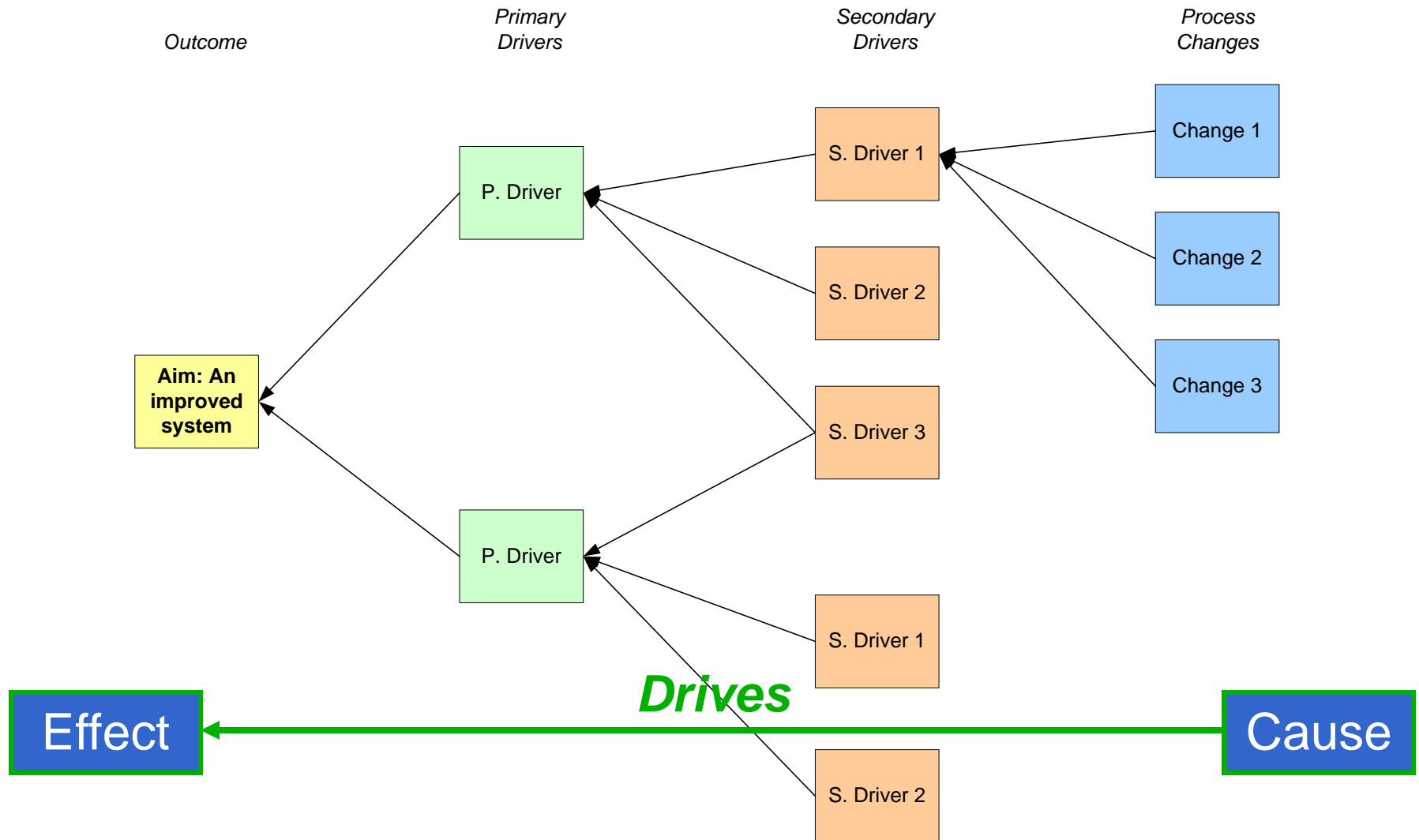


Driver Diagrams

- Clear, intuitive, visual demonstration of the most highly leveraged interventions and factors that are believed to promote the desired outcome
 - It's still a theory and predictive model
- Easy to “hang” measures on each key driver
- Promote rigor regarding the predicted impact (attributable effect) of specific changes on the key “drivers” and the causal pathway to the desired outcome
- May be useful to construct an “anti-driver” diagram or force field analysis to explicitly call out important barriers along the causal pathway
- Not ideal for showing complexity and interactions
- Ignore “less important” and unmeasured factors in determining the outcome

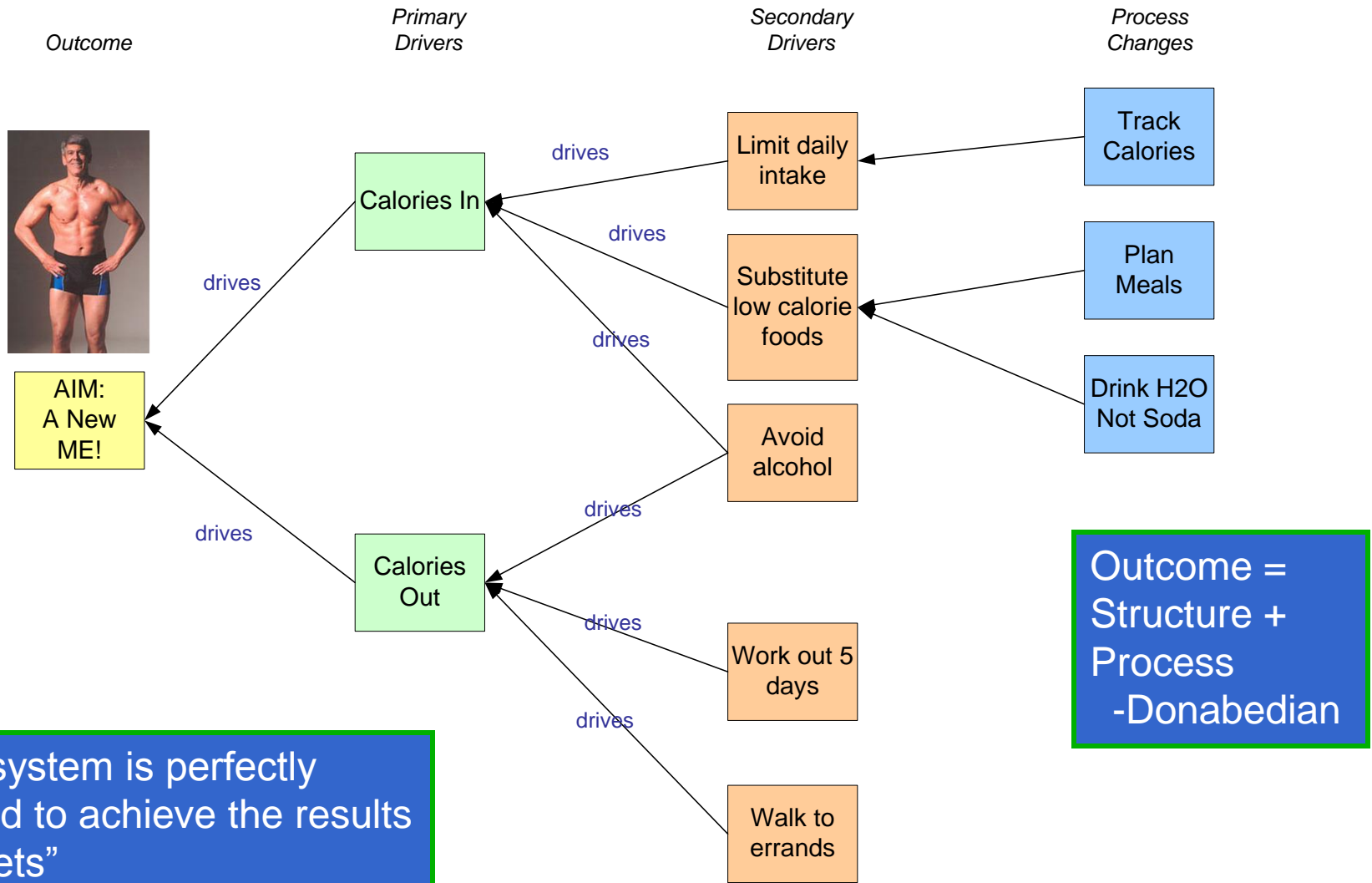


Cause-Effect Driver Diagram: What Changes Should We Test?



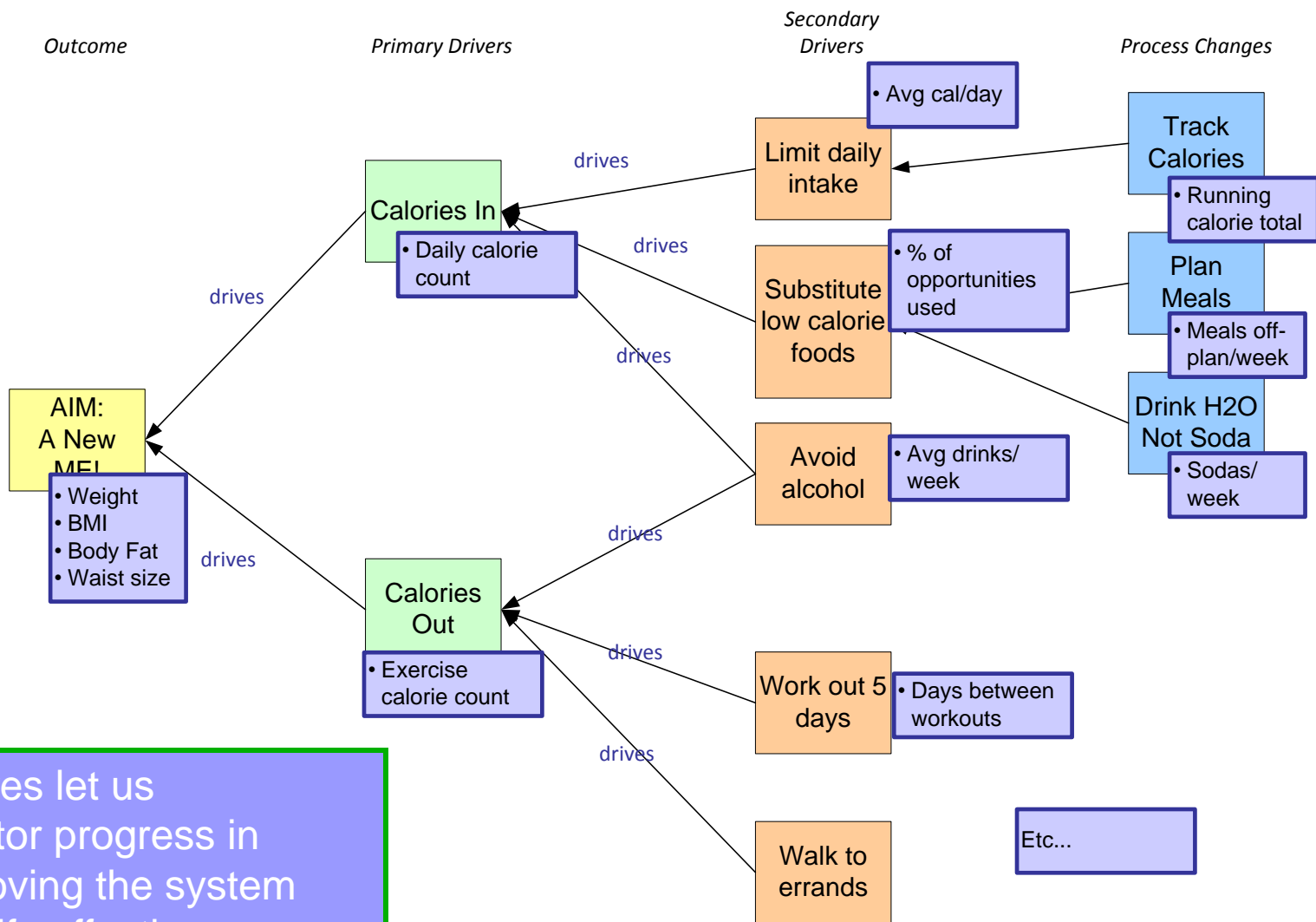
What Changes Should We Test?

Understanding the System for Weight Loss



How Will We Know We Are Improving?

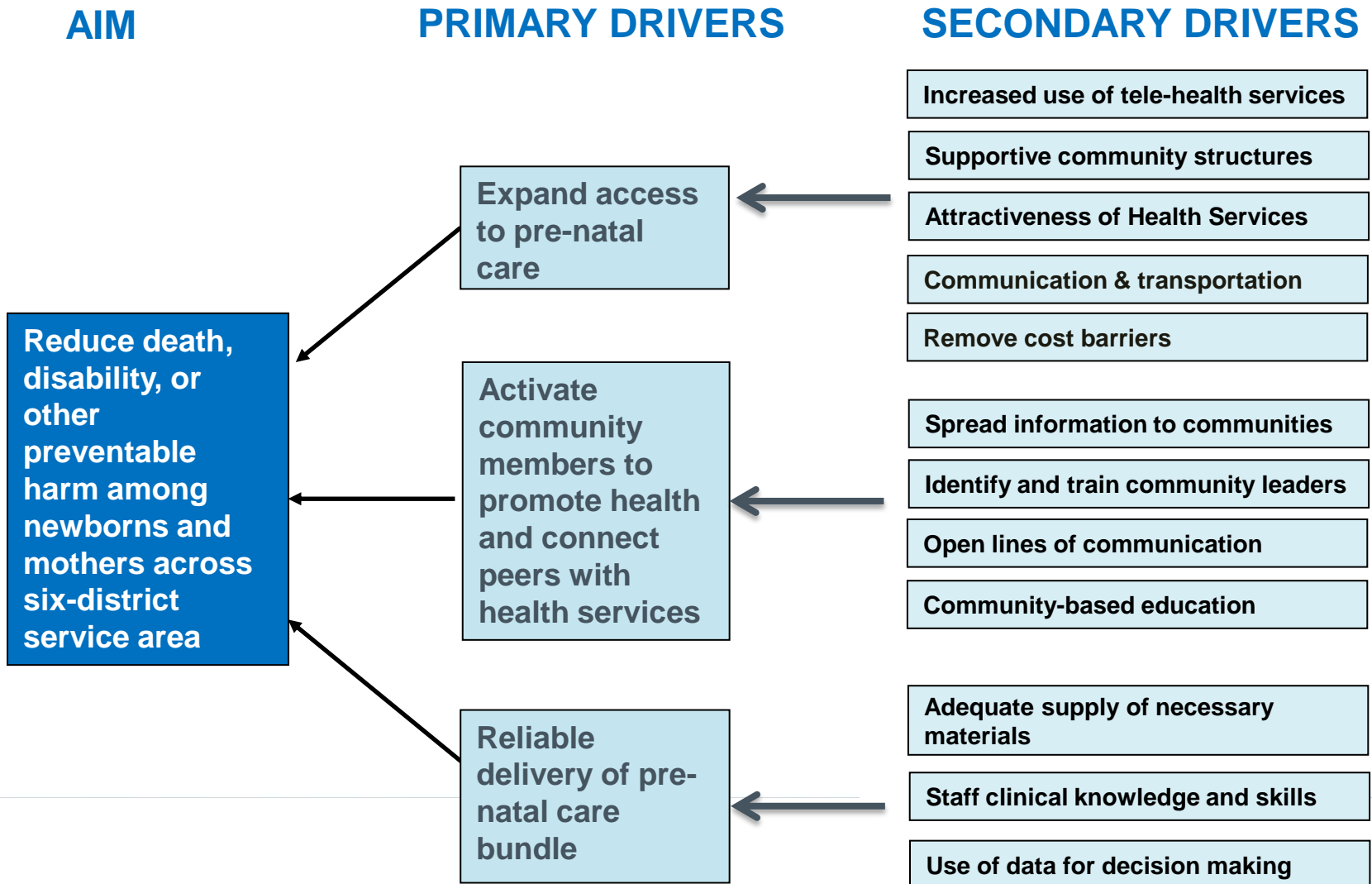
Understanding the System for Weight Loss with Measures



Measures let us

- Monitor progress in improving the system
- Identify effective

Driver Diagram: Example



Always Understand and Plan for
“Anti-Drivers”

Always Anticipate and Monitor
Unintended Consequences