



**2019 HEALTH**  
MEETING

JUNE 24-26 | PHOENIX, AZ



## **Session 63, The Science of Health Care Improvement: Overcoming Unintended Variation**

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# TWO CENTURIES. 12,000 MINDS.

Providing the best medical and healthcare knowledge available to:



Clinicians

Industry  
Executives

Pre-Health  
Learners

Patients, Families  
& Caregivers



OFFICE FOR  
External Education

# Executive Education

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Driving business value through insights into the science and practice of medicine

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**“I think the heart, for me, is the appreciation of the complexity of what we are dealing with in health care, the fact that there are multiple truths in this area, depending on who’s the stakeholder. This requires an ongoing, evolutionary conversation across many parties. It’s not simple.”**

– Raghu Krishnamoorthy, Vice President, Human Resources, GE Healthcare



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External Education

# Payers and Purchasers

## HMS programs provide research-based looks into

- ROI of employee wellness programs
- Retail clinics – substitutes or complements
- Narrow networks
- Centers of excellence
- Bundled payment
- Academic detailing

<https://executiveeducation.hms.harvard.edu>





# The Science of Health Care Improvement: Overcoming Unintended Variation

Ted A James, MD, MHCM, FACS

Medical Director

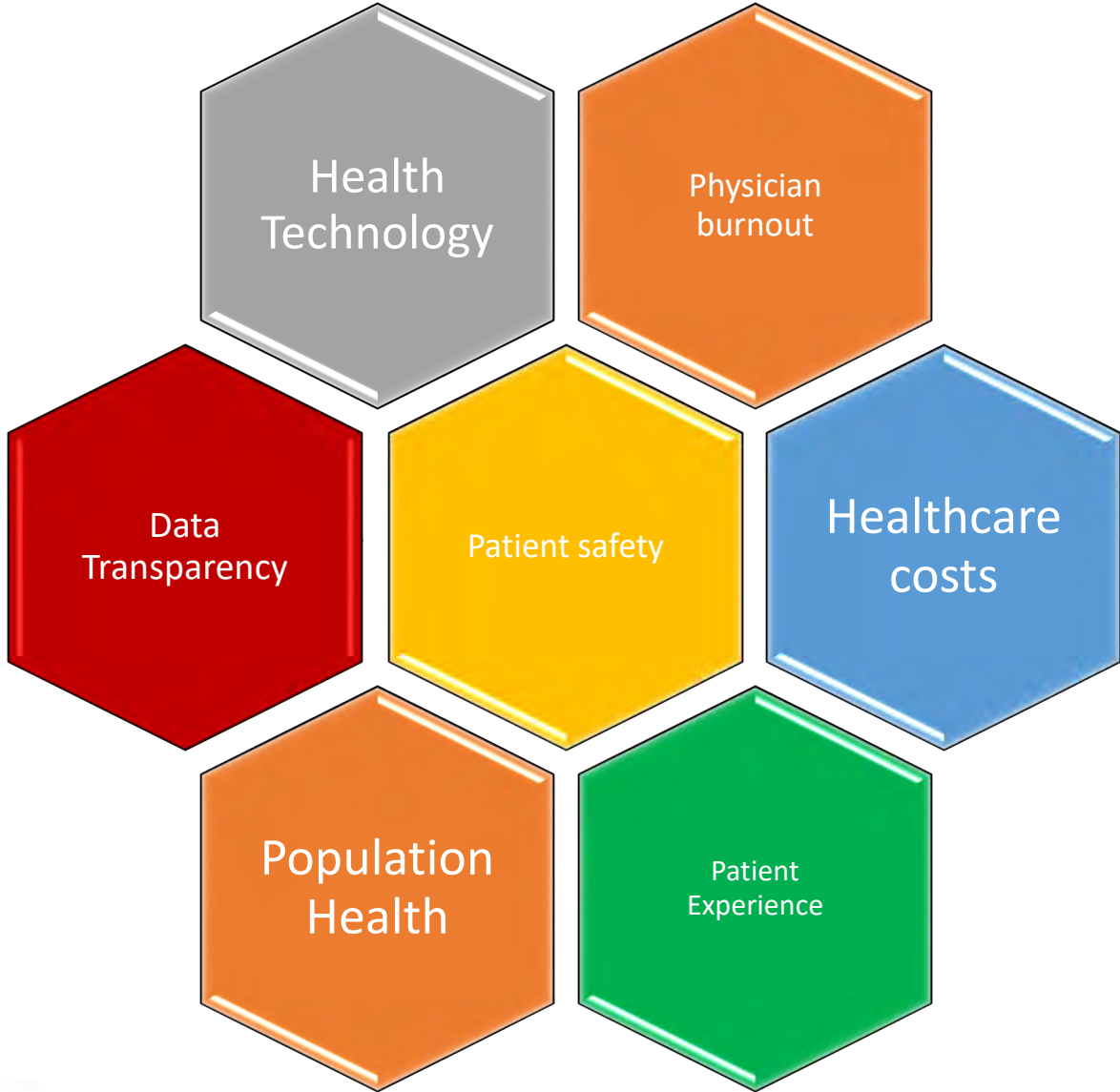
Vice Chair, Academic Affairs

Harvard Medical School

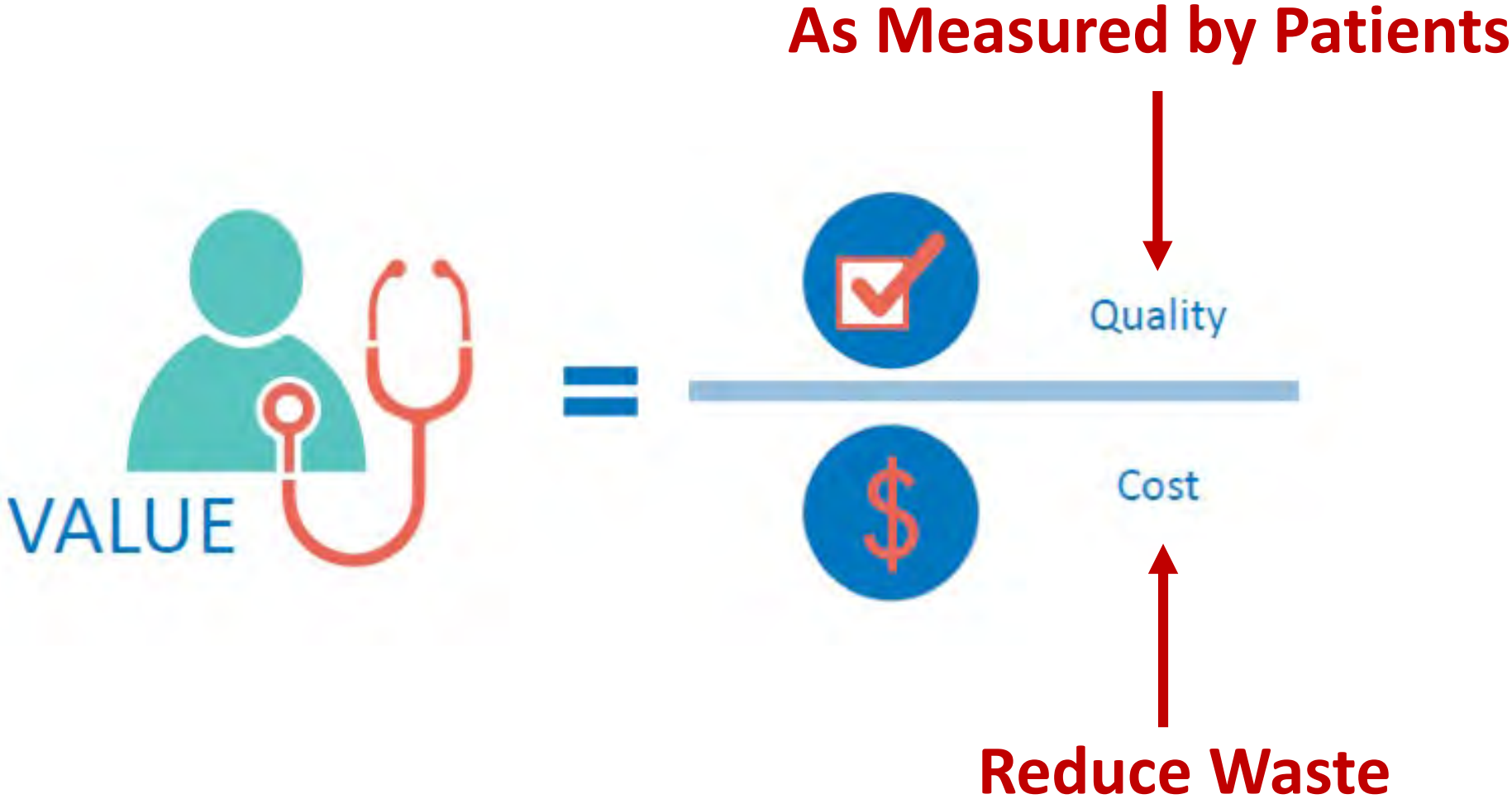


- 3 year old girl fell through an icy fishpond
- Extensive resuscitation efforts
- Countless steps had to be just right

# CHALLENGES OF MODERN HEALTHCARE



# Value Based Health Care





# What if other Industries were like Healthcare?



# Requirements



- Teamwork
- Safety
- Patient 1st
- Just
- Learning

- Resources
- Process
- Operations
- Innovation
- Redesign Models

- **High Reliability**
- **High Performance**

# Awareness Test

# Leadership Example: *Failure*

- A clinical department is considering a new patient care model
- Most are in favor; however, a few senior members oppose the change
- Differences in opinion regarding impact on quality, call coverage and revenue
- Conversation and arguments drag on for months
- Morale begins to decline and some faculty decide to leave
- The issue is never resolved by the Chair of the department

# Leadership Example: *Success*

- A newly appointed physician of medical group
- Noticed that cancer screening for their patients was only 60%
- Existing data not reliable, so designed new data collection tool
- Based on tool, reminders for screening sent to patients
- Presented outcomes to the medical staff leadership: ↑ 80% screening
- Subsequently implemented throughout entire network

Adapted from Ann Int Med and HBR



# Case: ABC Health System



## CMO Challenge:

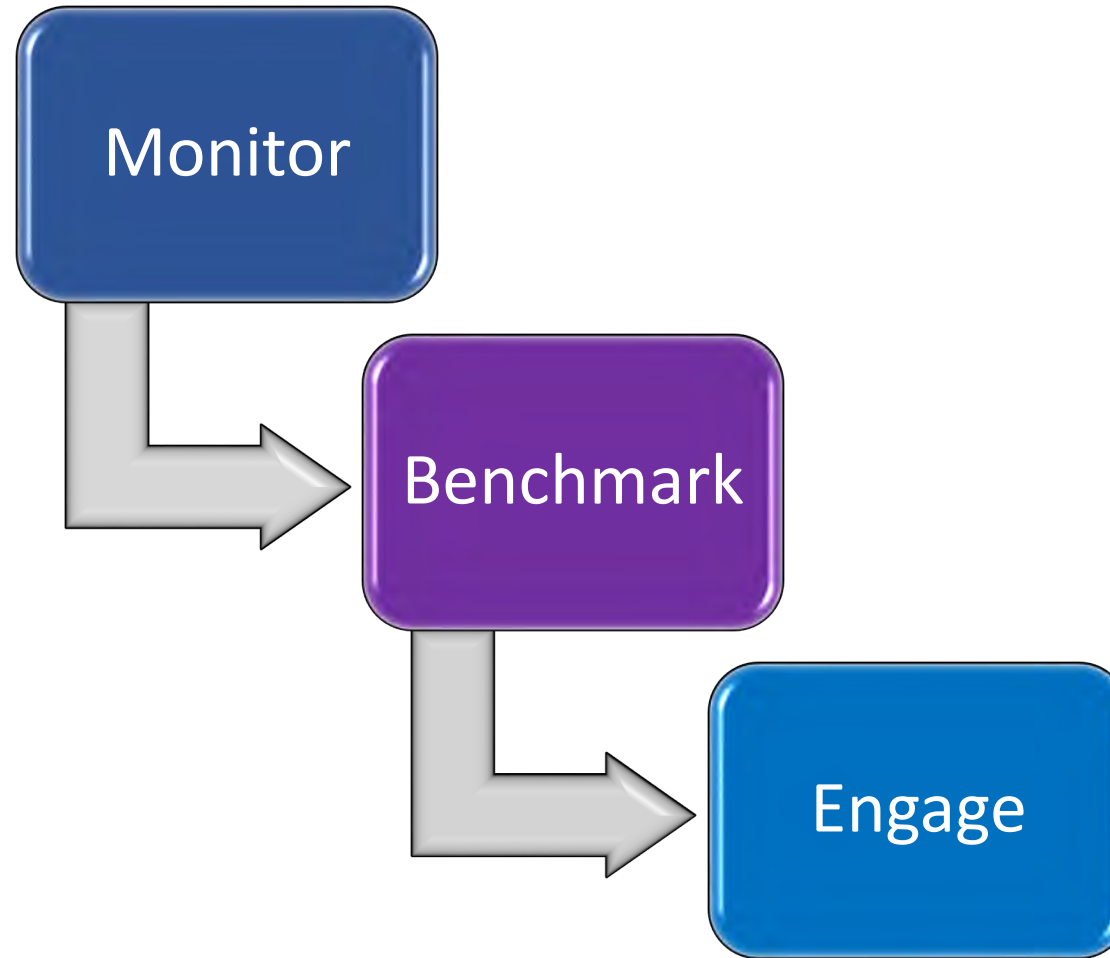
- Improve clinical outcomes
- Increase patient satisfaction
- Reduce overall cost

# Analysis: ABC Health System

- Mapped value streams
- Established performance metrics
- Series of rapid improvements
- Measured results
- Standardized to sustain



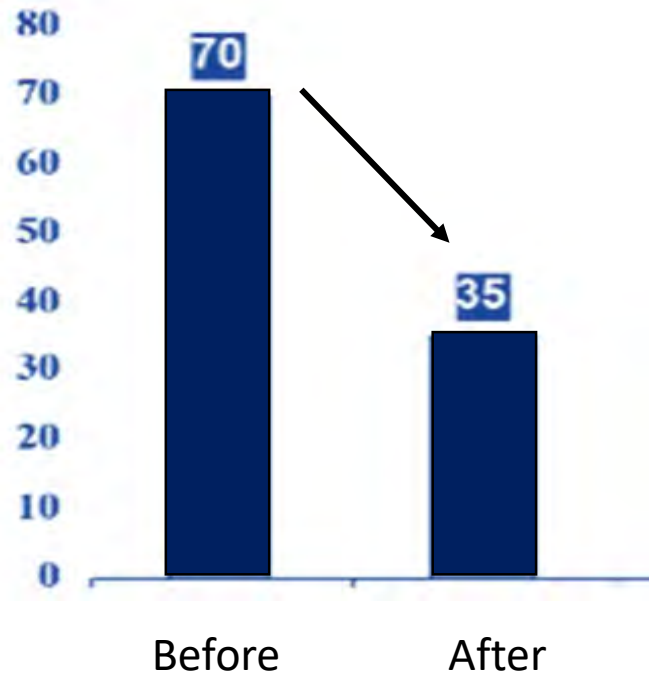
# Power of Data





# SUMMARY STATISTICS

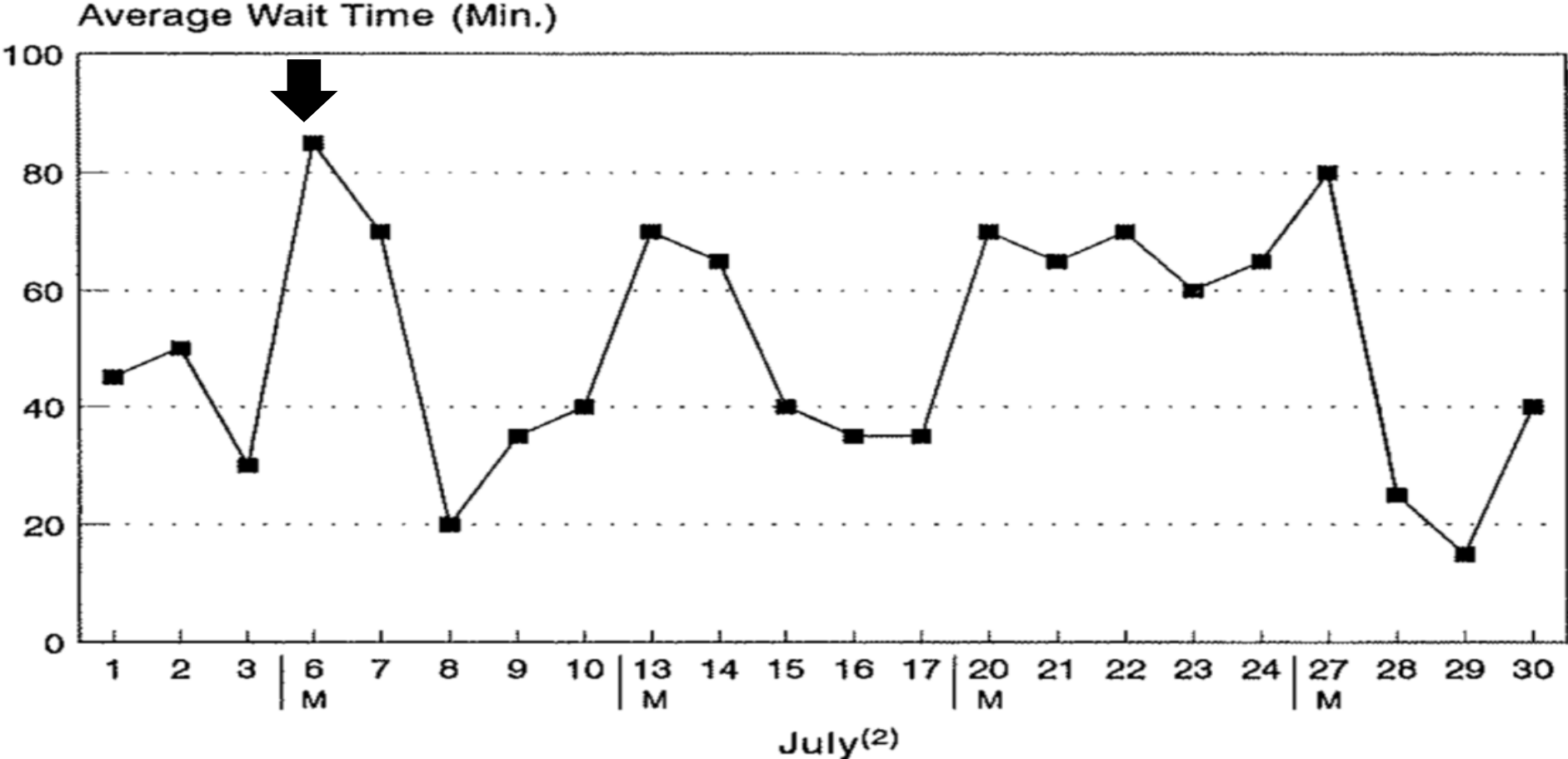
Delay in Treatment



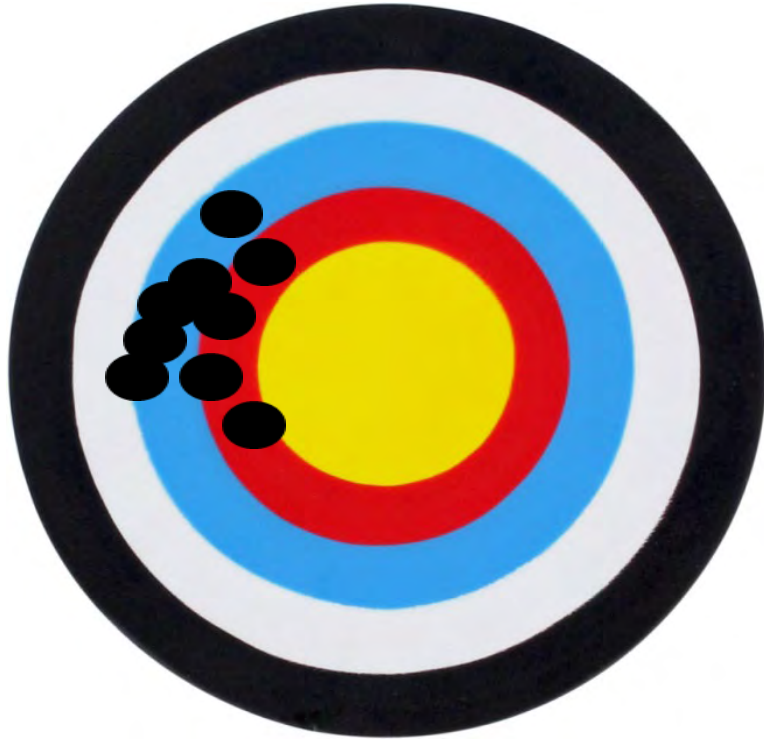
# PATIENT WAIT TIME

Measure	Minutes
Number of patients seen	150
Average wait time	45.1
Median wait time	32.6
Maximum wait time	94.5
Range	87.2
Standard deviation	16.2

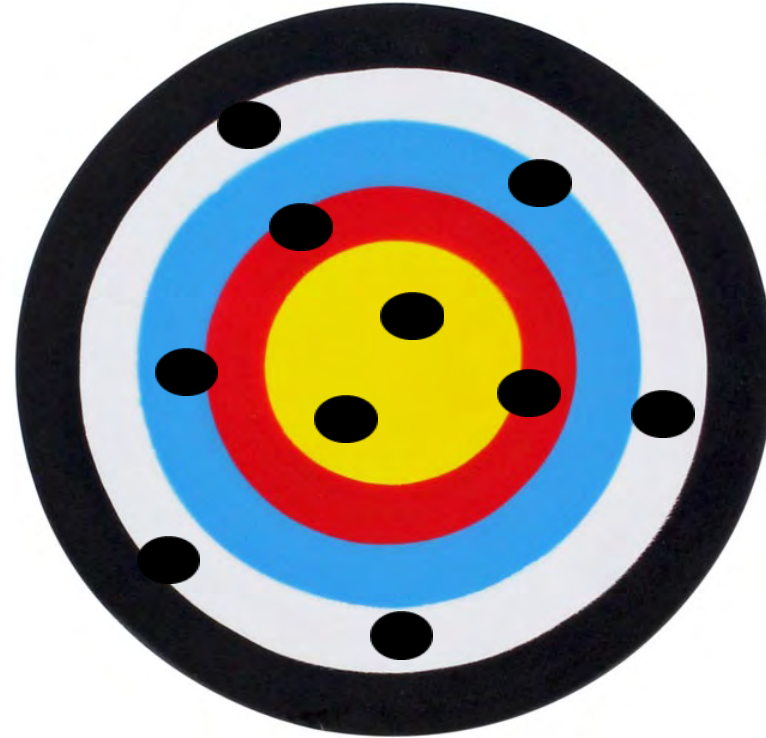
# WAIT TIME



# UNDERSTANDING VARIATION

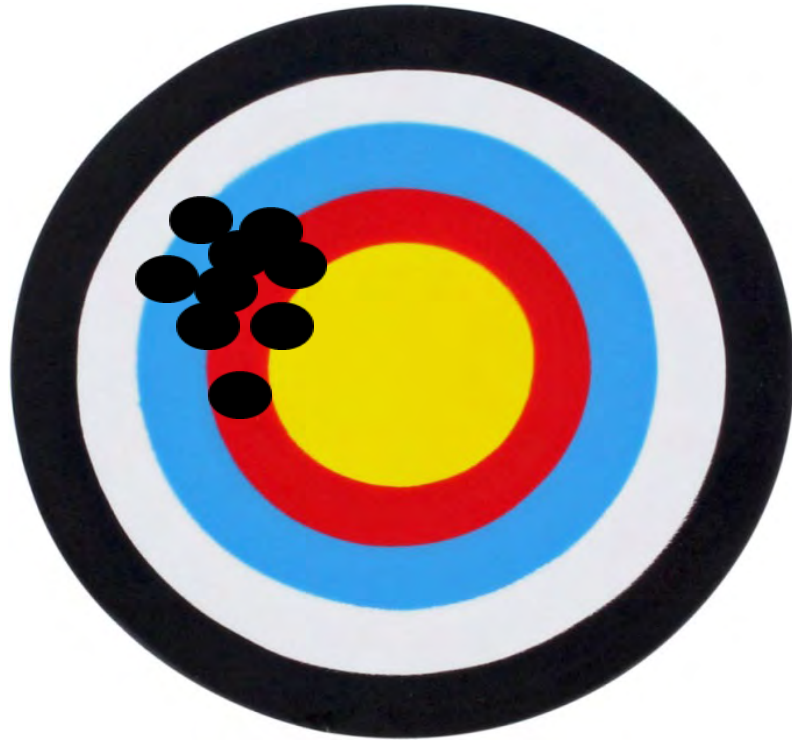


**MARY**



**BOB**

# UNDERSTANDING VARIATION

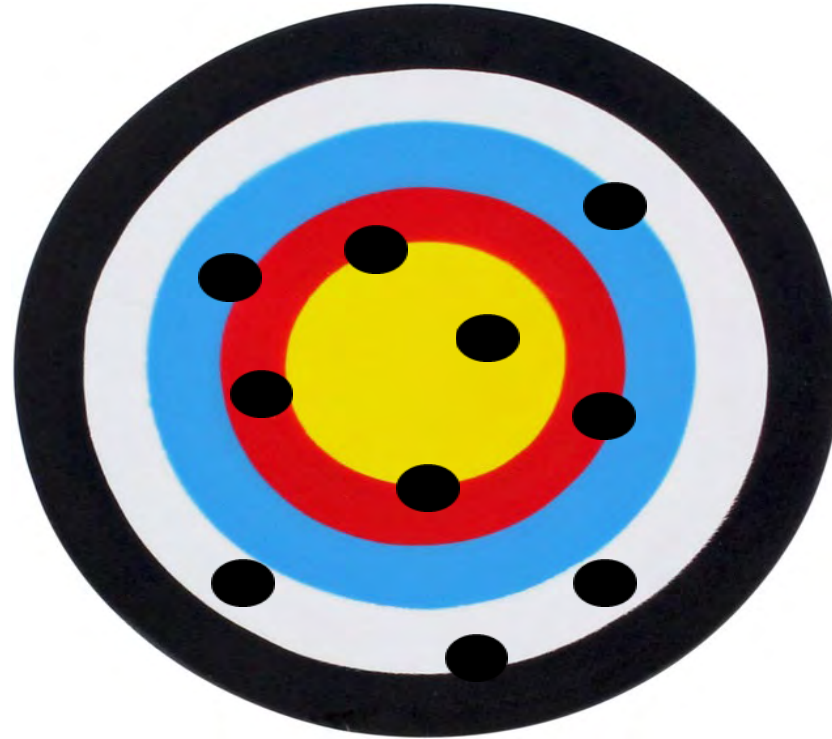


Common Cause

**MARY**

# UNDERSTANDING VARIATION

Special Cause



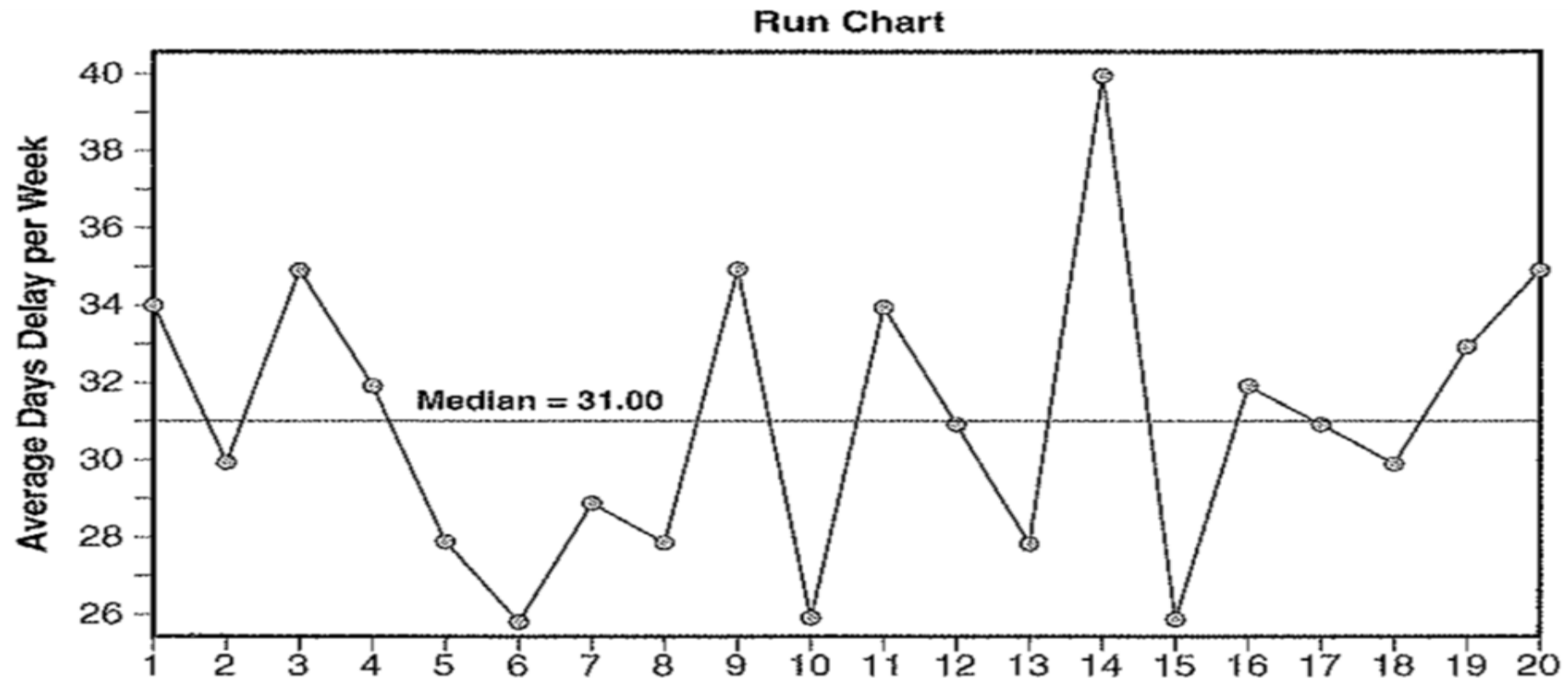
**BOB**

# TYPES OF VARIATION

Common Cause	Special Cause
Inherent to the system	Not inherent
Ordinary factors	Unnatural factors
Affects all	Affects some
Stable	Unstable
Random/unassignable	Non-random/assignable

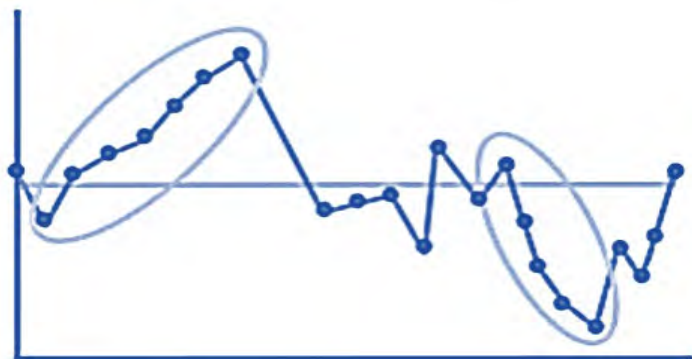
# CASE EXAMPLE

- What should the team's strategy be to improve the process?





# Tests of Variations



Trend:  
5+ increasing or decreasing



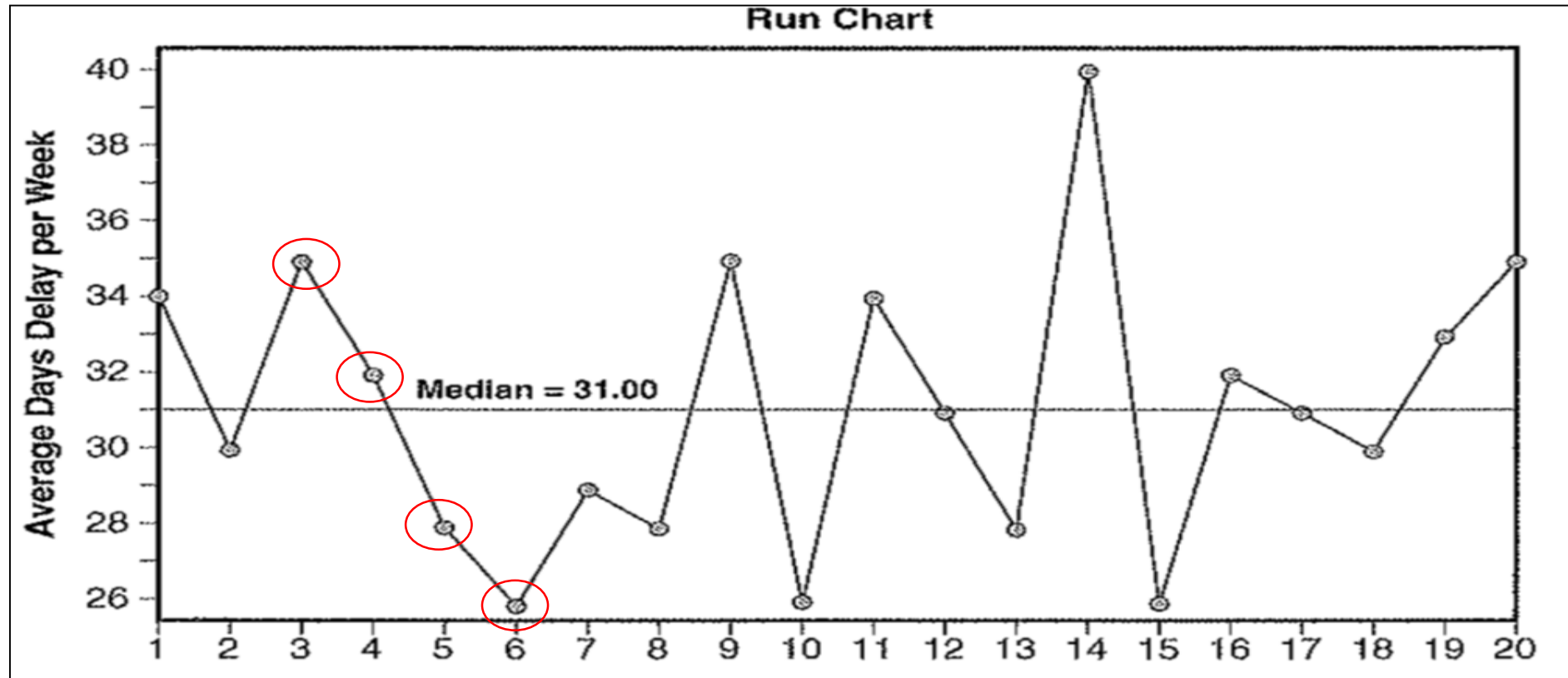
Shift:  
6+ above or below



Astronomical Point:  
Far exceeds the median

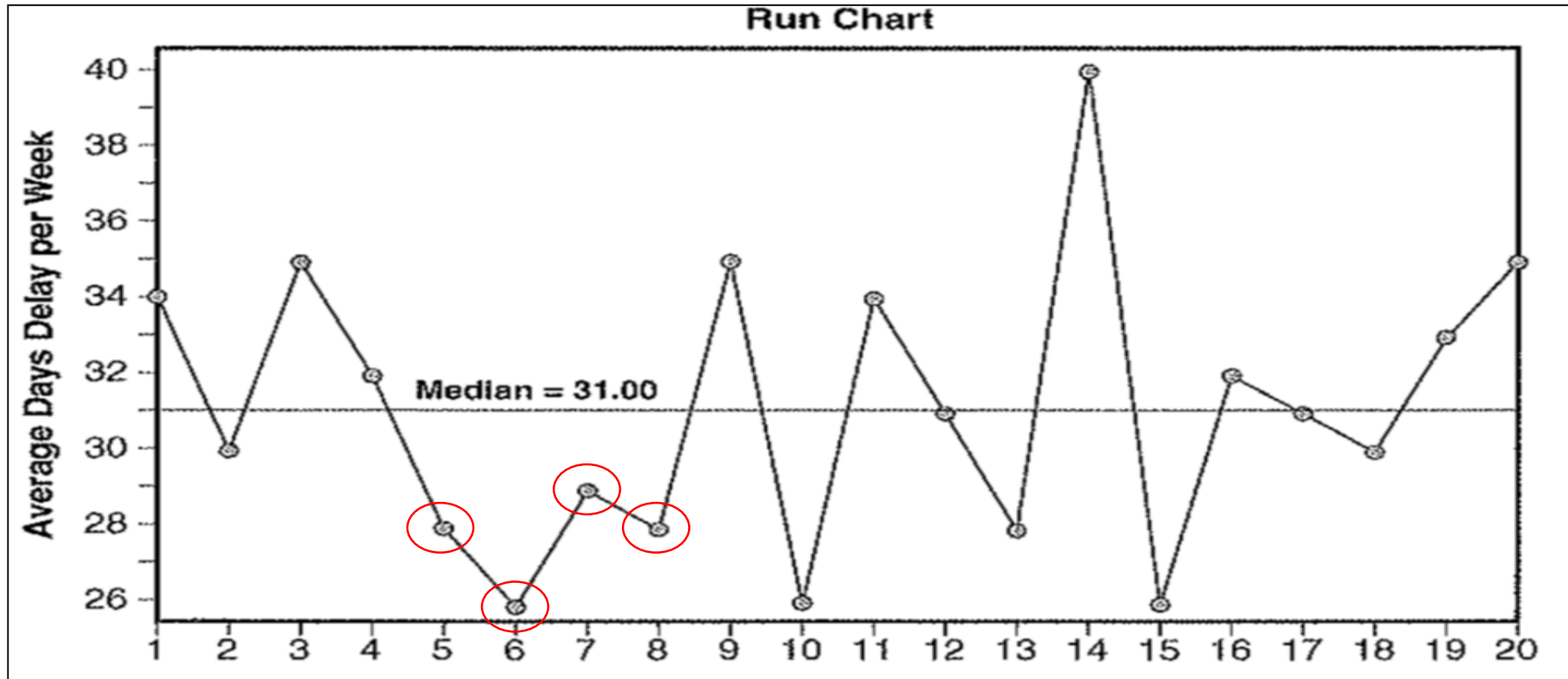
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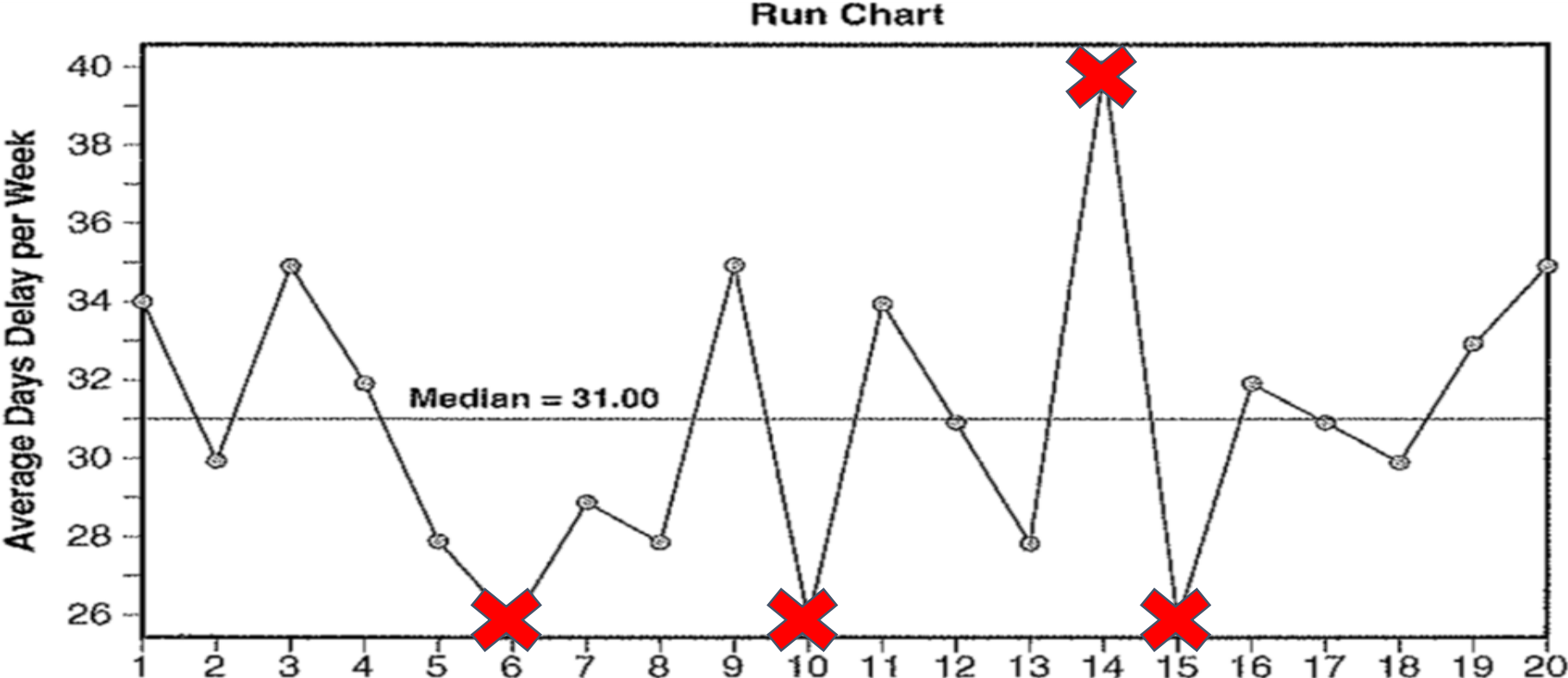
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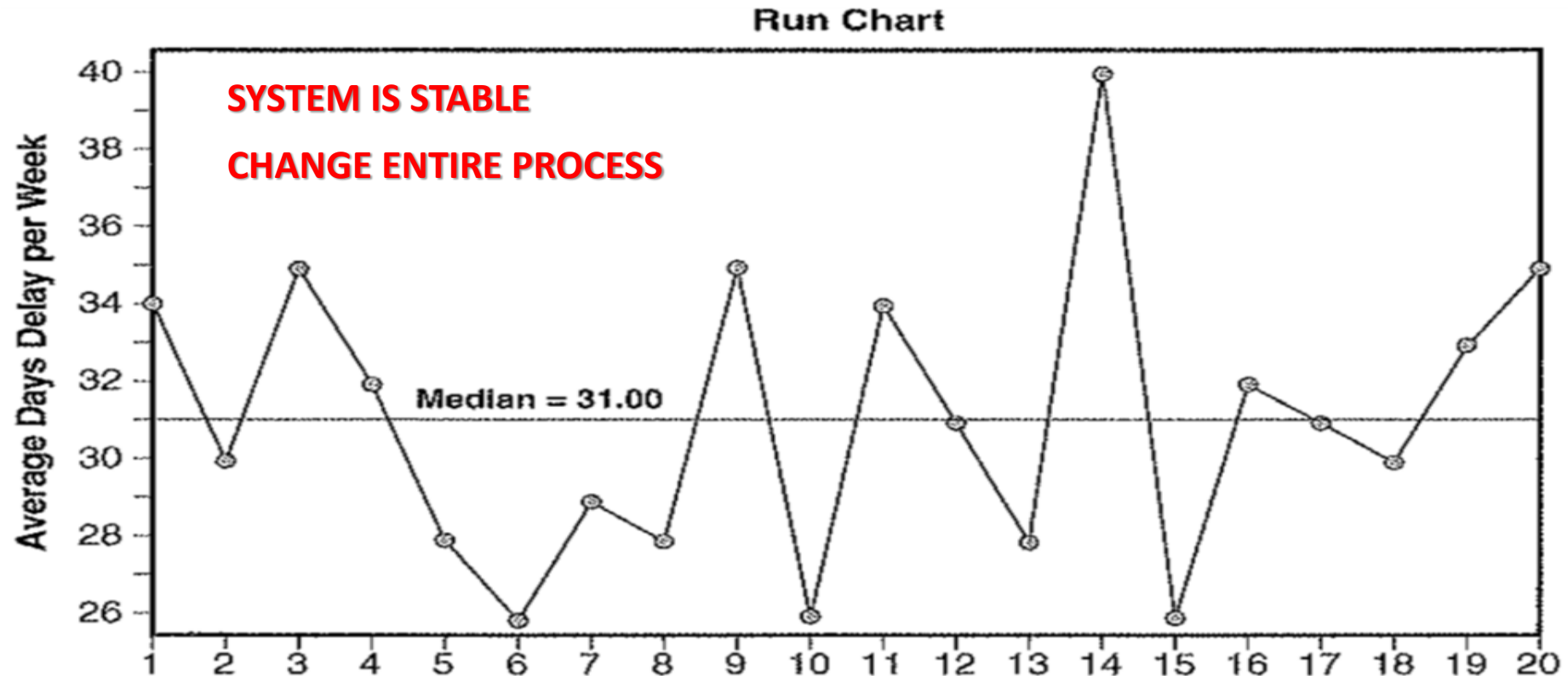
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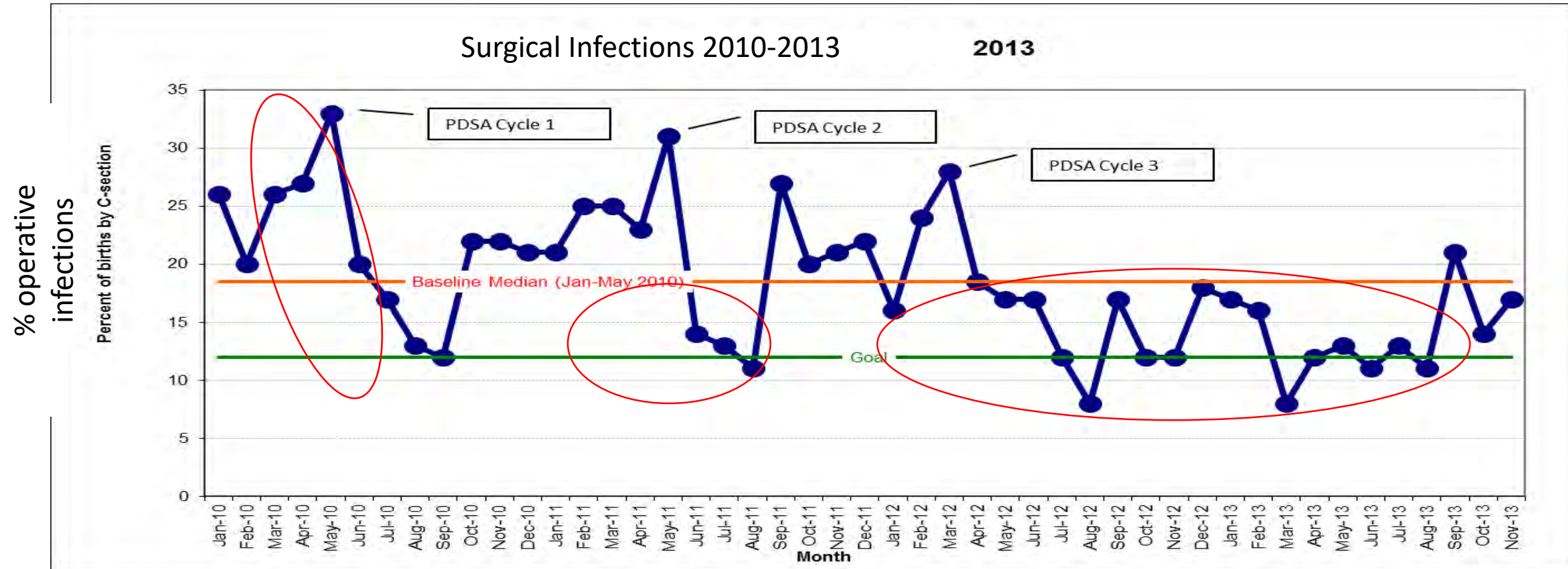


# CASE EXAMPLE

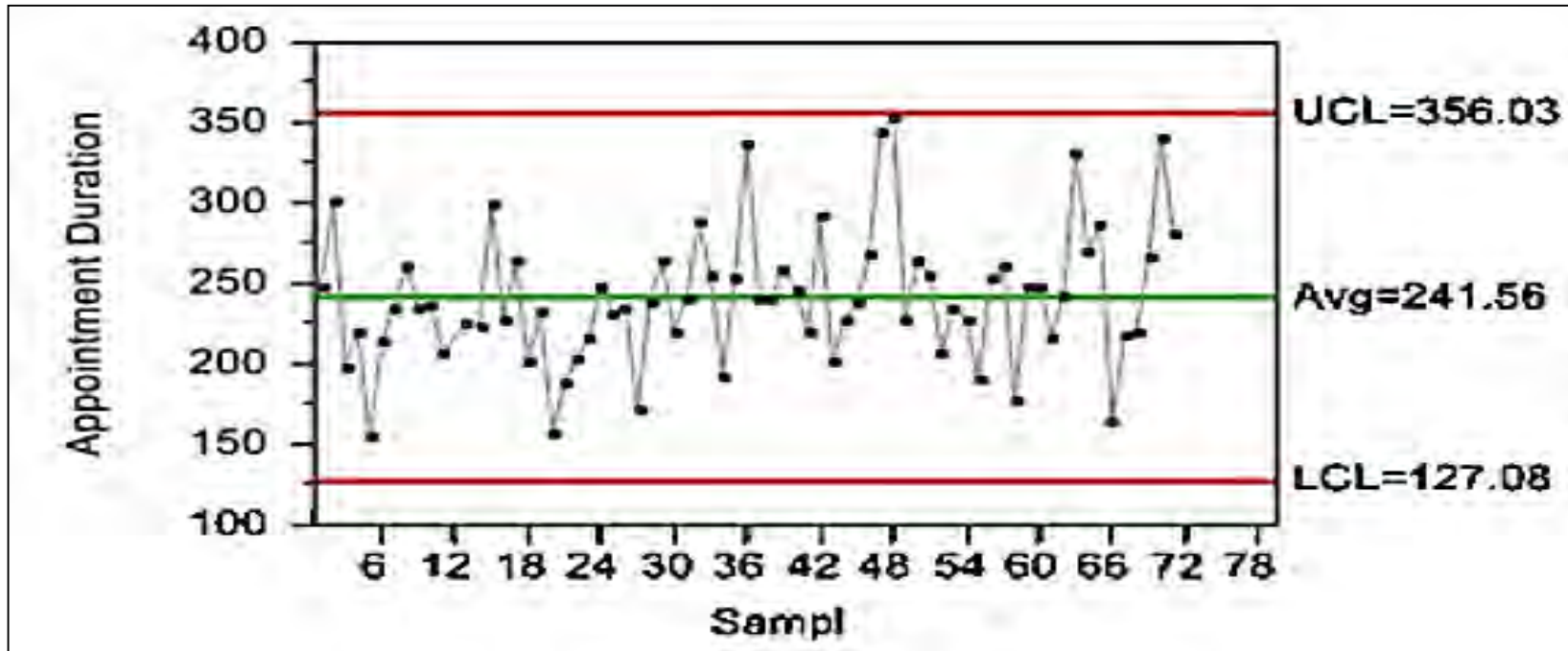
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# CASE EXAMPLE



# CASE EXAMPLE



C

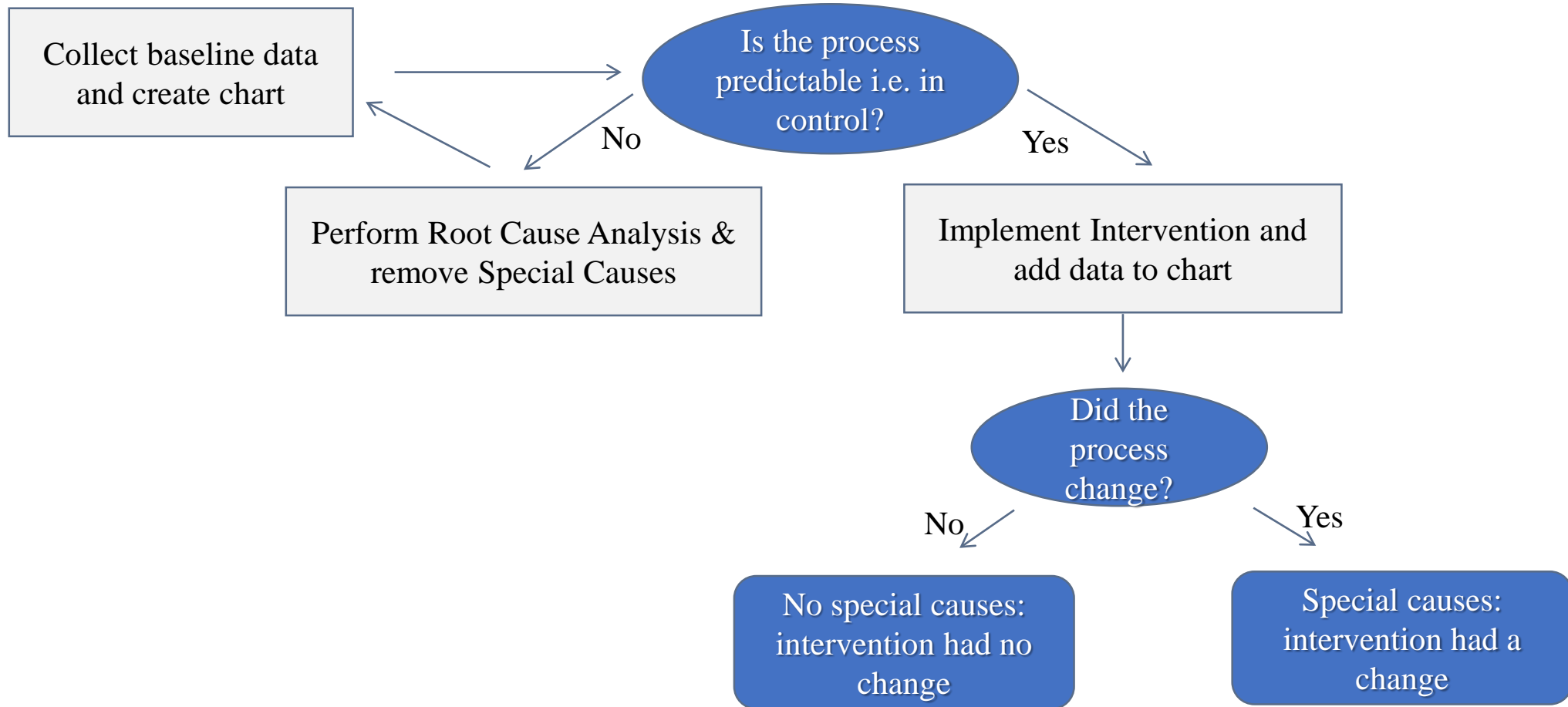
A. System is out of control

B. System is meeting expectations

C. System has common cause variation

D. System is optimized

# INTERPRETING QI DATA





# Data Analytics

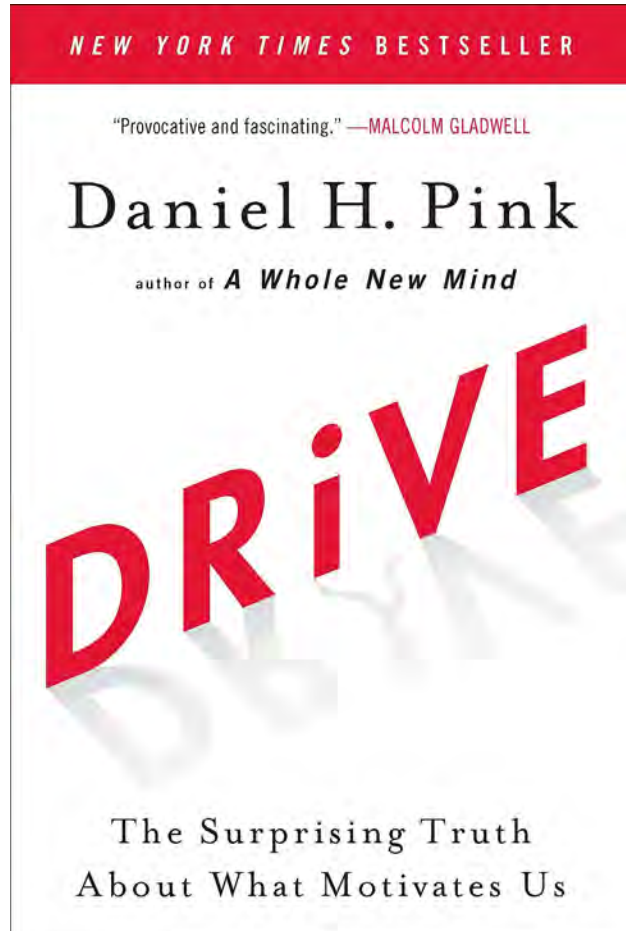
- Clinical decision support
- Predictive analytics
- Population Health
- Workflow analysis



BEFORE WE MOVE ON....



# Leading Change



Autonomy

Mastery

Purpose

Herzer KR, Pronovost PJ, AJMQ 2013

# CASE EXAMPLE

## Josie Robertson Surgery Center

# OUR JOURNEY



# Take Home Points

1. It is hard to improve what you do not **measure**
2. **Dynamic displays** of data provide a richer story
3. Recognize your role as a **leader** of change

# Thank you

*Commit to making everything, and everyone, just a little bit better*