

# Root Cause Analysis

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Improvement Foundation





# What was the problem?



# Fun Easy and Popular!

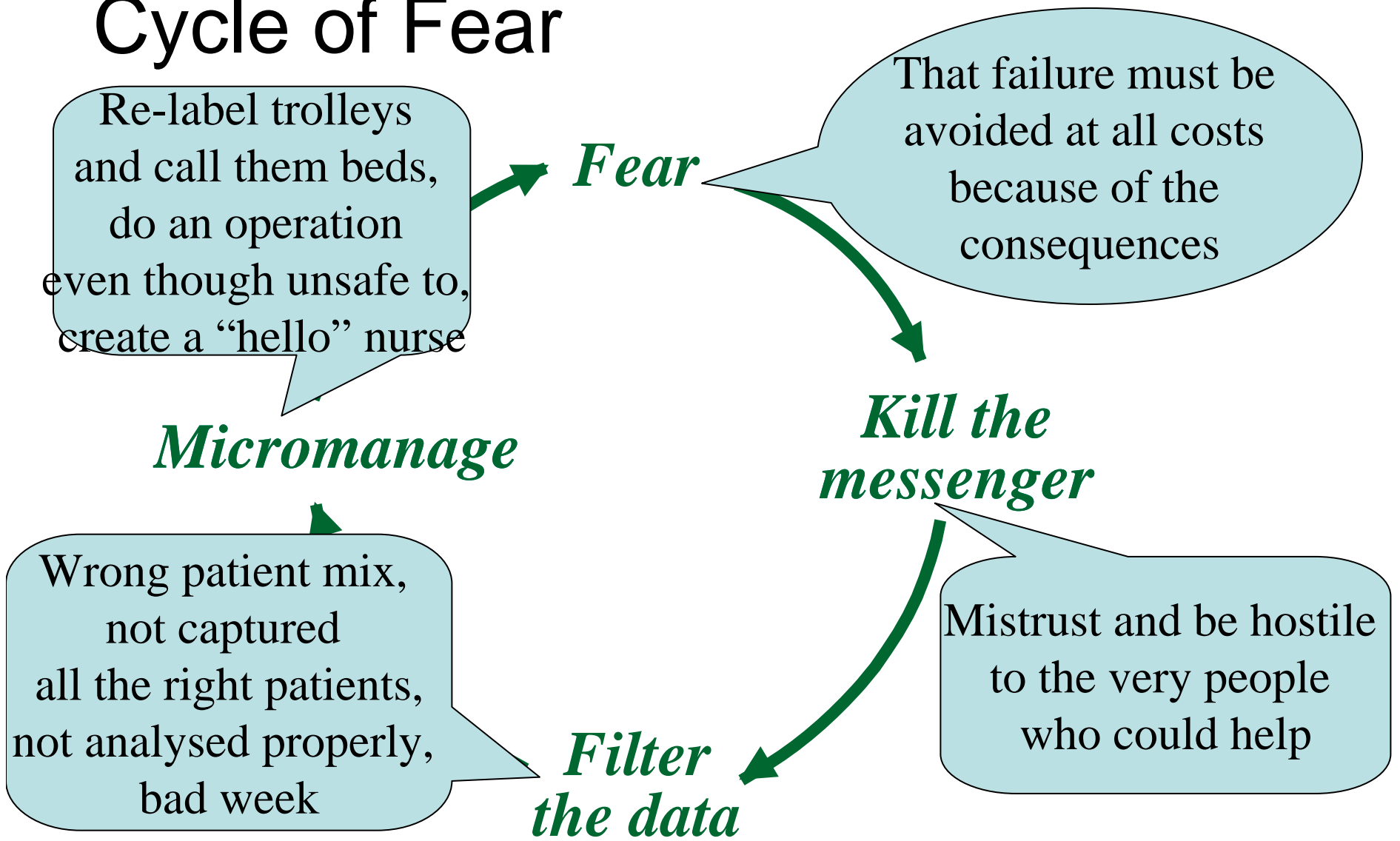


# A Root Cause

- Is the single biggest contributory factor to a systems failure
- Is a fundamental cause, which, if eradicated, will resolve or significantly contribute to the resolution of the problem, widely across a system



# Cycle of Fear



# Ground Rules



- Everyone must be honest with each other & show respect
- Everyone involved in the event attends the meeting
- No blame, only 'I' statements
- The event is recalled by each individual involved
- These recollections are agreed & documented

# Gathering Information

- Information is the lifeblood of knowledge & wisdom
- 60% of the time should be spent information gathering
- Everyone involved in the patient's care should be included



# Multiple Professional Review Meeting

- Invite delegates, explain process
- OHP flipcharts
- Transpose incident chronology onto wall
- Note-pads, pens, different coloured post-its and blue tack
- Refreshments
- Facilitator



# Root Cause Analysis



- Success is all in the preparation
- Generally people too readily jump to **Solutions**
- In the long run we pay heavily for not
  - **Defining & Analysing the Problem**

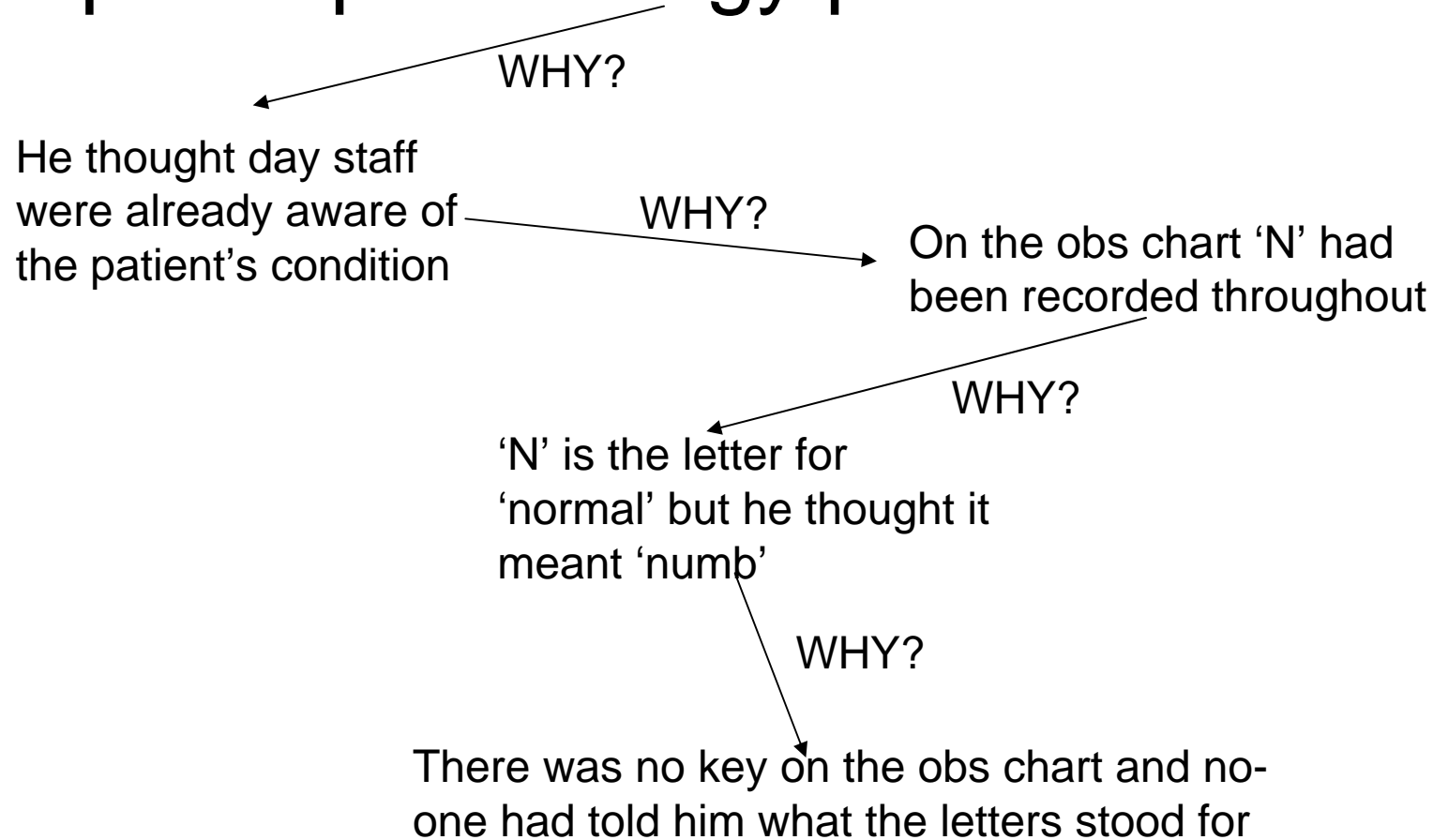
# Tools For Defining The Problem

- 5 Whys
- Gap Analysis
- Process and Mind Mapping
- Ishikawa (Fishbone)
- Gathering Information
- Pareto Analysis
- Brainstorming
- Affinity diagram
- Tree diagram

# Root Cause Analysis

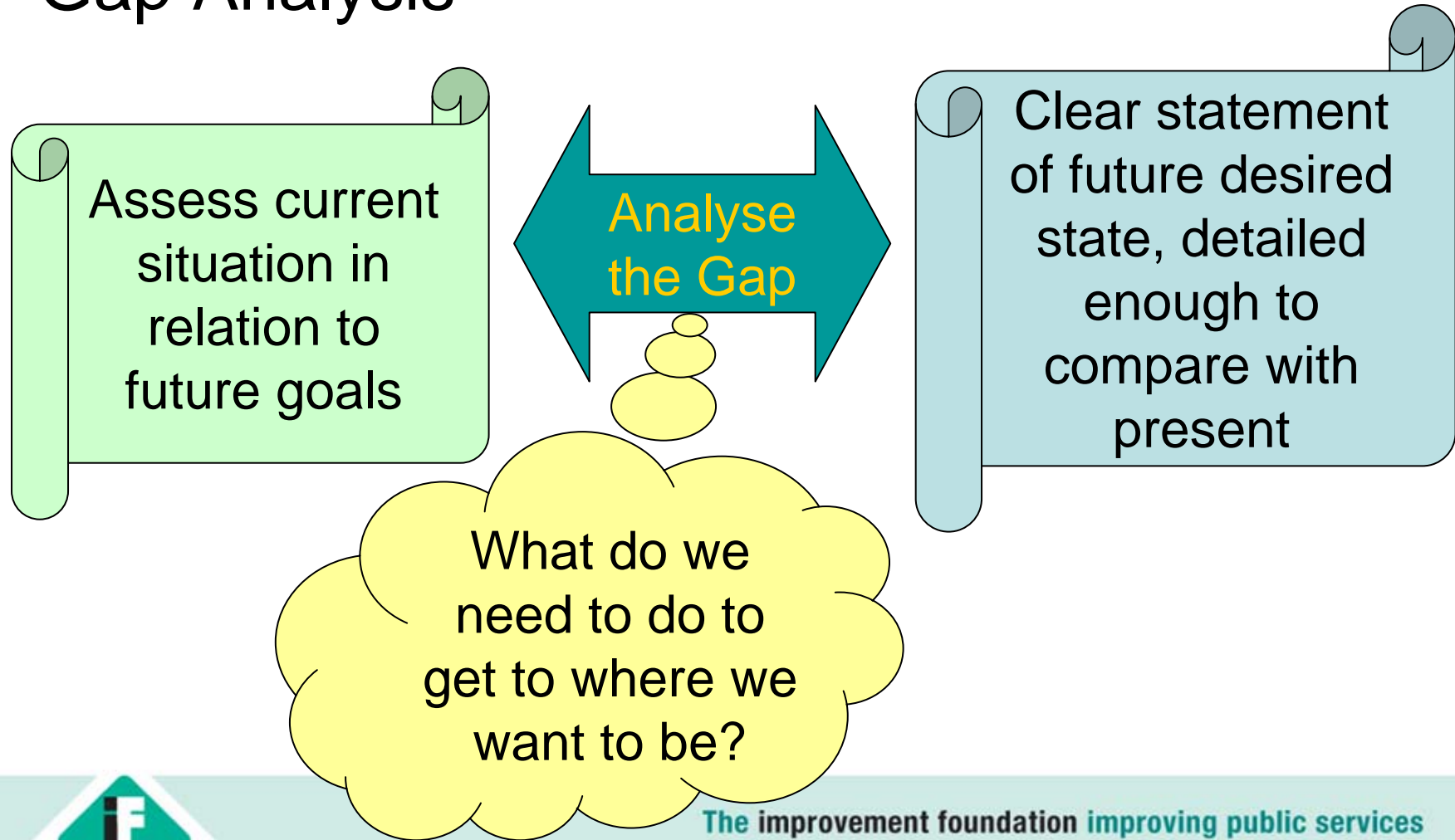
- The 5 Whys
- **WHY?**  
    **WHY?**  
        **WHY?**  
            **WHY?**  
                **WHY?**

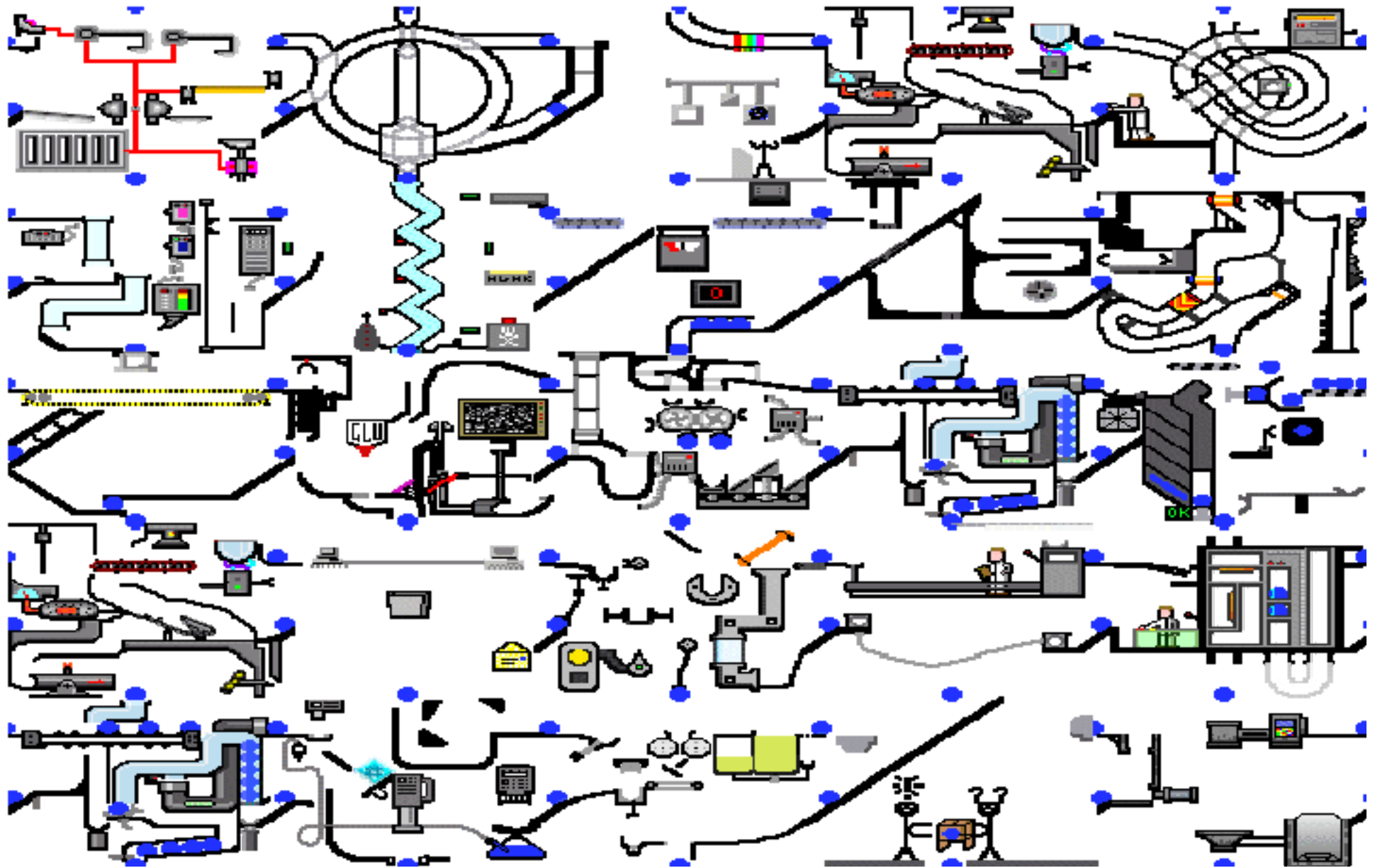
# Nurse did not alert staff to deterioration in post-op neurology patient



# Root Cause Analysis

## Gap Analysis



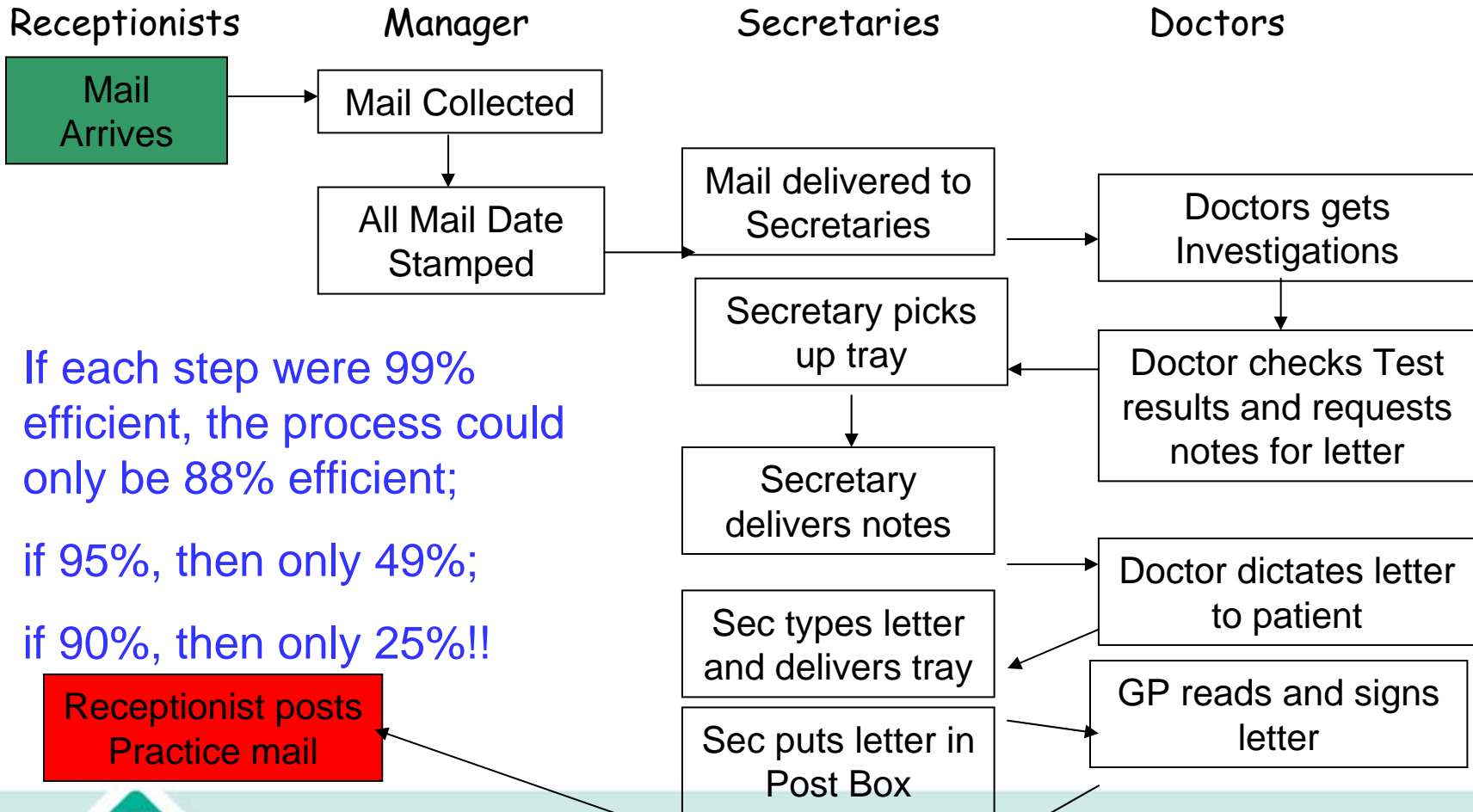


The improvement foundation improving public services

# Root Cause Analysis

- Process Mapping
- The patient journey
  - Who does what to the patient?
  - Define which group of patients
  - Define the scope (beginning and end)
  - Identify everyone involved
  - Together, write it down or draw it
- Other (sub-) processes
  - Transport,
  - Communication

# Process Map re Patient Test Results



If each step were 99% efficient, the process could only be 88% efficient;

if 95%, then only 49%;

if 90%, then only 25%!!

Receptionist posts Practice mail



# Mind Maps ( What can the future look like)



# Mind maps

- Encourage Problem Solving by allowing new opportunities.
- See the whole picture
- Organise action plans, activities, meetings and journeys.
- Mind maps speak louder than a thousand words
- Fun team work

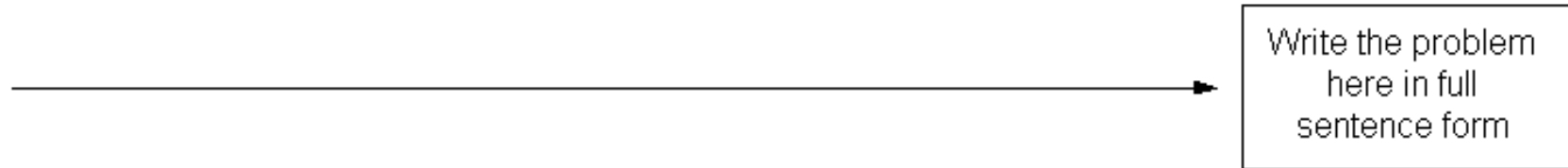
# Mind map – Holiday or Shopping



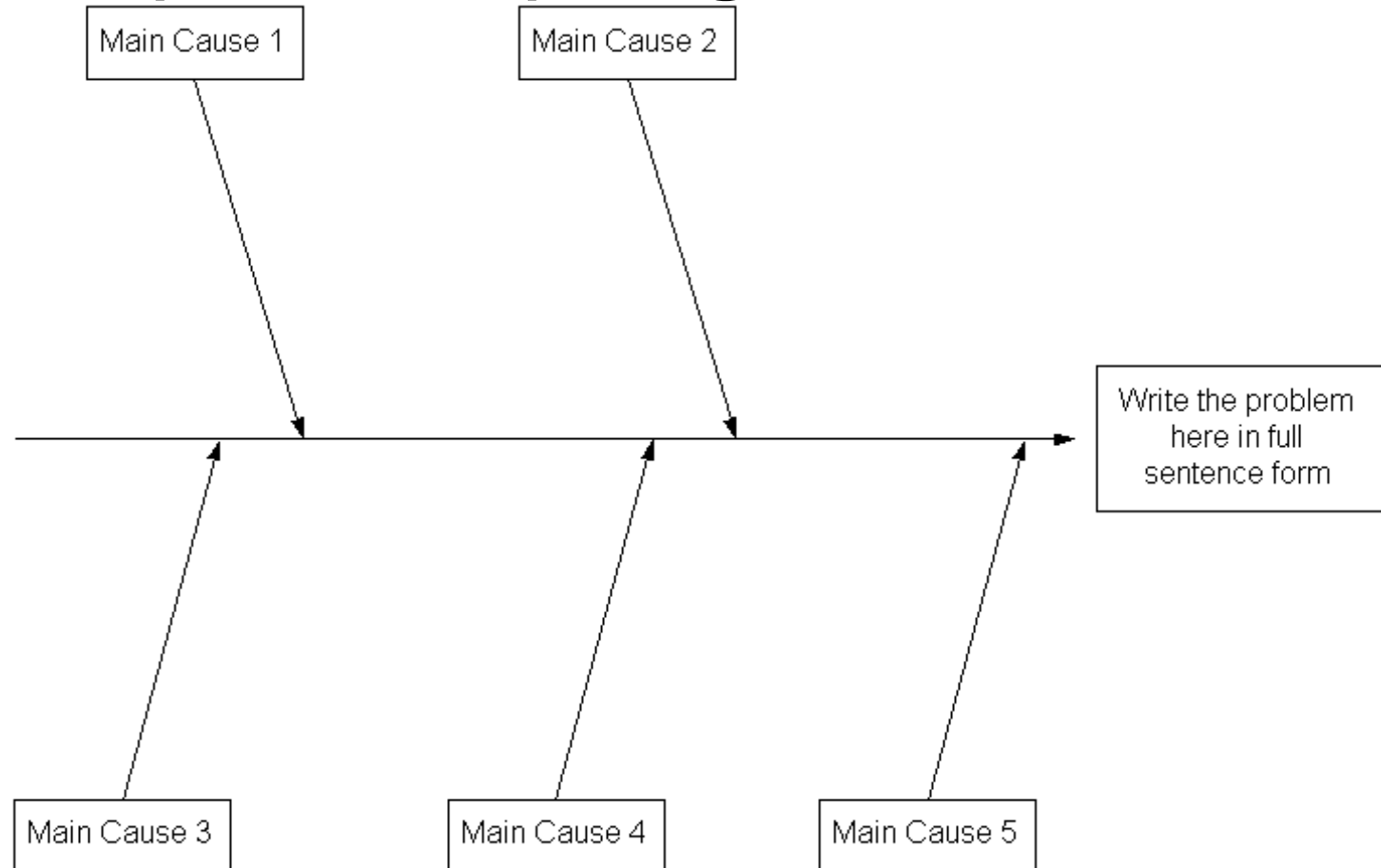
# Root Cause Analysis

## Ishikawa (Fishbone) Diagrams

-- Cause and Effect Diagram --

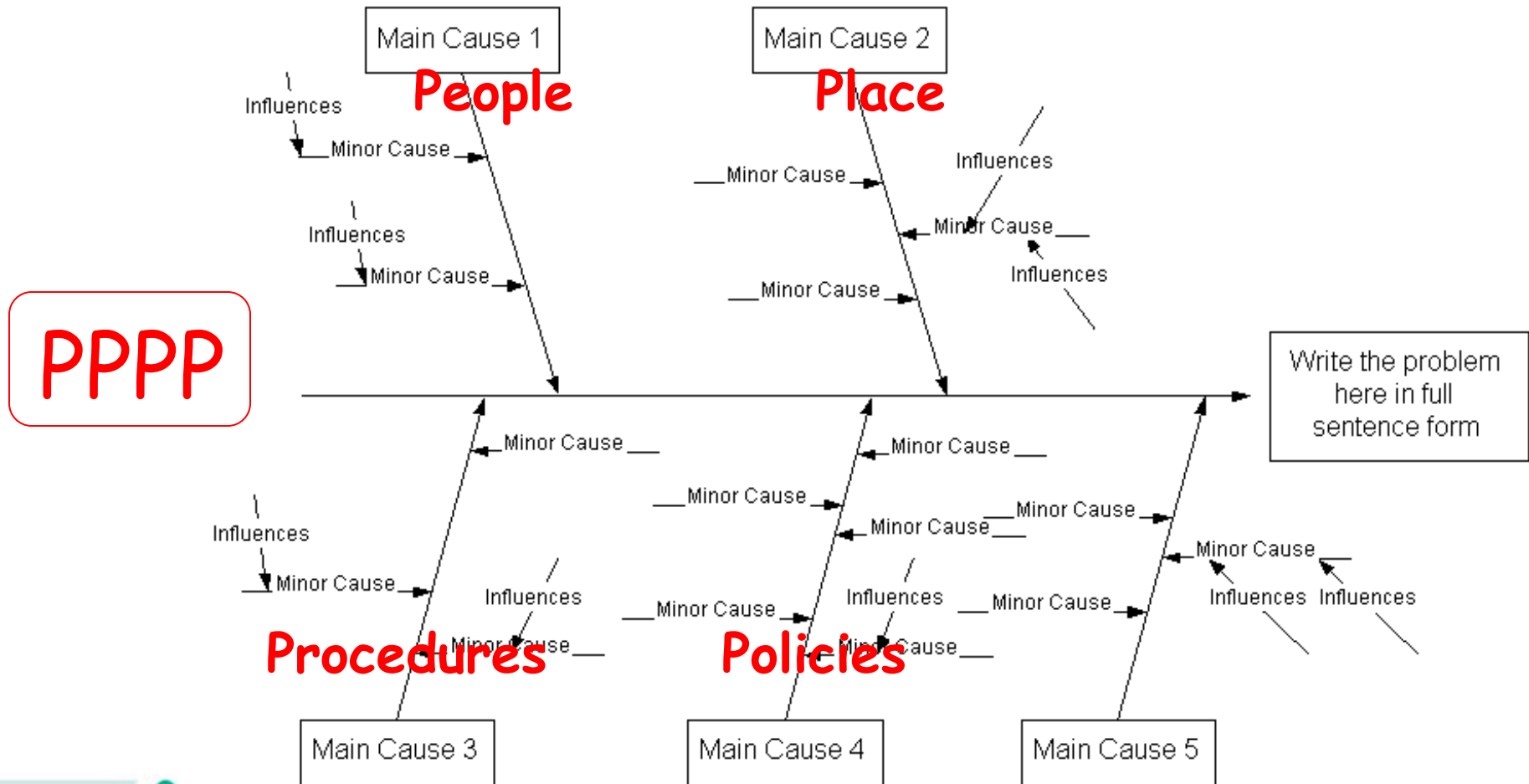


# Root Cause Analysis Ishikawa (Fishbone) Diagrams

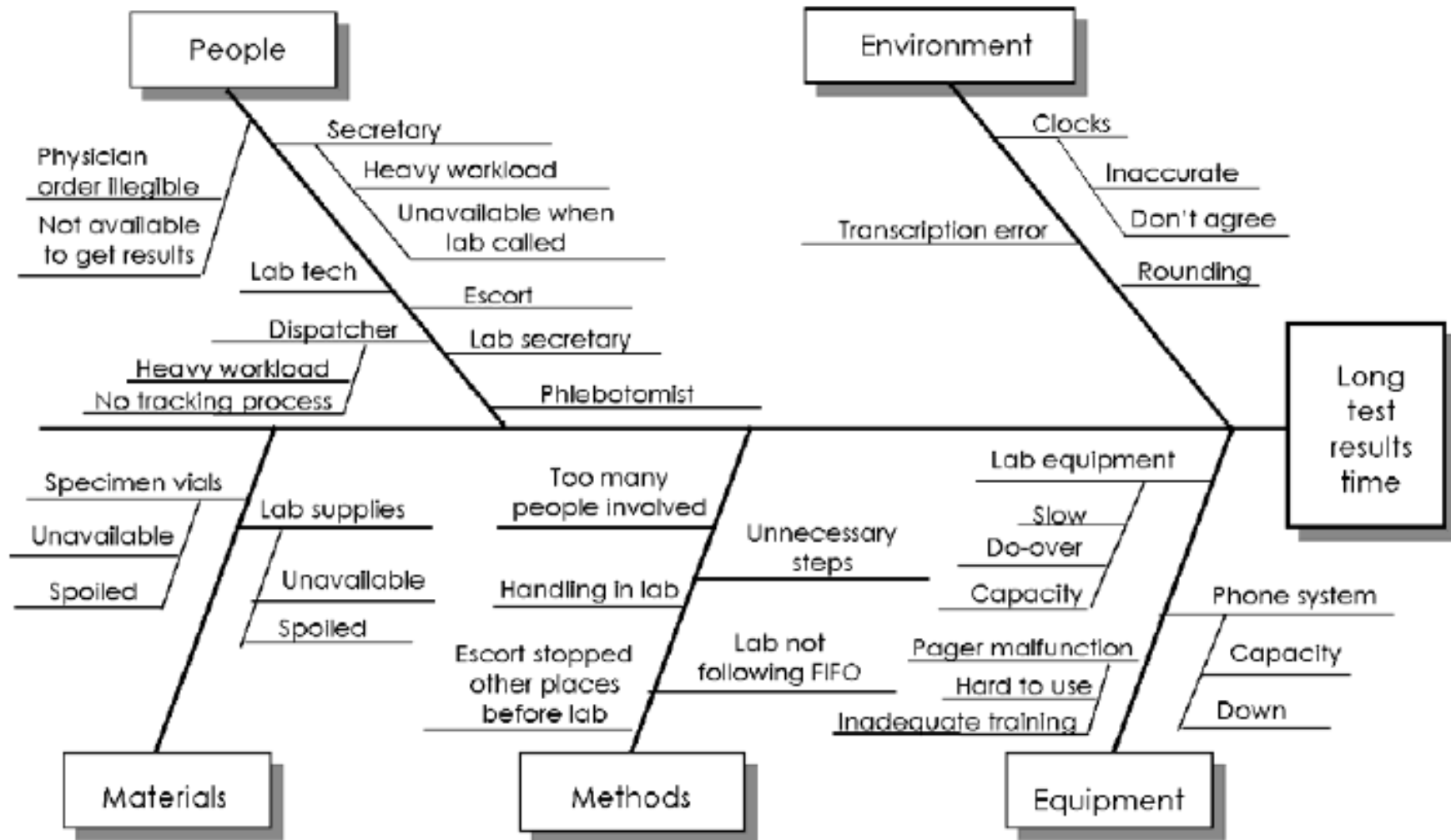


# Root Cause Analysis

## Ishikawa (Fishbone) Diagrams



# Example Cause & Effect Diagram



# Gathering Information

- Samples- choosing a representative group to count rather than everything
- Checklist ✓ IIII IIII II
- Linear scales- having a scale on which to mark a feeling  
SAD-----HAPPY
- Picture scales  
☺-----☹-----☹
- Lickert scale  
1- excellent, 2- good, 3- fair, 4- poor
- Survey (of a few cases)

# The Pareto Principle

- ‘The 80-20 Rule’
- For many phenomena, 80% of the consequences stem from 20% of the causes
- Observation that 80% of income in Italy went to 20% of the population
- ‘The Law of the Vital Few’

*Vilfredo Pareto, 1906*

# An Example Of Pareto Analysis

I was often late starting work- I knew what the problem was- the shower was cold, my wife kept me talking, and she forgot to set the alarm. She said the problem was my late nights and reading the paper.

So I decided to gather some information to prove my point ...

Week	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>18</u>	<u>19</u>	<u>20</u>
Alarm	1	0	1	0	1	1	2	0	0	1	1	0	1	0	0	1	1	1	2	0
Toaster fuse	2	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Slow kettle	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reading paper	4	4	2	1	2	4	3	3	4	2	2	4	2	1	2	1	1	0	0	0
Talking to spouse	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Late night	2	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0
Computer Failed Login	2	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0
Cold shower	2	3	2	1	0	0	2	2	1	1	3	1	2	0	0	2	1	0	0	1
Emergency Visit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interrupted by PN	0	1	0	2	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0

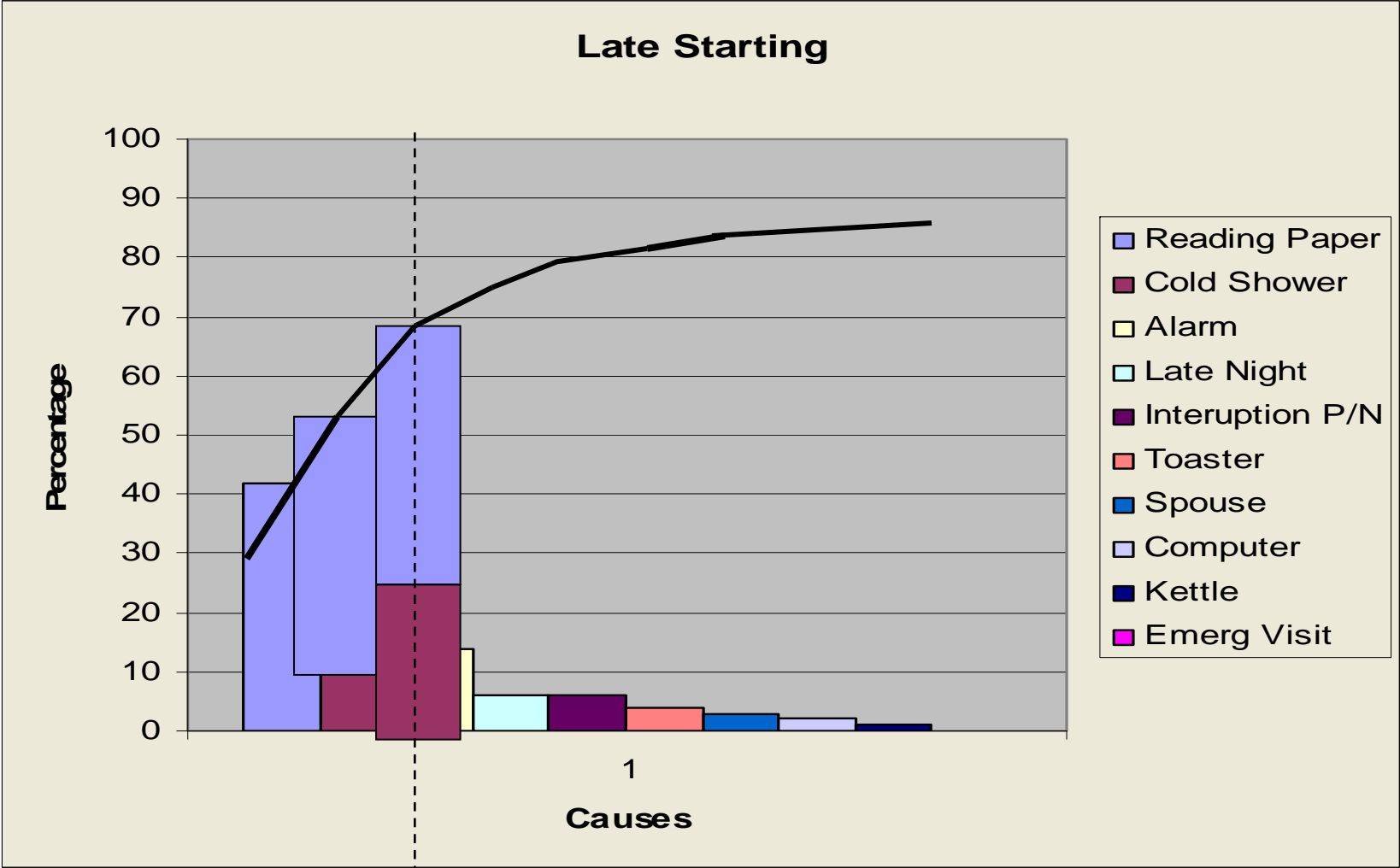
# Reasons Why I Start Morning Surgery Late

Alarm	<del>    </del> <del>    </del>	14
Toaster Fuse		4
Slow Kettle	I	1
Reading Paper	<del>    </del> <del>    </del> <del>    </del> <del>    </del> <del>    </del> <del>    </del> <del>    </del> <del>    </del> <del>    </del> <del>    </del>	42
Talking to Spouse	II	3
Late Night	<del>    </del> I	6
Computer Failed	II	2
Emergency Visit		0
Cold Shower	<del>    </del> <del>    </del> <del>    </del> <del>    </del>	24
Interruption by P/N	<del>    </del> I	6

# Rank Order the Causes

Reading Paper	42
Cold Shower	24
Alarm	14
Late Night	6
Interruption by P/N	6
Toaster Fuse	4
Talking to Spouse	3
Computer Failed Login	2
Slow Kettle	1
Emergency Visit	0

# Pareto Chart: Causes Of Late Start

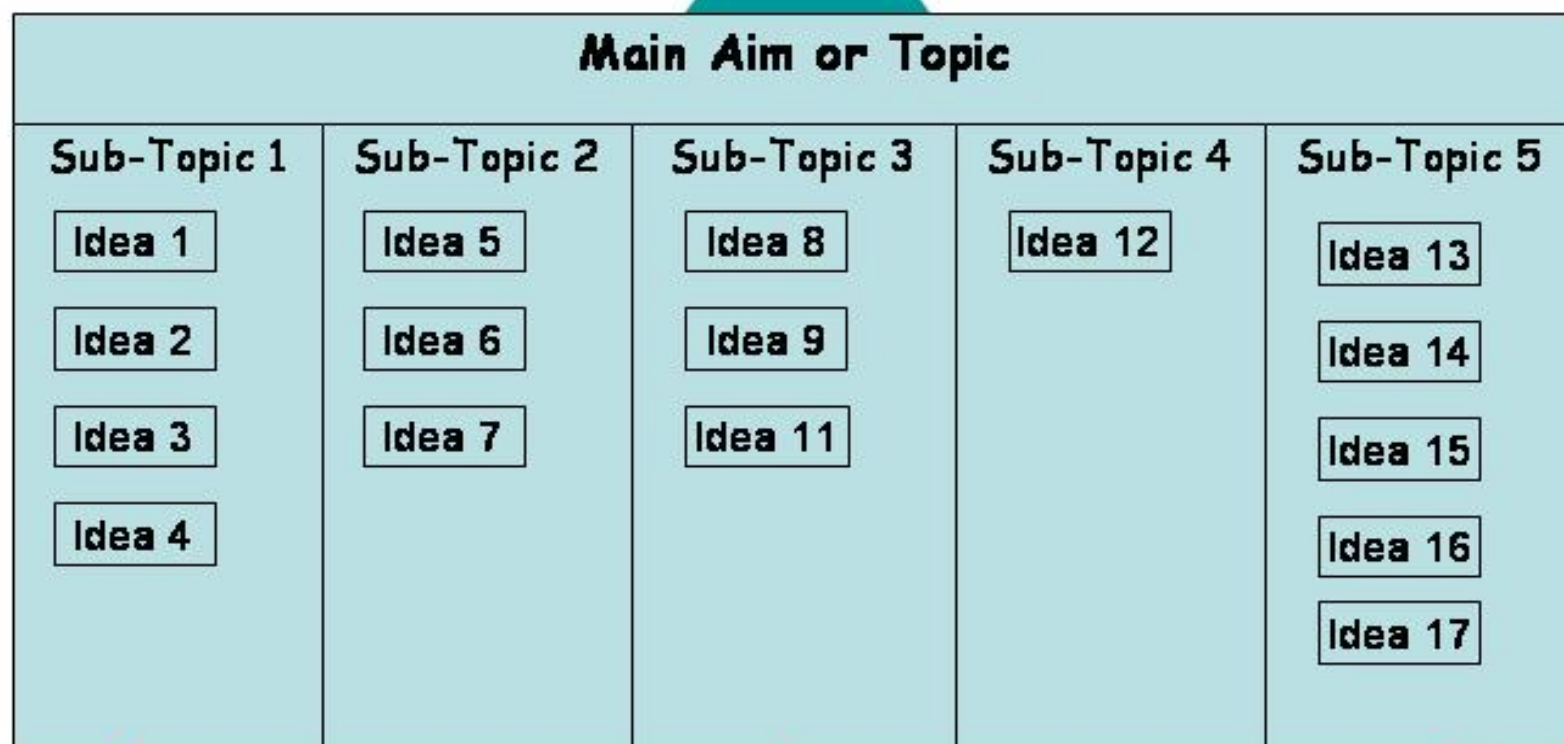


# Brainstorming

- Preparation
- Ground Rules
- Processing the Results
  - Affinity Diagram
  - Multi - voting
  - Nominal Group Technique



# Affinity Diagram using Flip-Chart



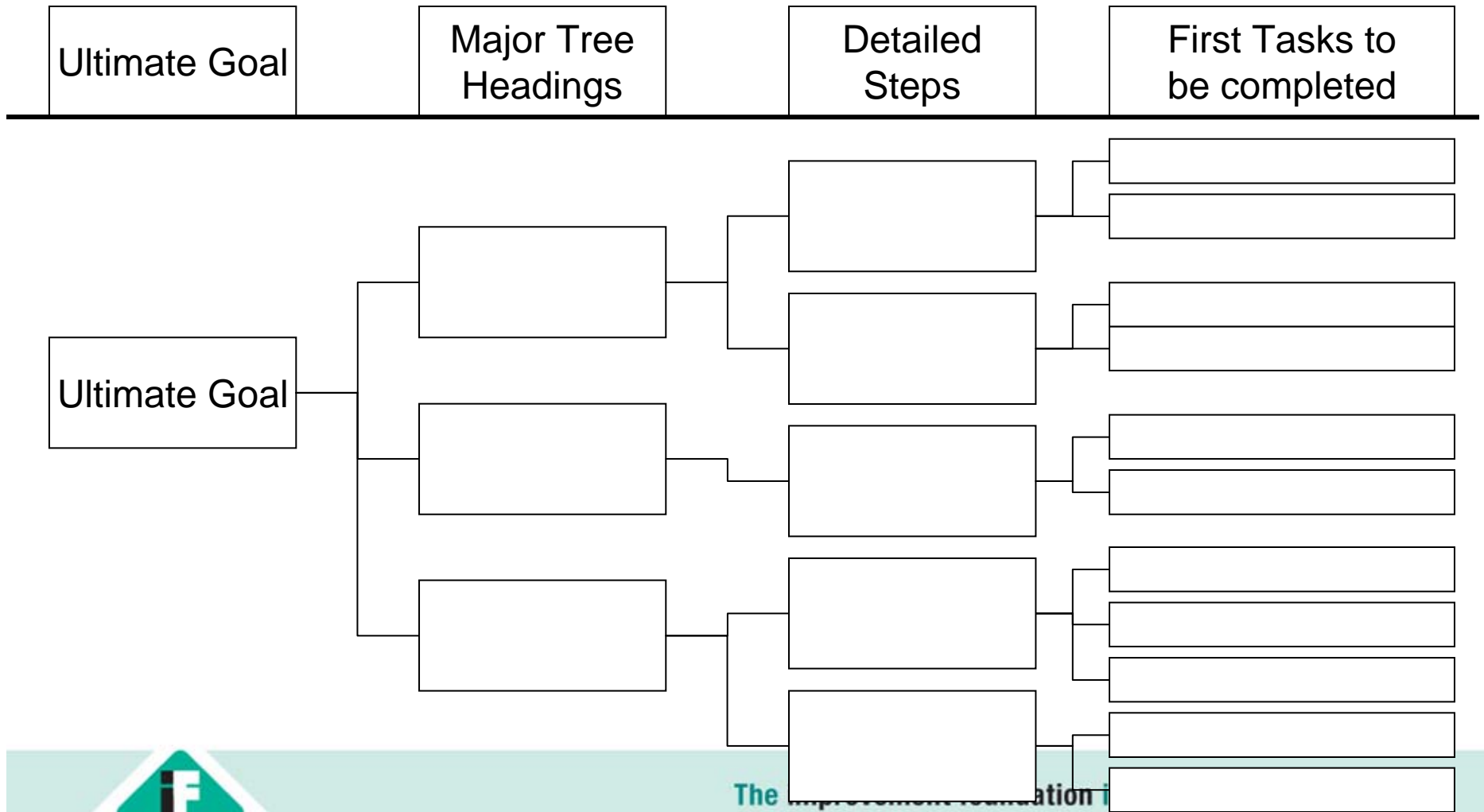
# Generating Solutions

- Involve Patients and Staff
- List all recommendations for change and prioritise for effective implementation
- Draw up an Action Plan
- Keep It Simple

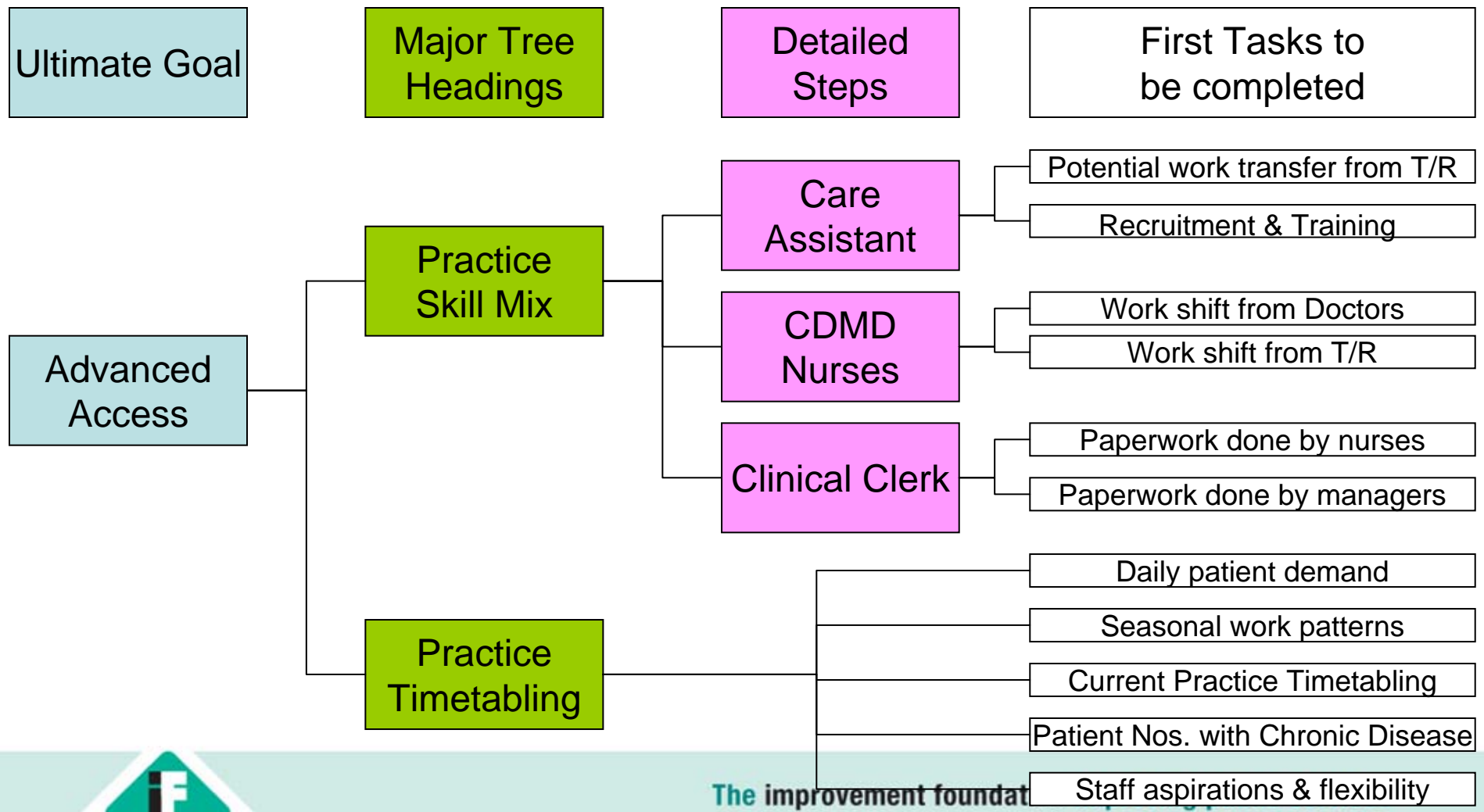
# Produce A Report

- Concentrate on the Facts
- Anonymise participants (Doctor A, Nurse B, Ms C, Mr D)
- Document the lessons learnt
- Recommend corrective/preventative actions
- Keep it Simple

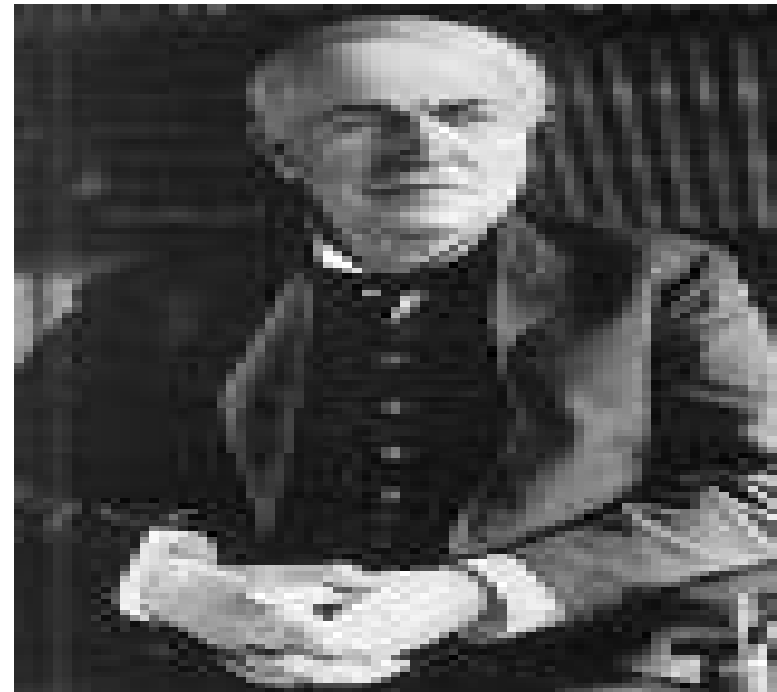
# The Tree Diagram



# A Tree Diagram re Advanced Access



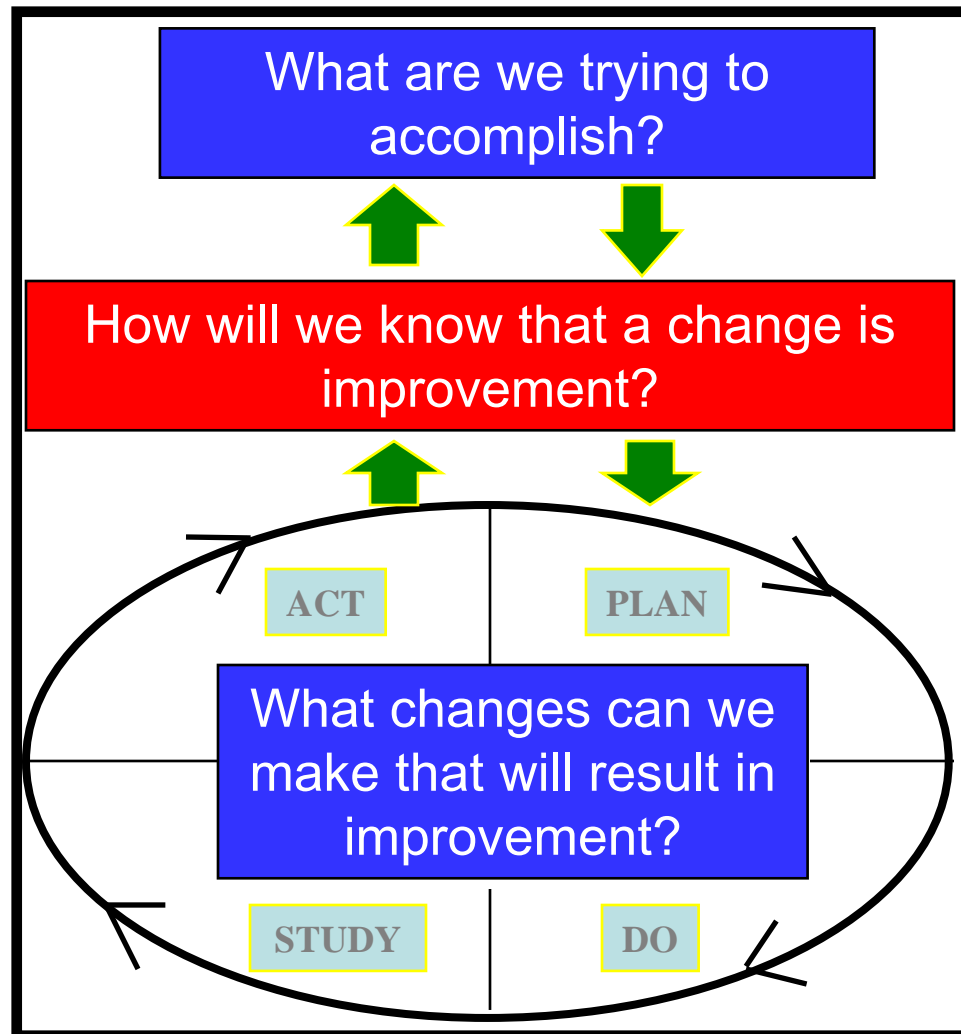
# Thomas Edison



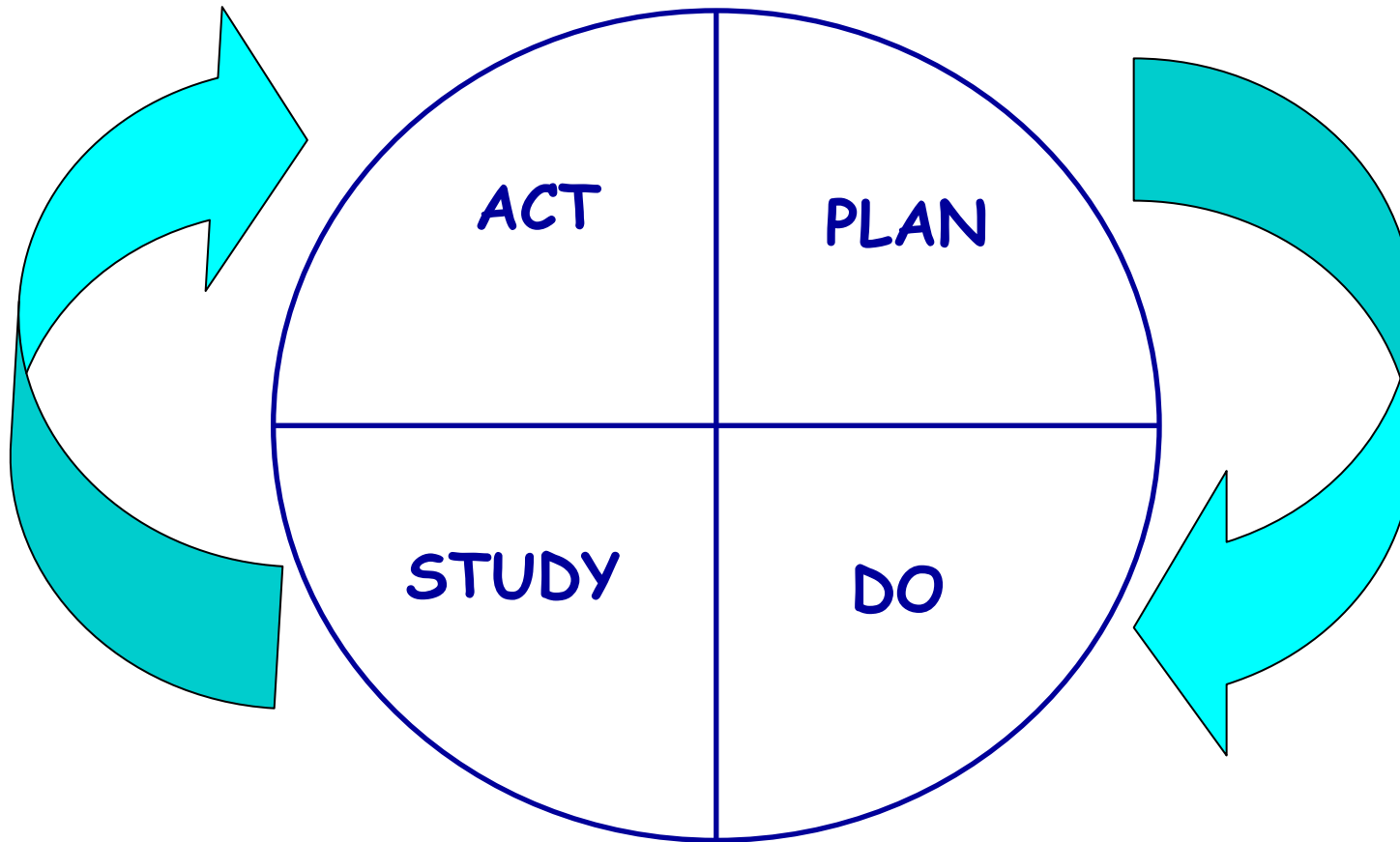
# Change idea!







# Model for Improvement



# Step 1: Plan



**What will you do? who, what, when, where, how)**

**What do you think will happen**

**How will you measure the change**

**How will you collect data**

# Step 2: Do



**Carry out the plan**

**Document problems and unexpected observations**

**Collect data**

# Step 3: Study



**Complete data analysis**

**What has happened?**

**What have you learnt**

# Step 4: Act



**What changes can be made**

**How can you improve further**

**What will be the next cycle**

## B. “Plan” your first PDSA

- What do you think the problem is? (outcomes of your brainstorming session)
- Break the problem down - what small test could you put in place?
- How long would I need to test it for?
- Think about: what measurement you would put in place?

Remember asking me how I feel is a valid measurement!

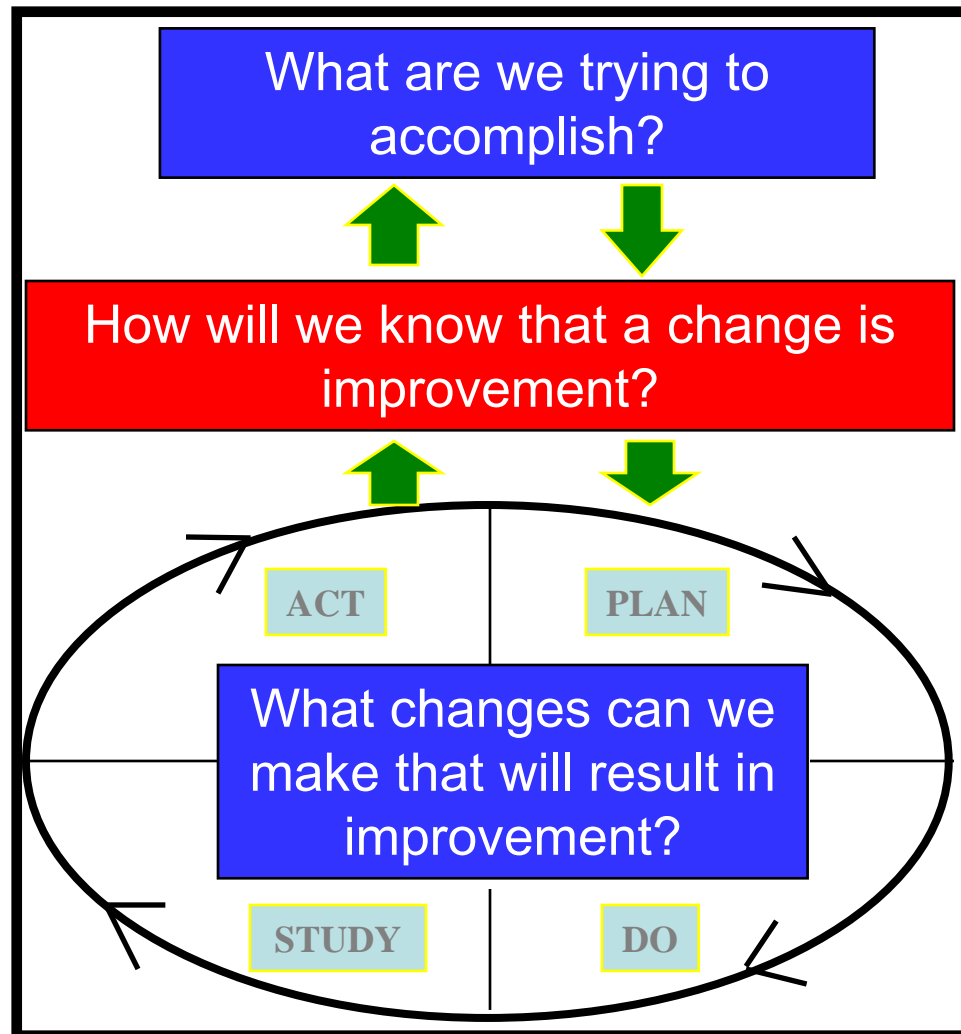


# Hints and Tips - PDSA

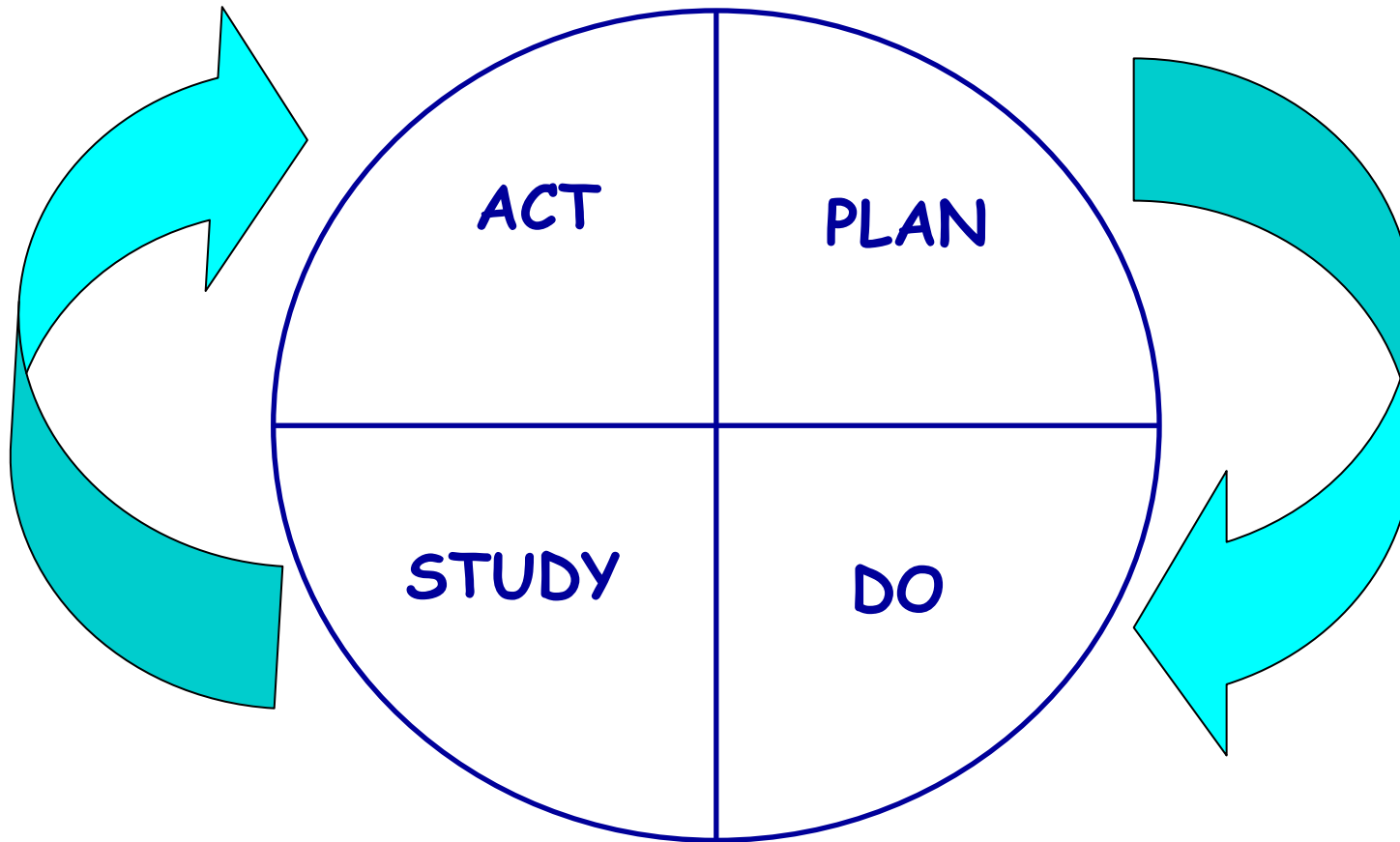


- Keep it simple
- Keep it small and manageable
- Cycles should happen quickly – think in terms of a week not a month!
- There is no wrong answer, if you find something works – use it
- Write it down! It helps remind you of what you have already learnt as well as planning the next steps
- Copy and adapt other people’s ideas if you think they may be useful





# Model for Improvement



A patient is the most important person in our hospital. He is not interruption to our work, he is the purpose of it. He is not an outsider in our hospital, he is part of it. We are not doing him a favour by serving him, he is doing us a favour by giving us an opportunity to do so

Mahatma Gandhi

