AHD – Continuous Quality Improvement

Dr Jay Hingwala

Dr Priyanka Mysore

Objectives

1) Appreciate how to identify stakeholders and review the pillars of quality improvement

2) Learn about the Model for Improvement and Plan-Do-Study-Act (PDSA cycles)

3) Learn about common tools and data collection methods

4) Practice doing a PDSA cycle and using some QI tools

6 Dimensions of Quality Healthcare

Quality Healthcare
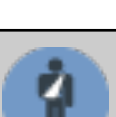
Safe   Timely   Equity   Effective   Efficient   Patient Centered

Improvement science and profound knowledge

Crossing the Quality Chasm: A New Health System for the 21st Century, 2001 Institute of Medicine

6 Dimensions of Quality

	Safe: Avoiding injuries to patients from the care that is intended to help them
	Timely: Reducing waits and harmful delays for patients and providers
	Effective: Providing the appropriate level of services based on scientific knowledge
	Efficient: Avoiding waste of equipment, supplies, ideas, and energy
	Equitable: Care that does not vary in quality because of personal characteristics
	Patient-Centered: Providing care that is respectful of and responsive to individual patients

Case

You work in a busy Nephrology clinic. The wait times for new referrals have increased from 3 months, to now 6 months for non-urgent referrals. You decide that you want to start a quality improvement project to try to improve the wait times. How do you start?

AIM STATEMENT

The Model for Improvement

AIM
What are we trying to accomplish?

MEASURES
How will we know that a change is an improvement?

CHANGES
What changes can we make that will result in improvement?

Act | Plan
Study | Do

© 2012 Associates in Process Improvement
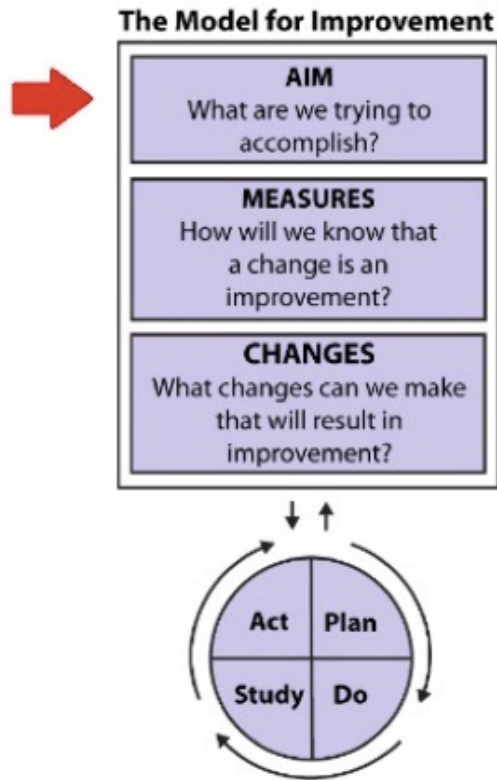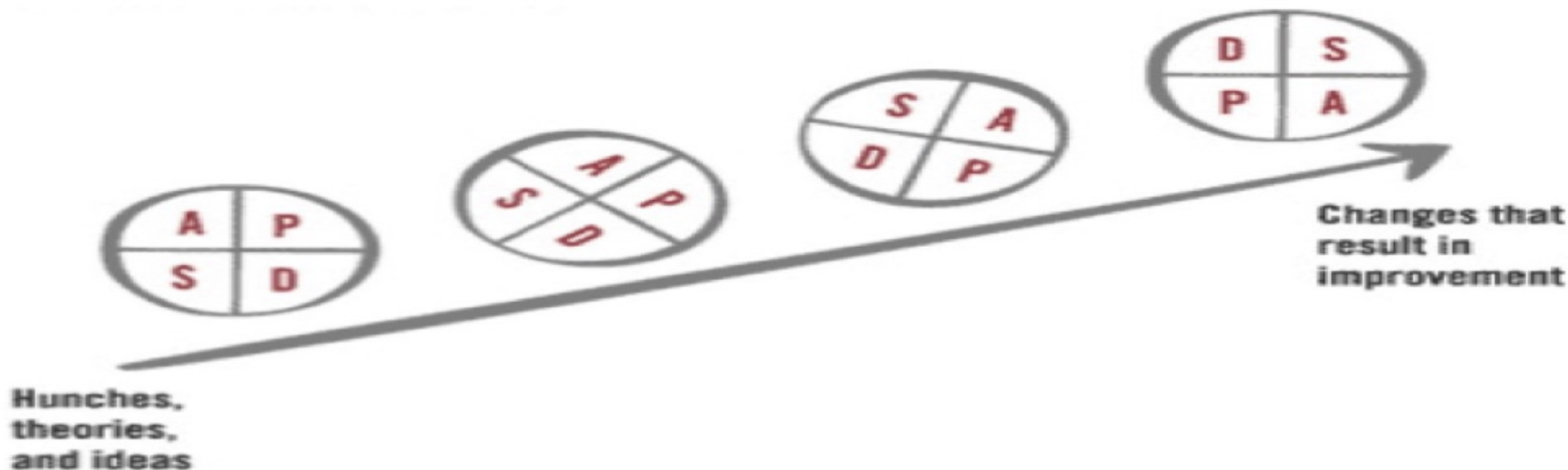
- **S**pecific
- **M**easurable
- **A**ctionable
- **R**ealistic
- **T**imely

AIM STATEMENT

We want to decrease the wait time to see new non-urgent referrals to 3 months by July 1/21.

Hunches, theories, and ideas

Changes that result in improvement

PDSA #	Planned change (do)	Result (study)
1	Have one extra clinic a month to see 4 consults	No change in wait time
2	See one more consult in each of my clinics	Wait time decreases by 2 weeks
3	Create a cancellation list to fill in extra clinic spots with new consults	See 2 more consults a month
4	Ask collegues if they would like to take any consults	Decrease wait time by 1 month
5	Create referral guidelines for appropriate non urgent referrals	Higher risk patients seen

Data measurement

- Helps to focus efforts & see if improvement happening

Types of Measures
- Outcome : what is overall result (ie main thing we are measuring)
    - Ex. How many medication adminstation errors occuring each month

- Process : what changes/steps logically will lead to our desired outcome, adoption of best practices that lead to improved outcomes
    - Ex. Percent of MAR signed off/month

- Balance: any unintended consequences as a result of our new process
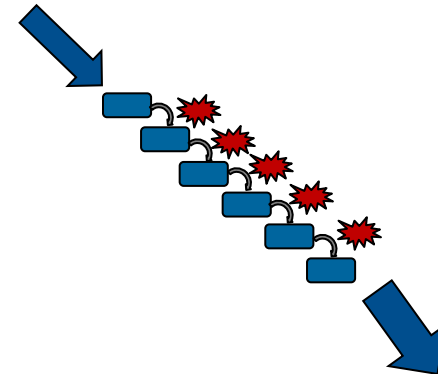   - Ex. % Eprex doses missed/month

Planning

AIM Statement
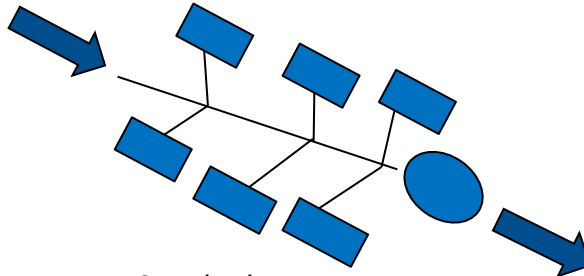
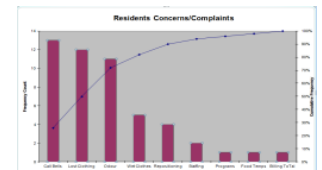Common Approach To Root Cause Analysis

Standard Categories

Select a reasonable number

Identify stakeholders
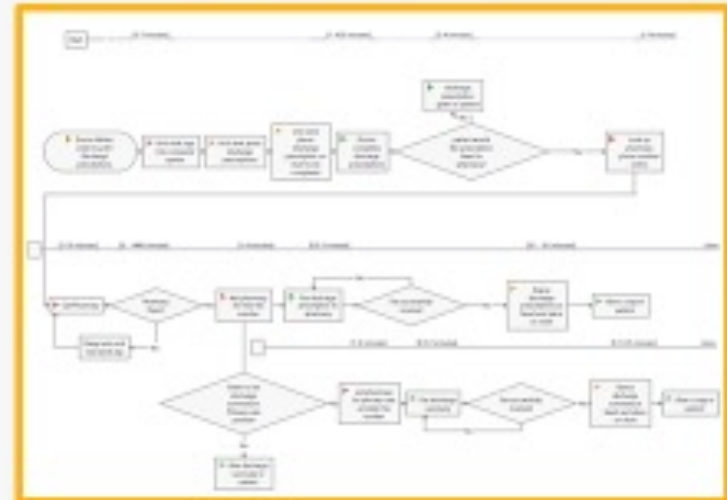Literature review

Stakeholder examples

Patients

MDs

Clerks

Managers

Pharmacists

Dietitians

Other clinics

Root Cause Analysis
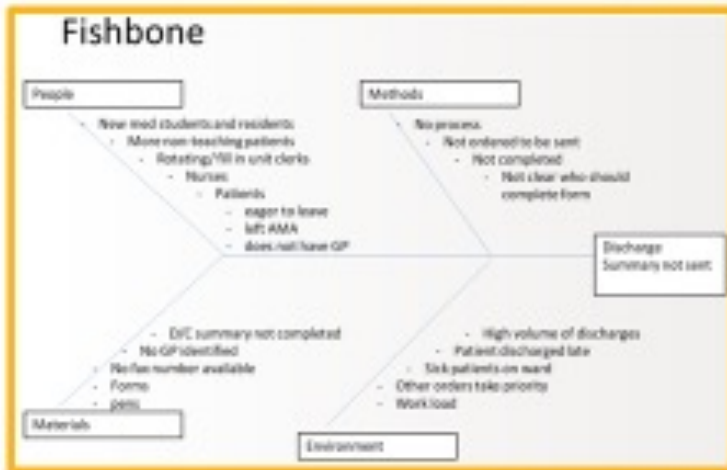
Some QI tools to find the root cause

1)5 Whys

2)Ishikawa (Fishbone Diagrams)

3)Process Mapping

4)Defect tick sheets/Pareto Charts

The 5 Whys

Got caught speeding

WHY?

Late for work

WHY?

Got up late

WHY?

Alarm clock did not work

WHY?

Batteries were dead

WHY?

Forgot to replace them

Buy an alarm clock that plugs into an outlet or replace batteries at set intervals before they run out.

An Example

Antibiotic was not during treatment

WHY?

Order wasn't seen

WHY?

RN busy doing other tasks

WHY?

Too much paperwork to complete

WHY?

Duplictation of charting

WHY?

Need to write information in multiple areas

WHY?

Photocopy one set of documentation

Our Case

Longer wait times

WHY?

More patients being referred

WHY?

eGFR reporting has started

WHY?

Lower risk patients being referred

WHY?

Lack of referral guidelines

Make triage criteria

Some QI tools to find the root cause

1) 5 Whys

2) Ishikawa (Fishbone Diagrams)
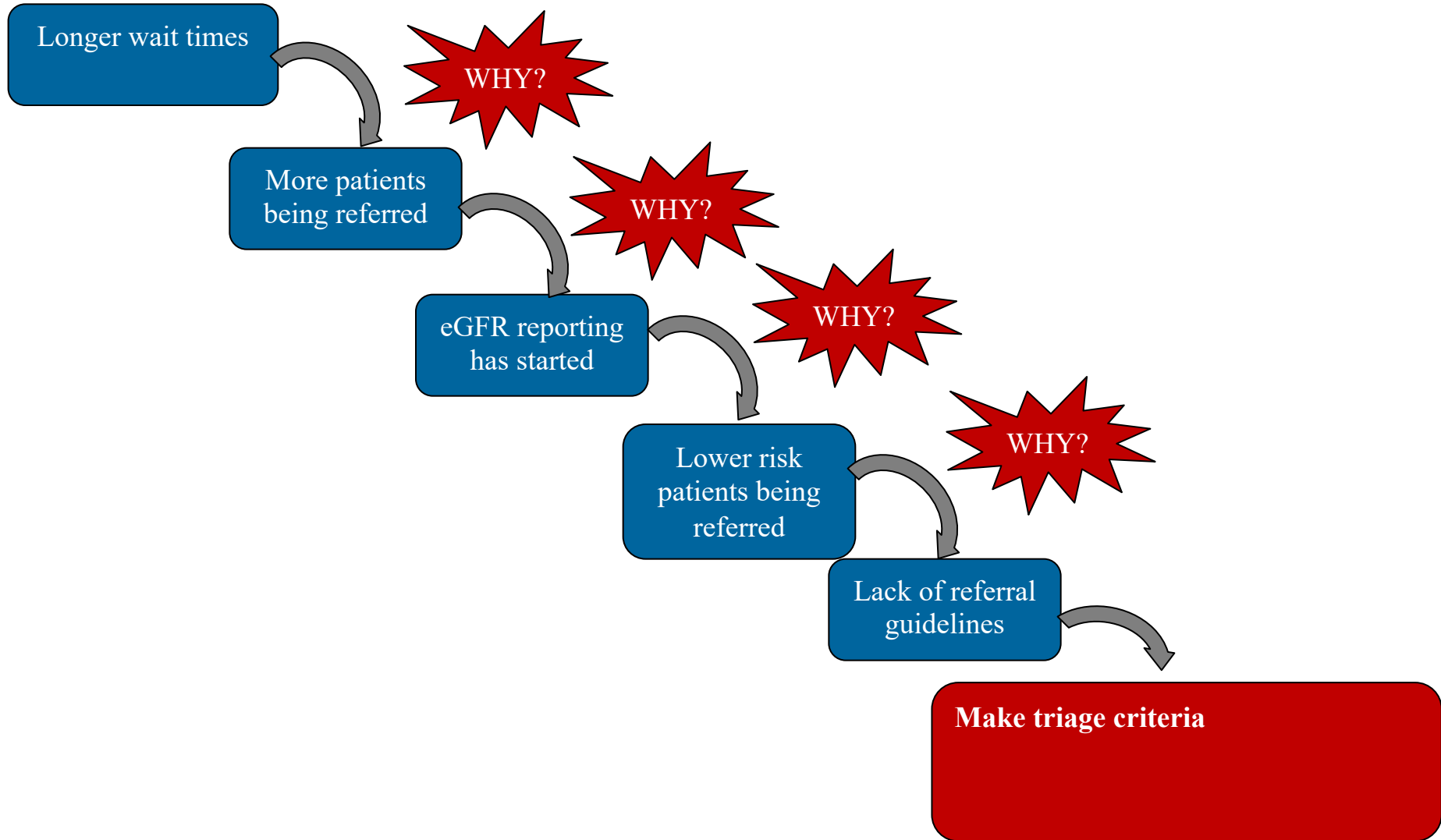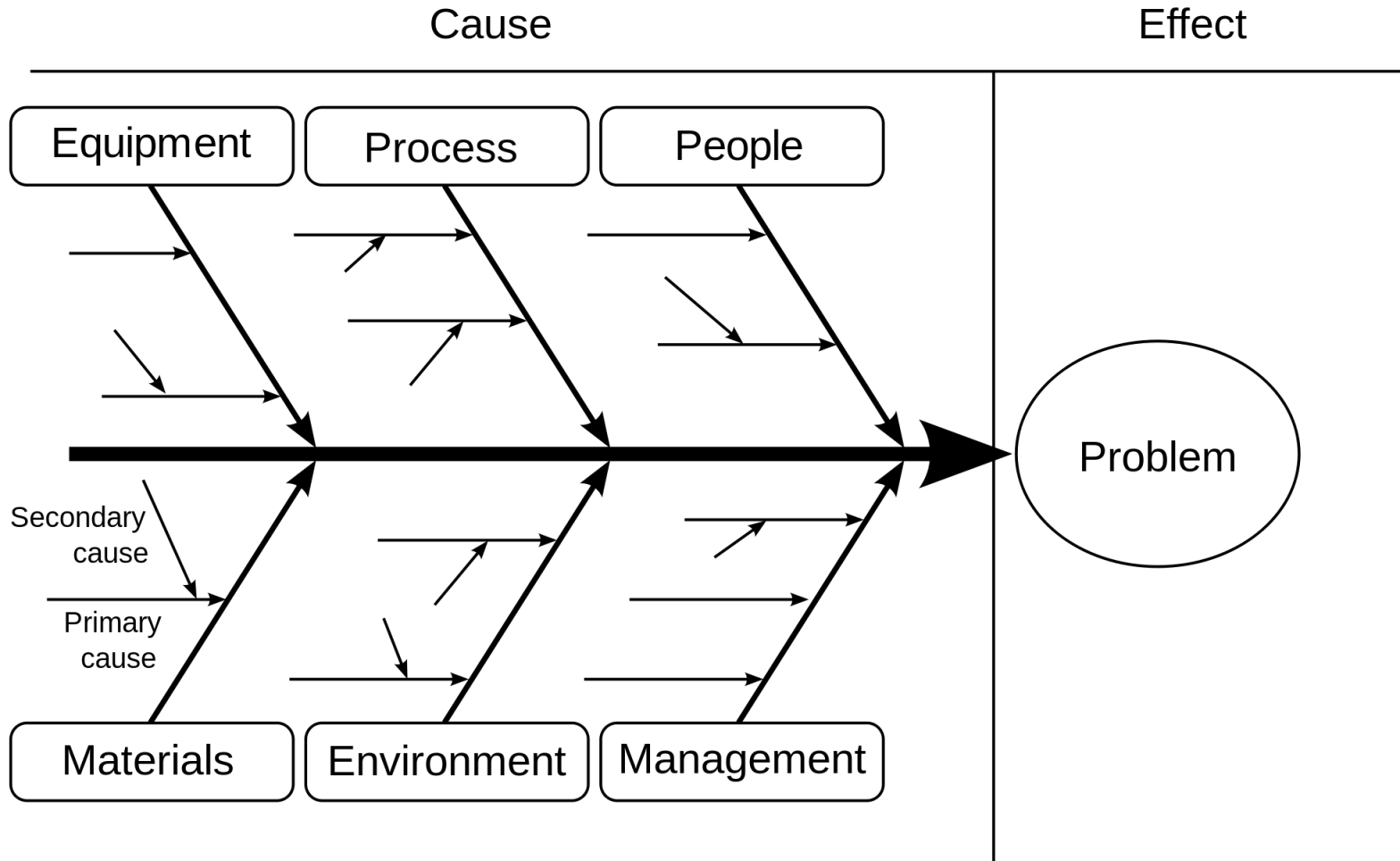
3) Process Mapping

4) Defect tick sheets/Pareto Charts

Fish Bone

Many different headers in the fish…

Figure 3.5: ISHIKAWA DIAGRAM
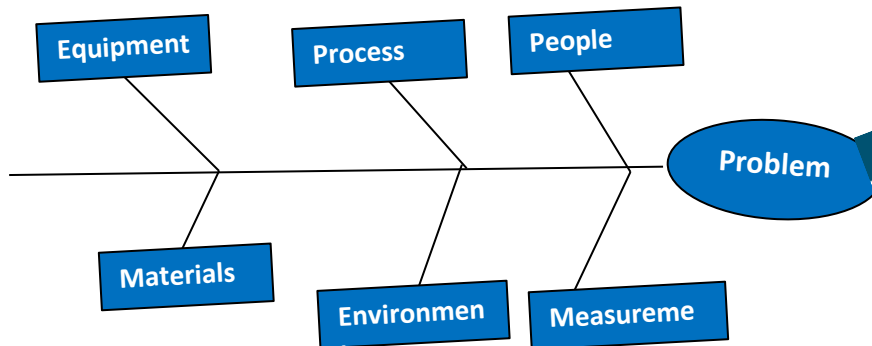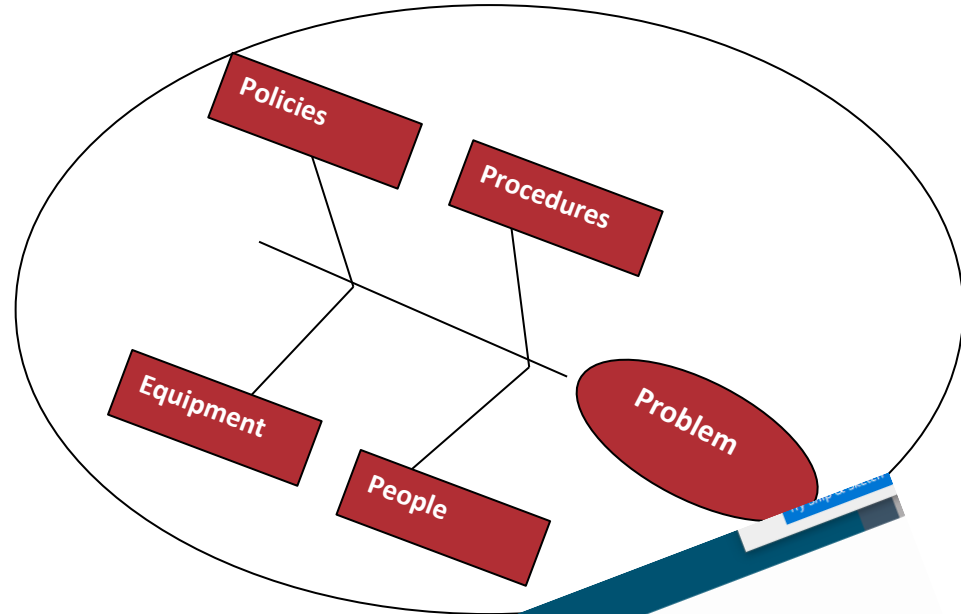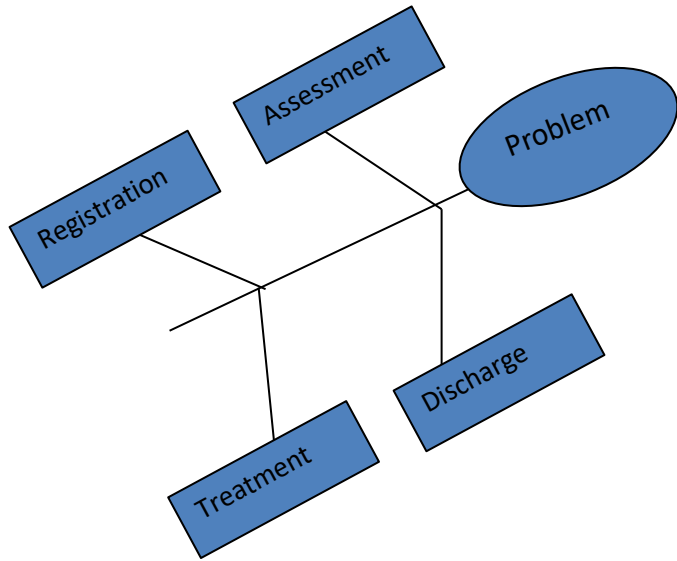
Fishbone Diagram Template

- You work in a busy Nephrology clinic. The wait times for new referrals have increased from 3 months, to now 6 months for non-urgent referrals. You decide that you want to start a quality improvement project to try to improve the wait times

Policies

Procedures

Equipment

Issue / effect

People

Process

Example: Cause and Effect Diagram

People
- Physician order illegible
- Not available to get results
- Secretary
  - Heavy workload
  - Unavailable when lab called
- Lab tech
- Dispatcher
  - Heavy workload
  - No tracking process
- Escort
- Lab secretary
- Phlebotomist

Environment
- Clocks
  - Inaccurate
  - Don't agree
  - Rounding
- Transcription error

Materials
- Specimen vials
  - Unavailable
  - Spoiled
- Lab supplies
  - Unavailable
  - Spoiled

Methods
- Too many people involved
- Handling in lab
- Escort stopped other places before lab
- Unnecessary steps
- Lab not following FIFO

Equipment
- Lab equipment
  - Slow
  - Do-over
  - Capacity
- Pager malfunction
  - Hard to use
  - Inadequate training
- Phone system
  - Capacity
  - Down

Long test results time

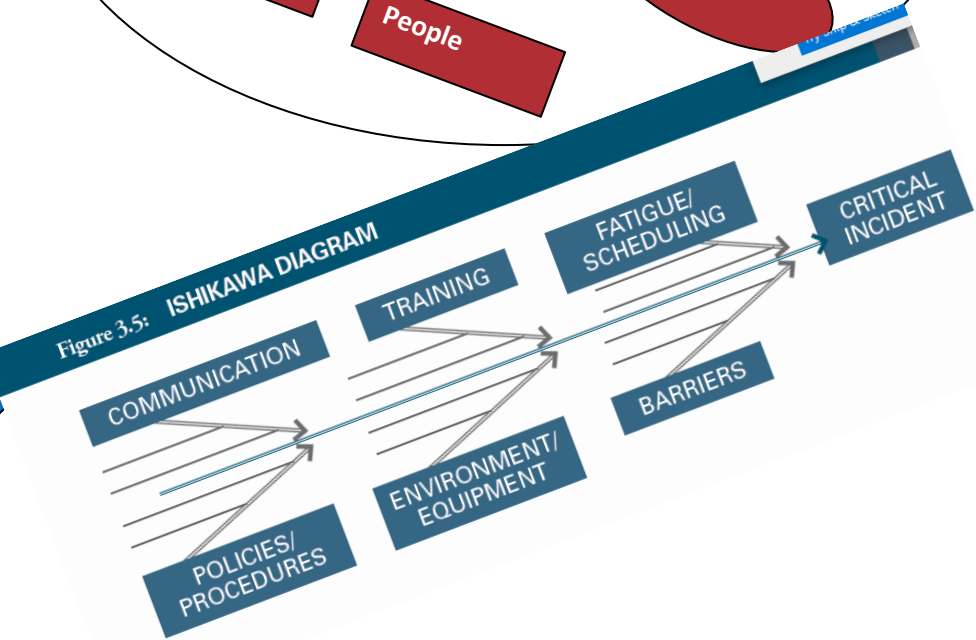# Some QI tools to find the root cause

1) 5 Whys

2) Ishikawa (Fishbone Diagrams)

3) Process Mapping

4) Defect tick sheets/Pareto Charts

Some QI tools to find the root cause

1) 5 Whys

2) Ishikawa (Fishbone Diagrams)

3) Process Mapping

4) Defect tick sheets/Pareto Charts
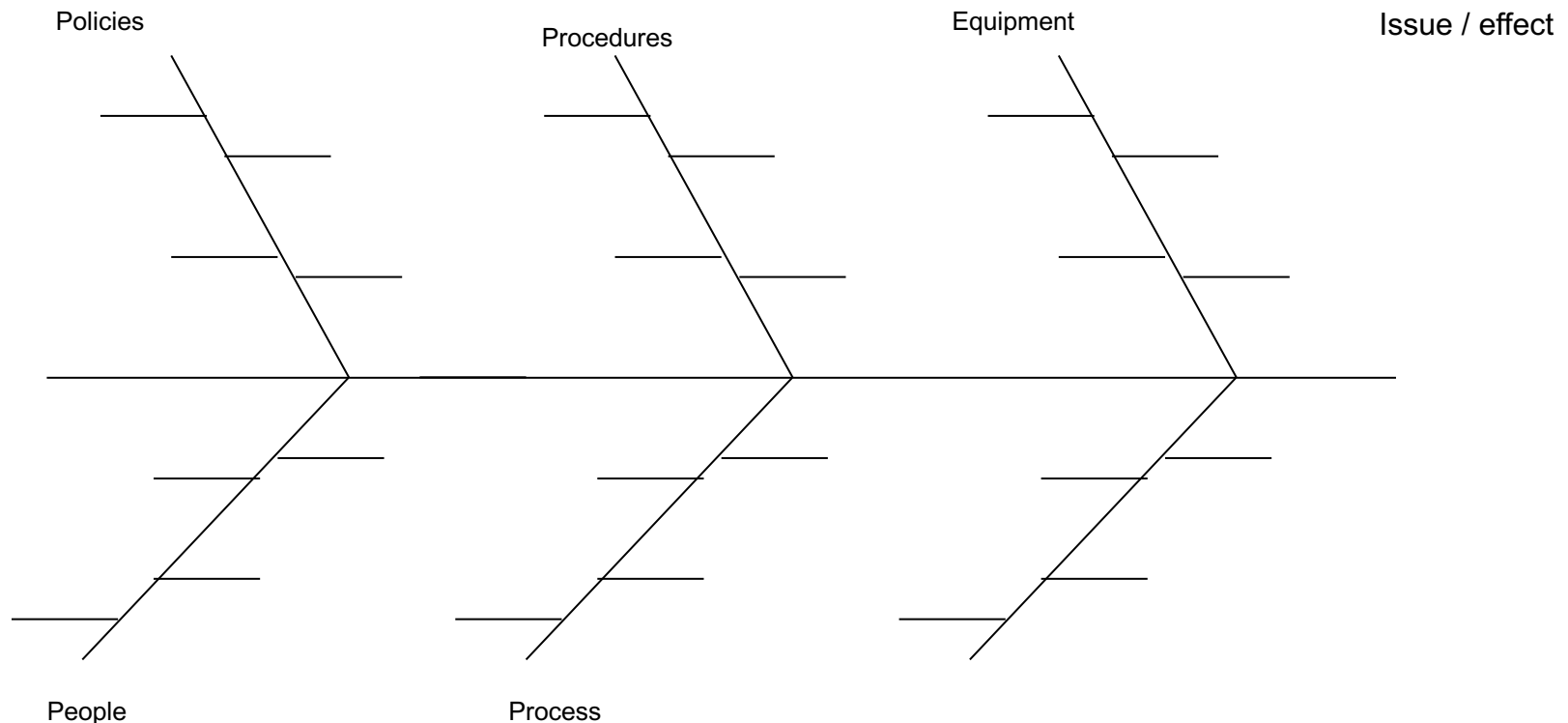
Process Map
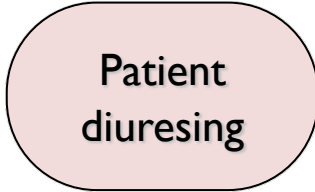
➢ Visually captures how various activities relate to one another

➢ Map existing process

➢ Help you to identify bottlenecks and variation in practice

➢ Are there opportunities to standardize procedures?

➢ Can steps or handoffs be eliminated?

Constructing a Process Map

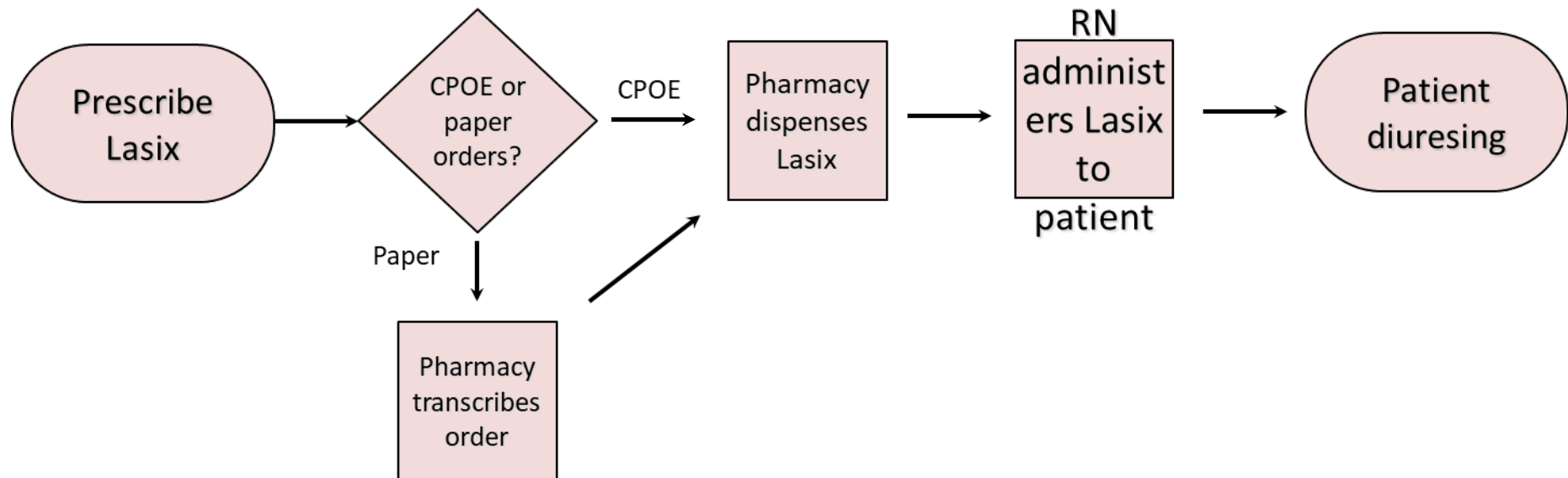1. Establish the start and the end of the process and use an oval **terminal** symbol to depict these

Prescribe Lasix

Patient diuresing

2. Start with major "high-level" steps in the process. Use rectangles to represent actions and diamonds to represent decisions.

3. Add more detail about each major step of the process - can be mapped further to better understand specific step in a process

Prescribe Lasix → CPOE or paper orders? → CPOE → Pharmacy dispenses Lasix → RN administers Lasix to **patient** → Patient diuresing

Paper → Pharmacy transcribes order

- Bring Lasix to patient
- Double-check patient's name
- Watch patient take Lasix
- Document on MAR

ASPIRE
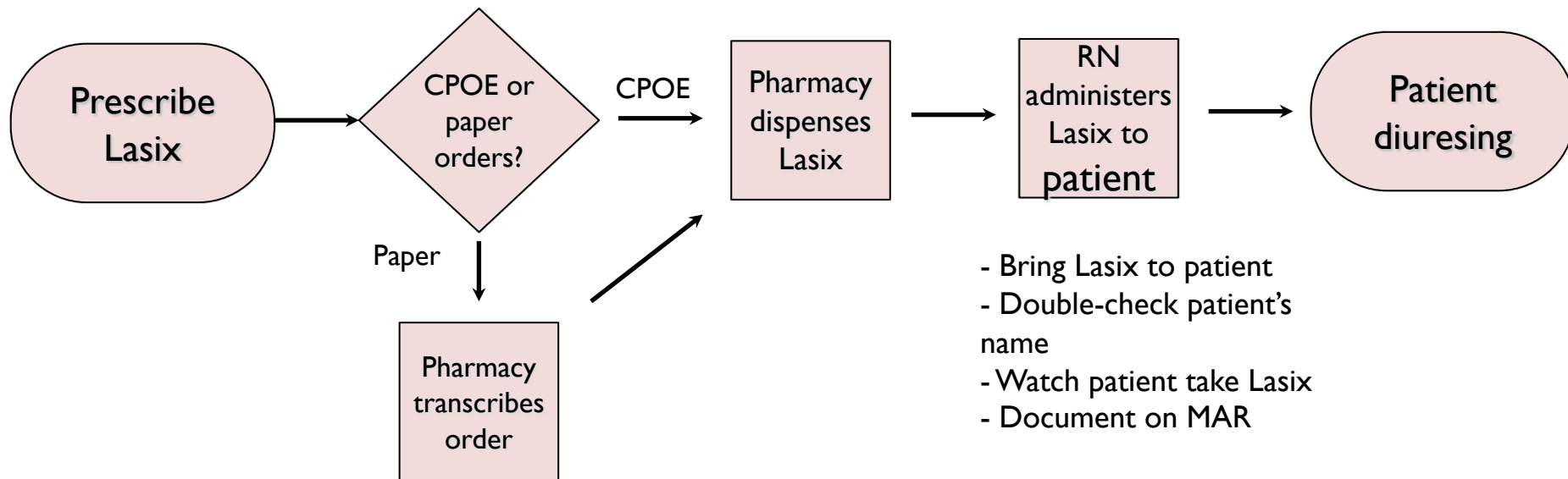
4.   If you are unclear about a specific step, can use a **cloud** as a placeholder and re-visit when more information is available

Prescribe Lasix → CPOE or paper orders? —CPOE→ Pharmacy dispenses Lasix → RN administers Lasix to patient → Patient diuresing
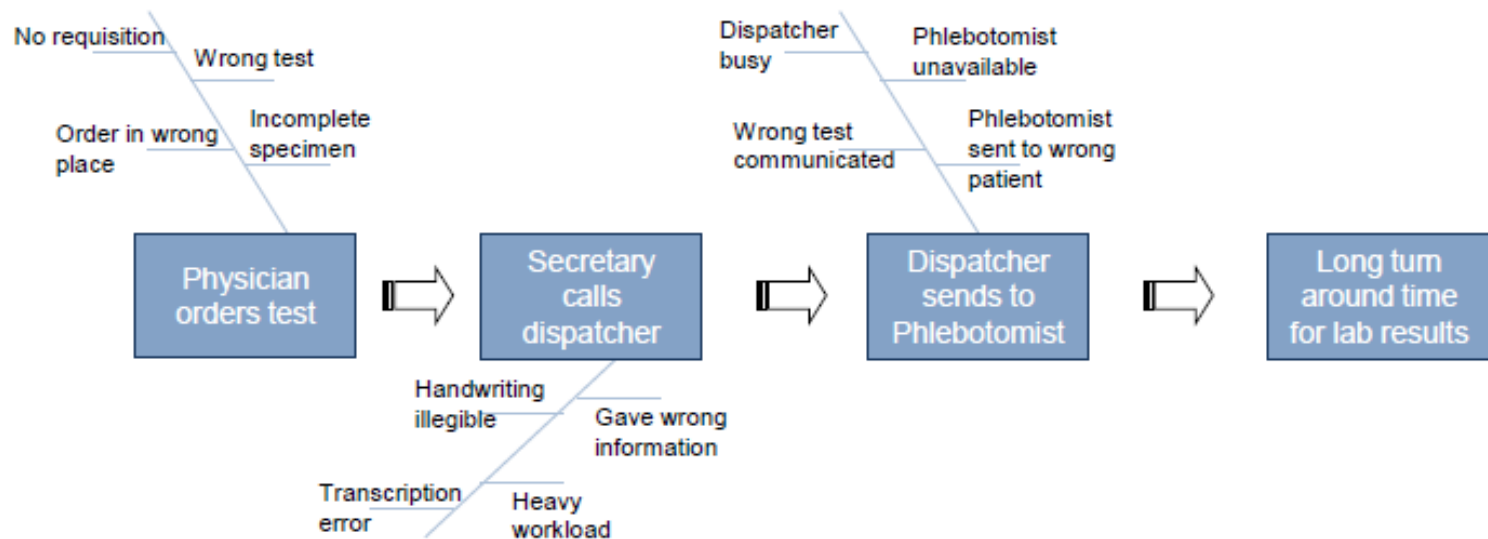
Paper ↓

Pharmacy transcribes order

- Bring Lasix to patient
- Double-check patient's name
- Watch patient take Lasix
- Document on MAR

cpsi·icsp
Canadian Patient Safety Institute / Institut canadien pour la sécurité des patients

ROYAL COLLEGE
OF PHYSICIANS AND SURGEONS OF CANADA
COLLÈGE ROYAL
DES MÉDECINS ET CHIRURGIENS DU CANADA

In some cases, you may find that using a process to understand root cause using the fishbone diagram tool is more intuitive for the team members to discuss

Fishbone diagram for Lab Turn Around Times

No requisition
Wrong test

Order in wrong place
Incomplete specimen

Dispatcher busy
Phlebotomist unavailable

Wrong test communicated
Phlebotomist sent to wrong patient

Physician orders test ⇒ **Secretary calls dispatcher** ⇒ **Dispatcher sends to Phlebotomist** ⇒ **Long turn around time for lab results**

Handwriting illegible
Gave wrong information

Transcription error
Heavy workload

Some QI tools to find the root cause

1)5 Whys

2)Ishikawa (Fishbone Diagrams)

3)Process Mapping

4)Defect tick sheets/Pareto Charts

Transitioning from Cause and Effect to a Pareto

- Identify most likely root causes from the Fishbone
  - multi-voting with the team
  - pick no more than 8-10 root causes
  - helps to focus resources and energy

Pareto

- Pareto principle (80–20 rule), roughly 80% of the effects come from 20% of the causes, ex:
  - 80% land owned by 20% population
  - 80% sales come from 20% of clients
  - 80% of worlds GDP in 20% of population
  - 80% of a company's complaints come from 20% of its customers
  - 80% of the injuries from 20% of the hazards (defects)
- Pareto chart highlights most important factors

Pareto of Incidents
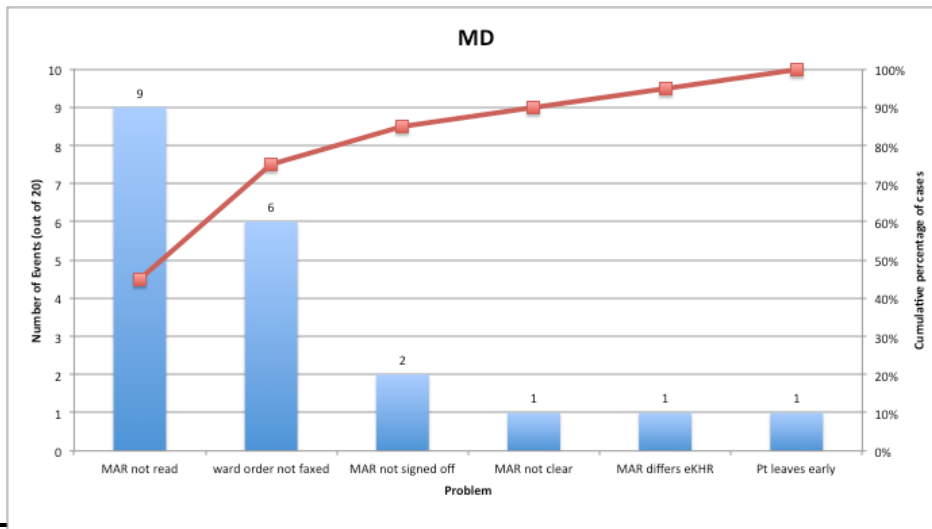
Why did Antibiotic error most likely occur?

Cause	Count	Total	Percentage of Total	Cumulative Percentage
MAR Not read	///// ////	9	45%	45%
Order not faxed	///// /	6	30%	75%
MAR not signed off	//	2	10%	85%
MAR not clear/available	/	1	5%	90%
MAR does not match eKHR	/	1	5%	95%
Patient leaves early	/	1	5%	100%

Lean

eliminate waste

improve workflow

optimize inventory

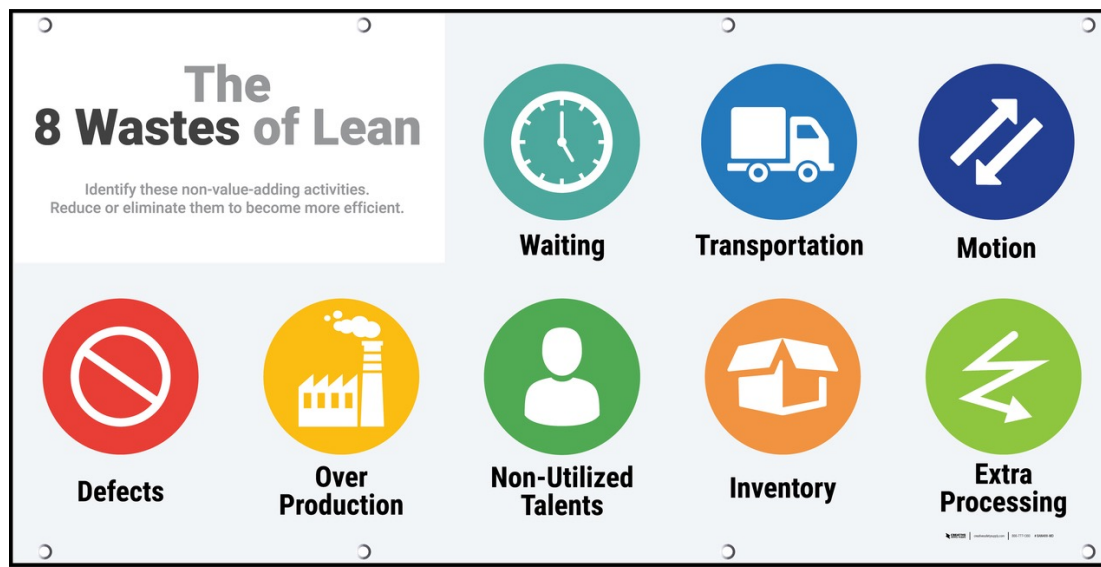change the work environment to support elimination of waste

enhance the customer relationship

manage time

manage variation

design systems to avoid mistakes

focus on products and services that meet the customer demand

The 8 Wastes of Lean

Identify these non-value-adding activities. Reduce or eliminate them to become more efficient.

Waiting | Transportation | Motion

Defects | Over Production | Non-Utilized Talents | Inventory | Extra Processing

5-S (how to eliminate waste)

Sort (seiri) – decide on whats necessary and unnecessary, get rid of what you don't need

Set in Order (seiton) – orderly storage to find things easily "a place for everything and everything in its place"

Shine (seiso) – keep workplace clean, lighting, tools clean, one activity at a time

Standardize (seiketsu) – standard best practices, keep areas consistent

Sustain (shitsuke) – behaviors and habits to promote standards in long term

(safety - added to healthcare to create 6-S)

(spirit – considered 7-S)

Determine if the change is an Improvement

Select an outcome that is meaningful and relevant to your stake holders

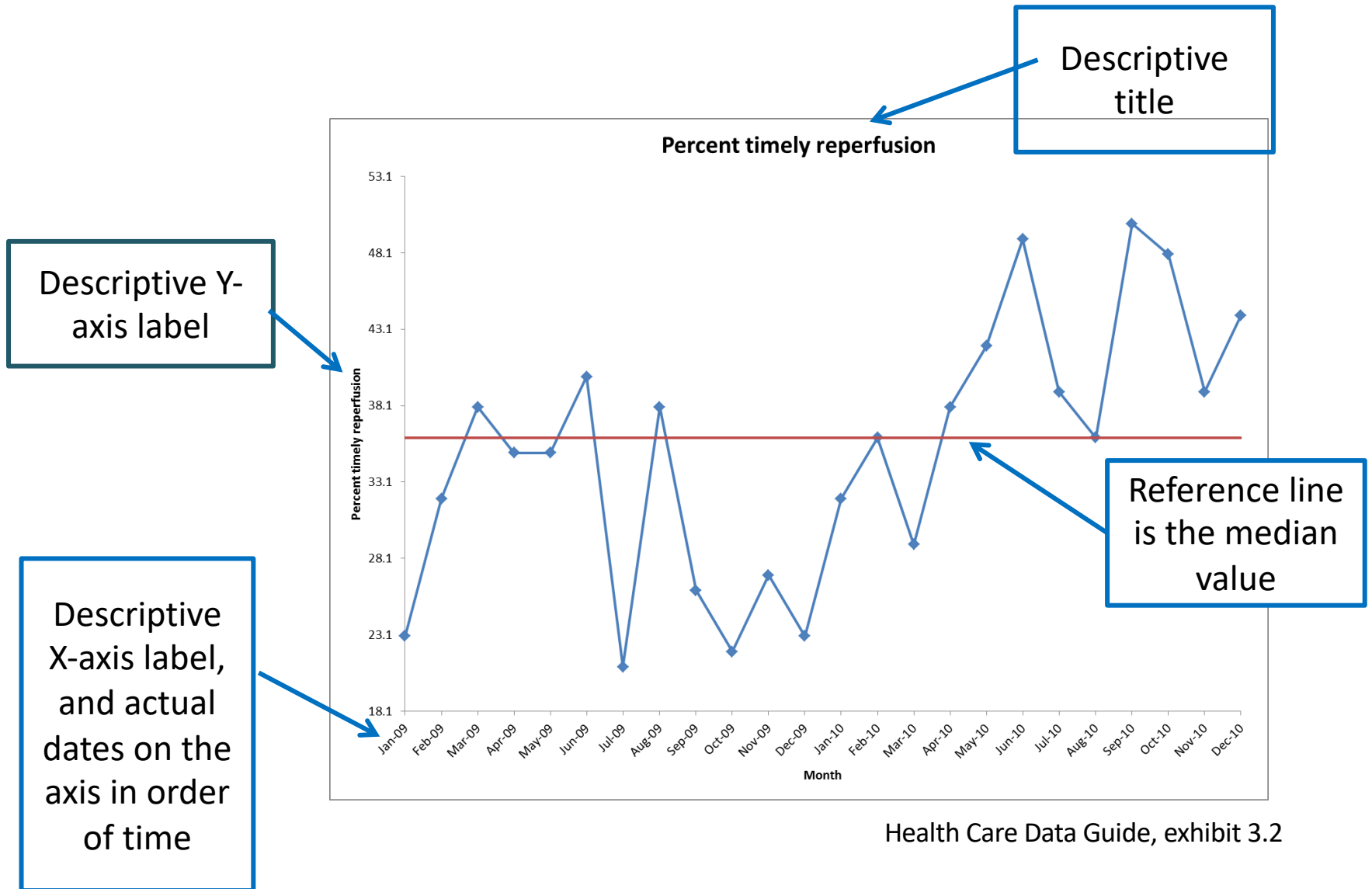Collect small sequential samples over time "just enough"
Plot as a Run Chart

The run chart: a simple analytical tool for learning from variation in healthcare processes

BMJ Qual Saf 2011;**20**:46—51.

Rocco J Perla,[1] Lloyd P Provost,[2] Sandy K Murray[3]

Anatomy of a Run Chart

Descriptive title

Descriptive Y-axis label

Descriptive X-axis label, and actual dates on the axis in order of time

Reference line is the median value
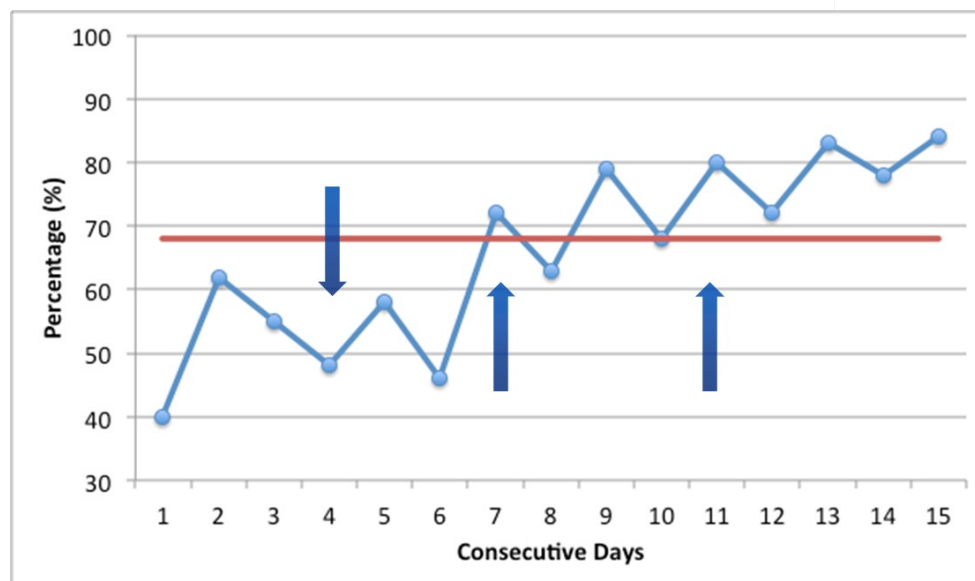
Health Care Data Guide, exhibit 3.2
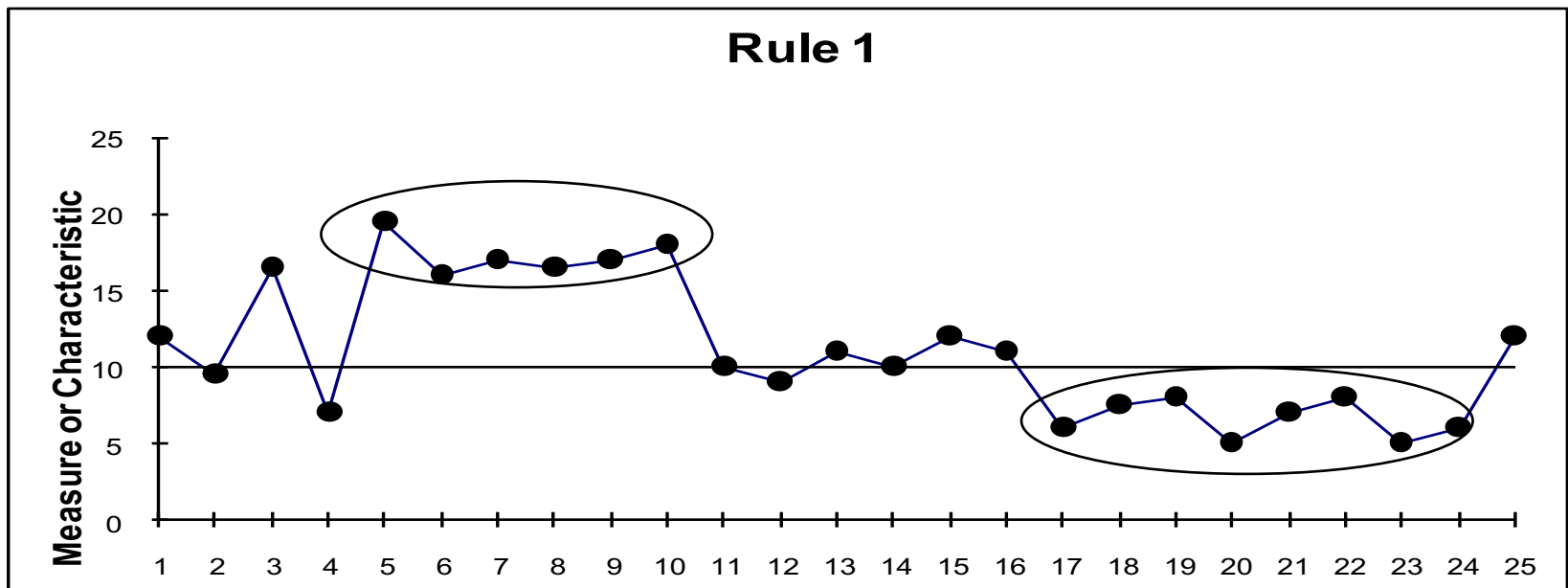
Rules for Interpreting a Run Chart

Four (probability-based) rules to identify non-random signals of change in a run chart

(Health Care Data Guide, pgs. 76 – 85)
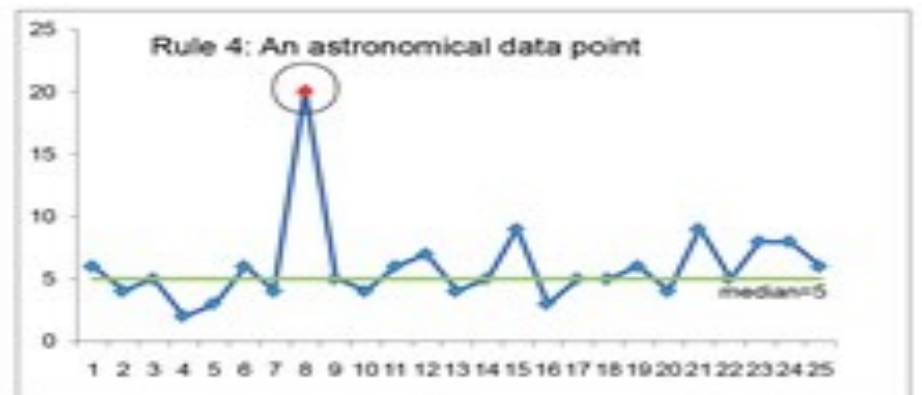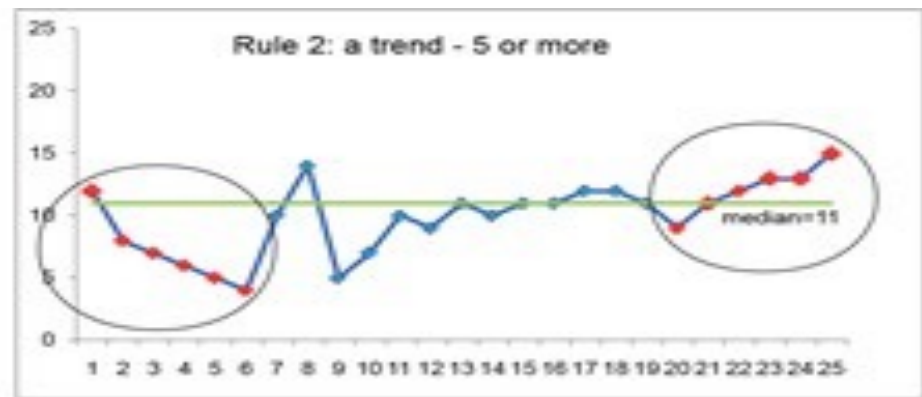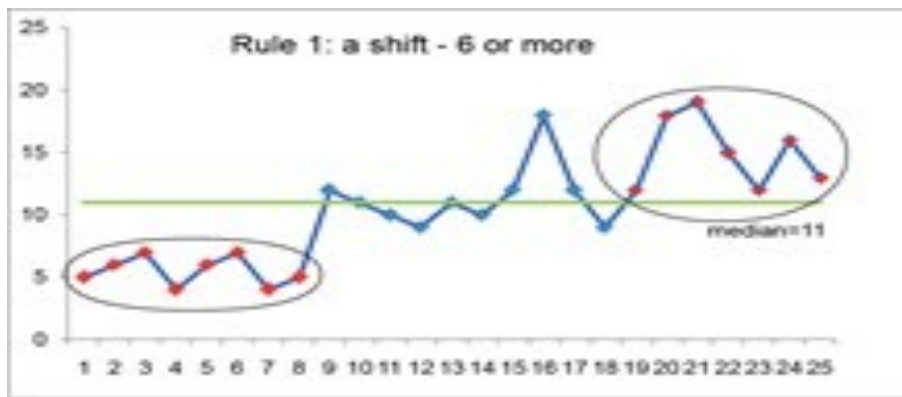
Rule 1 - shift

Six or more consecutive points either all above or all below the median signal a non-random pattern. Values exactly on the median do not make or break a shift.
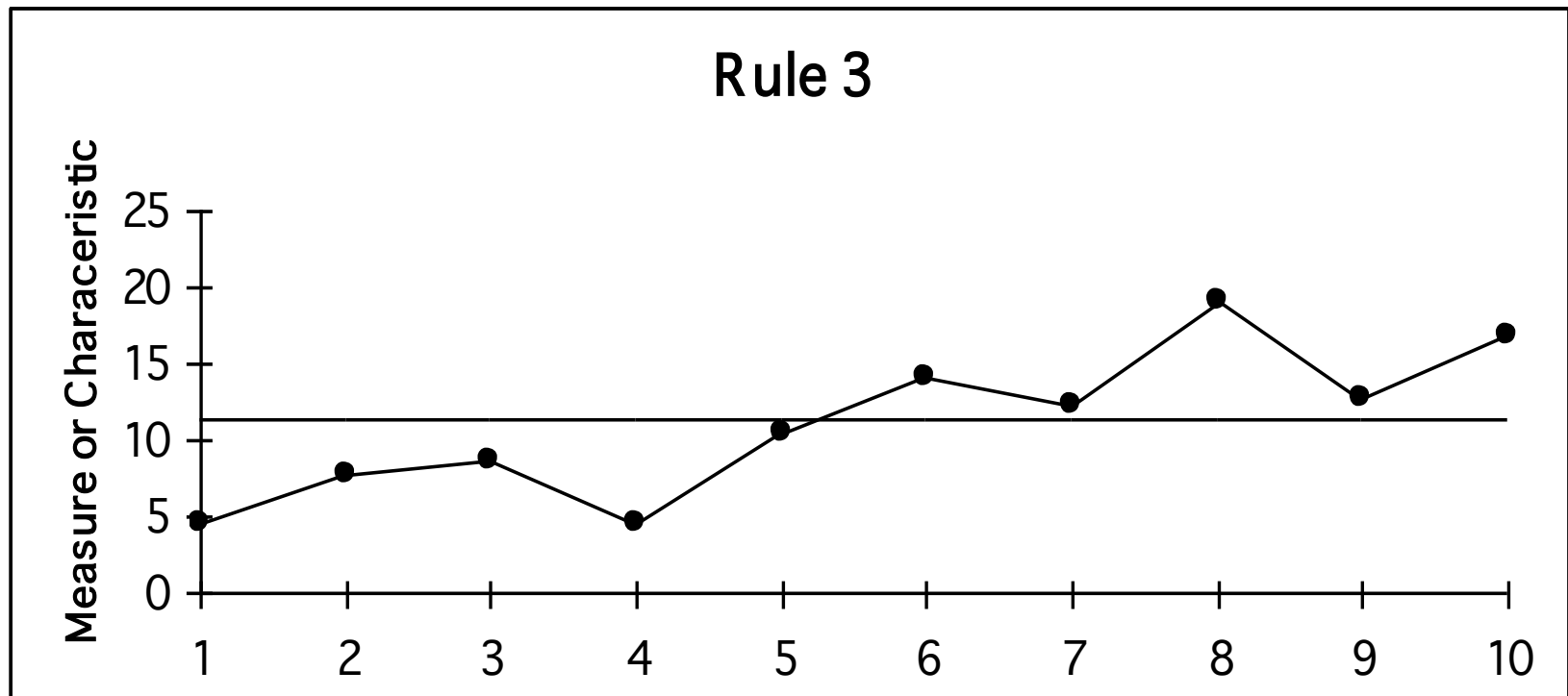
Rule 2 - trend

Five points all going up or all going down. If the value of two successive points are the same, ignore one of the points; identical values do not make or break a trend.
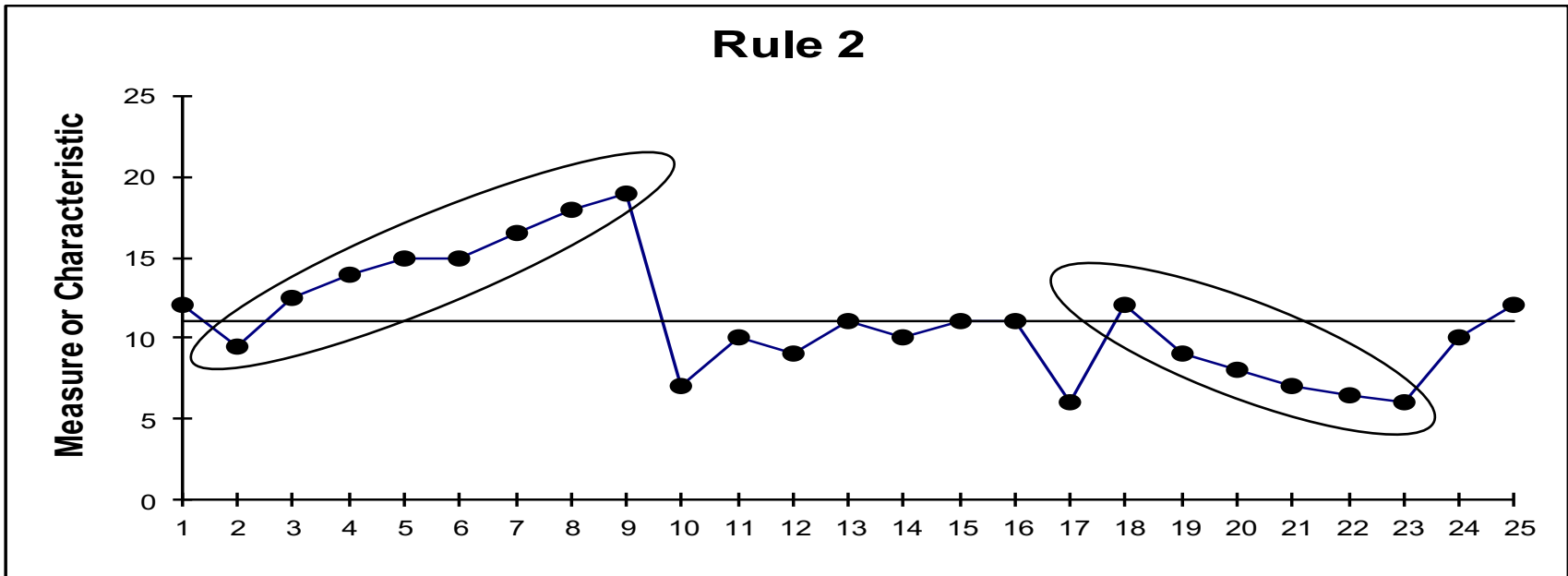
Rule 3 – number of runs

Rule 4 – Astronomical value

Unusually large or small numbers:

- Everyone studying the chart agrees that it is unusual

- Remember: Every data set will have a high and a low - this does not mean the high or low points are astronomical