



# Clinical Safety & Effectiveness Cohort # 8

## Decreasing Wasteful CBC Orders on Medicine Inpatients



Educating for Quality Improvement & Patient Safety

# FINANCIAL DISCLOSURE

**Gabriela Brzankalski, MD** has no relevant financial relationships with commercial interests to disclose.

**Hope Nora's, PhD** financial relationships with commercial interests will be disclosed prior to her presentation.

# The Team

**CS&E Participant** – Gabriela Brzankalski, MD

**CS&E Participant & Team Mentor** - Hope Nora, PhD

## **Team Members:**

Vivian Casas MHA, MT(ASCP) DLM

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Elizabeth Wilson, RN

**Facilitators** - Amruta Parekh, MD, MPH; Letti Bresnahan, MBA

**Sponsor** – Luci Leykum, MD, MBA

# **AIM STATEMENT**

**To decrease unnecessary CBCs  
ordered by residents on the UHS  
medicine ward services by 10%  
over 3 months.**

# Project Milestones

- Team Created May 2011
- AIM statement created May 2011
- Team Meetings Sporadic
- Background Data, Brainstorm Sessions Emails
- Workflow and Fishbone Analyses June 2011
- Interventions Implemented July – Aug 2011
- Data Analysis Early Sept 2011
- CS&E Presentation Sept 16, 2011

# Background



- Overutilization labs common across both private and medical training institutions.

## **Some Reasons:**

- No guidelines
- Level of experience
- Fear malpractice
- Fear repercussion by attending
- Time saver to order lots of labs

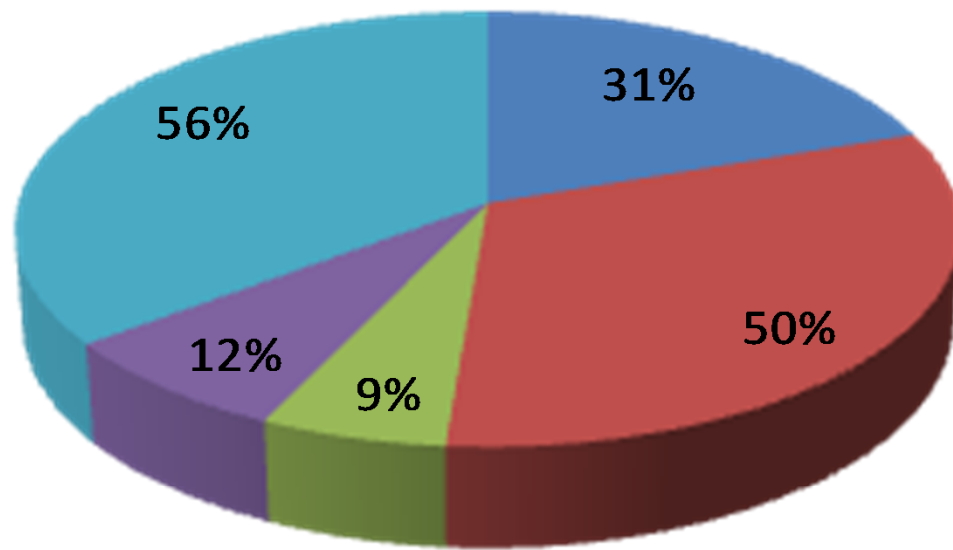
# Was this an issue at UHS?



- **Manual review 20 charts** on inpatient medicine wards
- Most had CBCs every day during the admission
- 7 of 20 charts had a normal CBC on admission.
  
- **Survey 32 medicine residents:**
  - > 1/3 admit to daily CBCs regardless of + indication.

# Medicine Resident Survey

## Contributors to over-ordering CBCs



- Fear repercussion if miss lab values on rounds
- Time constraints - save time by not thinking
- Computer viewing - no easy way to see CBC trend
- CBC is relatively inexpensive
- I don't know what a CBC costs hospital



# Detriment of Indiscriminant Lab Orders



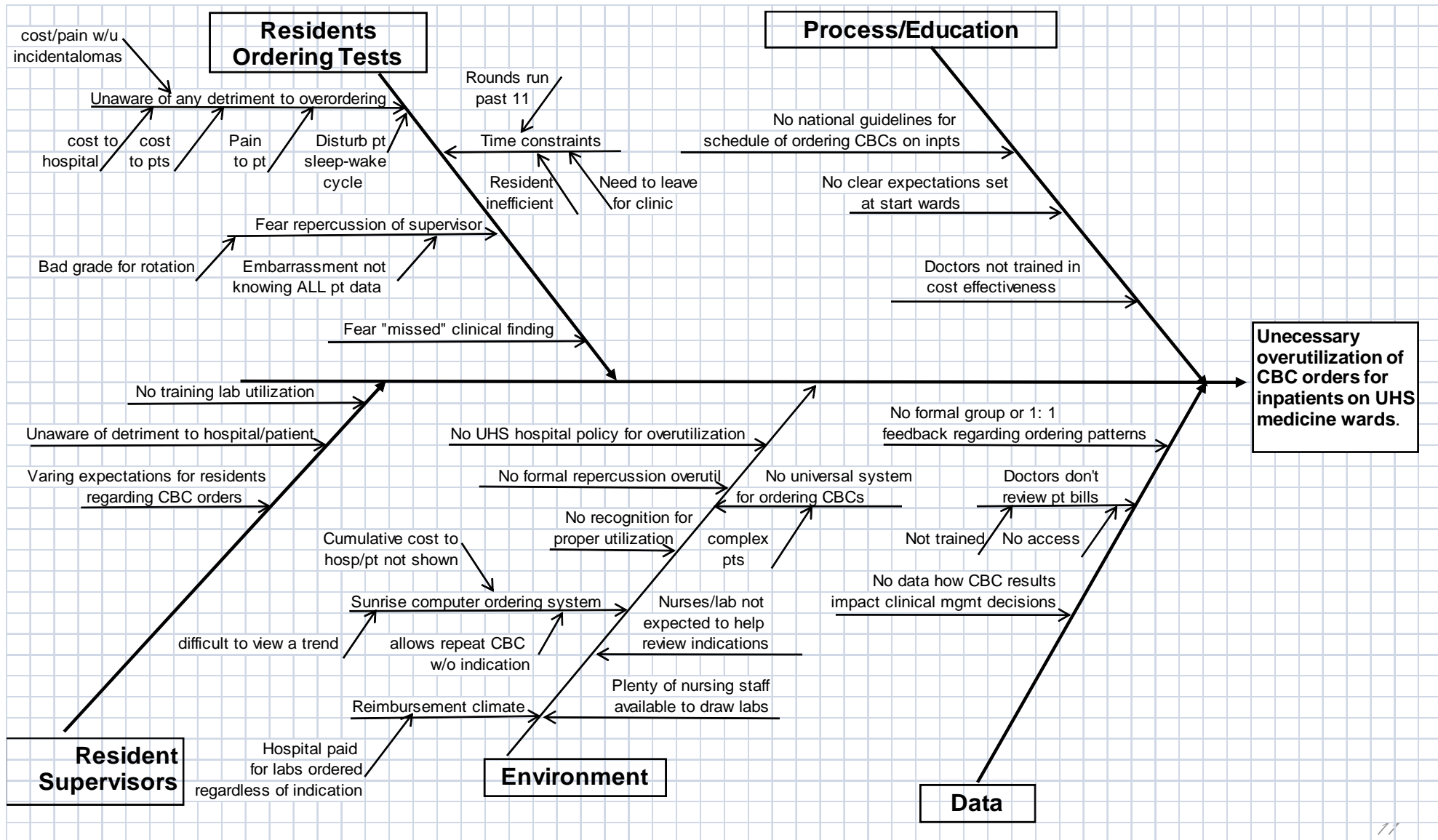
- Patient discomfort
- Waste pt blood and equipment for draw.
- Waste nursing or phlebotomy time for services.
- Further w/u incidentals

# Literature Review

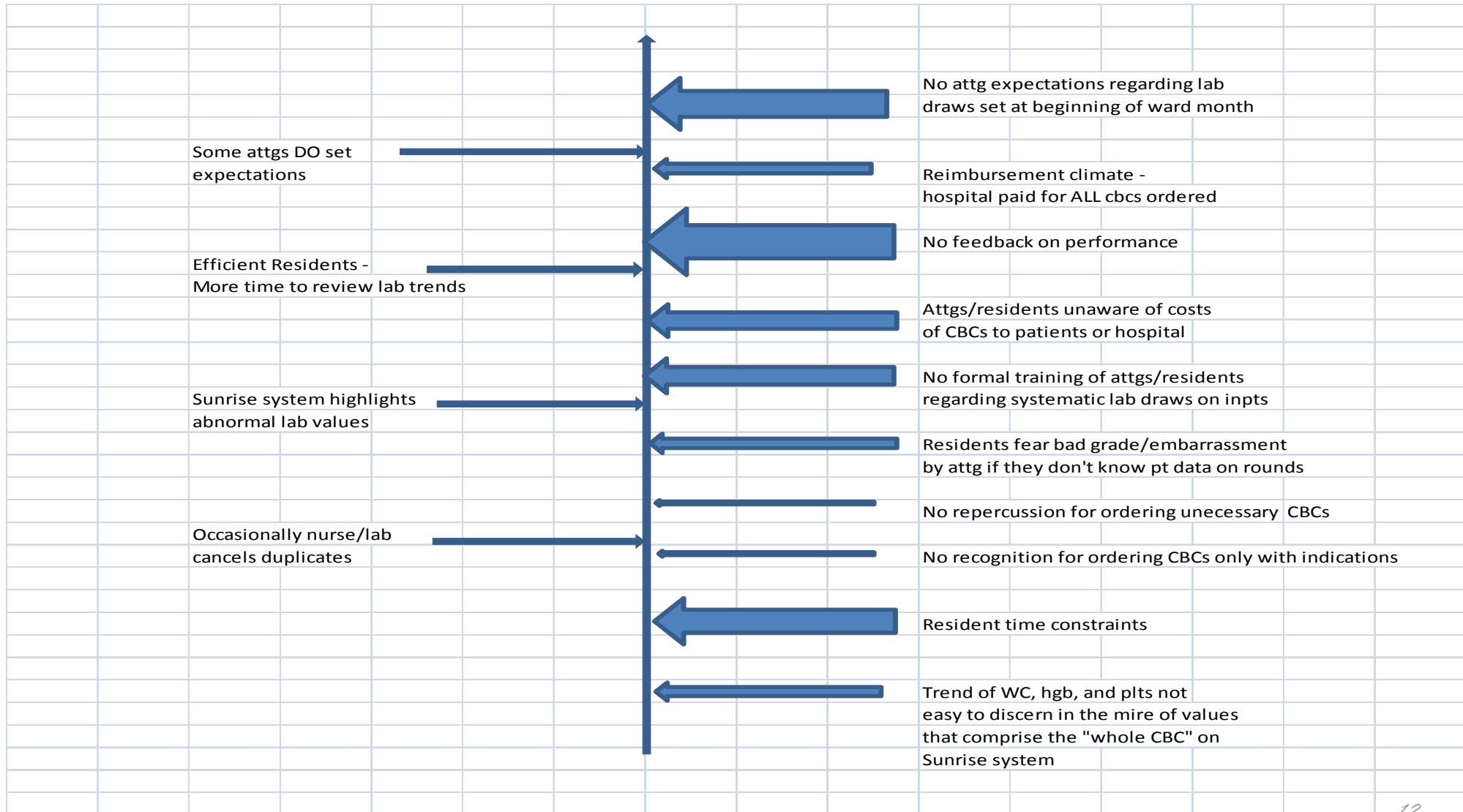
## **Prior interventions to decrease lab ordering**

- Computerized display of charges
- Assessing attending influence on resident ordering
- Education
- Creating unit specific guidelines
- Unbundling of panels
- Computer restricting repeat lab orders
- **Frequent feedback to resident teams regarding costs of their lab ordering.**

# Fish Bone



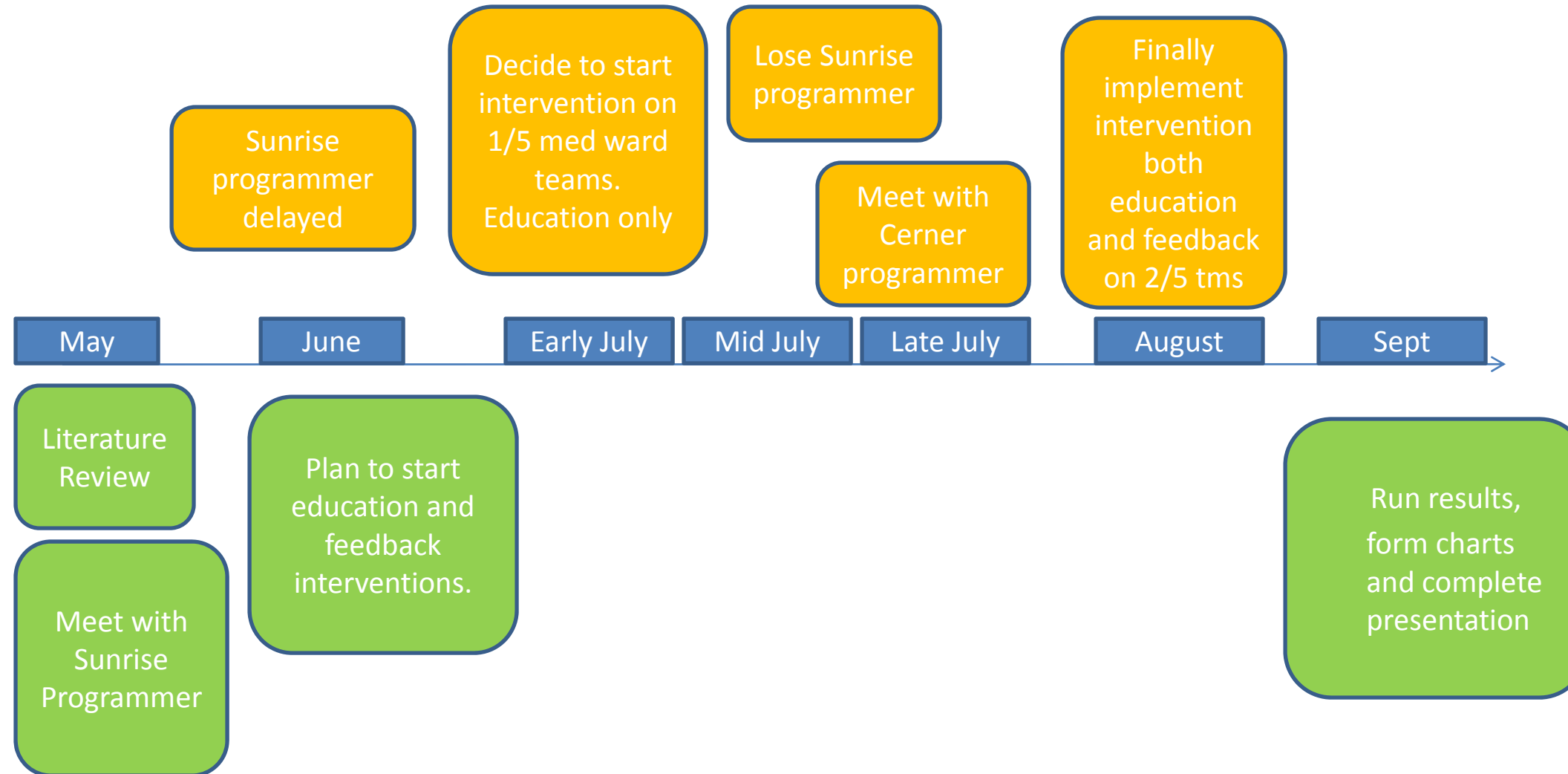
# Force Field Analysis



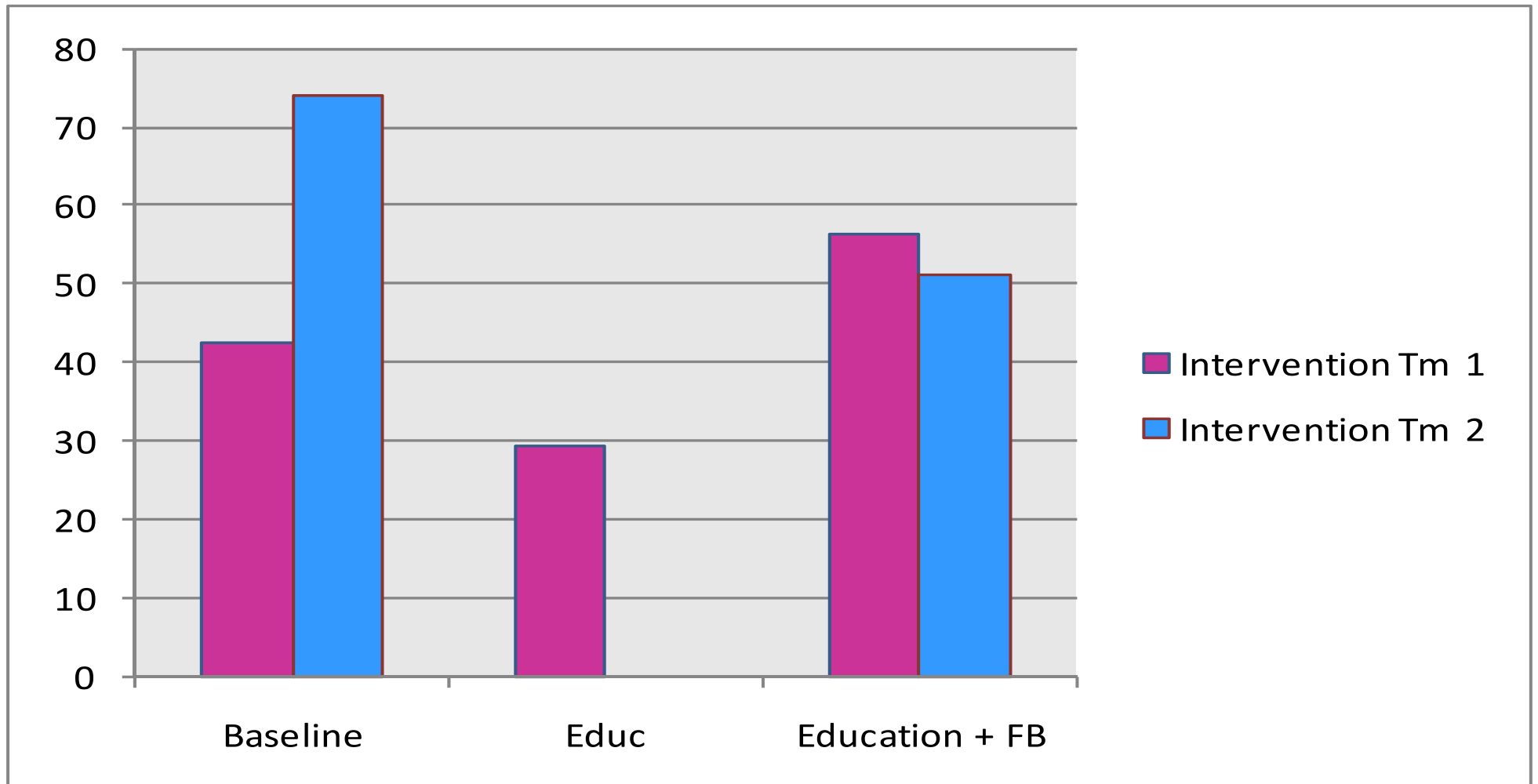
## Our Plan

- **Educate** 1 (out of 5 total) ward teams regarding mindful CBC ordering on a weekly basis.
- To intervention team only, provide **weekly feedback** regarding #CBCs ordered over # patients on each of the 5 ward teams.
- Run intervention for **12 weeks total**.

# What Was Actually Done

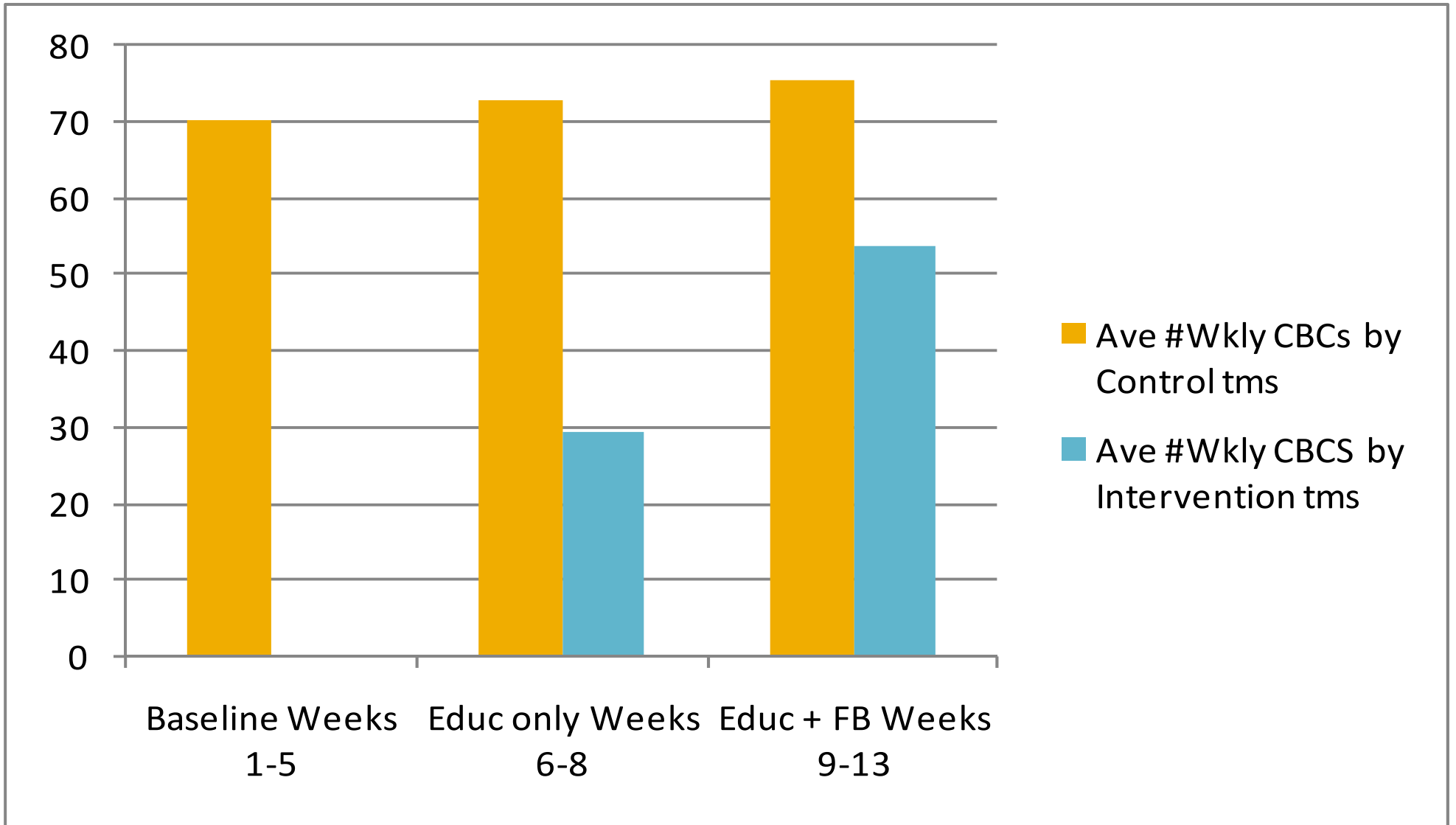


# Change Ordering Patterns Pre/Post Intervention Teams Only



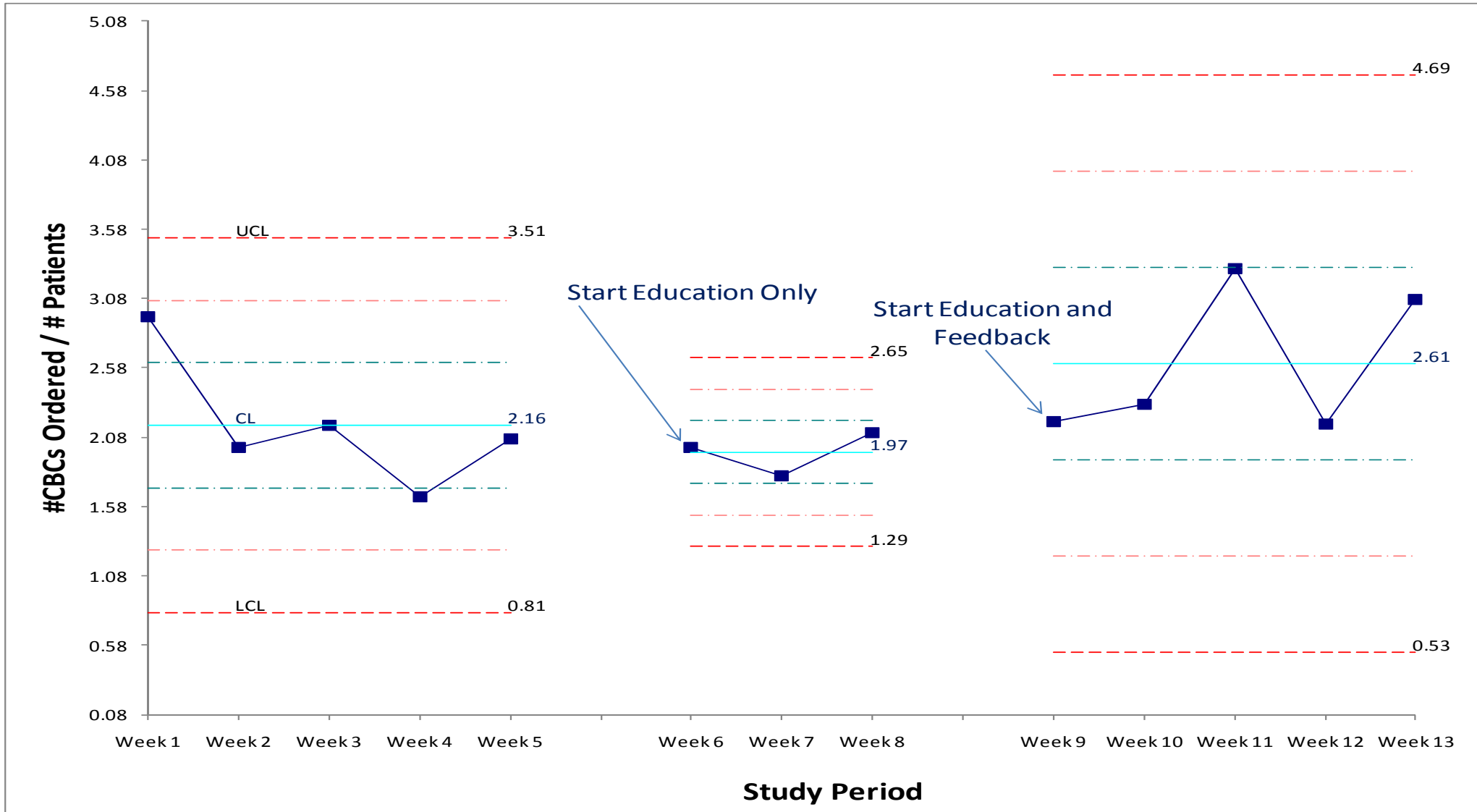
# Weekly CBCs Ordered

## Control Tms and Intervention Tms

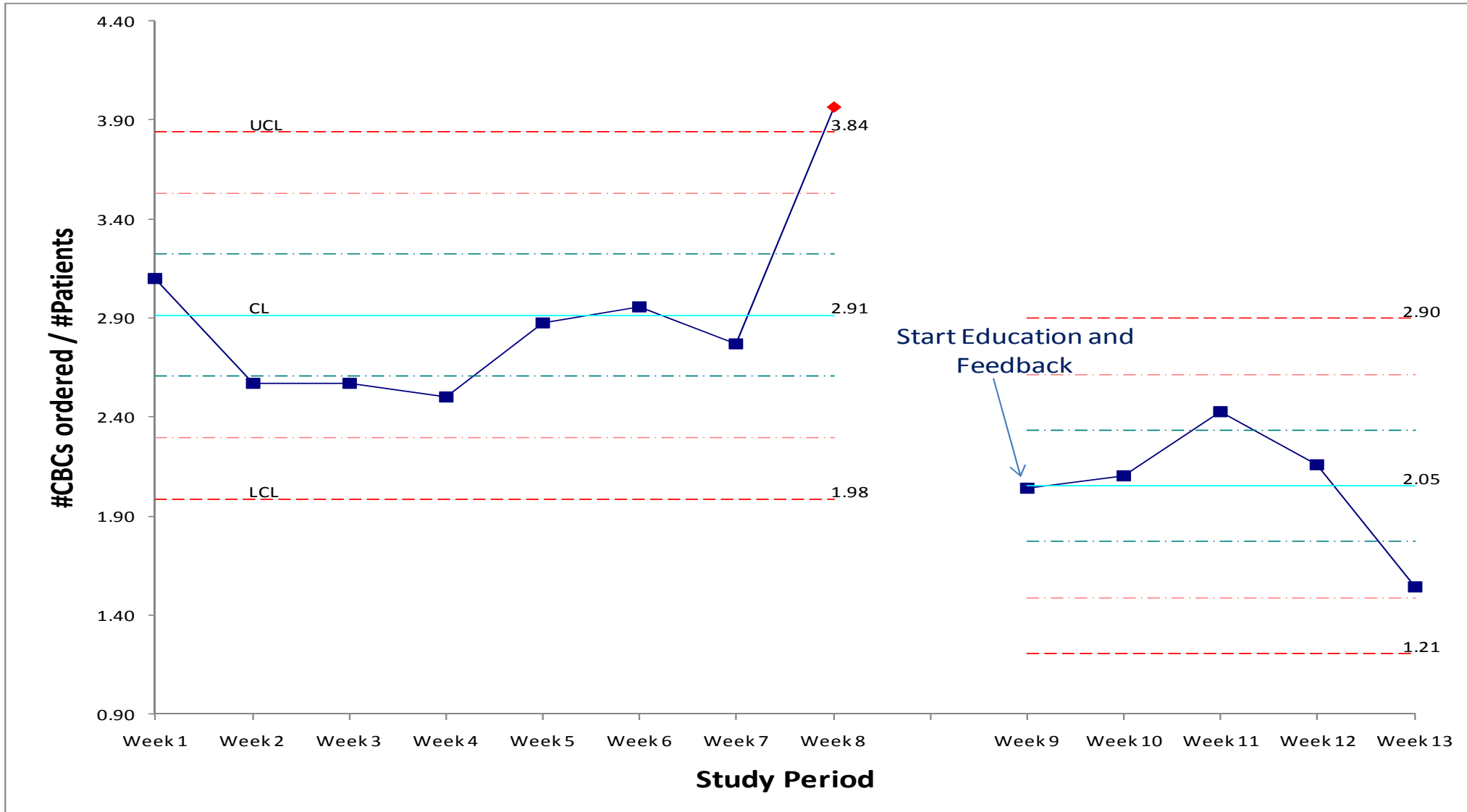




# 1<sup>st</sup> Intervention Tm – CBCs/#Pts

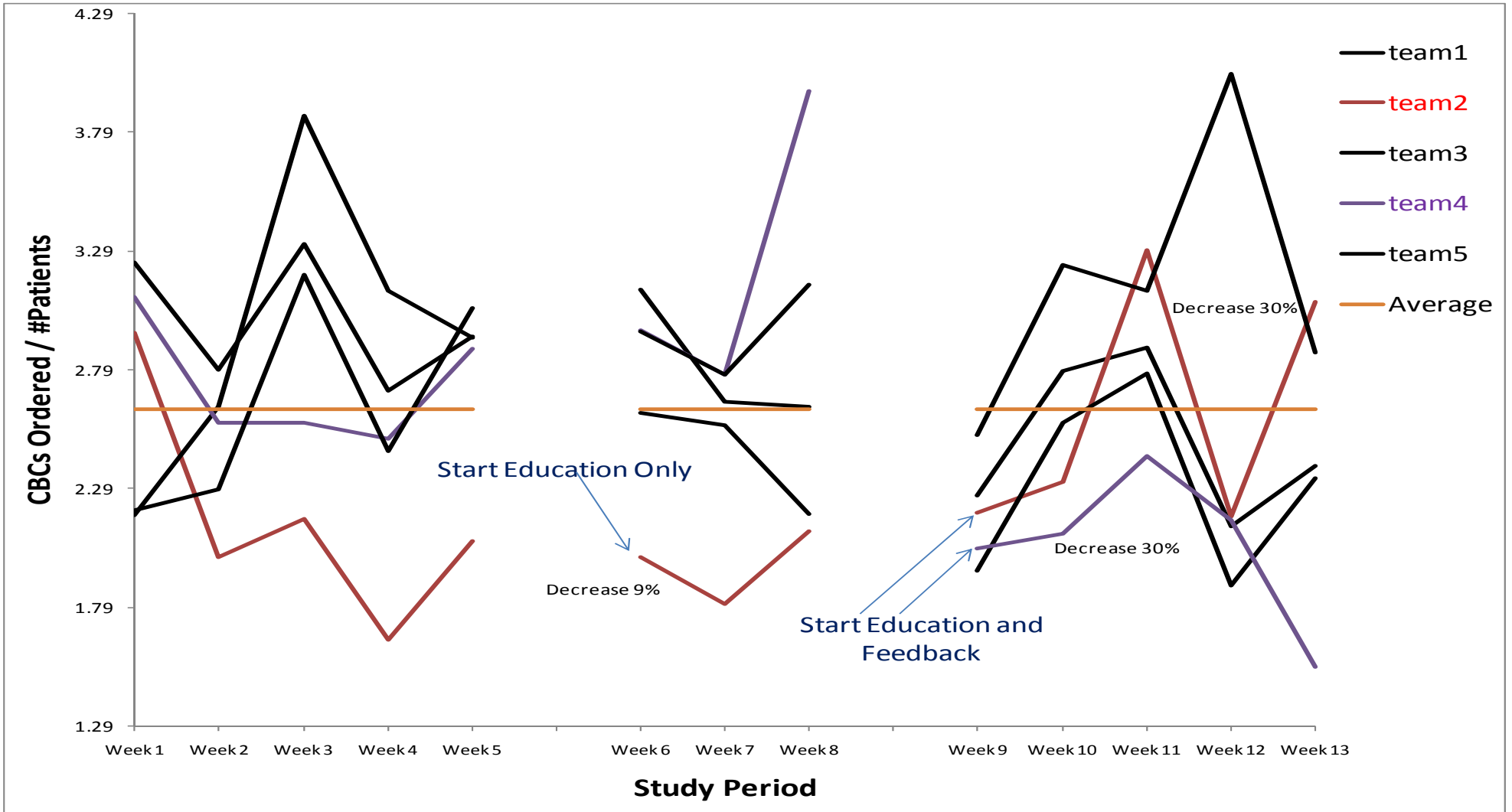


# 2<sup>nd</sup> Intervention Tm – CBCs/#Pts



# Controls and Intervention Tms

## CBCs Ordered/#Pts



# Estimated Return on Investment

After 8 weeks intervention:

- Tc - average #CBCs/tm/week = 72.8
- Ti - average #CBCs/tm/week with **education only** = 29.3
- Difference weekly average Tc-Ti →  $72.8 - 29.3 = 43.5$
- UHS cost is \$3.90 for each CBC ordered.
- $43.5 \times \$3.90 = \$169.65$  savings weekly
- $169.65 \times 3$  weeks of intervention = **\$508.95**

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- Tc - average #CBCs tm/week = 75.3
  - Ti - #CBCs/tm/week with **education + feedback** = 53.7
  - Difference weekly average Tc-Ti →  $75.3 - 53.7 = 21.6$
  - UHS cost is \$3.90 for each CBC ordered.
  - $21.6 \times 3.90 = \$84.24$  savings weekly
  - $84.24 \times 5$  weeks of intervention = **\$421.20**

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- **Total estimated savings 8 weeks intervention: \$930.15**

# Theorized Cost Savings with Expansion

- All 5 ward medicine ward teams:
  - 8 weeks → approx \$4185 savings
  - 1 yr → approx \$25,110 savings

Add approx cost nursing time:

\$7 per one peripheral stick (7 min)

\$12 per one central line draw (15min)

\$36 per one complicated draw (45 min)

# Considerations for Expansion of Intervention

- Heavy reliance on computer programmer and resident to run the numbers on a weekly basis.
- Frequent change of housestaff made education difficult on the intervention teams.
- Need data on pt comorbidities that influence CBC orders
- Specific attendings or residents may influence the ordering patterns of housestaff.
- Cross contamination (ie, unblinding) of non-intervention teams may have influenced the ordering patterns of these teams.
- Add counterbalance – effect on #readmissions, ICU transfers

# Conclusion

Providing education and weekly feedback to specific medicine ward teams regarding CBC ordering patterns appears to impact number of CBCs ordered by these housestaff.

# What Next?

- Consider expansion of intervention to include **chemistries, CBCs, and other redundant lab orders** for medicine and other hospital ward services.
- With more IT support, can consider **expansion to other services** besides medicine (gen surgery, family practice).
- Would benefit from other IT solutions such as **blocking of recently ordered tests.**
- Future lab/study ordering **feedback and continual cost consciousness education** should be worked into housestaff conferences.
- Develop our own **lab ordering guidelines?**



# References

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**Thank you!**



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# APPENDIX A

## Applying the Improvement Model

### **1. What you are trying to accomplish**

Focus on the **aim** of the project, consider the boundaries of the process, confirm rationale for why the process is important to improve

### **2. How we will know a change is an improvement**

Determine how the process will be measured, identify the type of metric(s) you will use (process/outcome measure), target a realistic magnitude of change

### **3. What changes we can make that will result in an improvement**

Analyze the process and identify which changes to make using tools that are appropriate for your process and consult textbook, Improvement Tools, for a comprehensive list of process analysis and decision-making tools

# APPENDIX B

## Writing an AIM Statement

### Tips for Setting Aims

- **State the aim clearly**

Teams make better progress when they are very specific about their aims. Make sure that the aim statement describes the system to be improved, the patient population and the approach to improvement.

- **Include numerical goals that require fundamental change to the system**

Setting numerical goals clarifies the aim, helps to create tension for change, directs measurement, and focuses initial changes.

- **Set stretch goals**

A "stretch" goal is one to reach for within a certain time. Effective leaders make it clear that the goal cannot be met by tweaking the existing system.

- **Avoid AIM drift**

Once the aim has been set, the team needs to be careful not to back away from it deliberately or "drift" away from it unconsciously.

- **Be prepared to refocus the aim**

Every team needs to recognize when refocus its aim. Don't confuse aim drift, or backing away from a stretch goal (usually not a good tactic), with consciously deciding to work on a smaller part of the system (often is a good tactic).

(Source: Institute for Healthcare Improvement)

# APPENDIX B

## Writing an AIM Statement (continued)

### **Format**

The aim of this project is to \_\_\_\_\_ (the change: improve, increase, decrease) the process of \_\_\_\_\_ by \_\_\_\_\_ (the targeted quantitative goal) during \_\_\_\_\_ (the timeframe). The process begins \_\_\_\_\_ and ends \_\_\_\_\_ (the process boundaries). This is important to improve because \_\_\_\_\_ (the rationale: it is a strategic goal, it is a safety concern, causes delays for patients or clinicians, is not effective, is not efficient, is not equitable, is not patient-centered, affects the staff, etc.)

### **Example**

The aim of this project is to increase the percent of our diabetic patients that received an eye exam from 80% to 100% during the period, January 1 – June 30, 2009. The process begins when patients schedule an appointment and ends when the patient completes the exam. This is important to improve because it aligns with our strategic goal to improve the care of diabetic patients.



# APPENDIX C

## PDA Cycle - Trial of Improvement

- **Plan**  
The action plan for the project; i.e., Who? What? When? Where? How?
- **Do**  
Actual implementation of change (date, documentation of implementation issues, and lessons learned)
- **Check**  
What were the results? (Measures on run/control chart, other. If run charts used, please annotate to show when improvement was initiated.)
- **Act**  
Will this change be implemented elsewhere (spread) or will it be abandoned because it did not result in an improvement?

# APPENDIX D

## Approach to Calculating ROI

- ROI is a simple concept. It's the total dollar/time return your organization will receive in exchange for undertaking a project or initiative of some sort.
- To accurately calculate the Return on Investment of your projects, you need to understand the two dimensions of ROI:

### **Reduced Costs**

The first way a project produces returns is in the form of reduced costs. In this situation you calculate ROI using this formula:

$$\text{ROI} = \text{Change in Operations Cost} / \text{Costs of Project}$$

### **Increased Revenues**

The second way a project produces returns is in the form of increased revenues to the organization. If a company decides to invest in developing a new process, the ROI for that new process will be the additional revenue that the process generates less the costs taken to produce and implement it. You calculate the formula like this:

$$\text{ROI} = \text{Change in Revenue} / \text{Costs of Process Development and Implementation}$$

# APPENDIX D (continued)

