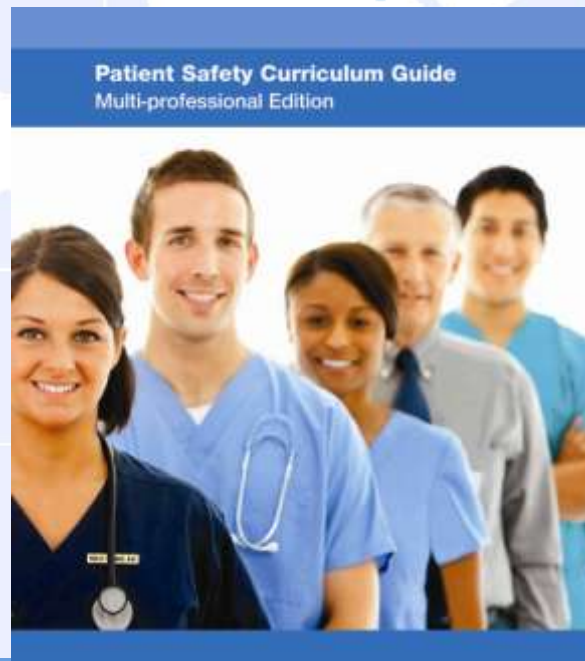


# Topic 7

## Using quality-improvement methods to improve care



# Learning objectives

- The objectives of this topic are to:
  - Describe the basic principles of quality improvement
  - Introduce students to the methods and tools for improving the quality of health care

# Knowledge requirements

- The science of improvement
- Change concepts
- Improvement principles
- Role of measurement in improvement

# Performance requirement

- Identify the opportunities for using safety science to analyse errors
- Appreciate the range of improvement methods available for reducing harm to patients
- Apply at least one improvement tool in a particular clinical context
- Participate in an improvement activity (if possible)

# The science of improvement

- Appreciation of a system
- Understanding of variation
- Theory of knowledge
- Psychology

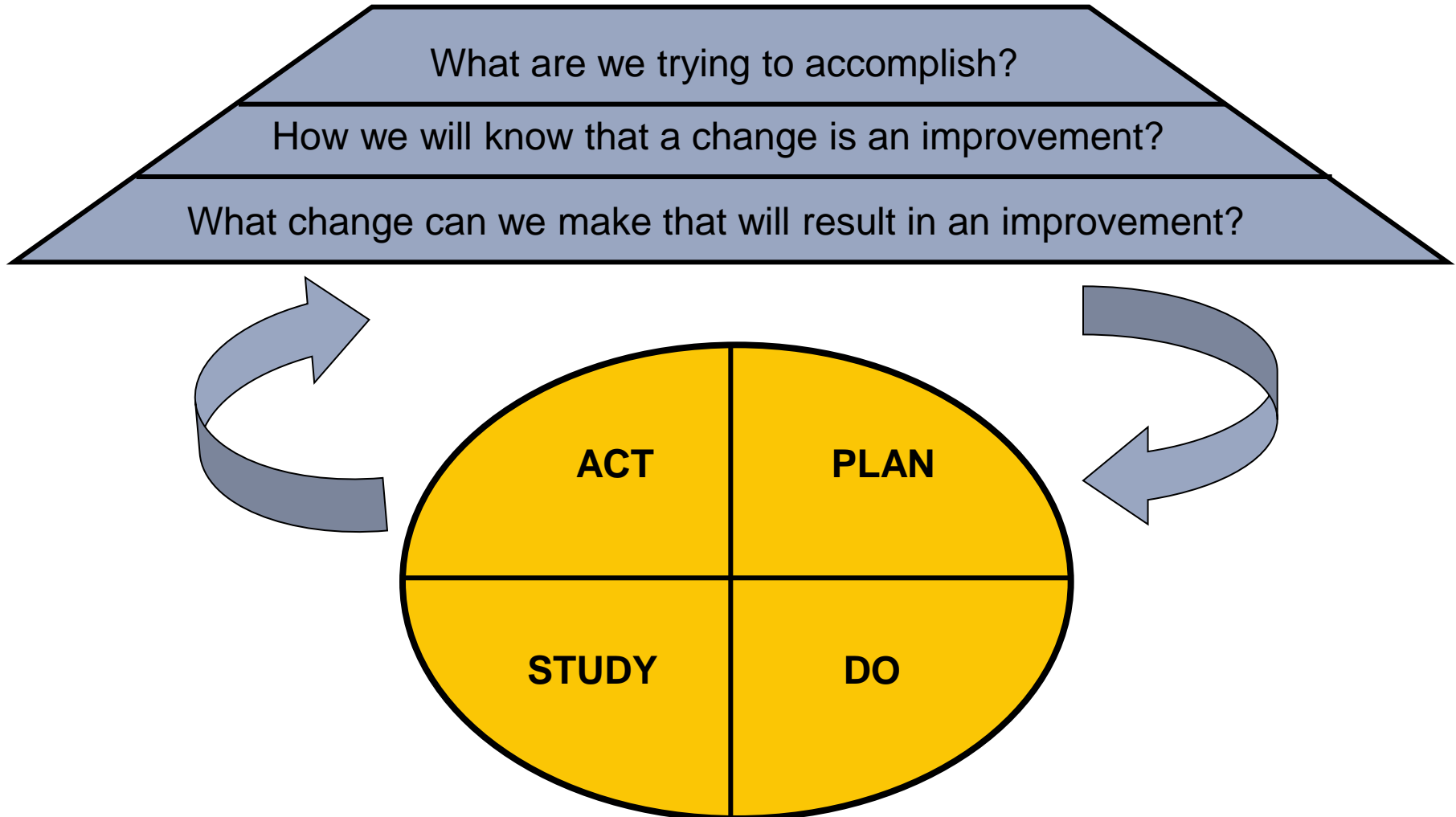
*Source: Langley GL*

# Change concepts ...

... are general ideas, with proven merit and sound scientific or logical foundation that can stimulate specific ideas for changes that lead to improvement.

*Source: Nolan TW, 1996*

# The model for improvement



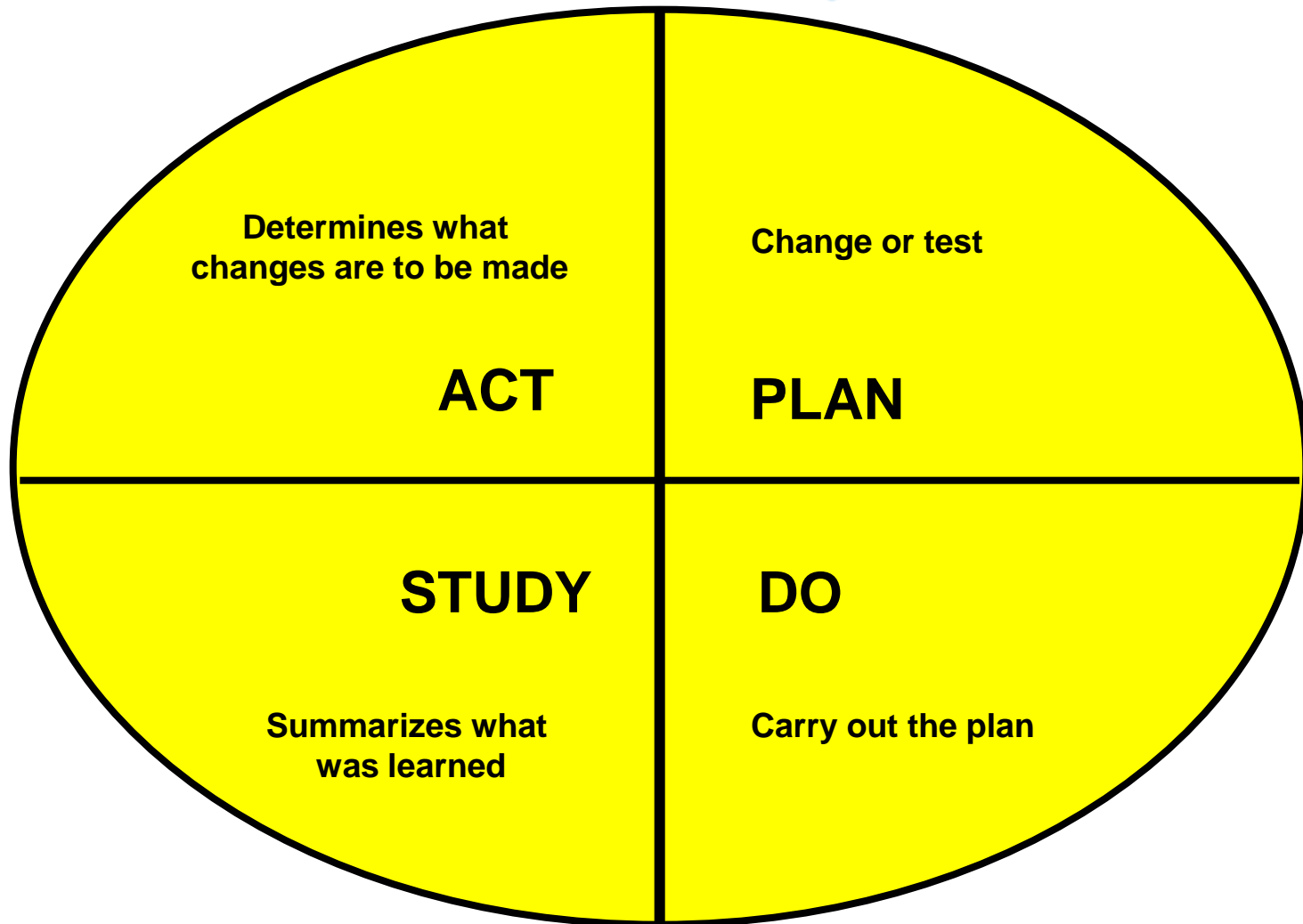
Source: Langley GL, Nolan, KM, Nolan, TW, Norman, CL & Provost, LP 1999

# The quality improvement model: the PDSA cycle

- 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?



# The PDSA cycle



Source: Langley GL, Nolan, KM, Nolan, TW, Norman, CL & Provost, LP 1999

# The Institute for Healthcare Improvement (IHI): different measures

	Measurement for research	Measurement for learning and process improvement
<b>Purpose</b>	To discover new knowledge	To bring new knowledge into daily practice
<b>Tests</b>	One large "blind" test	Many sequential, observable tests
<b>Biases</b>	Control for as many biases as possible	Stabilize the biases from test to test
<b>Data</b>	Gather as much data as possible, "just in case"	Gather "just enough" data to learn and complete another cycle
<b>Duration</b>	Can take long periods of time to obtain results	"Small tests of significant changes" accelerate the rate of improvement

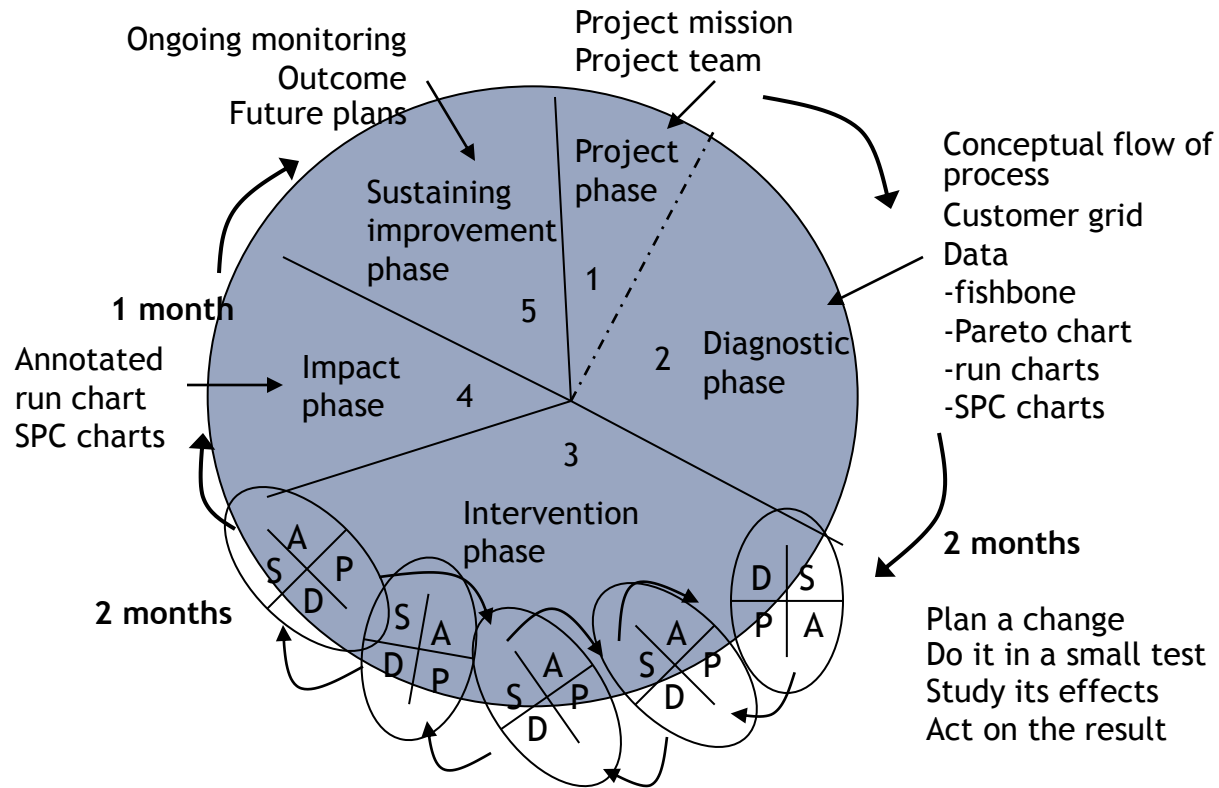
# Three types of measures

- Outcome measures
- Process measures
- Balancing measures

# Three examples of improvement methods

- Clinical Practice Improvement methodology (CPI)
- Root Cause Analysis (RCA)
- Failure Mode Effect Analysis (FMEA)

# The improvement process



Source: NSW Department of Health (2002). *Easy Guide to Clinical Practice Improvement*  
[www.health.nsw.gov.au/quality/pdf/cpi\\_easyguide.pdf](http://www.health.nsw.gov.au/quality/pdf/cpi_easyguide.pdf)

SPC – statistical process control

# Interventions phase

Identify appropriate interventions  
Implement changes identified in the diagnostic phase  
Undertake one or more PDSA cycles



## Interventions phase

Decide on interventions

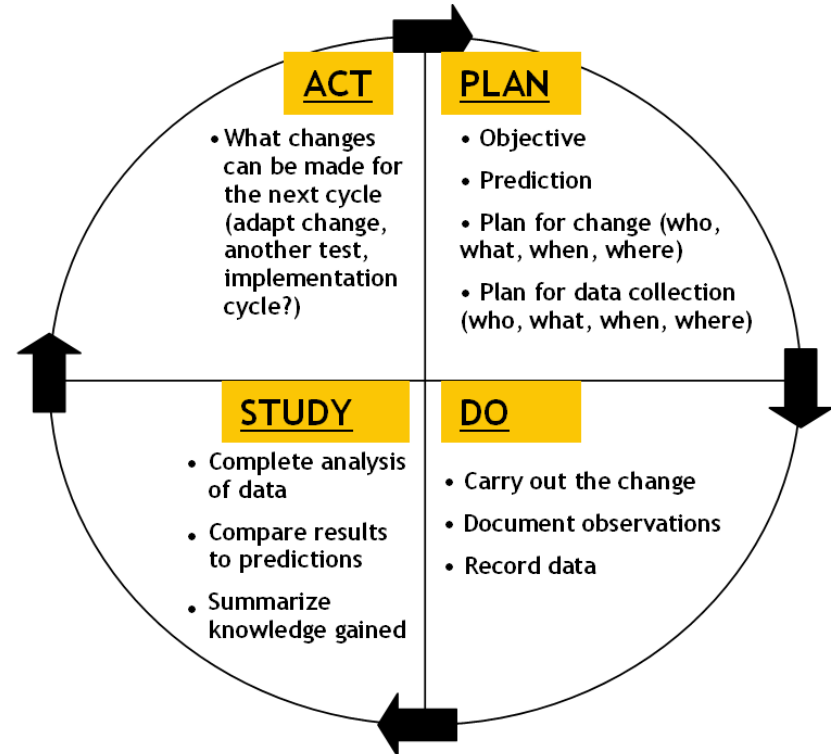


Undertake one or more PDSA  
cycles

Source: NSW Department of Health (2002). *Easy Guide to Clinical Practice Improvement*  
([www.health.nsw.gov.au/quality/pdf/cpi\\_easyguide.pdf](http://www.health.nsw.gov.au/quality/pdf/cpi_easyguide.pdf))

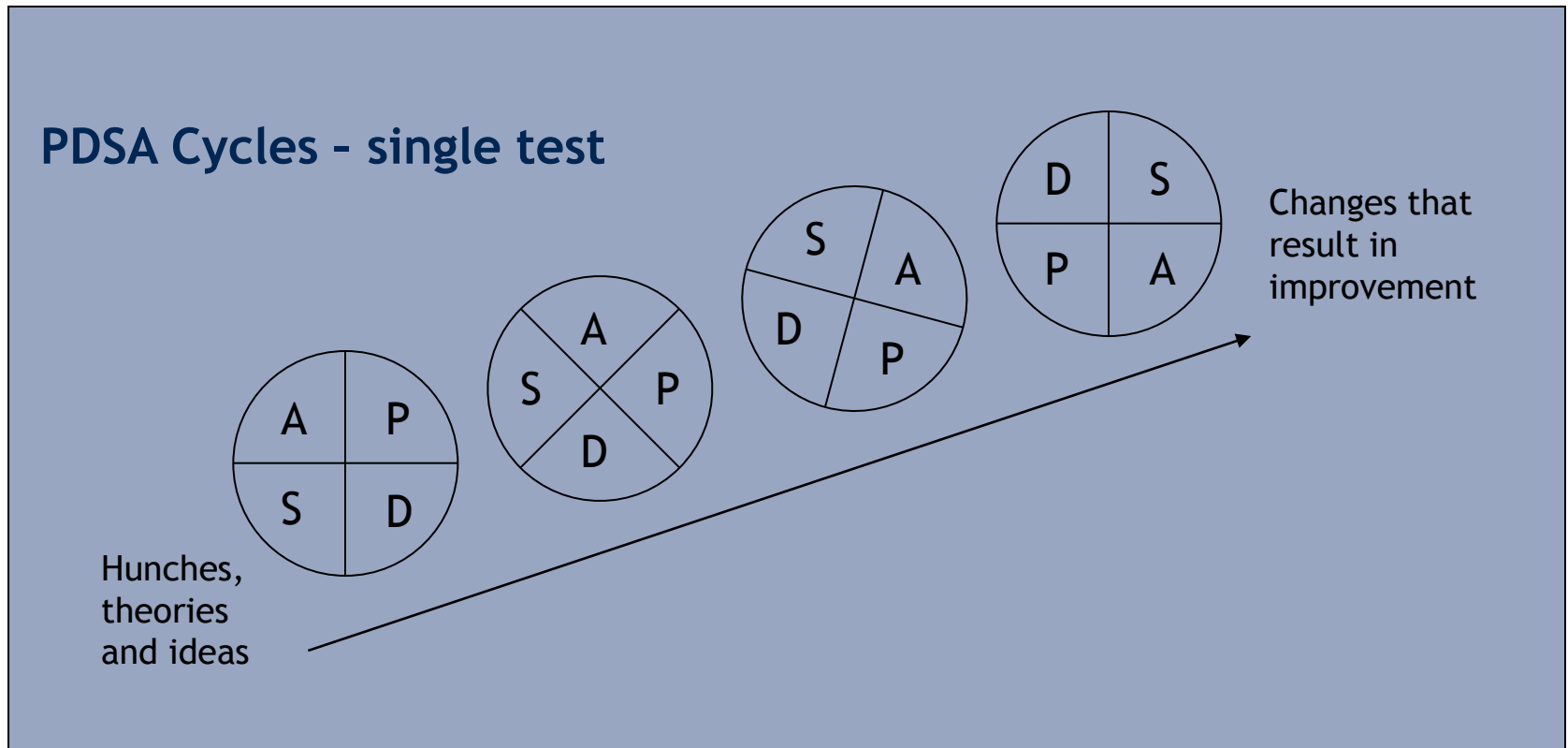
# How to use the PDSA Cycle

- Use 'plan-do-study-act' cycles to conduct small-scale tests of change
  - Plan a change
  - Do it in a small test
  - Study its effects
  - Act on what learned
- Team uses and links small PDSA cycles for broader implementation



NSW Department of Health (2002). *Easy Guide to Clinical Practice Improvement*  
([www.health.nsw.gov.au/quality/pdf/cpi\\_easyguide.pdf](http://www.health.nsw.gov.au/quality/pdf/cpi_easyguide.pdf))

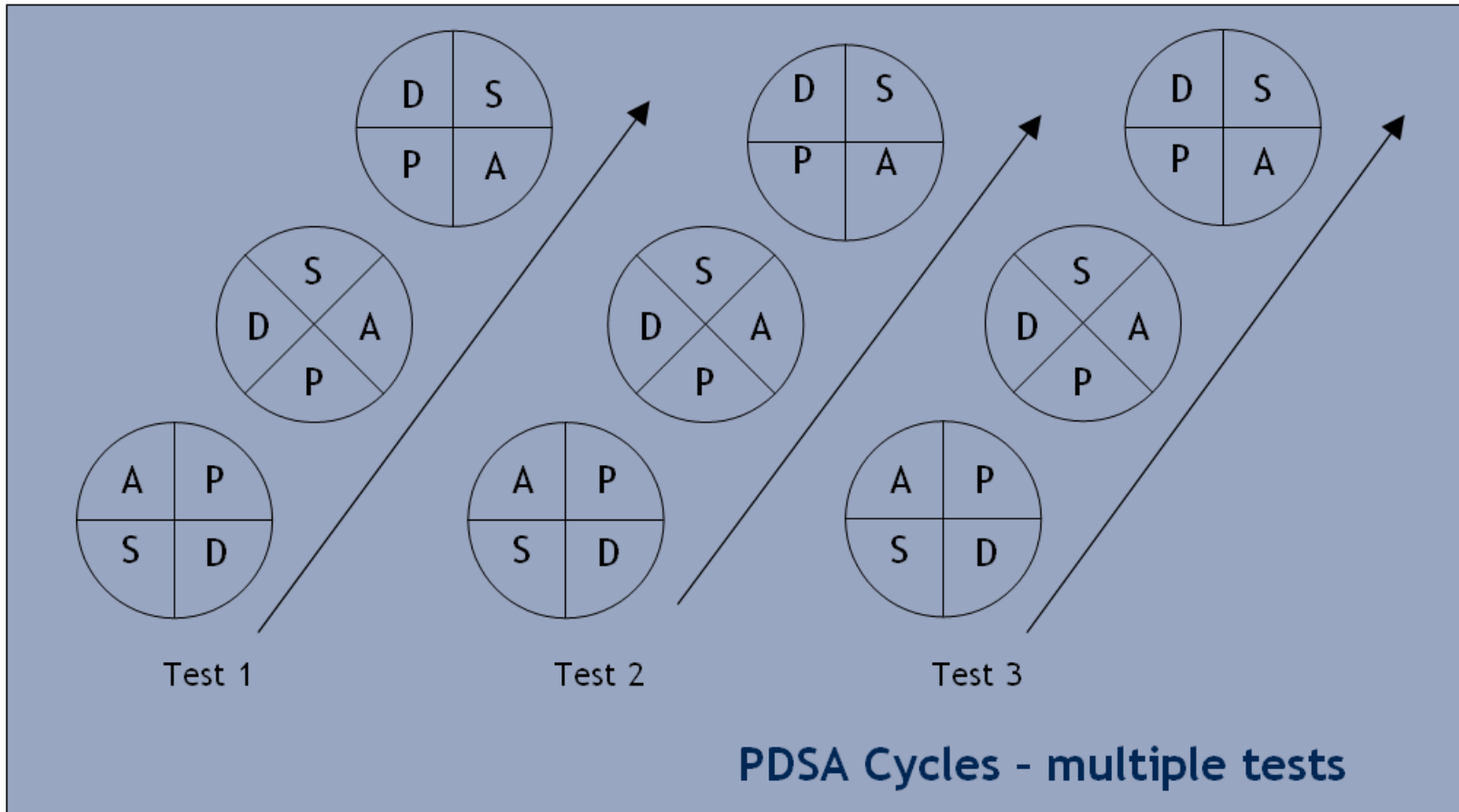
# PDSA cycle - single test



Source: NSW Department of Health (2002). *Easy Guide to Clinical Practice Improvement* ([www.health.nsw.gov.au/quality/pdf/cpi\\_easyguide.pdf](http://www.health.nsw.gov.au/quality/pdf/cpi_easyguide.pdf))



# PDSA cycle – multiple tests

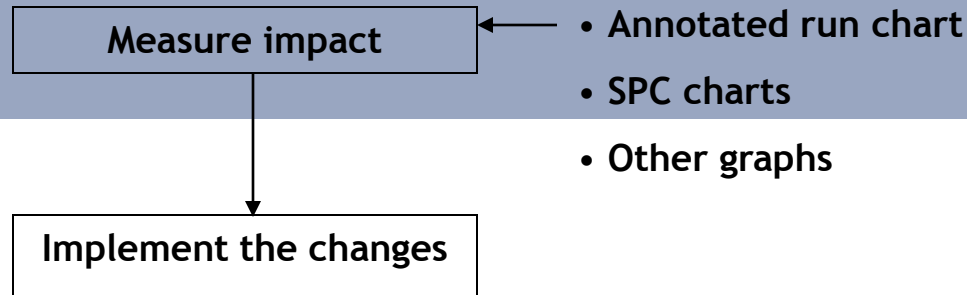


NSW Department of Health (2002). *Easy Guide to Clinical Practice Improvement*  
([www.health.nsw.gov.au/quality/pdf/cpi\\_easyguide.pdf](http://www.health.nsw.gov.au/quality/pdf/cpi_easyguide.pdf))

# Impact and implementation phase

1. Measure impact of changes/interventions
2. Record the results
3. Revise the interventions
4. Monitor impact

## Impact and implementation phase

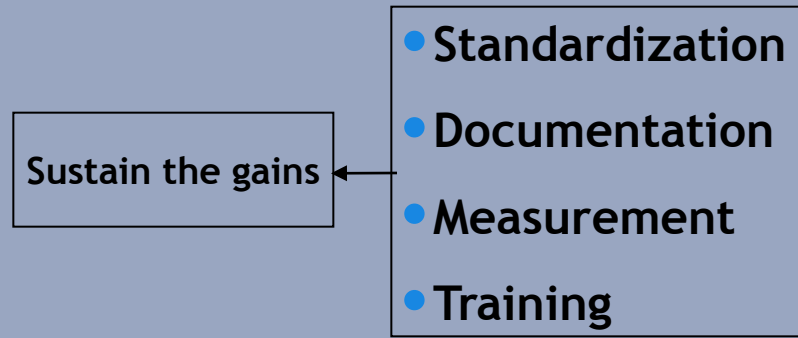


NSW Department of Health (2002). *Easy Guide to Clinical Practice Improvement*  
([www.health.nsw.gov.au/quality/pdf/cpi\\_easyguide.pdf](http://www.health.nsw.gov.au/quality/pdf/cpi_easyguide.pdf))

# Sustaining and improvement phase

- Once an intervention has been introduced, the intervention and any improvements need to be sustained
- This may involve:
  - **Standardization** of existing systems and processes
  - **Documentation** of policies, procedures, protocols and guidelines
  - **Measurement** and review of interventions to ensure that change becomes part of “standard” practice
  - **Training and education** of staff

## Sustaining improvement phase

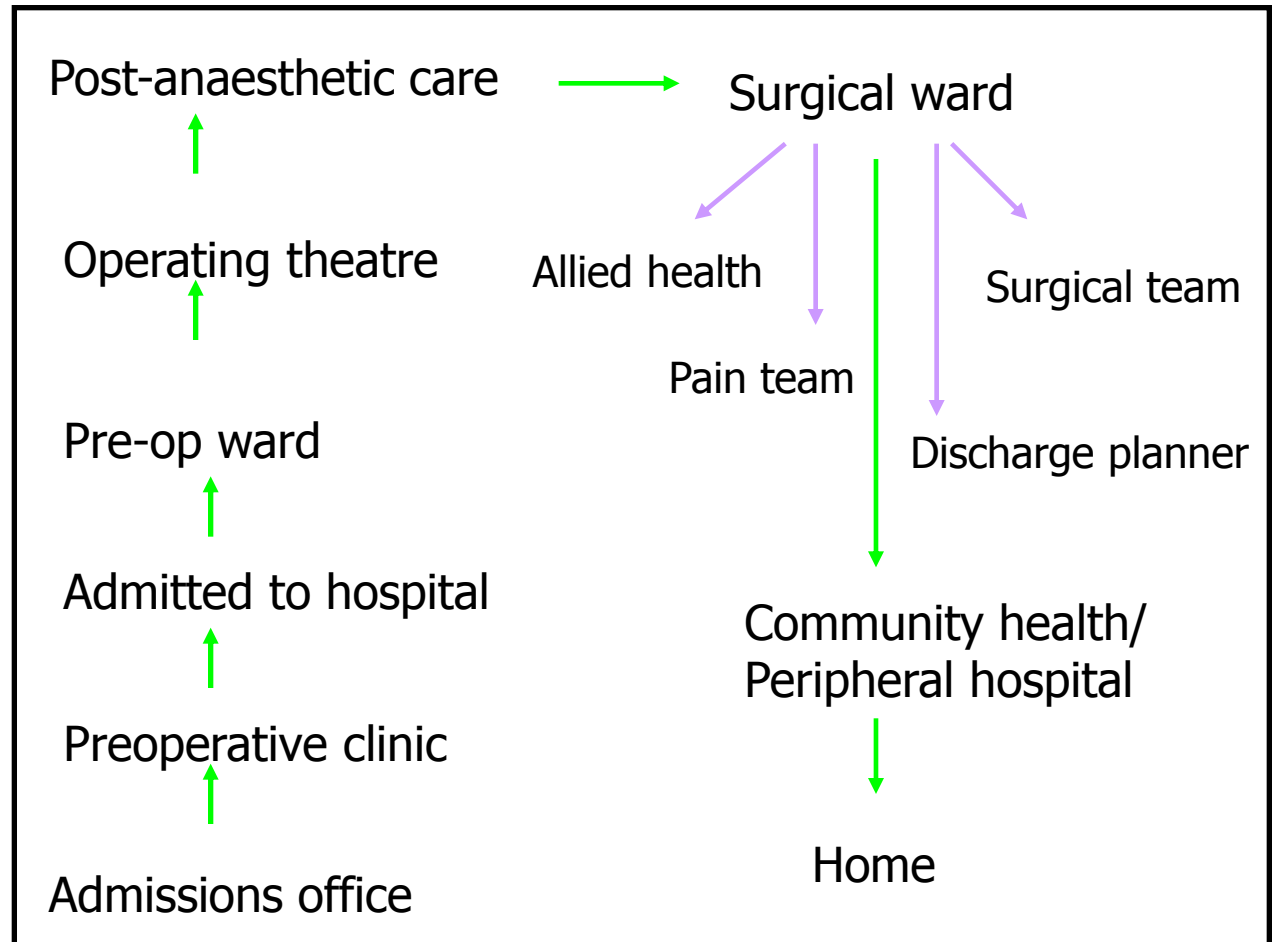
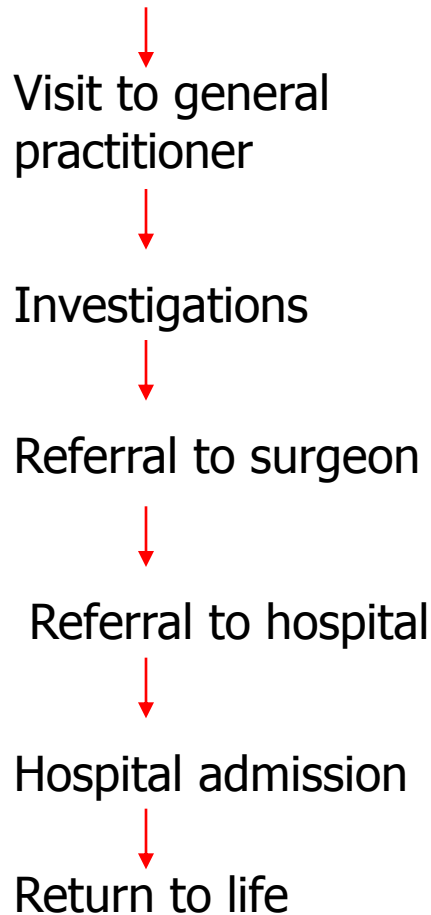


NSW Department of Health (2002). *Easy Guide to Clinical Practice Improvement*  
([www.health.nsw.gov.au/quality/pdf/cpi\\_easyguide.pdf](http://www.health.nsw.gov.au/quality/pdf/cpi_easyguide.pdf))

# Flowchart of process

Example of a flow chart for a project titled: Accelerated Recovery Colectomy Surgery (ARCS)  
North Coast Area Health Service  
Australia

Something amiss

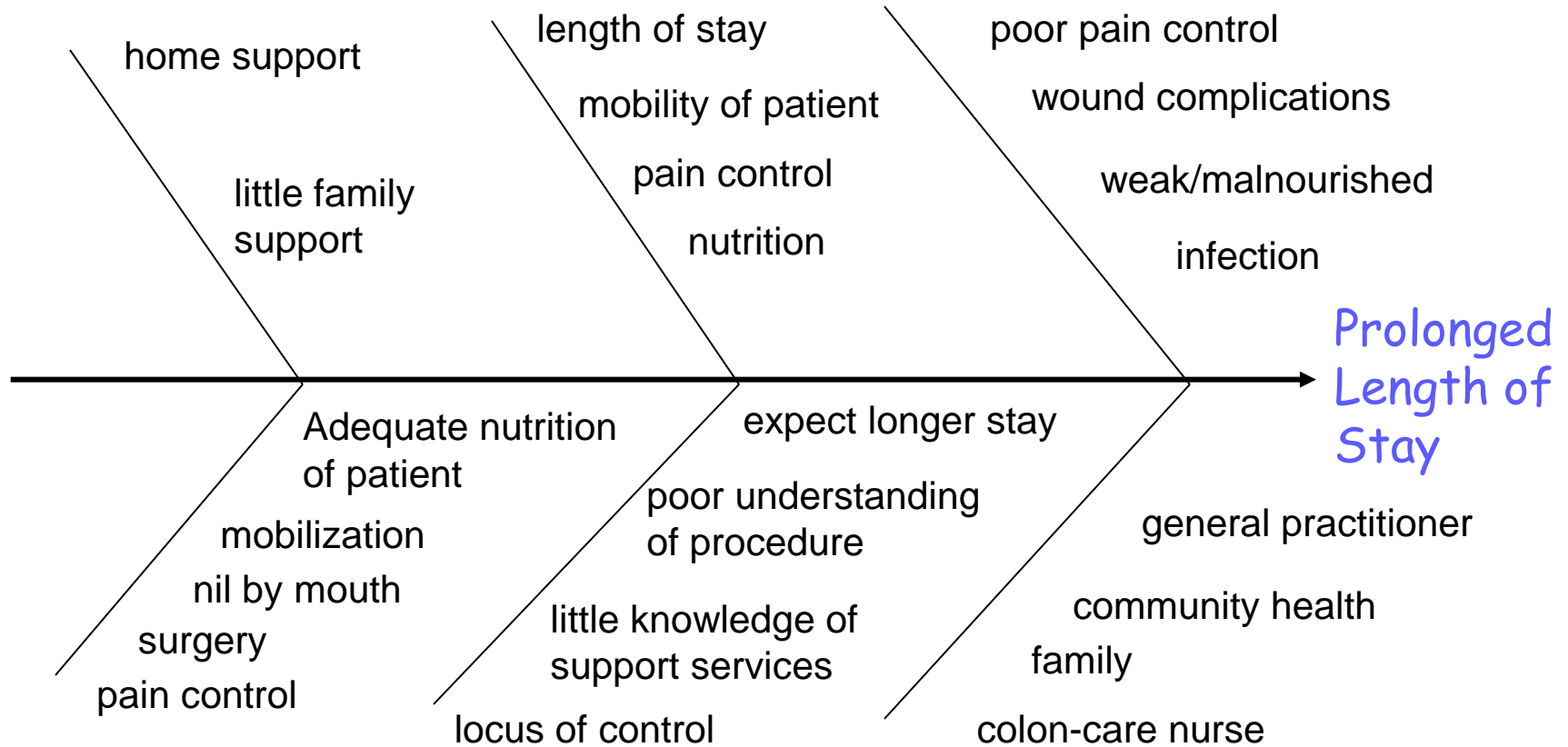


# Cause and effect diagram

## Social issues

## Staff attitudes

## Complications



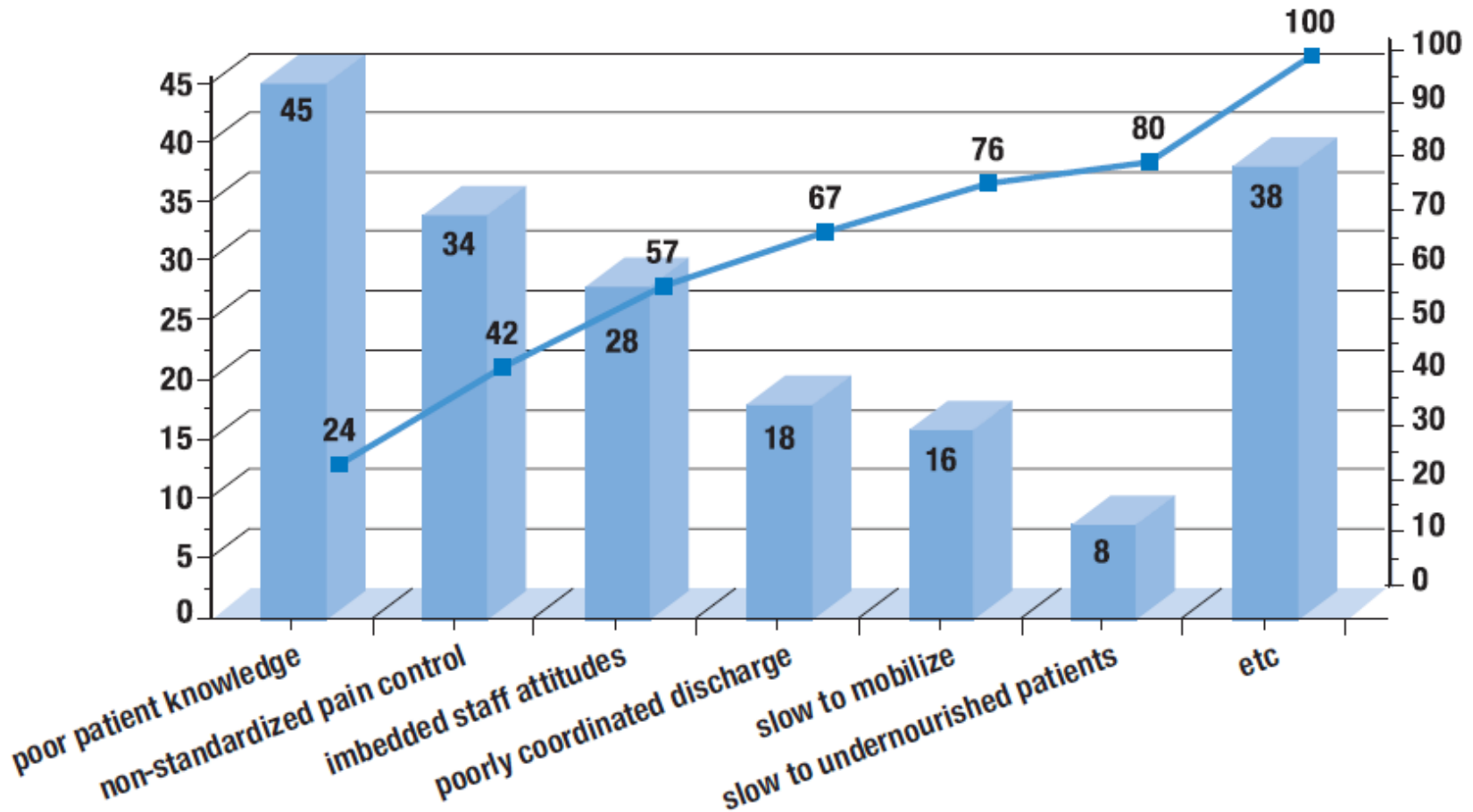
## Procedure

## Patient perception

## Post discharge support

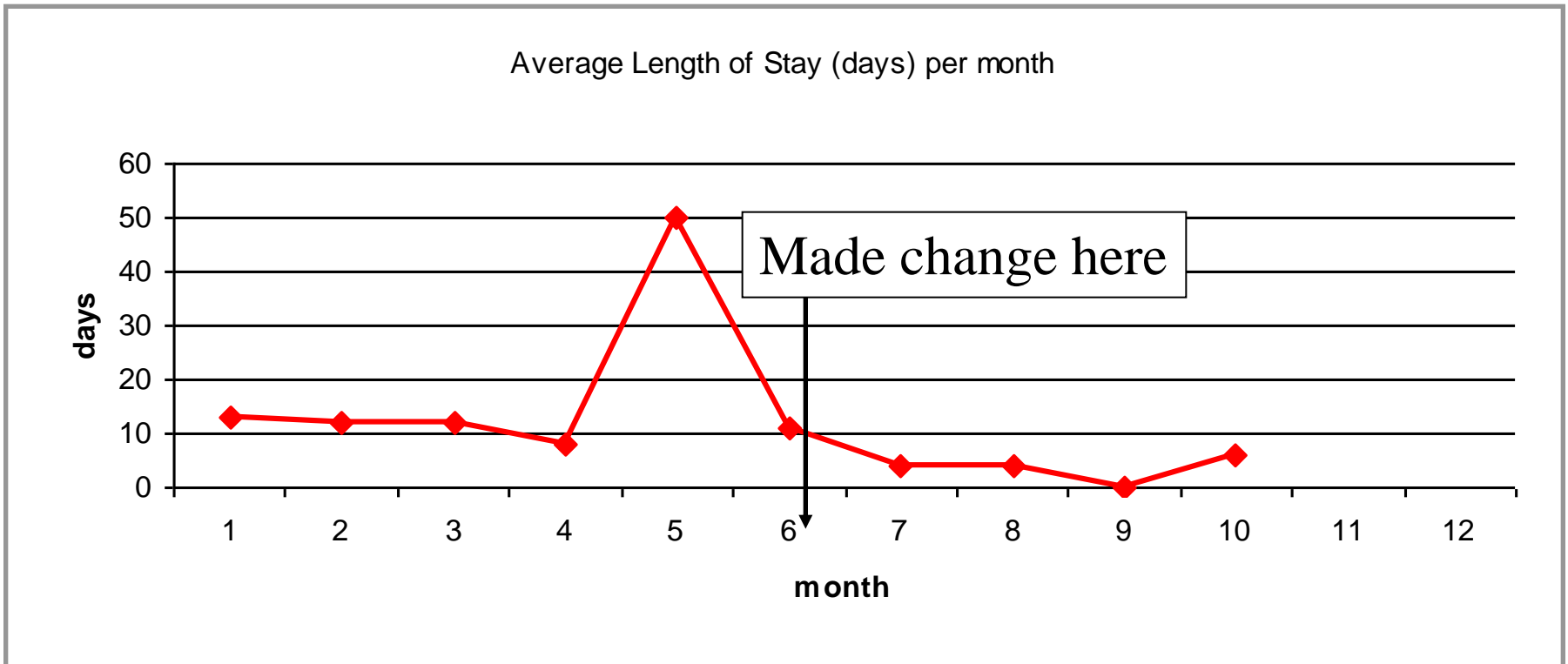
*Accelerated Recovery Colectomy Surgery (ARCS), North Coast Area Health Service, Australia*

# Pareto chart



Source: Langley GJ, Nolan KM, Norman CL, Provost LP, Nolan TW. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance*. 1996

# Run chart



# Strategies for sustaining improvement

- Document and report each patient Length of Stay ( LOS)
- Measure and calculate monthly average LOS
- Place run chart in operating theatre, update run chart monthly
- Bimonthly team meetings to report positives and negatives
- Continuously refine the clinical pathways
- Report outcomes to clinical governance unit
- Spread
  - all surgeons
  - left hemicolectomy
  - all colectomy surgery
  - throughout North Coast Area Health Service