Quality Improvement Methodology, Workflow Redesign and Outcomes Management

Jeffrey Hummel, MD, MPH
Medical Director for Clinical Informatics,
Qualis Health and
UW Medicine Neighborhood Clinics
July 28, 2006

Quality Improvement Methodology

Major transformation in late 1990s

- From measuring mistakes to process redesign
- From the methodology heavy machinery of outcomes research…
  - Before and after
  - Intervention and control groups
  - Rigorous statistical analysis
- …to emphasis on rapid assessment, agile implementation, and simple techniques to measure progress in closing quality gaps
- Far less academic and more mission driven

Changes in medicine combine with experience from other industries

- Evidence-based medicine
- Institute for Health Care Improvement
  - Conceptual framework based on improvement methodology adapted from Deming
  - Breakthrough Collaboratives
- Chronic Illness Care Model – stared at GHC and now the international model
- Toyota "Lean Methodology" perfected in Japan starting in the 1930s, now making major changes in healthcare

Evidence-based Medicine

- Sackett "The conscientious, explicit and judicious use of the best current evidence"
- While the standards for what was considered high quality evidence have gone way up, the methods for applying it have become more empiric
- In the words of David Eddy:
  - If it works, do it
  - If it doesn't work, don't do it
  - When there is insufficient evidence to decide, be conservative

IHI Model for Improvement

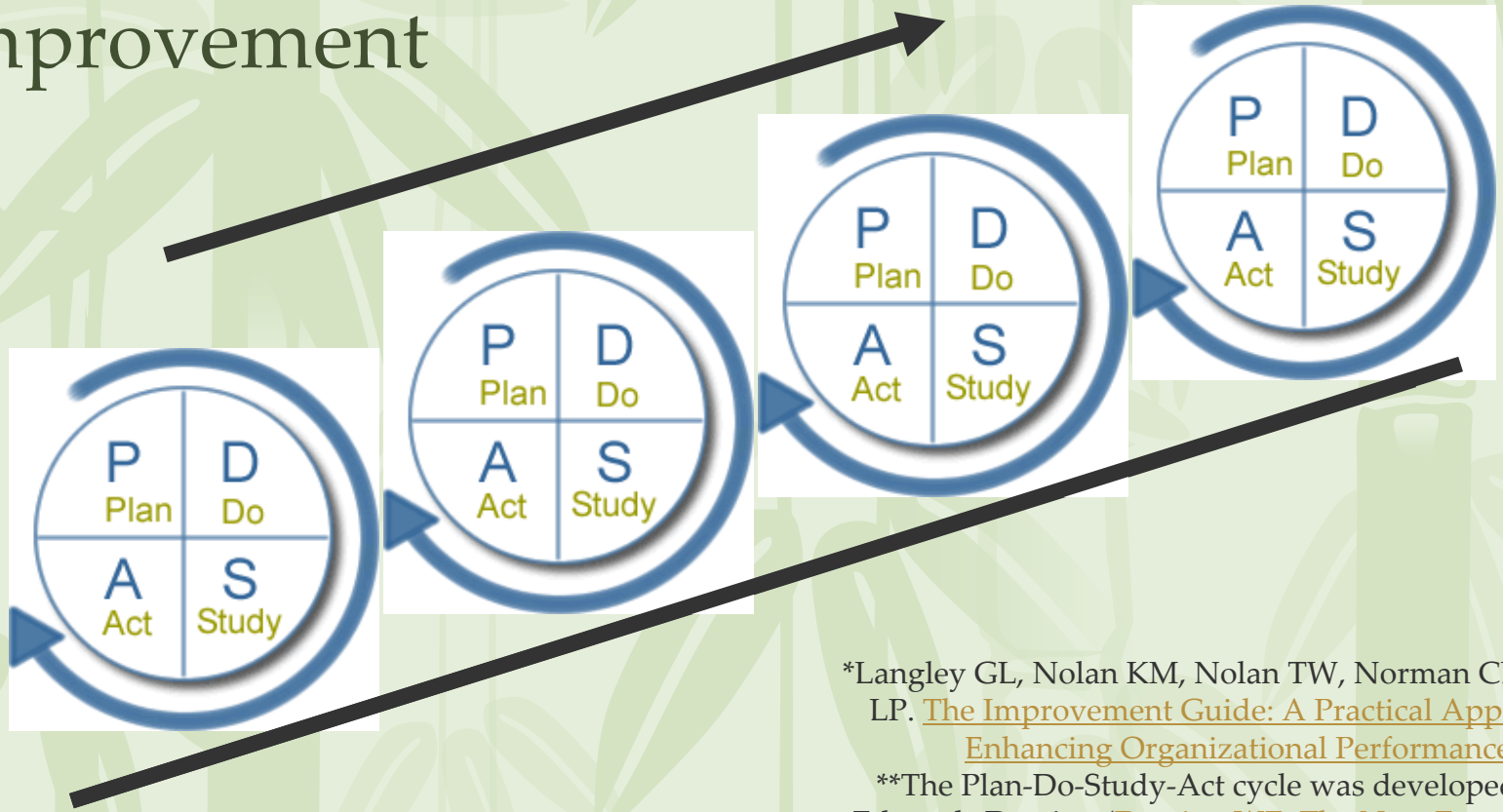
- "Every process is perfectly designed to give you exactly the outcome that you get."
- Step 1: The Three Questions:
  - What are we trying to accomplish?
  - How will we know that a change is an improvement?
  - What changes can we make that will result in an improvement?

Step 2: PDSA Cycle Shorthand for testing a change in a real world setting

- Plan:
  - Design workflow changes;
  - Identify tools to support the new workflow;
  - Decide what to measure & how
- Do: Implement plan
- Study: Look at what was measured; figure out what it means
- Act: Fix the things didn't work the first time and retest until it works right

One PDSA Cycle isn't enough

The cycles are linked for continuous improvement



*Langley GL, Nolan KM, Nolan TW, Norman CL, Provost LP. The Improvement Guide: A Practical Approach to Enhancing Organizational Performance.

**The Plan-Do-Study-Act cycle was developed by W. Edwards Deming (Deming WE. The New Economics for Industry, Government, Education.).

But what do we measure?

- Don’t waste time trying to get perfect data
- Don’t wait for the technology
- Learn to navigate on minimal data points
- Use quick and dirty samples if necessary
- Examples:
  - Wait times
  - Number of tests ordered
  - Asking the people affected what worked and what didn’t

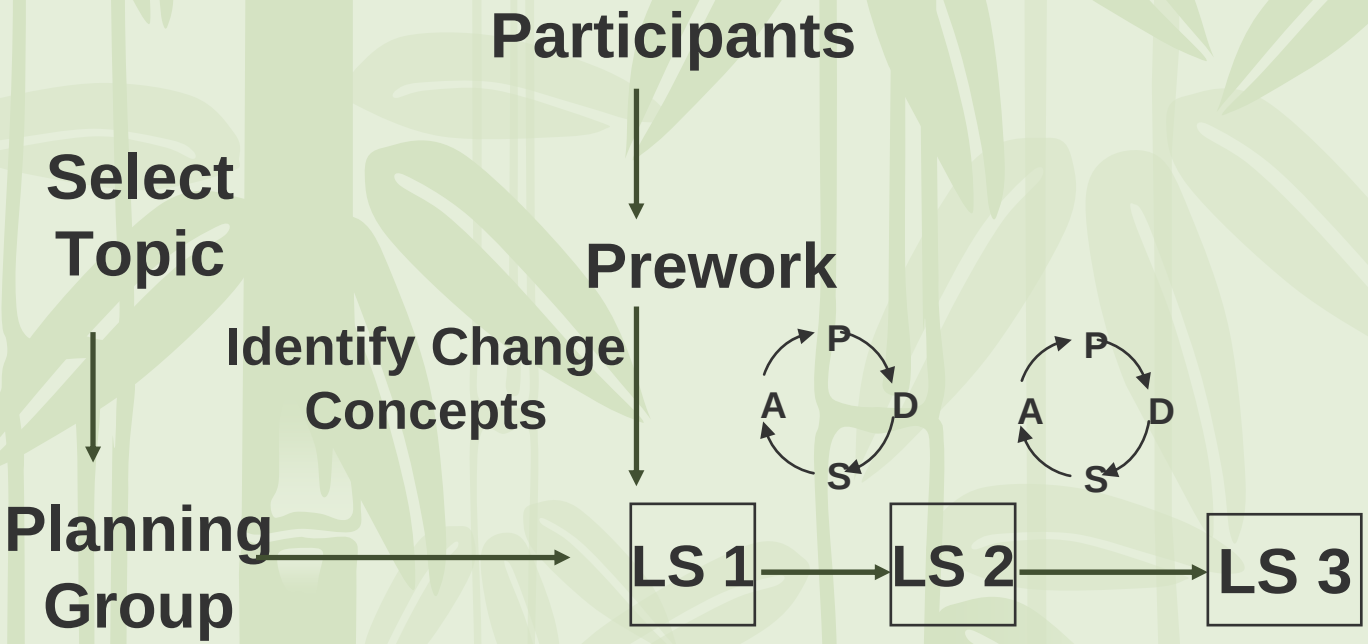
Spread

- It isn't enough to simply do a demonstration.
- Spread to across the organization
  - Role of leadership is essential
  - Replicate the process of education
  - Replicate the data collection
  - Replicate the PDSA cycles
    - Can start with the perfected workflow from the pilot
    - Try it in other areas, but be prepared for it not to be a perfect fit

The Collaborative Concept - 1995

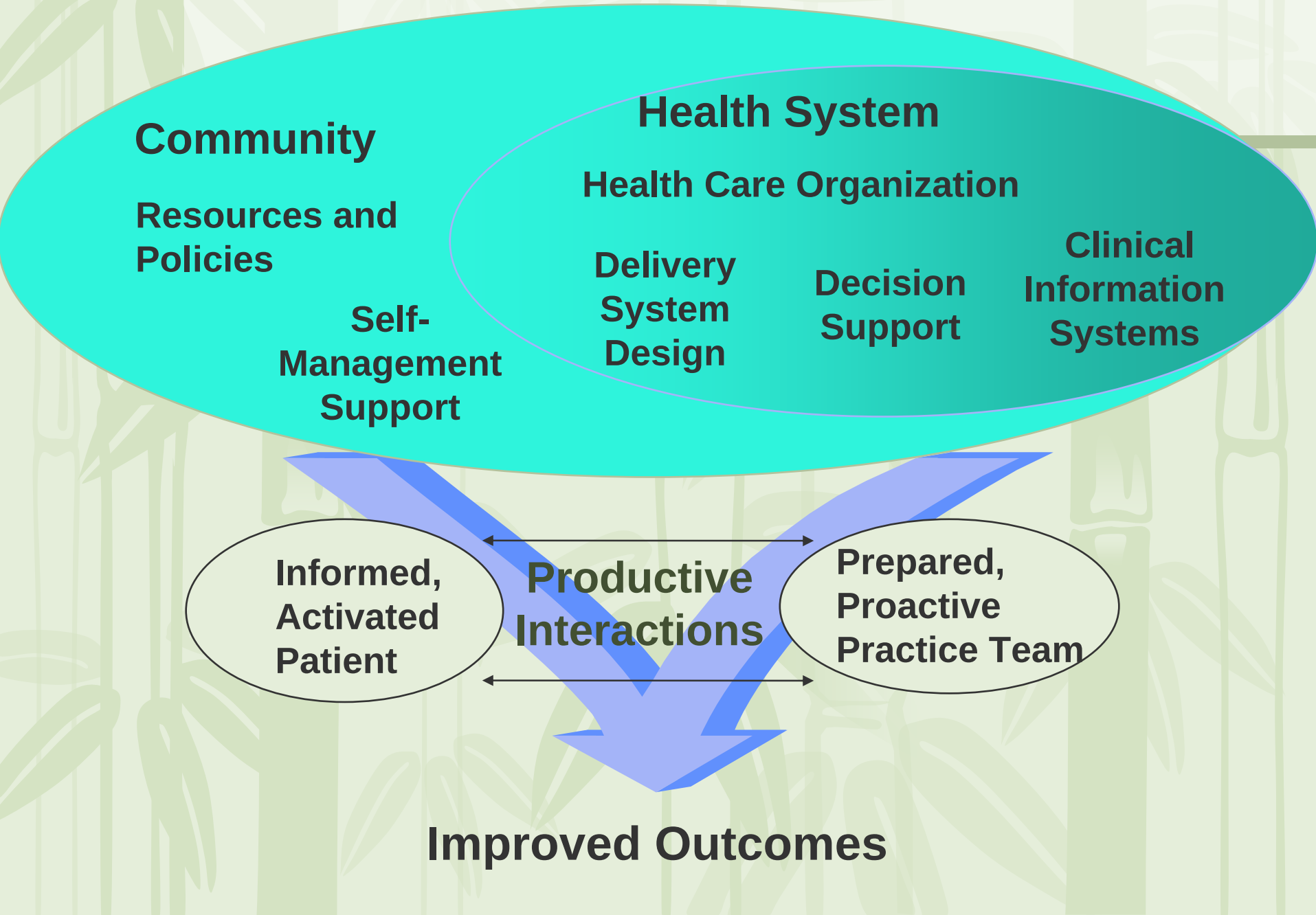
- Short 6-15 month learning sessions bringing teams from different settings all seeking improvement on a focused clinical area
- Team of 3 usually attend 3 learning sessions and report back to additional team members at the local organization
- Examples of goals:
  - Reduce ED wait times by 50%
  - Reduce hospitalization for CHF Pts by 50%
  - Reduce worker absenteeism by 25%

Collaborative Improvement Model



Supports

E-mail	Visits
Phone	Assessments
	Senior Leader Reports


Community
Resources and Policies
Self-Management Support
Health System
Health Care Organization
Delivery System Design
Decision Support
Clinical Information Systems
Informed, Activated Patient
Productive Interactions
Prepared, Proactive Practice Team
Improved Outcomes

Toyota Lean Methodology 14 Principles

- Base decisions on long-term philosophy at the expense of short term financial goals
- Create continuous flow to bring problems to the surface
- Use “pull” systems to avoid over production
- Level out the work load
- Build a culture of stopping to fix problems
- Standardized tasks and processes are the foundation for continuous improvement and employee empowerment
- Use visual control so no problems are hidden
- Use only reliable, thoroughly tested technology that serves your people and processes

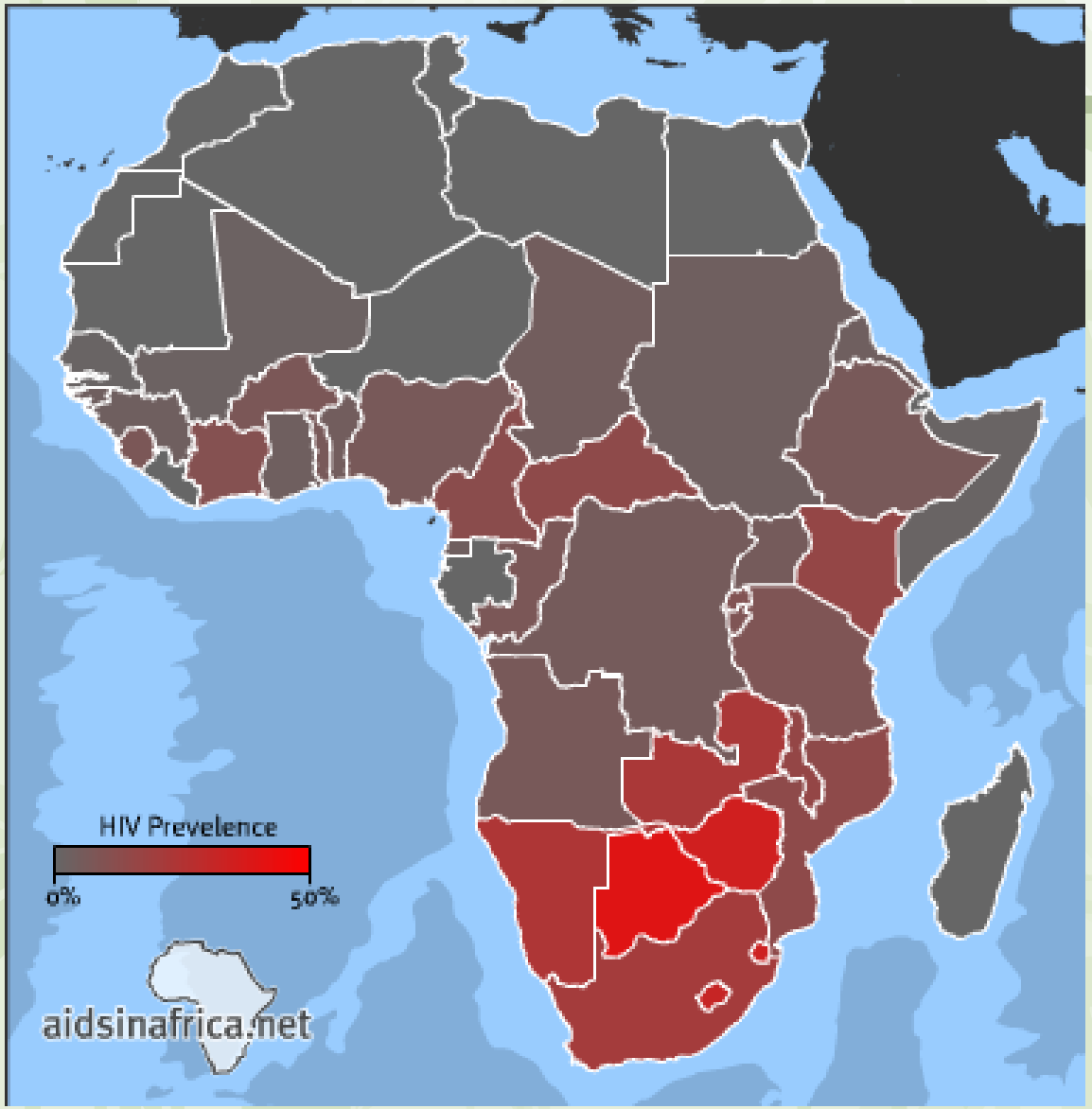
14 Principles Continued

- Grow leaders who thoroughly understand the work, live the philosophy and teach it to others
- Develop exceptional people and teams who follow your company's philosophy
- Respect your network of partners and suppliers by challenging them and helping them improve
- Go and see for yourself to thoroughly understand the situation
- Make decisions slowly by consensus, thoroughly considering all options; implement decisions rapidly
- Become a learning organization through relentless reflection, slow promotion, and very careful succession systems

QI in Developing Countries

- Projects use the classic IHI improvement strategies
  - Model for improvement
  - Breakthrough Collaborative Series
  - Chronic Illness Care Model including spread
- South Africa HIV Project with Pierre Barker
  - Develop replicable urban and rural best practice models for treating HIV in children and adults that optimize existing staff and resources
  - Increase the capacity of local and regional systems to allow rapid scale-up of the ARV program

The HIV pandemic: prevalence of HIV in Sub-Saharan Africa



<u>SOUTH AFRICA - 2005</u>

Pop – 47,000,000

AIDS deaths 500,000

AIDS Orphans – 500, 000

HIV prevalence:

Pregnant mothers – 30%

All adults – 21%

All children – 3%

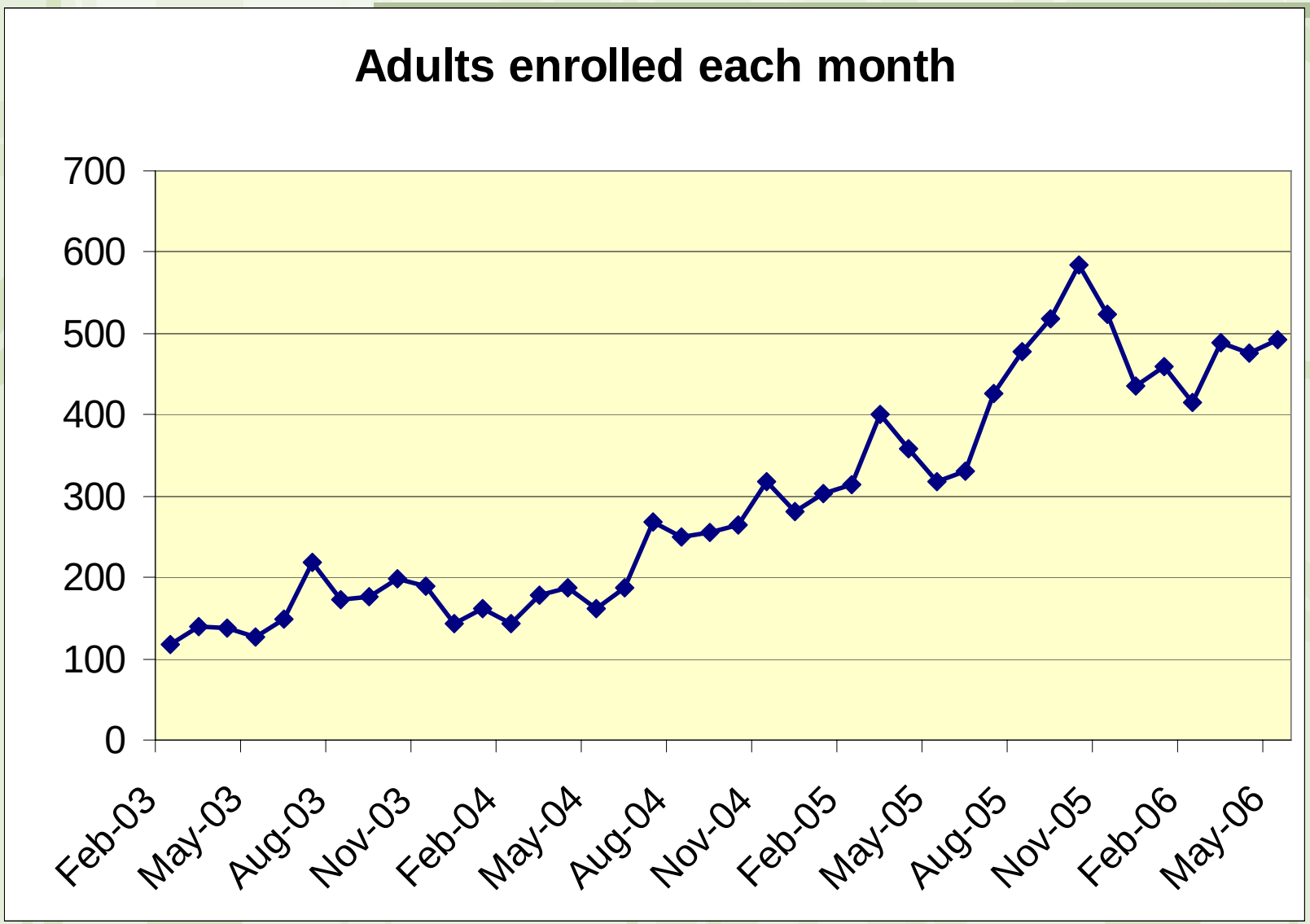
Clinic In Mozambique

- Approximately 500 new HIV positive patients each month and increasing
- Only 10% are having their CD4 counts done within 1 month of enrollment
- There is a registry to track patients
- Resources to buy reagents for CD4 testing are scarce
- Only those patients with resources to obtain ART get CD4 test

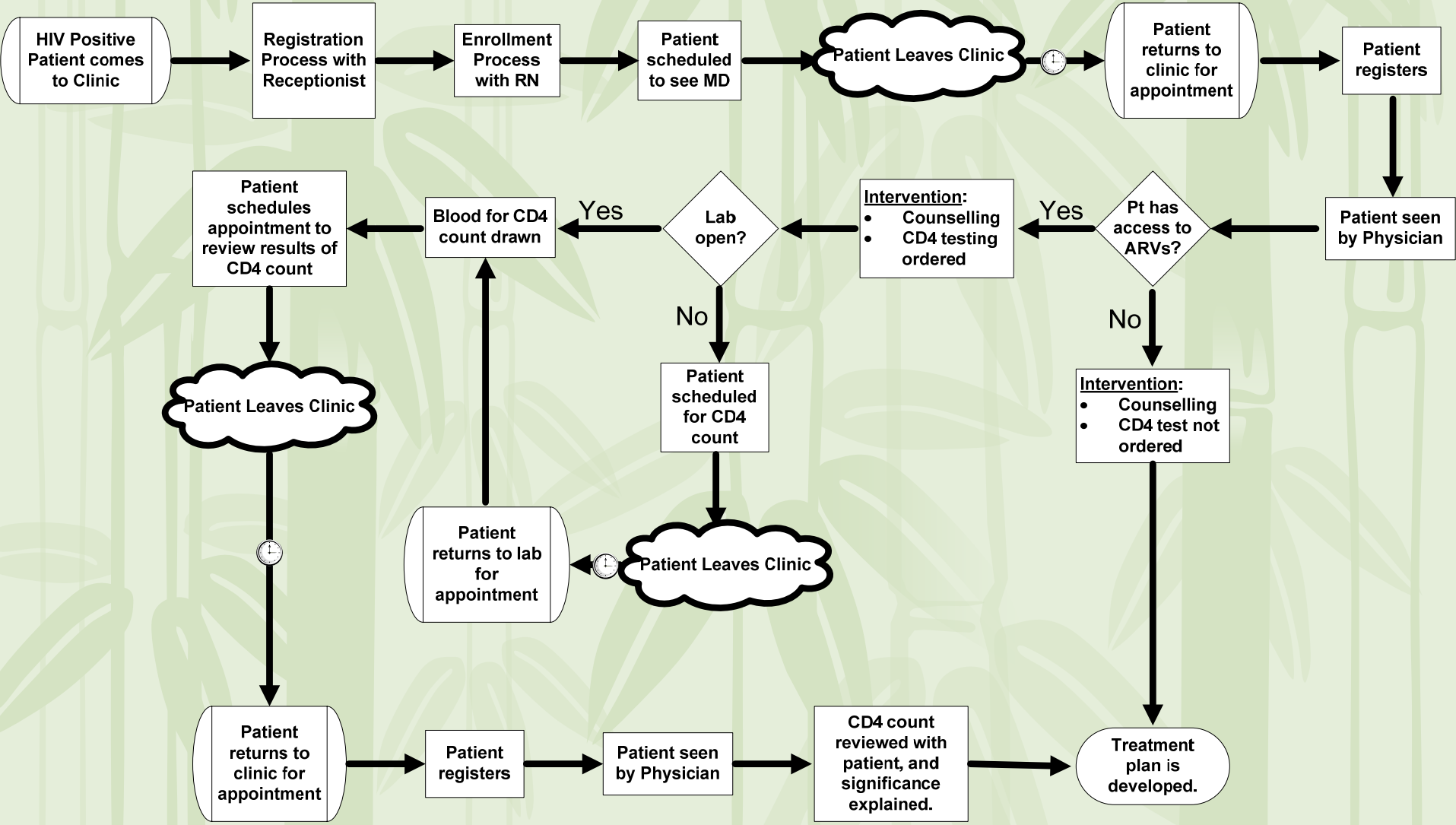
PDSA Cycle in Beira, Mozambique

- What are we trying to accomplish?
  - All HIV positive patients will have a CD4 count within 1 month of presenting to the clinic
- How will we know that a change is an improvement?
  - The percent of patients with CD4 count will rise from and approach 100%
- What changes can we make that will result in an improvement?
  - Remove barriers to testing
  - Remove non-value added steps from the workflow

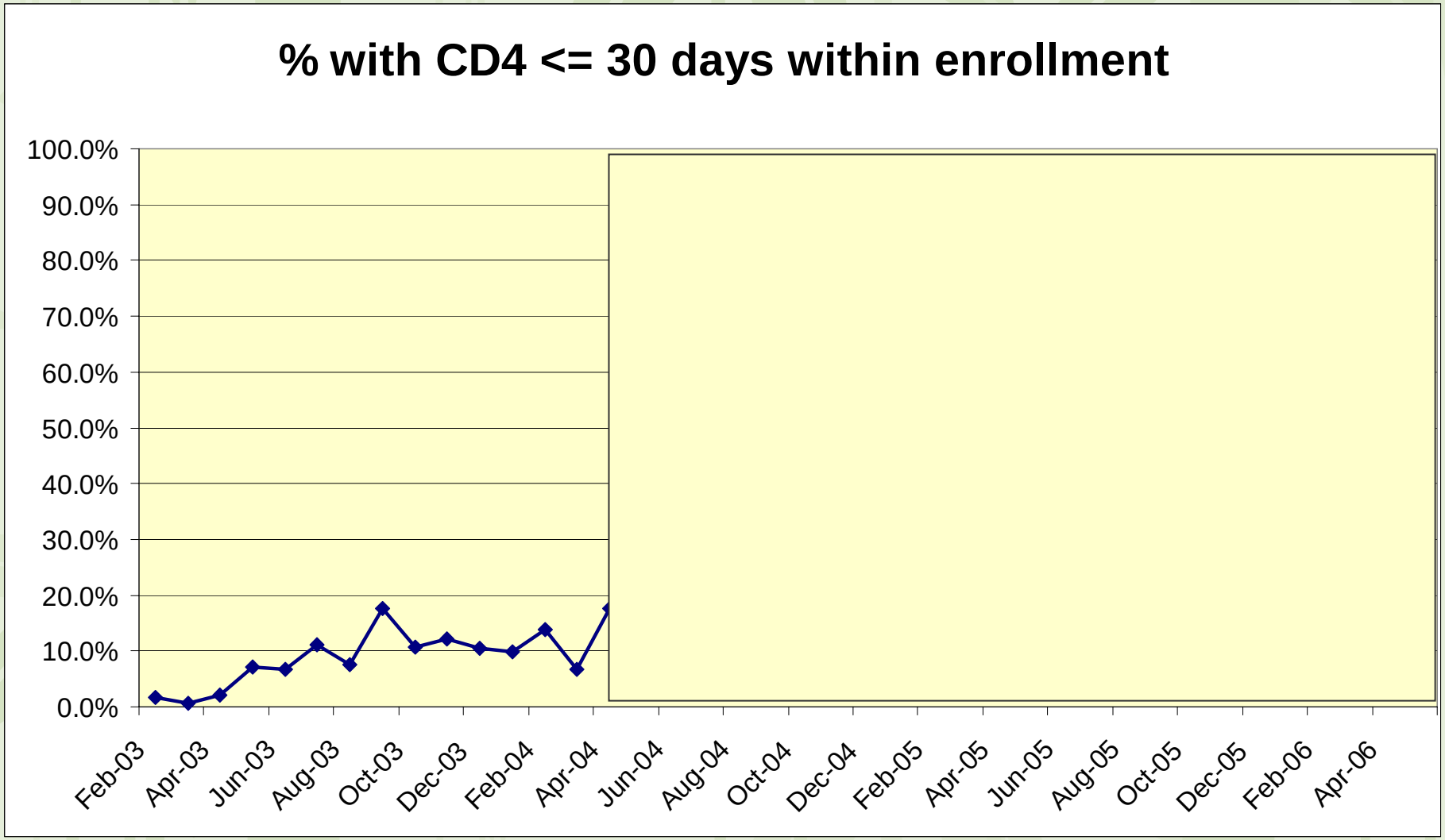
Steady enrollment growth



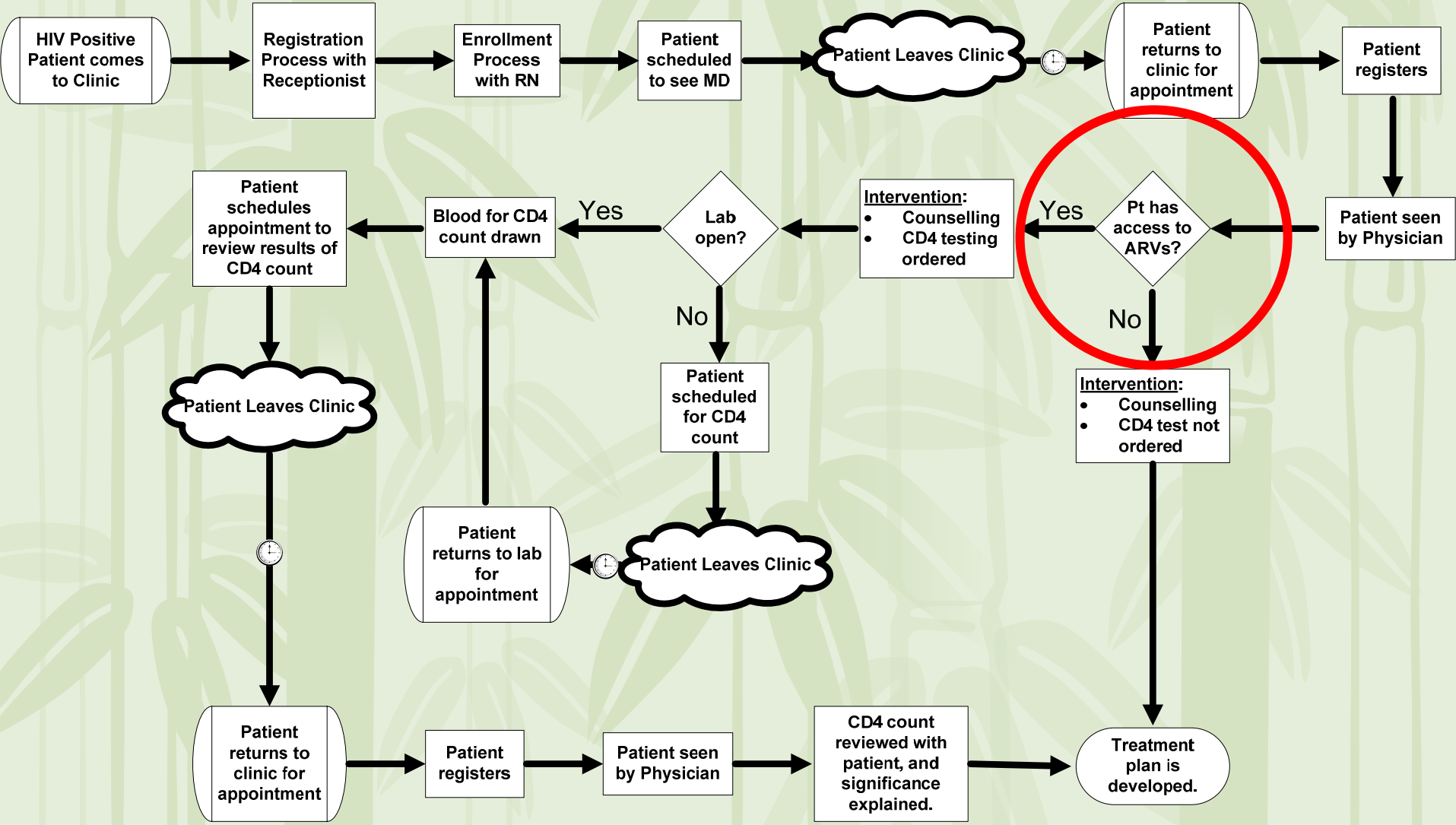
Initial Workflow

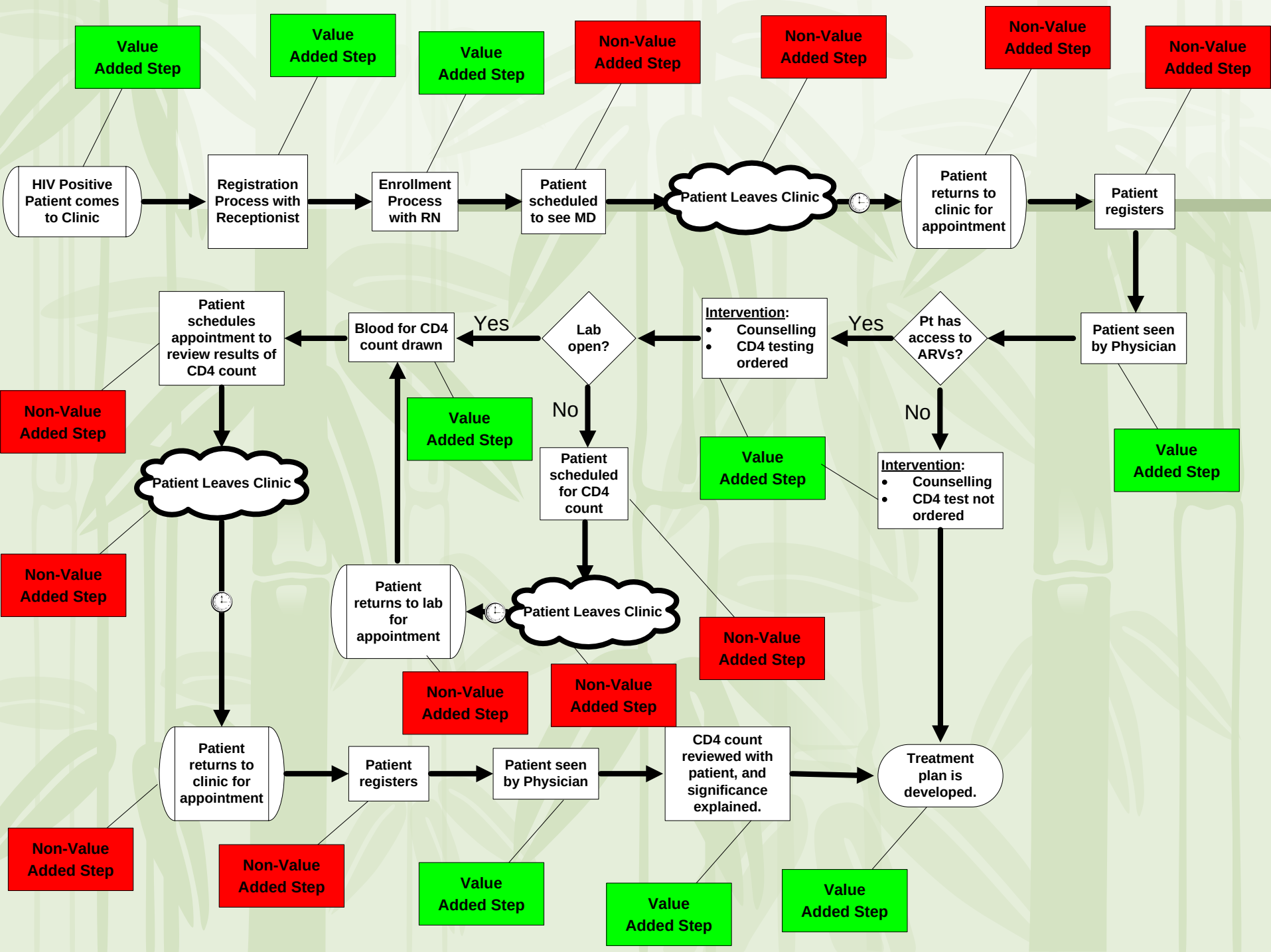


Outcome of a process perfectly designed get 10% CD4 Testing

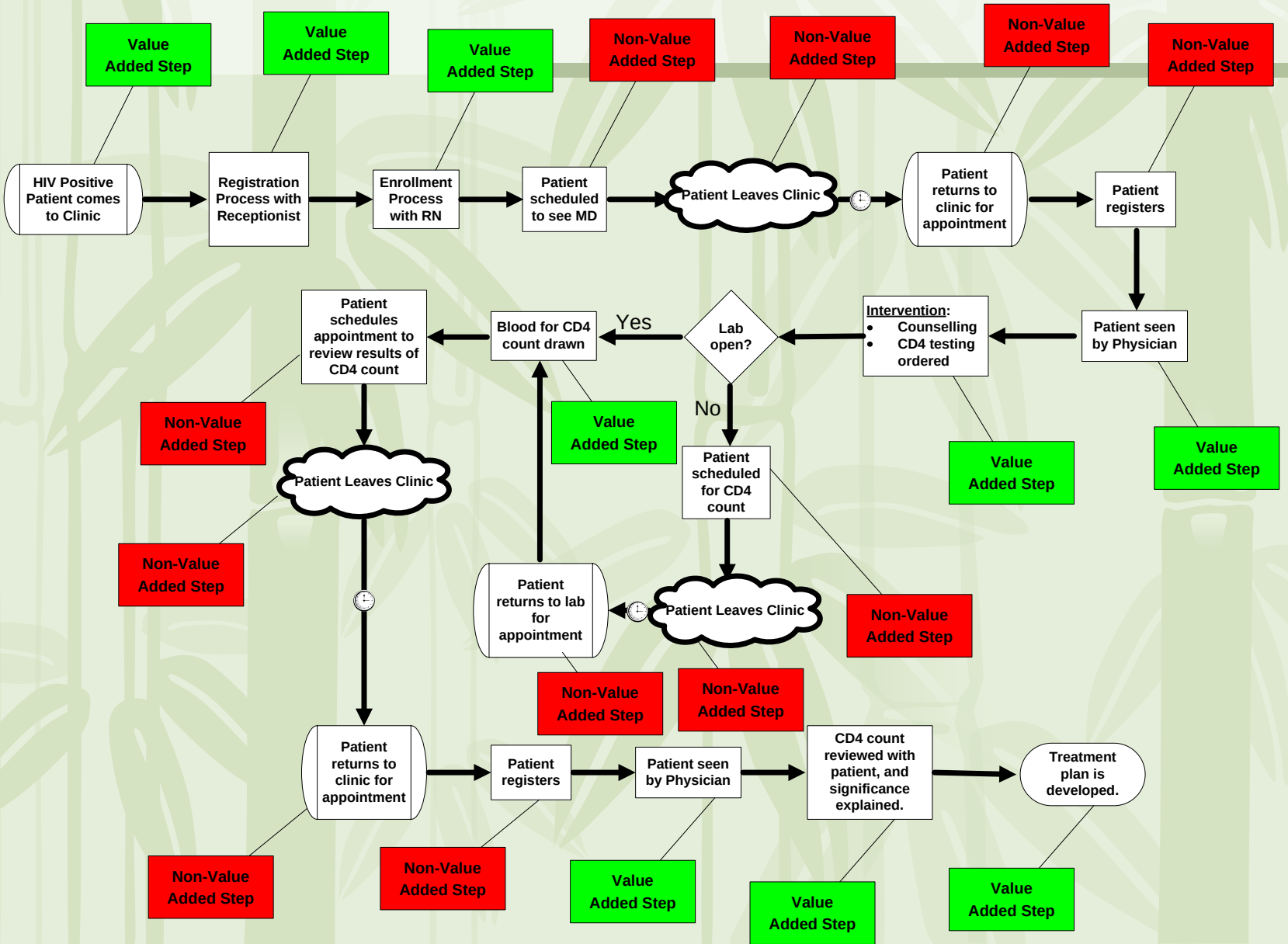


Major System Barrier to CD4 Testing

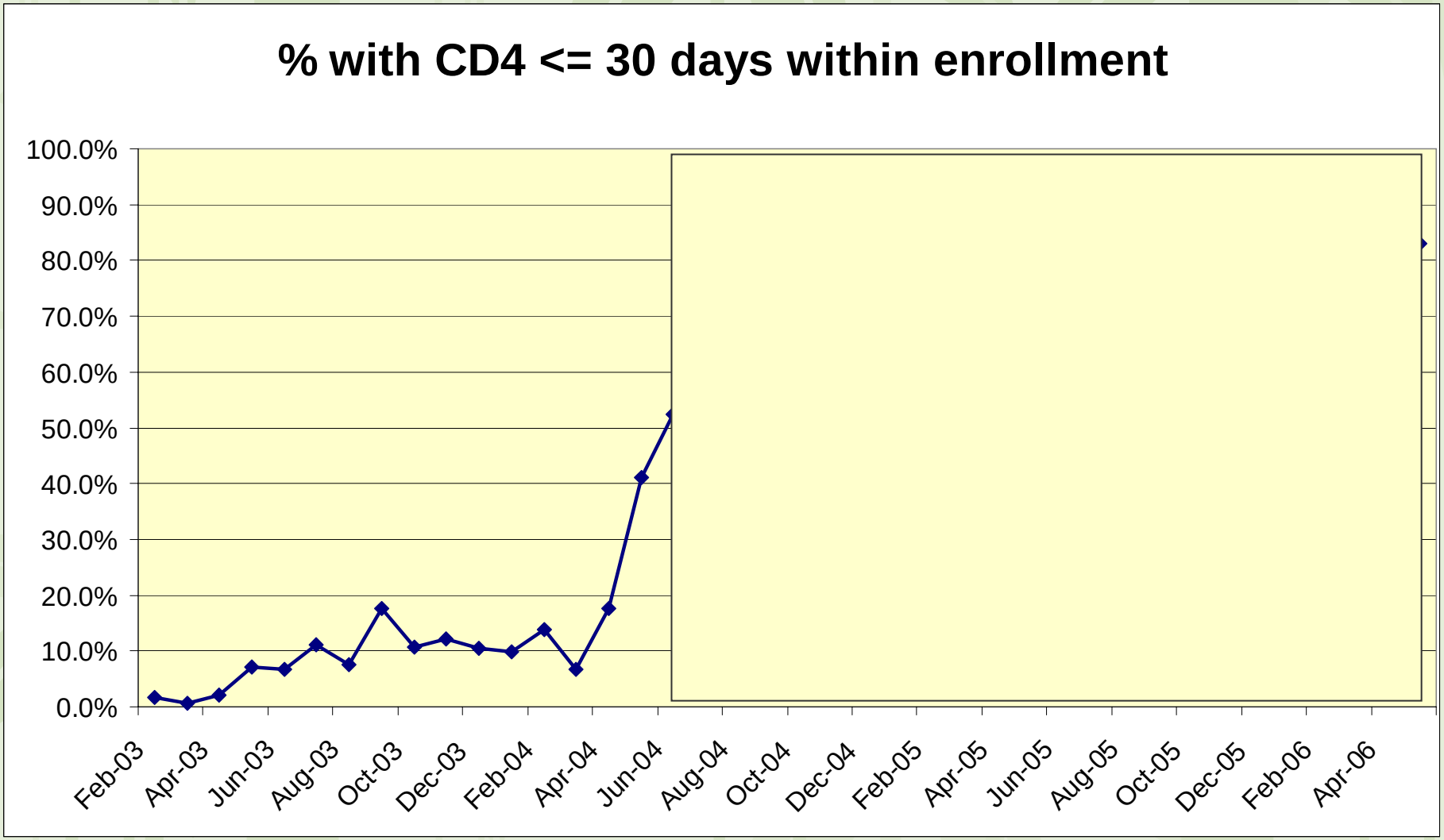



Value Added Step
Value Added Step
Value Added Step
Non-Value Added Step
Non-Value Added Step
Non-Value Added Step
Non-Value Added Step
HIV Positive Patient comes to Clinic
Registration Process with Receptionist
Enrollment Process with RN
Patient scheduled to see MD
Patient Leaves Clinic
Patient returns to clinic for appointment
Patient registers
Patient seen by Physician
Pt has access to ARVs?
Yes
Intervention:
Counselling
CD4 testing ordered
Lab open?
Yes
Blood for CD4 count drawn
Patient schedules appointment to review results of CD4 count
Non-Value Added Step
Value Added Step
Value Added Step
Value Added Step
No
No
Intervention:
Counselling
CD4 test not ordered
Patient Leaves Clinic
Patient scheduled for CD4 count
Non-Value Added Step
Non-Value Added Step
Patient returns to lab for appointment
Patient Leaves Clinic
Non-Value Added Step
Non-Value Added Step
Patient returns to clinic for appointment
Patient registers
Patient seen by Physician
CD4 count reviewed with patient, and significance explained.
Treatment plan is developed.
Non-Value Added Step
Non-Value Added Step
Value Added Step
Value Added Step
Value Added Step

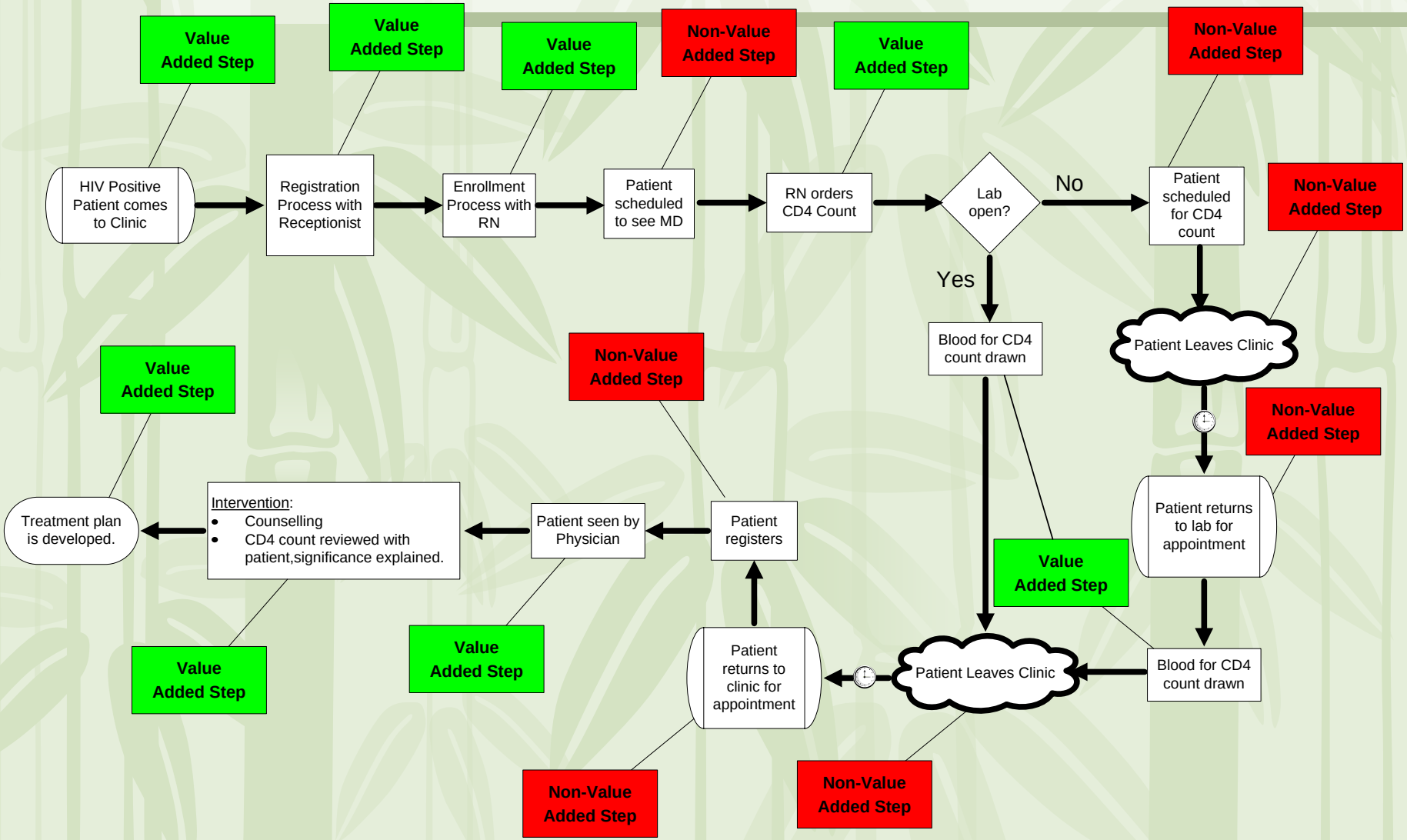
Step 1: Remove the barrier



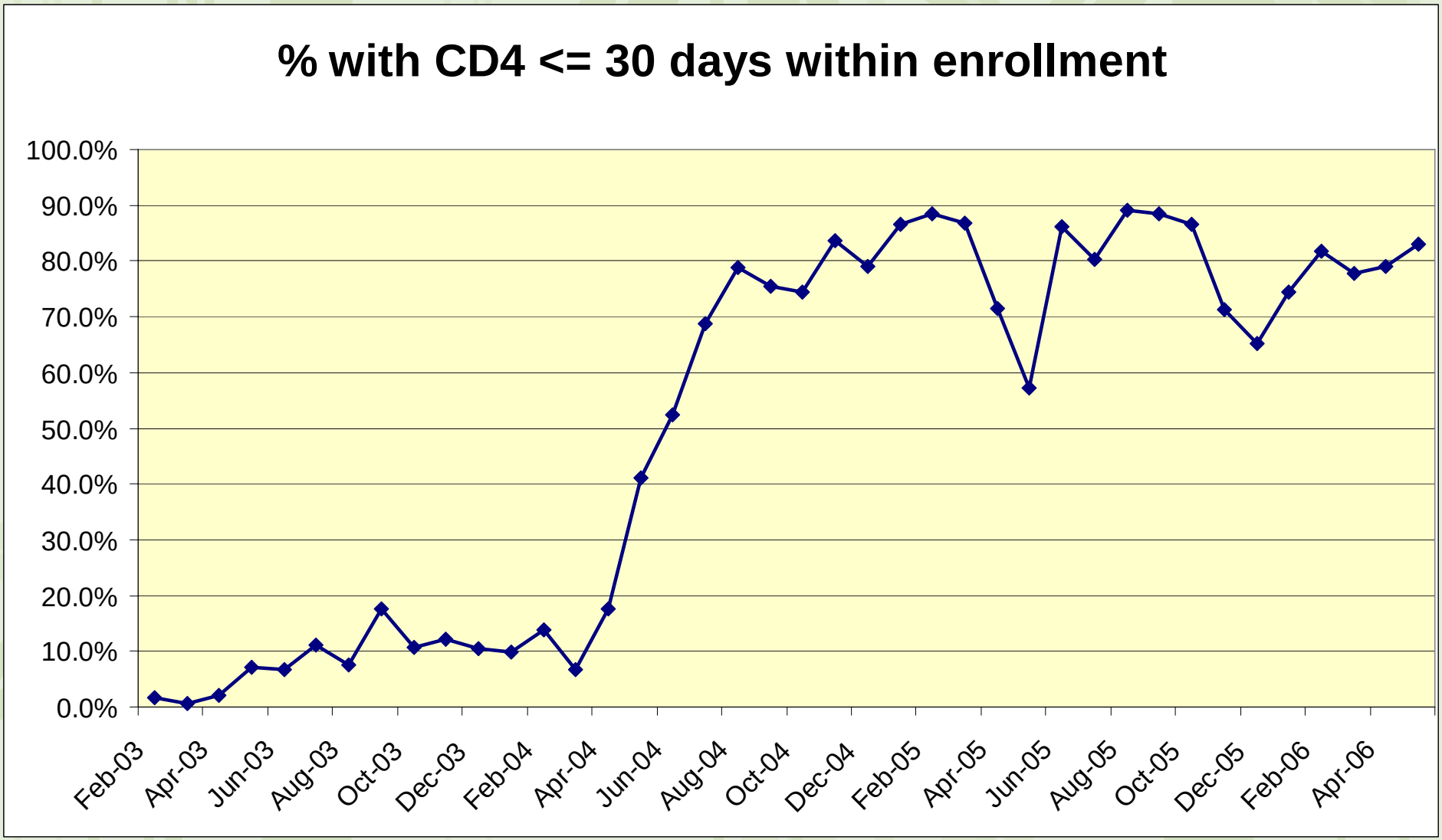
Outcome after barrier is removed



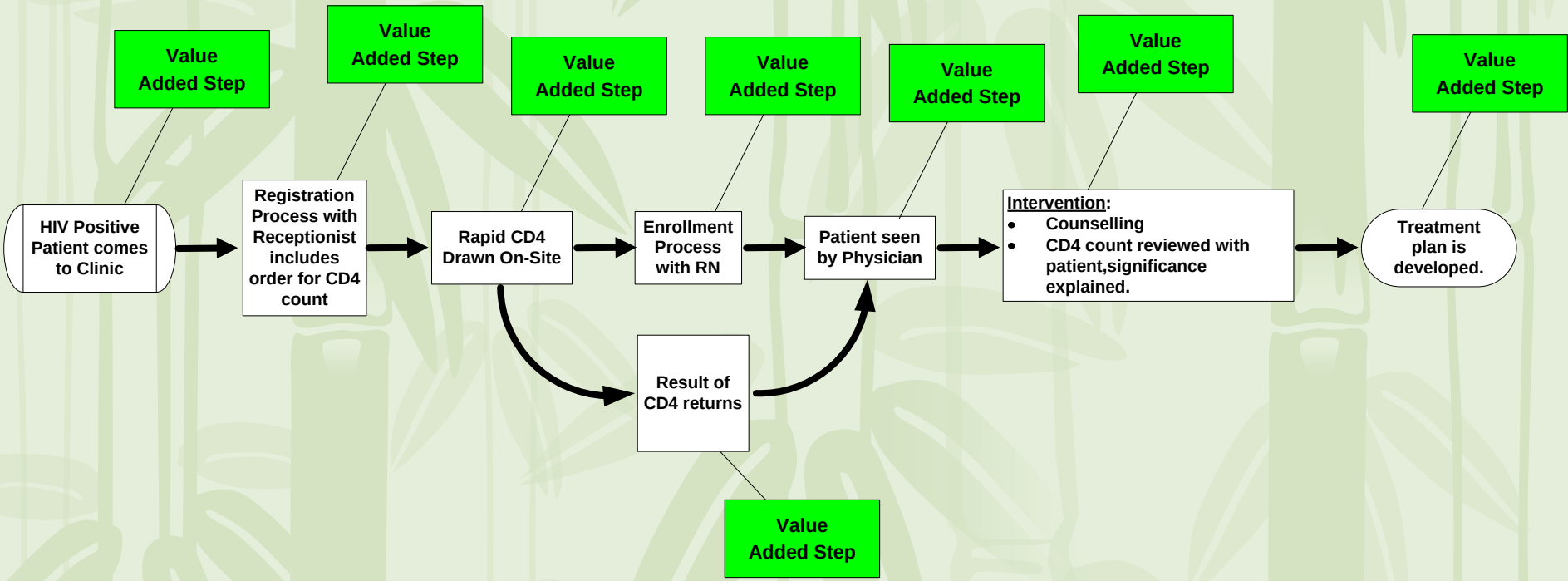
Step 2: Take CD4 ordering away from the physician



Outcome after CD4 count order is "automatic"



What would Toyota do?



Recap of the tools we used

- Evidence-based medicine: – target was designed to identify everyone who needs ART as early as possible
- Improvement Methodology:
  - Clear articulation what we are trying to accomplish
  - Changes tried out, adjusted to get them to work better, all of them required overcoming resistance,
  - Measurement to track improvement
  - Spread to other clinics

The tools we used

- Chronic Illness Care Model
  - Information system
  - Decision support
  - Redesign of the care delivery system
  - Patient self-management support

What parts of "lean" do we see in this case study?

- Base decisions on long-term philosophy at the expense of short term financial constraints
- Create continuous flow to bring problems to the surface
- Standardized tasks and processes are the foundation for continuous improvement and employee empowerment
- Use only reliable, thoroughly tested technology that serves your people and processes
- Respect your network of partners and suppliers by challenging them and helping them improve
- Go and see for yourself to thoroughly understand the situation
- Make decisions slowly by consensus, thoroughly considering all options; implement decisions rapidly

Questions?