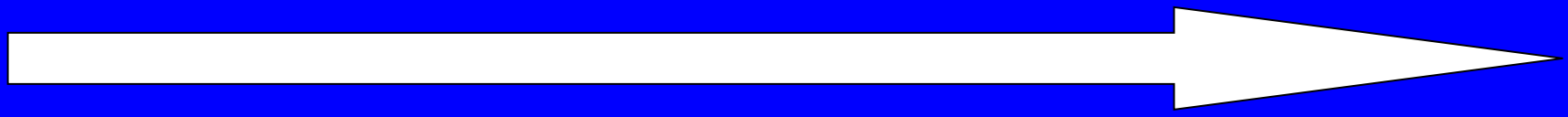
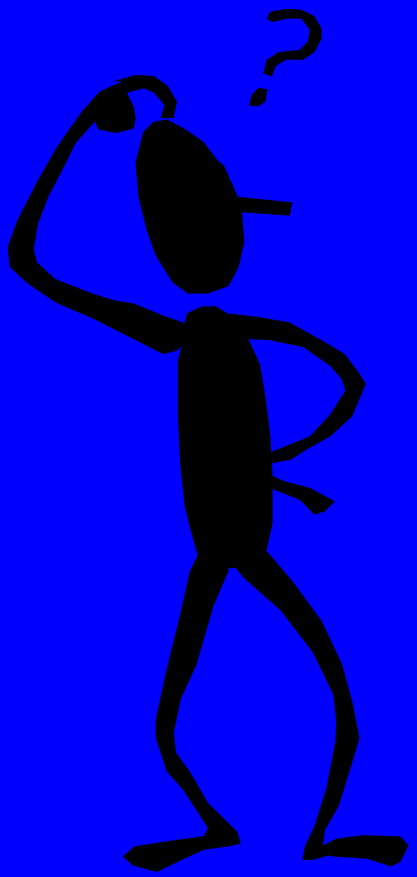

www.cci.scot.nhs.uk

# Getting started with Process Mapping, Patient Tracking and Flow Analysis

Teresa Fenech



# Why do Process Mapping?



# Process mapping….

- Views the system from the patient perspective following their journey across organisational boundaries

- Helps staff understand how complex and confusing processes appear to the patient

- Organisation specific

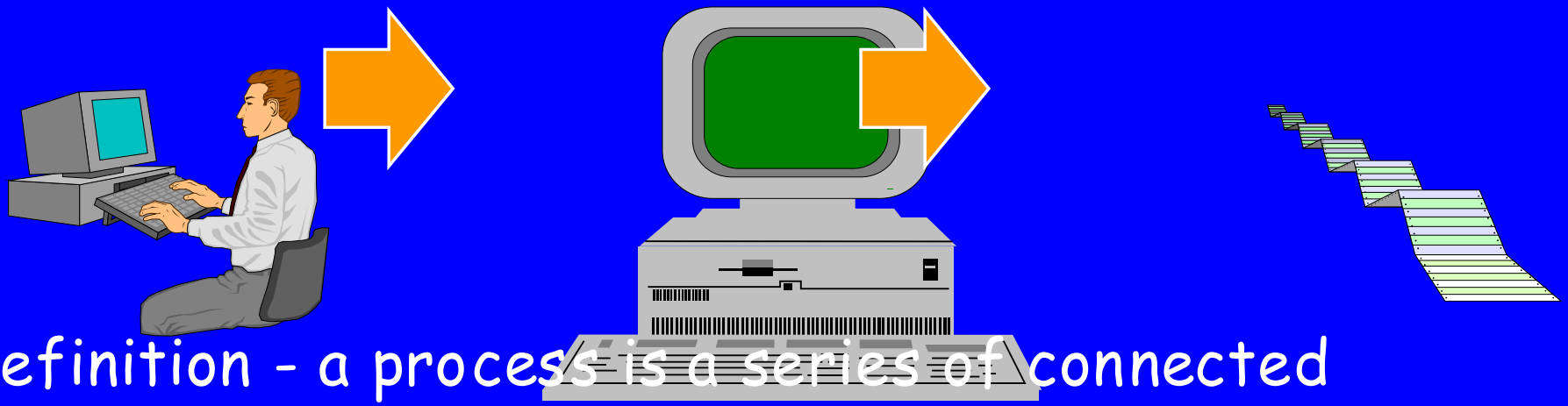
- Diagnostic and used as a basis for redesign, actively involving frontline staff in the process

# Process has inputs and outputs

Input

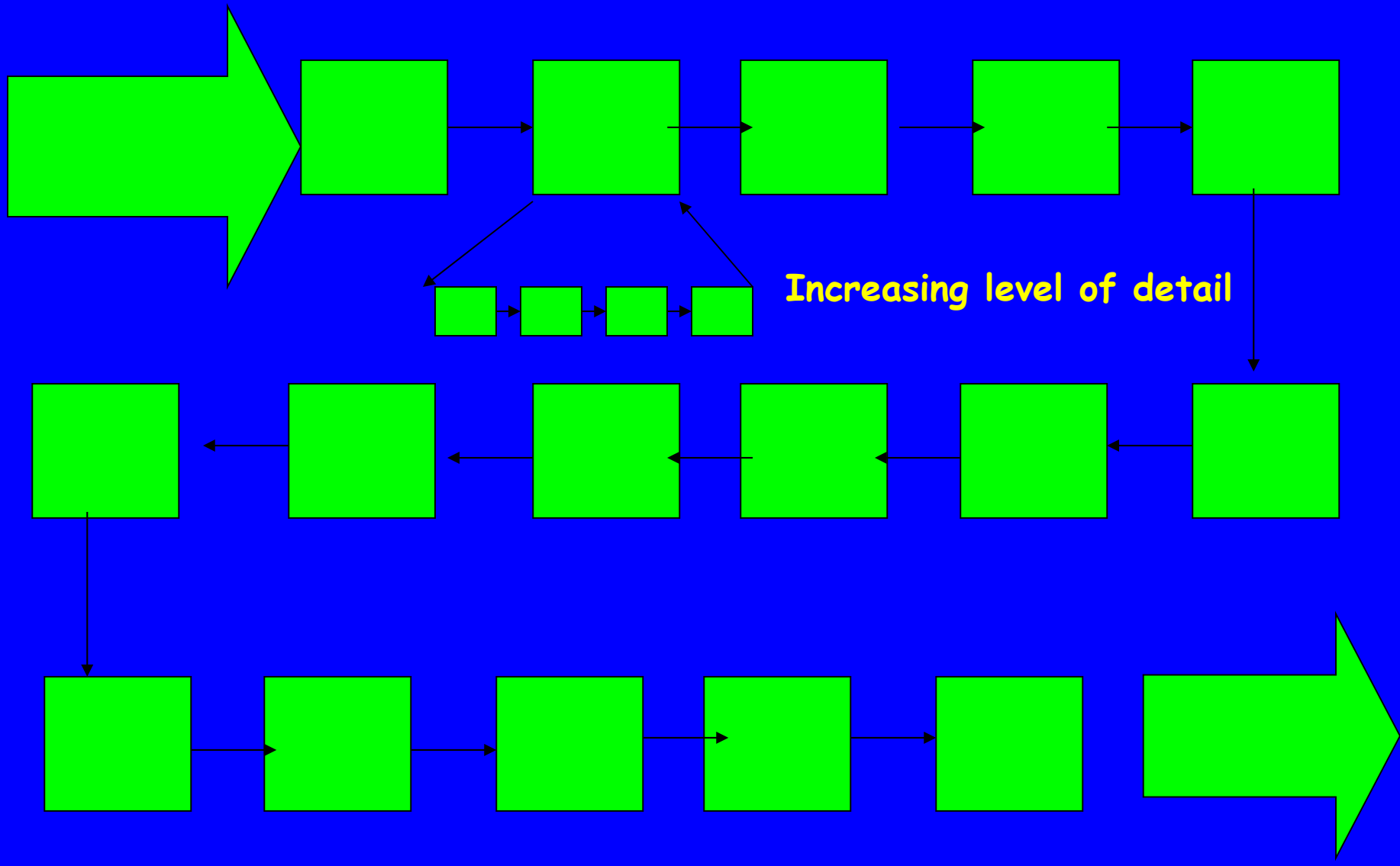
Process

Output



Definition - a process is a series of connected steps or actions to achieve an outcome

# High level



# Compiling a Process Map

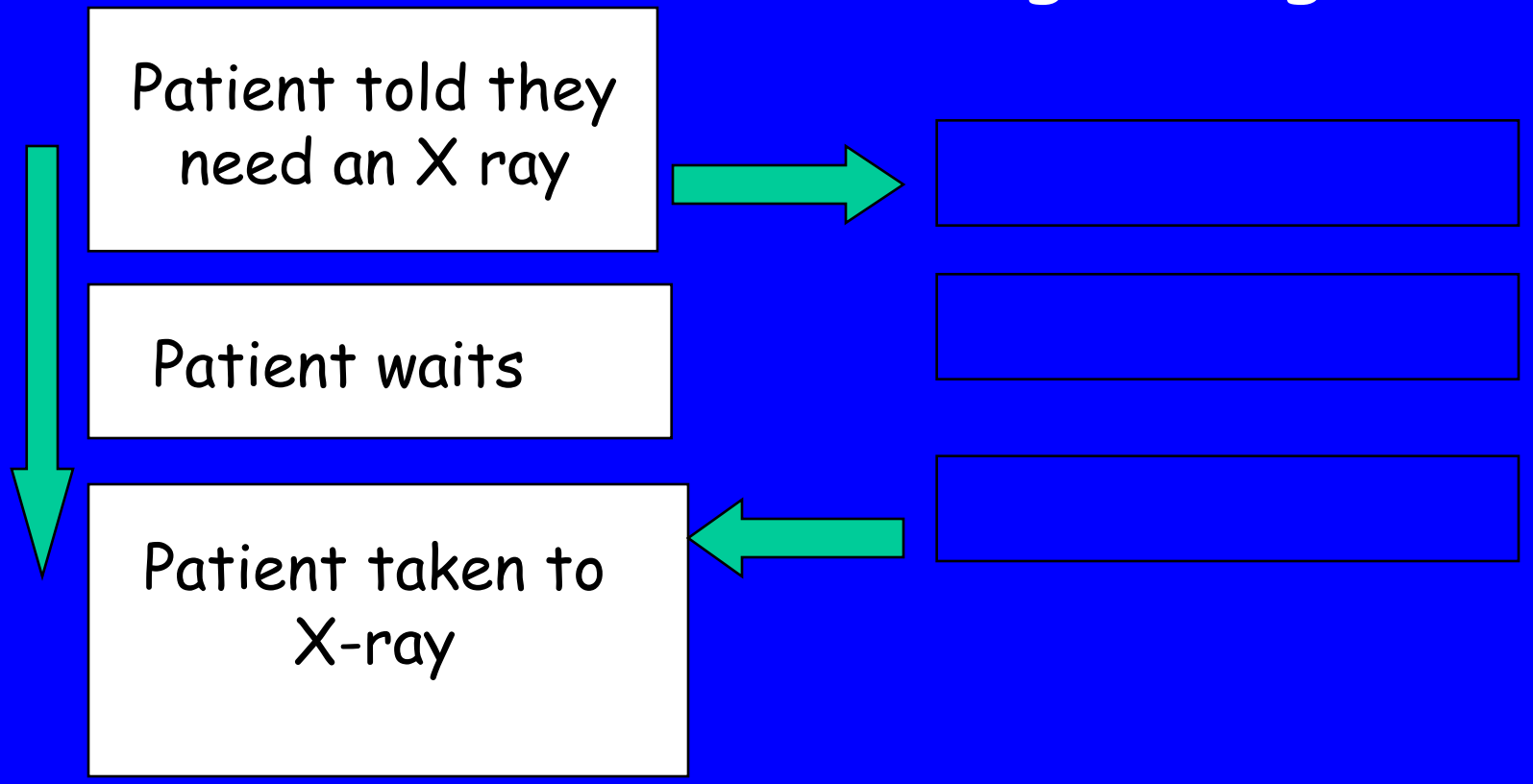
Name of the
person
completing task
+
verb

Who does what and when?

# Patient process and parallel processes

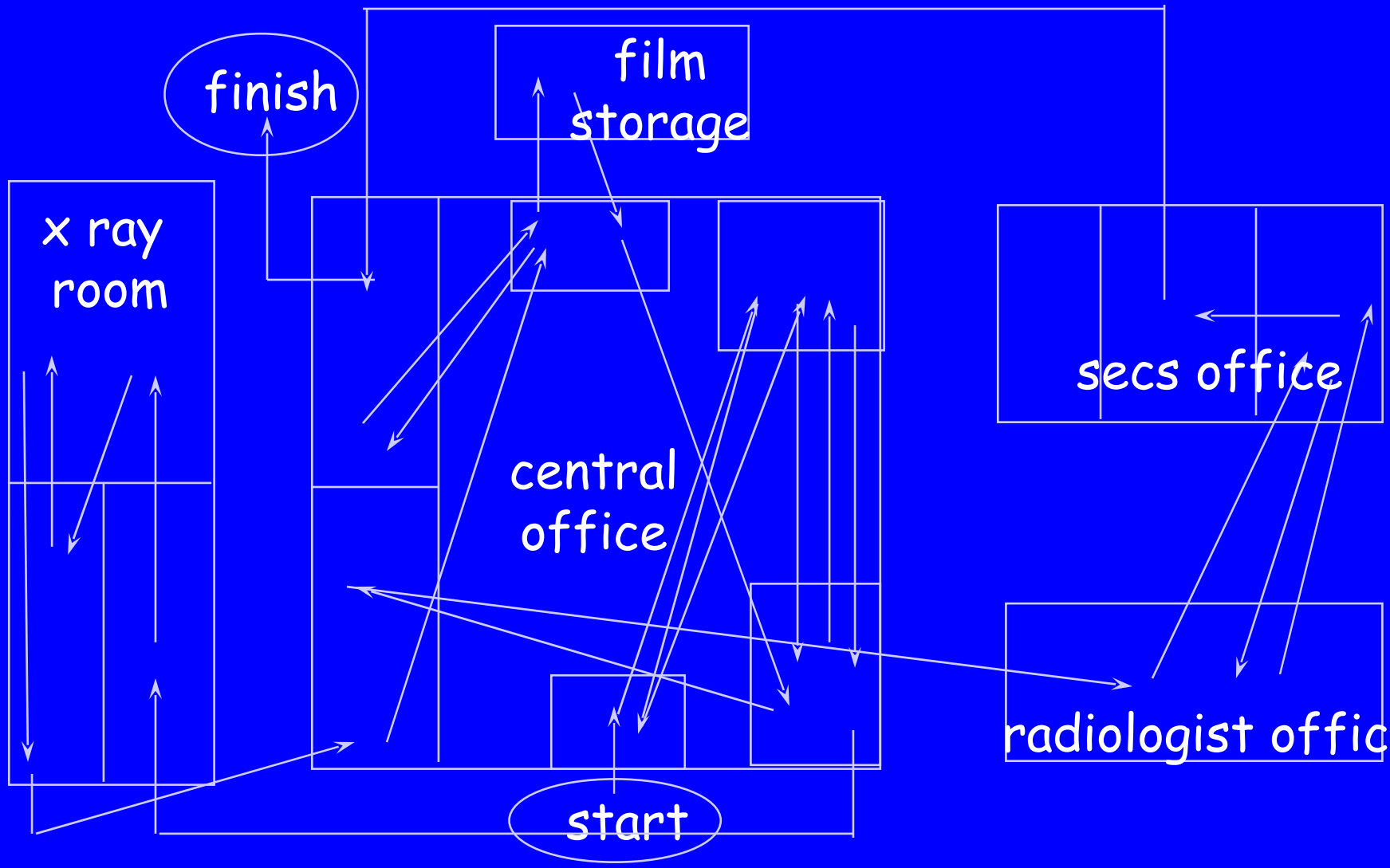
Patient process

Parallel process: Organising the X-ray



# Demonstrate complexity visually

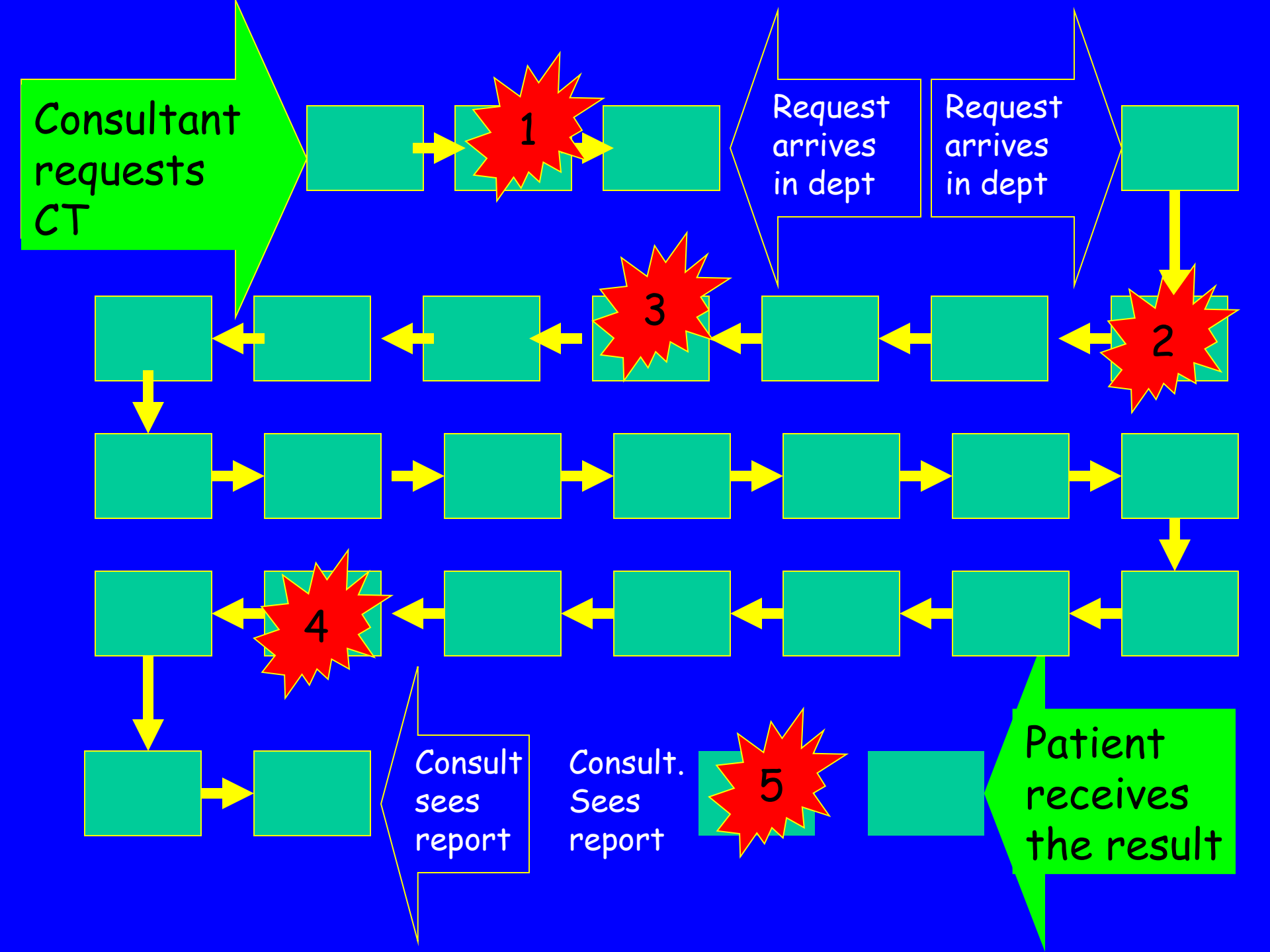
(chest x ray- 62 tasks, 12 hand offs)



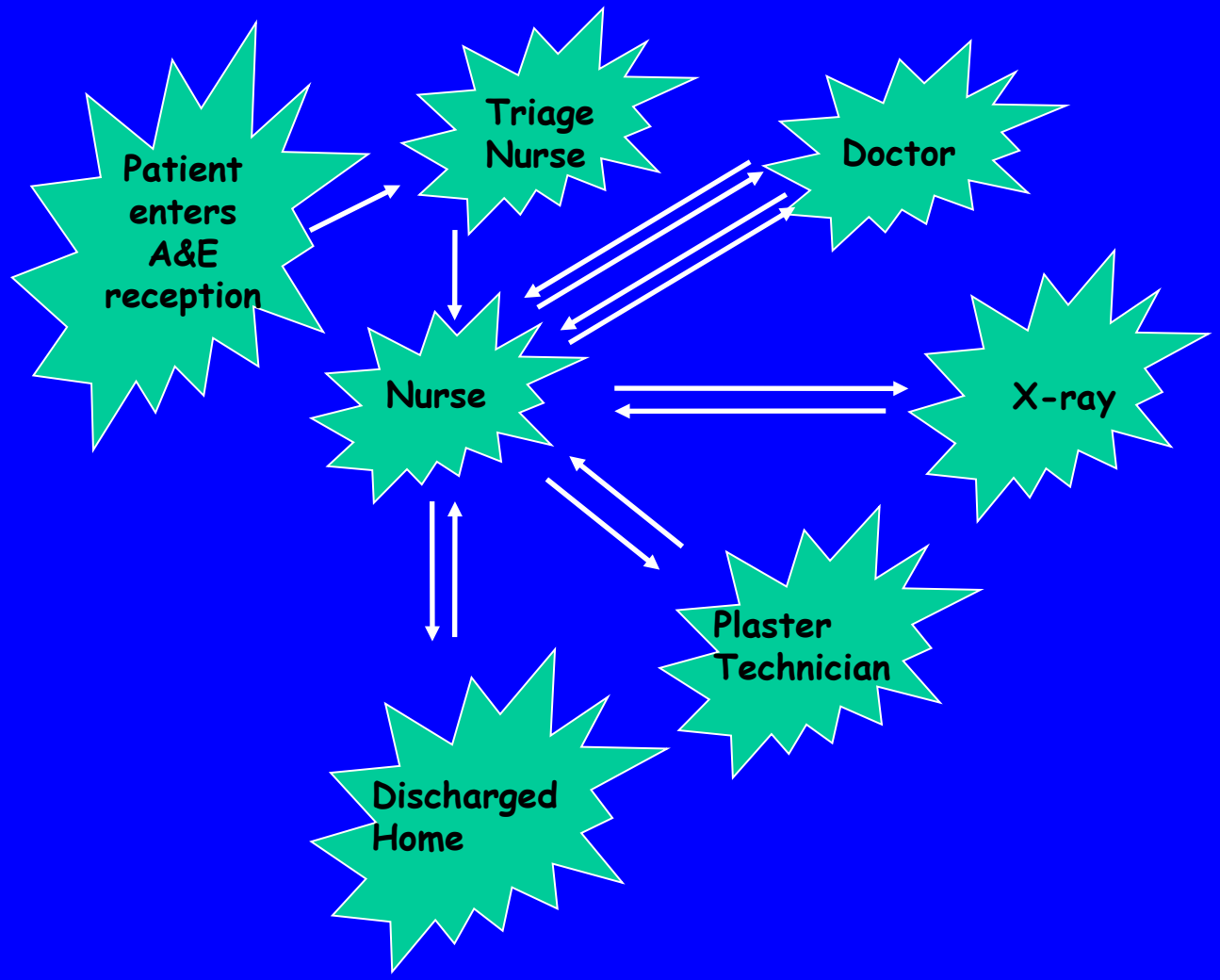
# Remember the following...

- Define where the process starts and ends
- Consider who you would involve in the mapping exercise?
- Use post-its to record the activities including time
- Assemble the post-its to create the journey (remembering that some activities happen in parallel)
- Keep a note of issues and opportunities


A
How


Consultant requests CT
1
Request arrives in dept
Request arrives in dept
2
3
4
Consult sees report
Consult. Sees report
5
Patient receives the result

# Hand Offs


Patient enters A&E reception
Triage Nurse
Doctor
Nurse
X-ray
Plaster Technician
Discharged Home

# A lesson of probability

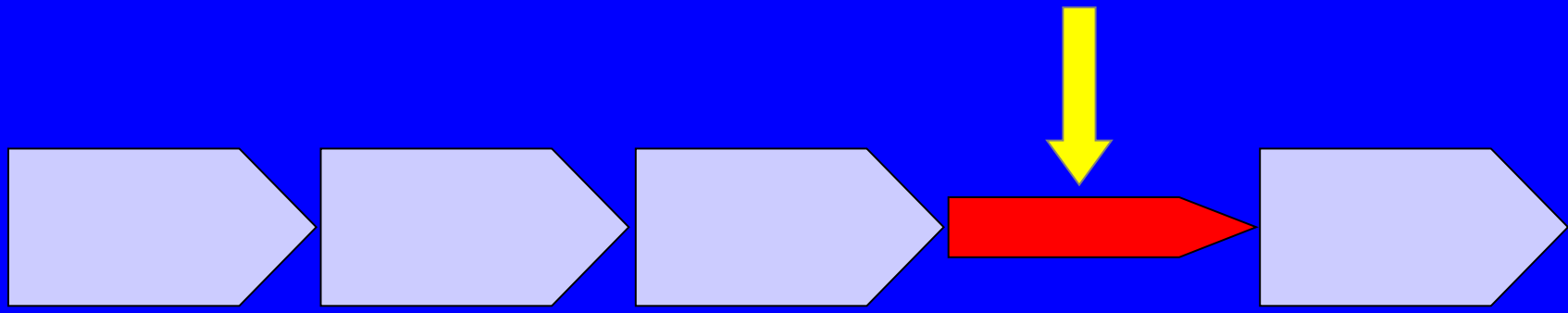
The more steps the lower the probability of overall success:

For example - 10 steps, each with 95% probability

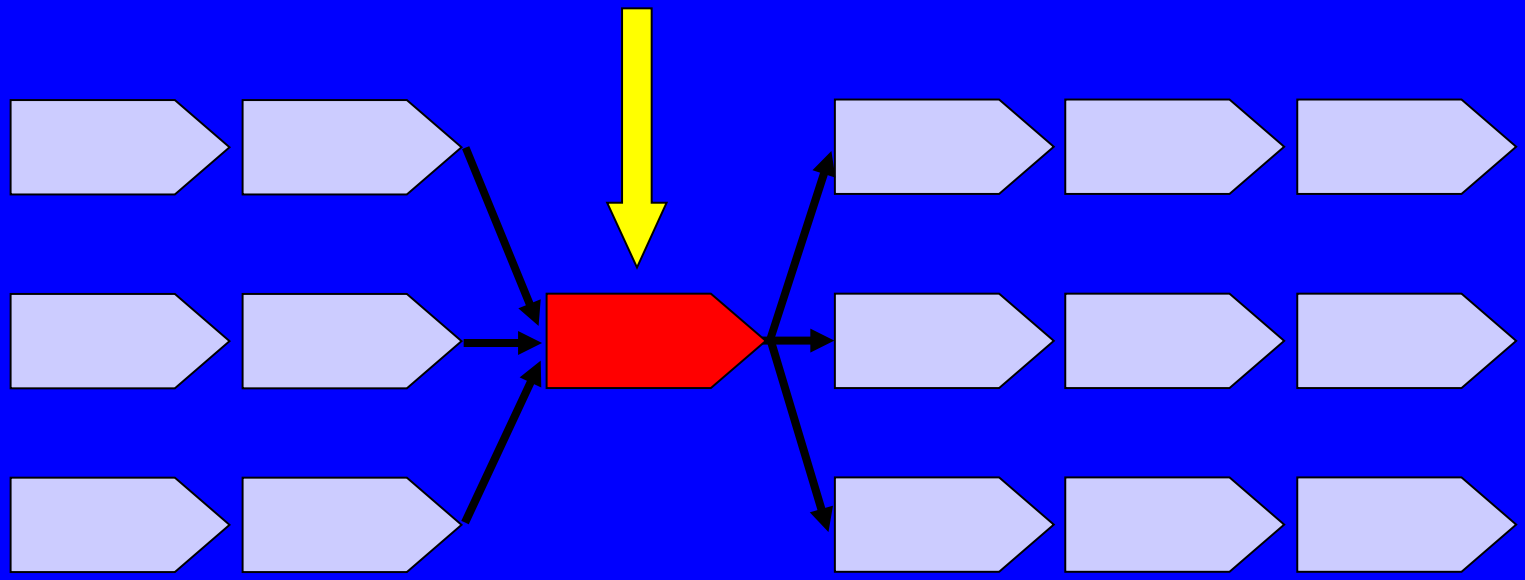
- Overall probability = 60%

**Process Bottlenecks** occurs when a step is the limiting rate of the process

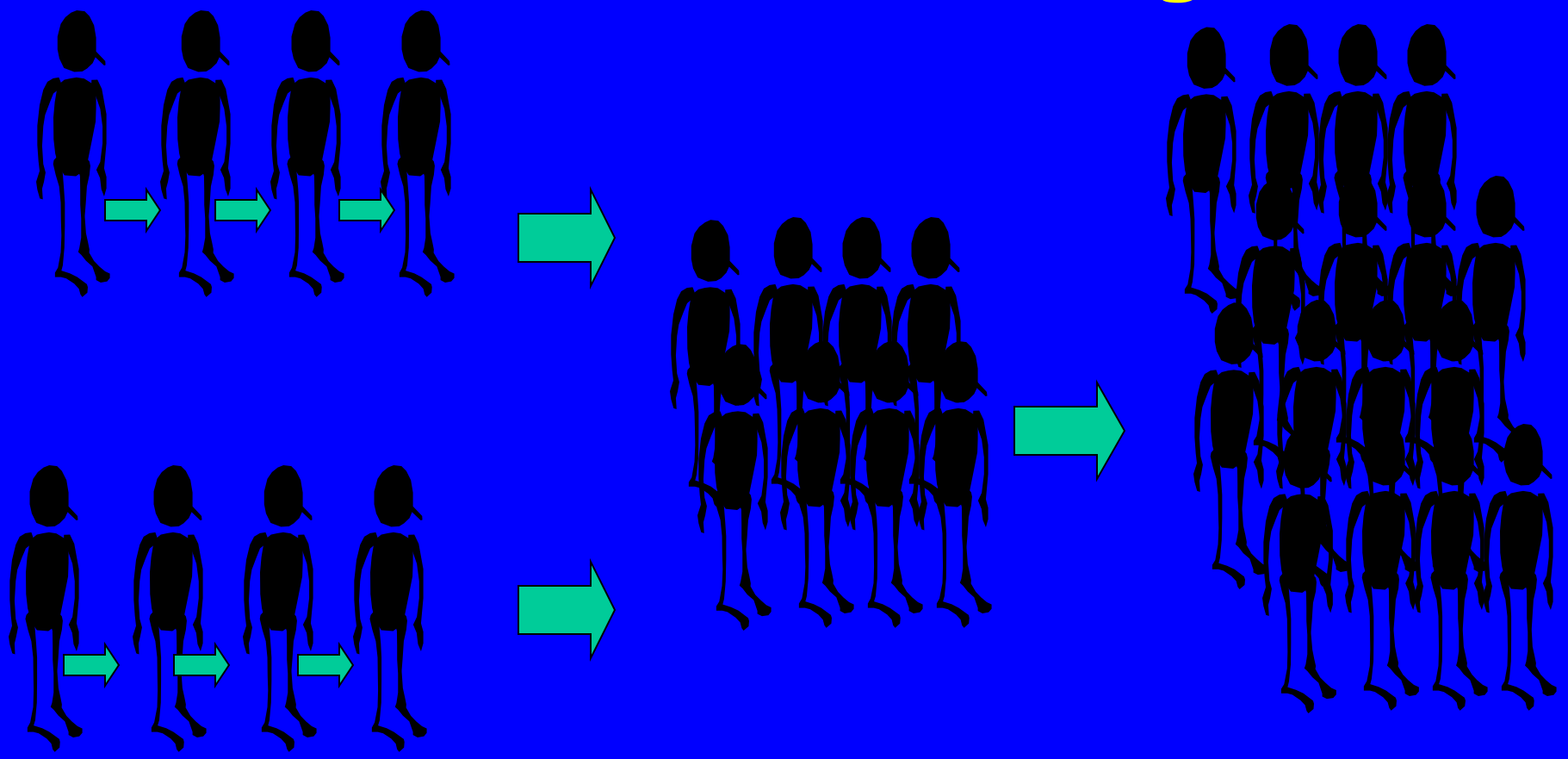
The step takes a significant time, and slows the whole process down.



**Functional Bottlenecks** occur when a resource is used by more than one process



# Look for batching



Dr sees patients individually

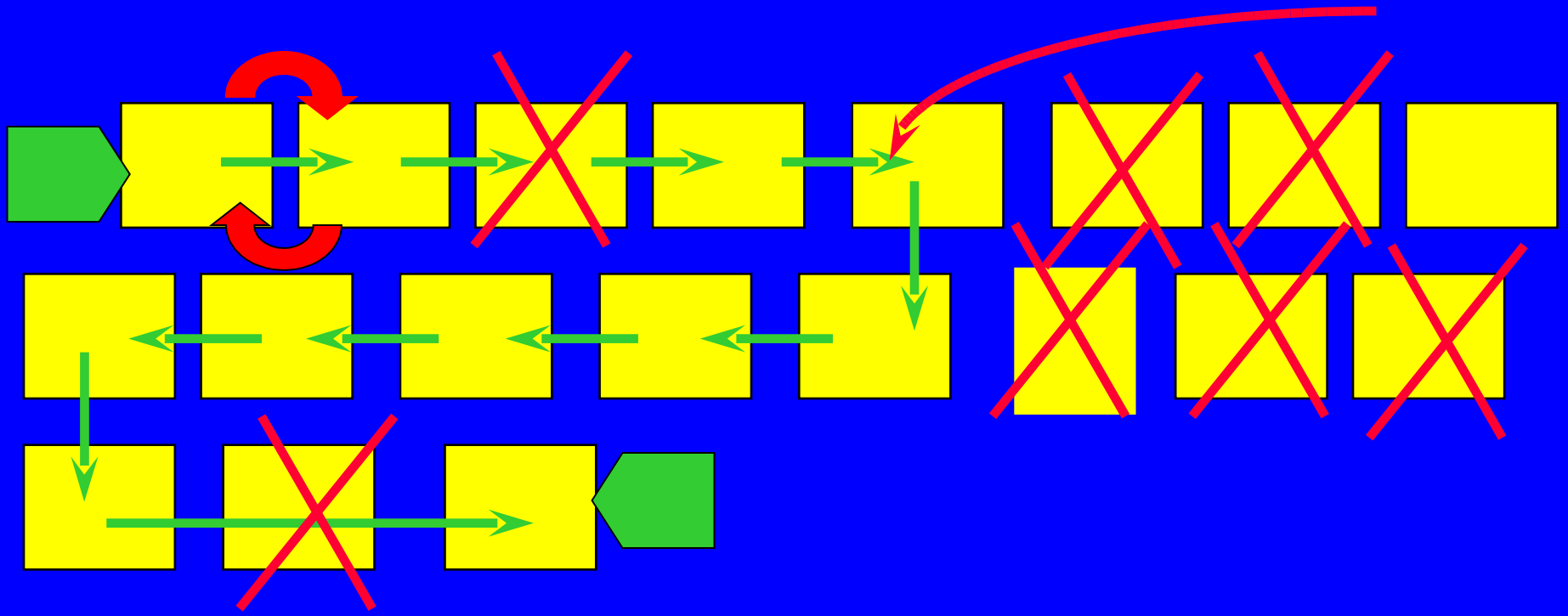
Requests sent in batches

Results return in batches

# Activity:

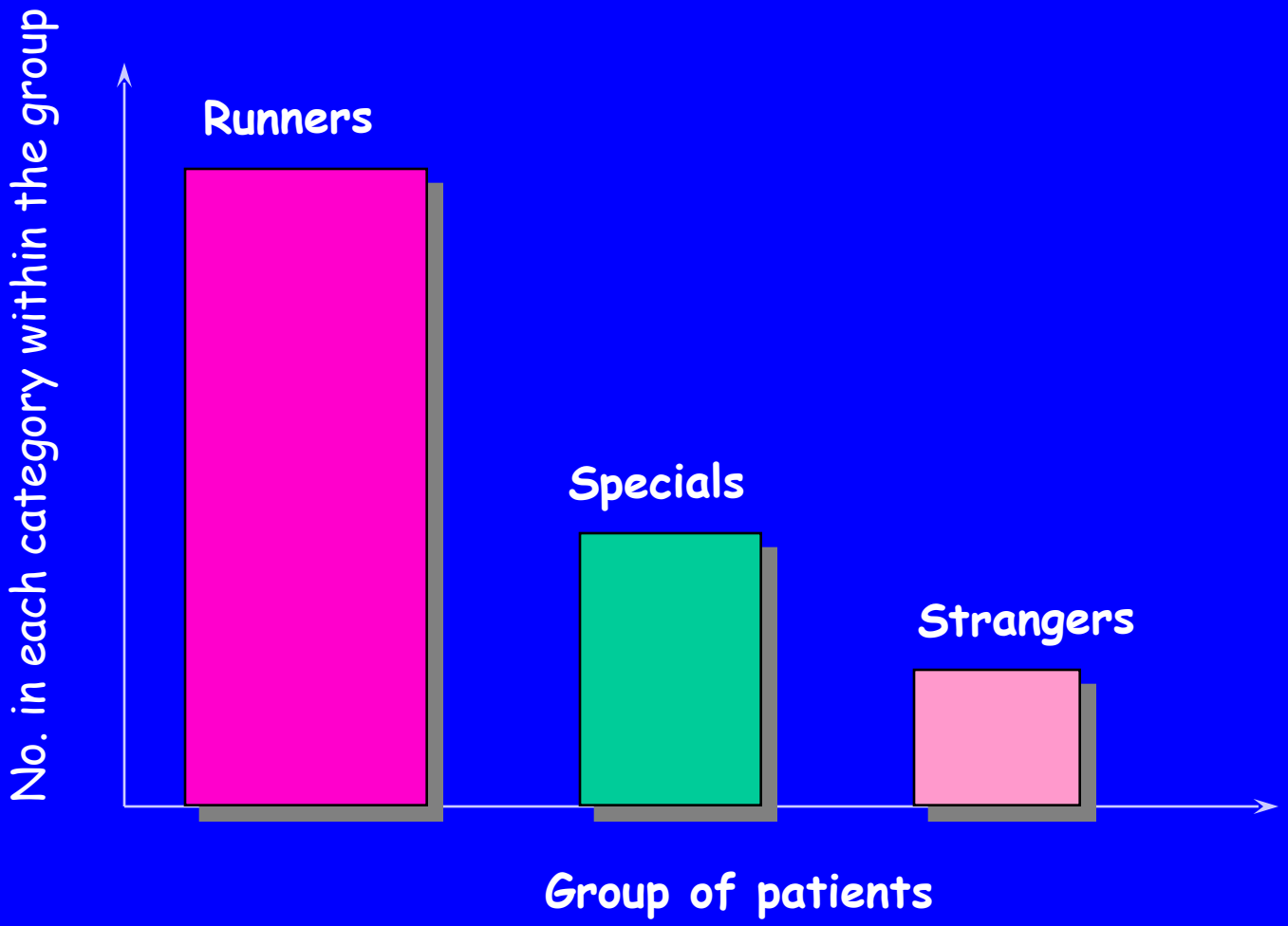
Identify other examples of batching in current processes in your organisations

# Opportunities for Redesign



Whe

# Defining patient groups



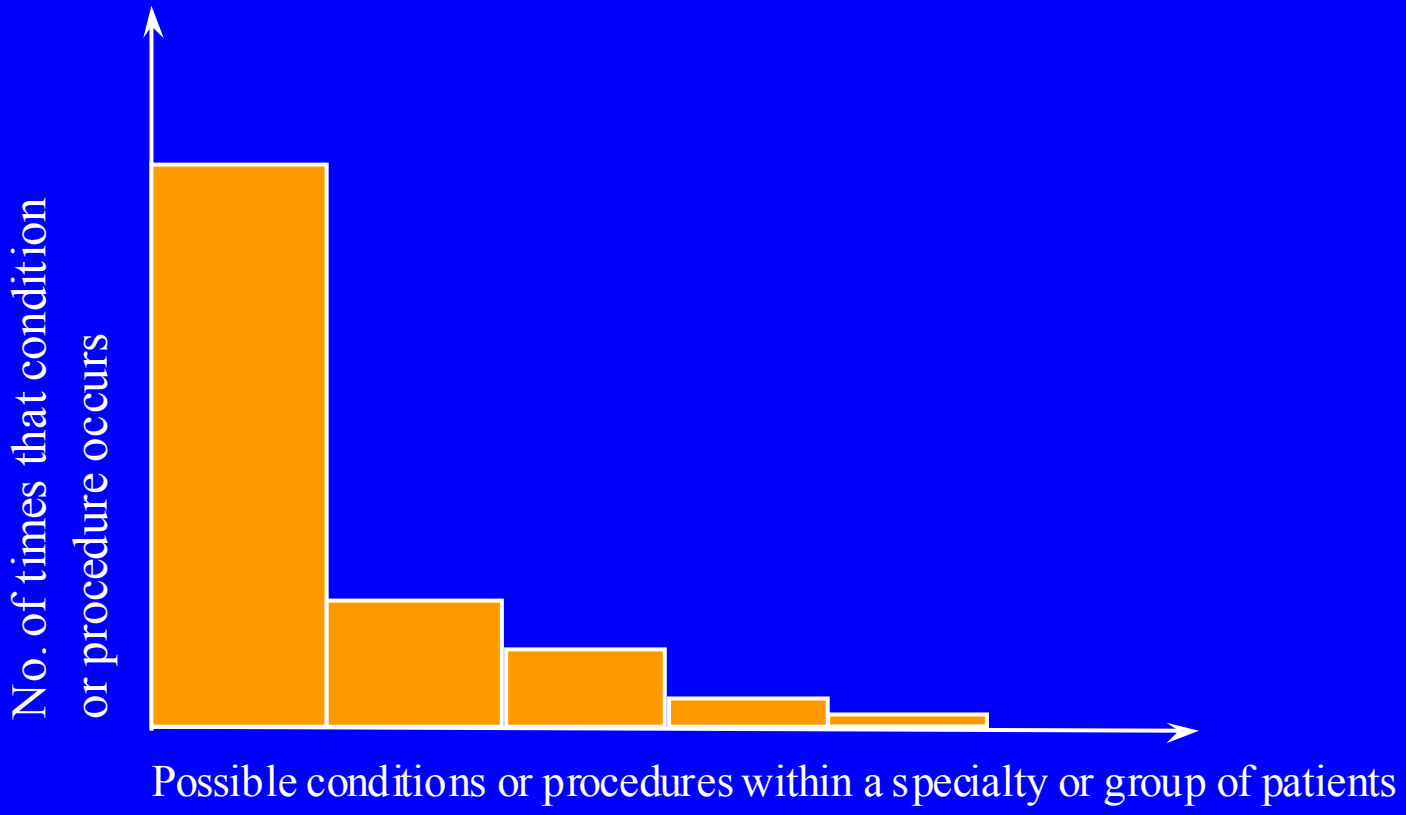
# Tools for defining patient groups

**Runners**
- share common characteristics
- high volume
- fast throughput
- highly predictable
- "standardised" patient routes
- up to 90% pre-scheduled

**Specials**
- "customised"
- lower volume
- predictable
- share some steps but require extra steps
- standardised patient routes
- can be pre-scheduled

**Strangers**
- low volume, unique requirements
- unpredictable demand patterns
- route unpredictable and complex
- throughput time tends to be longer

# Conduct a high level analysis of the process




Use the Pareto principle to find the high patient volumes in your department

# The Pareto principle

- Italian economist Vilfredo Pareto (1848-1923)
- 20% of the causes, inputs or efforts lead to 80% of the results, outputs or rewards
- 80% of what the organisation achieves comes from 20% of time spent

Th

# 'Ground rules' for the Process Mapping workshop

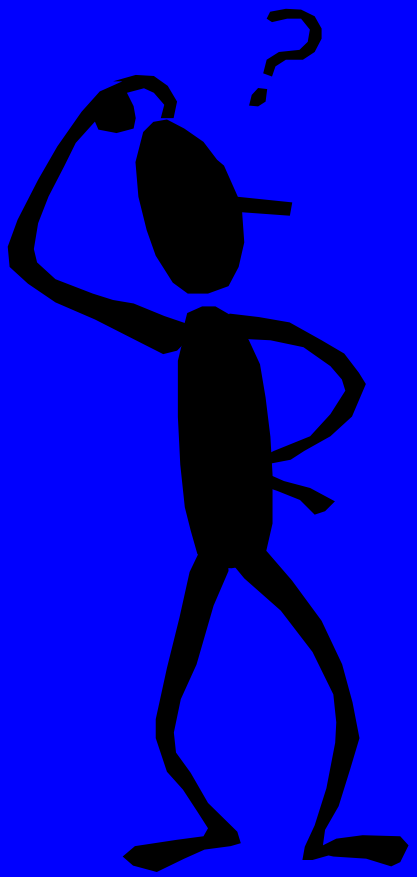
- Everything is confidential
- Everyone has a valuable contribution to make
- Value the diversity of the group
- Think creatively/generate ideas
- Focus on ideas and opportunities
- 'Park' issues
- Keep to time

# Patient tracking

- Validate or challenge process map
- High volume runners
- Blank sheet to record process steps and true complexity of journey
- At least 25 patients per flow

# Walk the Patient Journey for yourself

# What is flow analysis?



# 3 Stages to Flow Improvement

1 - See the current state

2 - Analysis

3 - Take action to apply flow improvement principles

# Stage 1:
# Current State

# Flow Analysis Tool: 4 elements

- Process steps
- Communication steps
- Responsible clinically
- Responsible for each part of the process

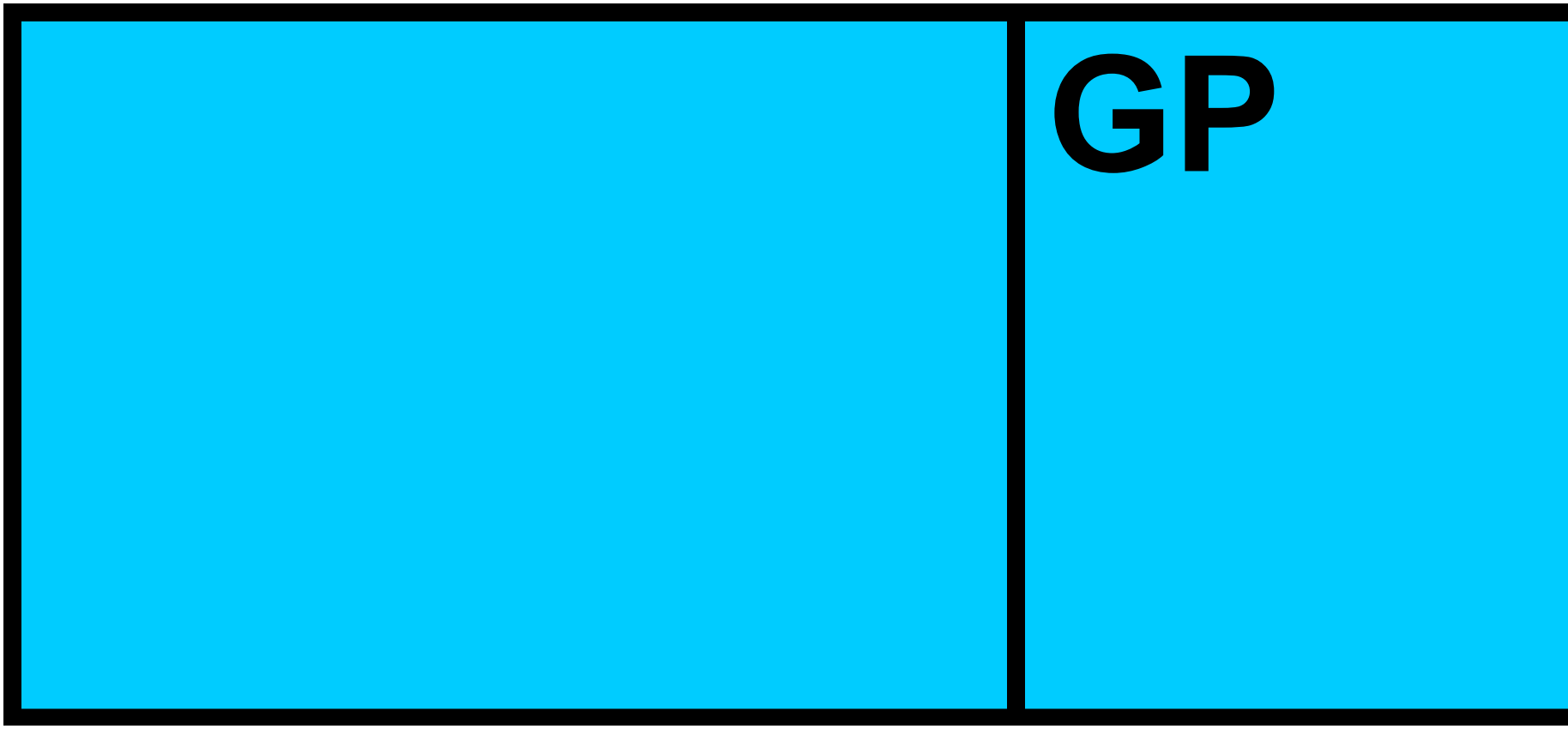
# Flow Analysis Tool: Process steps

**Patient**

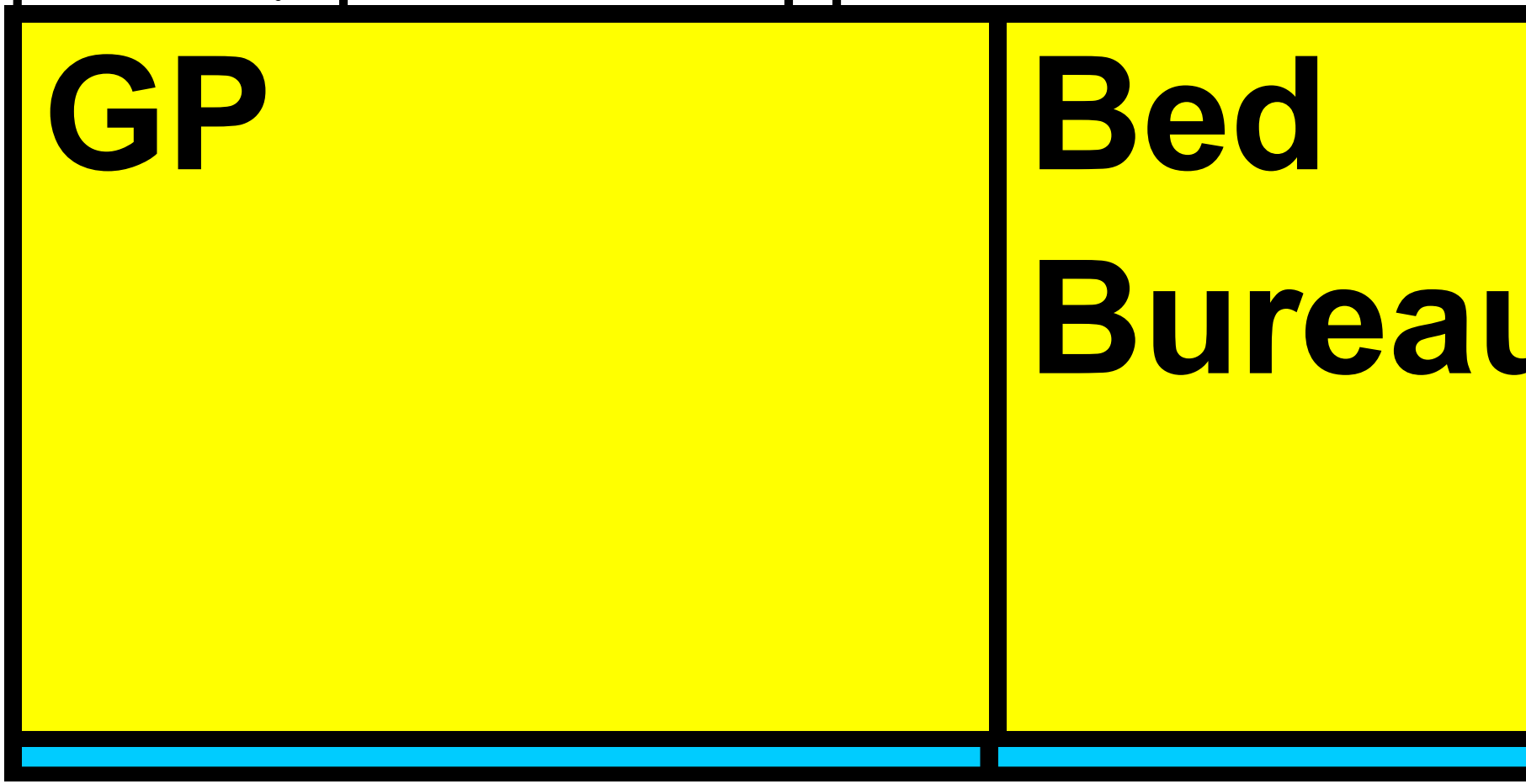
**Patient**

# Flow Analysis Tool:
# Information & communication steps

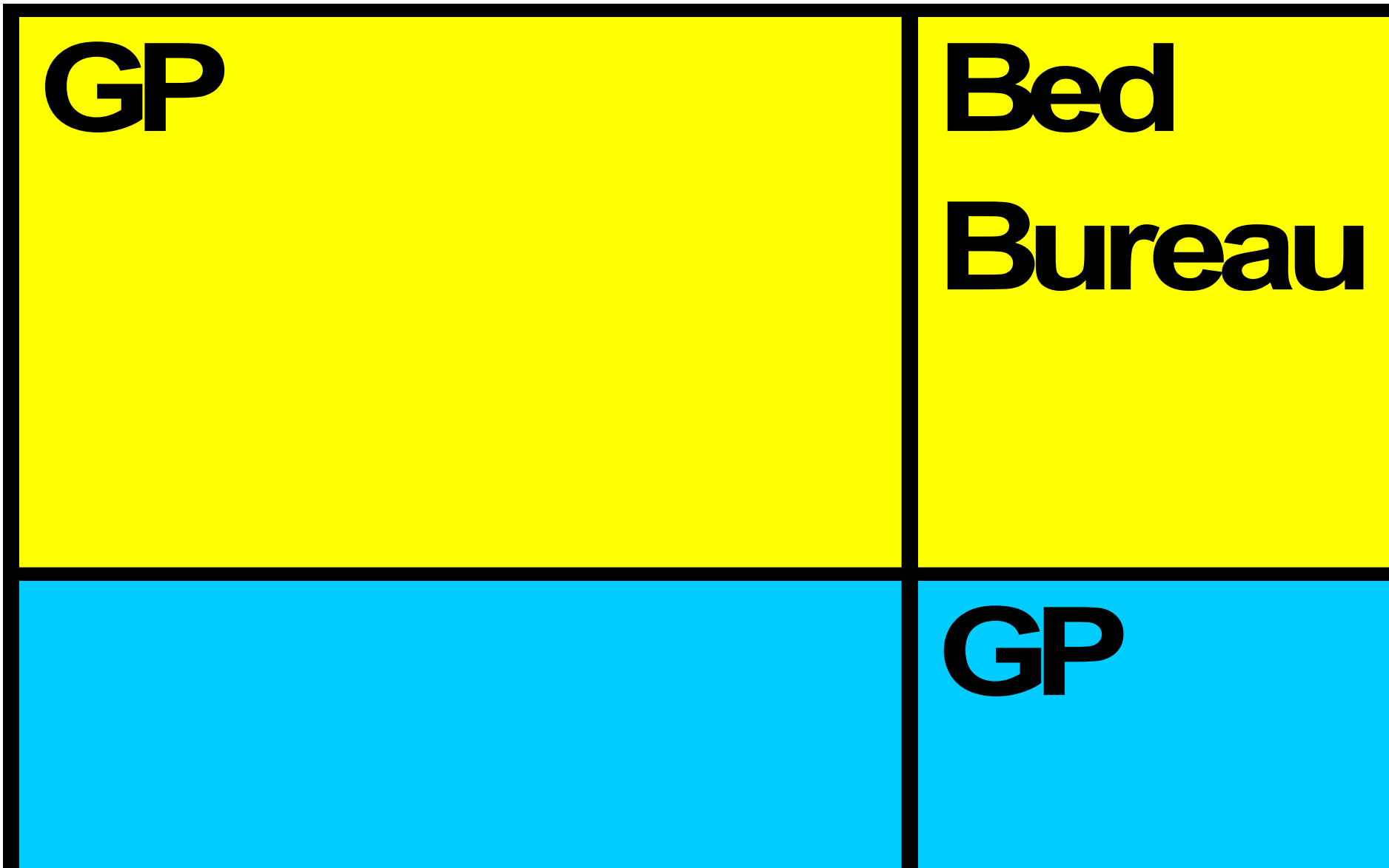
# Flow Analysis Tool: Clinically responsibility



Flow Analysis Tool:
Responsible for making each part of process happen



# Flow Analysis Tool



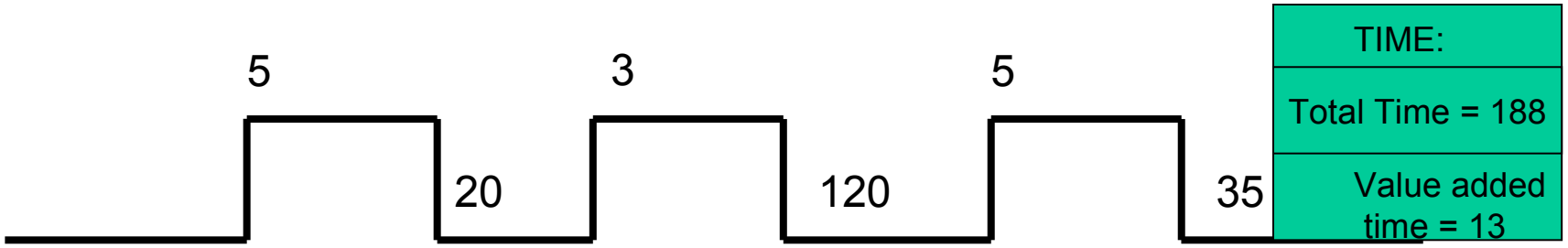
# Stage 2: Analysis

# Understanding your Map

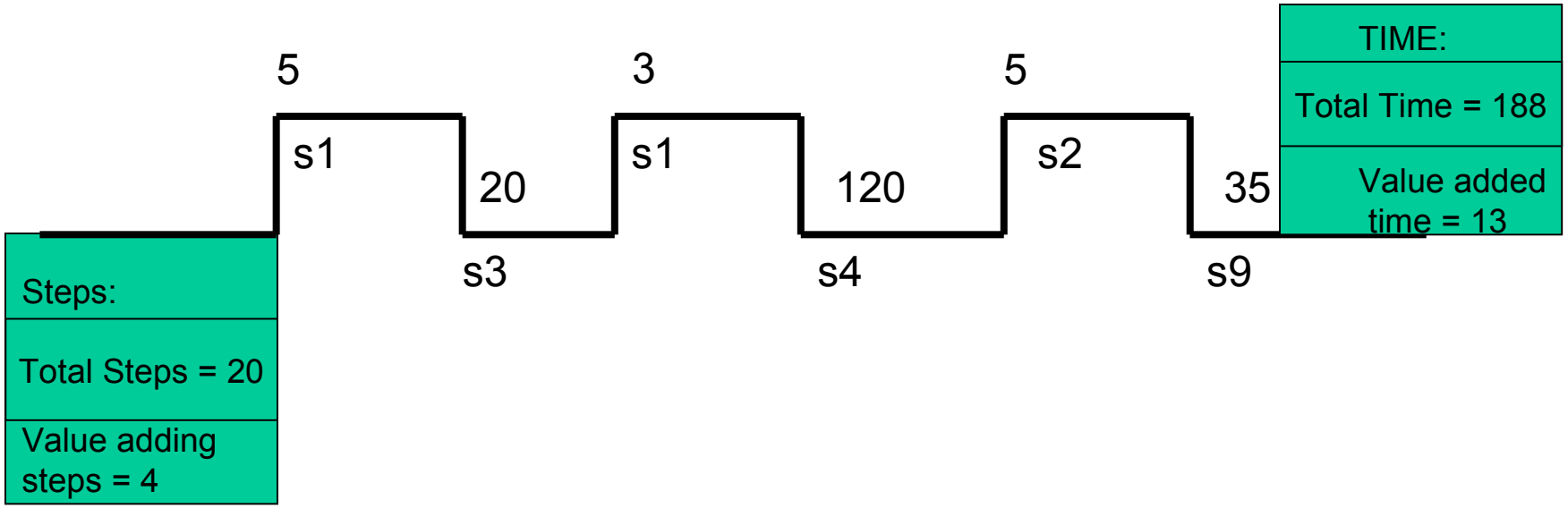
**Add** value

**Remove** waste

# Quantifying Value Added Activity



# Quantifying Value Added Activity



# Activity:

Review the completed current state map and identify the value and non-value added steps

Compare the value and non-value steps identified on the completed current state map

# Opportunities to Remove Waste

- Waiting
- Mistakes
- Uncoordinated activity
- Stock
- Transportation
- Motion
- Inappropriate processing

# Waste Spotters Guide

| Waste | Symptom | Example |
|---|---|---|
| **MISTAKES** | • Clinical Incident.<br>• Complaints.<br>• Multiple Checking Systems. | • Patient with more than one PAS number.<br>• Post operative wound infection.<br>• Drug error.<br>• Equipment failure.<br>• Patient outlying on the 'wrong' ward. |
| **UNCOORDINATED ACTIVITY** | • Tests undertaken before they are needed' and when they are not necessary. | • 'Bed requested' just in case. |
| **STOCK** | • Poor ability to respond to problems.<br>• Increased need for storage space. | • High volume stock in wards and departments. |
| **TRANSPORTATION** | • Movement of documents, materials and patients. | • Ambulance conveys patient within minor injury to A&E Department.<br>• Patient outlying in 'wrong' ward.<br>• Specimens transported to centralised laboratory for processing<br>• |
| **UNNECESSARY MOTION** | • Excessive walking. | • Poor layout of working environment. |
| **INAPPROPRIATE PROCESSING** | • High variation.<br>• Duplication.<br>• Batching. | • Patients seen by many healthcare professionals when one would do.<br>• Multiple data entry on information systems which do not communicate.<br>• Patient details recorded on A&E 'white board' in addition to A&E card and information system.<br>• 'Bed State' updated twice daily.<br>• Twice weekly consultant ward round.<br>• |
| **WAITING** | • Information stored on a computer awaiting action.<br>• Imbalance between capacity and demand.<br>• Large Waiting Rooms.<br>• Long length of hospital stay. | • Surgeon awaiting arrival of patient in the operating theatre.<br>• Patient queuing for diagnostic test.<br>• Medically fit patient waiting to go home. |

# Activity:

On the flow analysis map identify waste and plot the different sorts of waste

# Activity:

Watch the video, identify and discuss the different sorts of waste shown

# Analysis Summary

**Steps**

Total number Steps

Number of value steps

Value steps as % total steps

**Time**

Total time Hrs:Mins

Time of value steps

Value Time as % total time

**Waste**

- Waiting
- Mistakes
- Uncoordinated activity
- Stock
- Transportation
- Motion
- Inappropriate processing

# Waiting

Waiting is the most important of all the wastes because:

- The process STOPS
- Inhibits FLOW
- Does not add value for the PATIENT

# Stage 3:
# Take action to apply flow improvement principles

# Next - helping the value adding steps flow

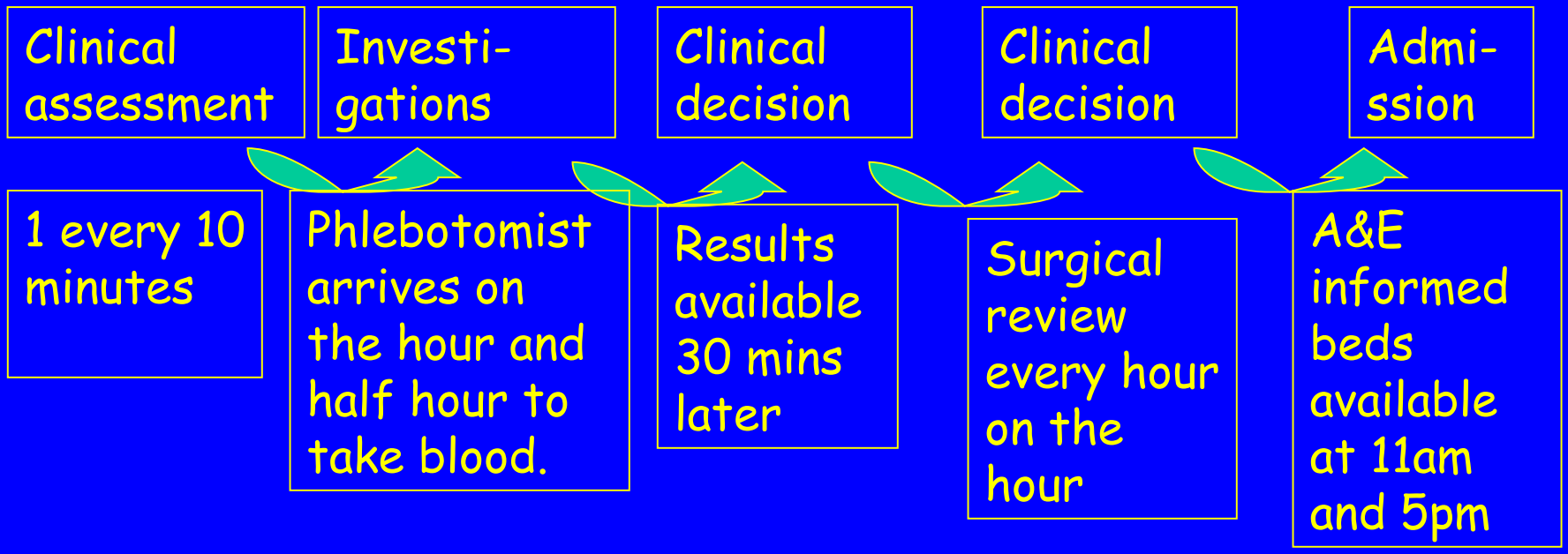
4 characteristics of smooth flow

1 Small batch sizes
2 Linked processes
3 Setting the pace
4 Overall co-ordination

# Batching

- A key reason why setting the pace is very difficult
- Batching is where multiple patients are processed at once at every stage e.g assessment by medical on-call in A&E, ward rounds, reporting of x-ray results
- Batching means that patients can only move between stages at the rate at which each batch is processed

# Batching activity:




Patient 1 arrives at 8am - how long will they wait at each stage?

Patient 2 arrives at 12.25pm - how long will they wait at each stage?

Patient 3 arrives at 4.35pm - how long will they wait at each stage?

# Batching activity:

- Assume no wait for clinical assessment
- What is the waiting time for investigations, clinical decision, and admission?
- How long from arrival to admission for each patient?
- How would you prioritise improving this system, and why?

# Batching and the impact on patient flow?

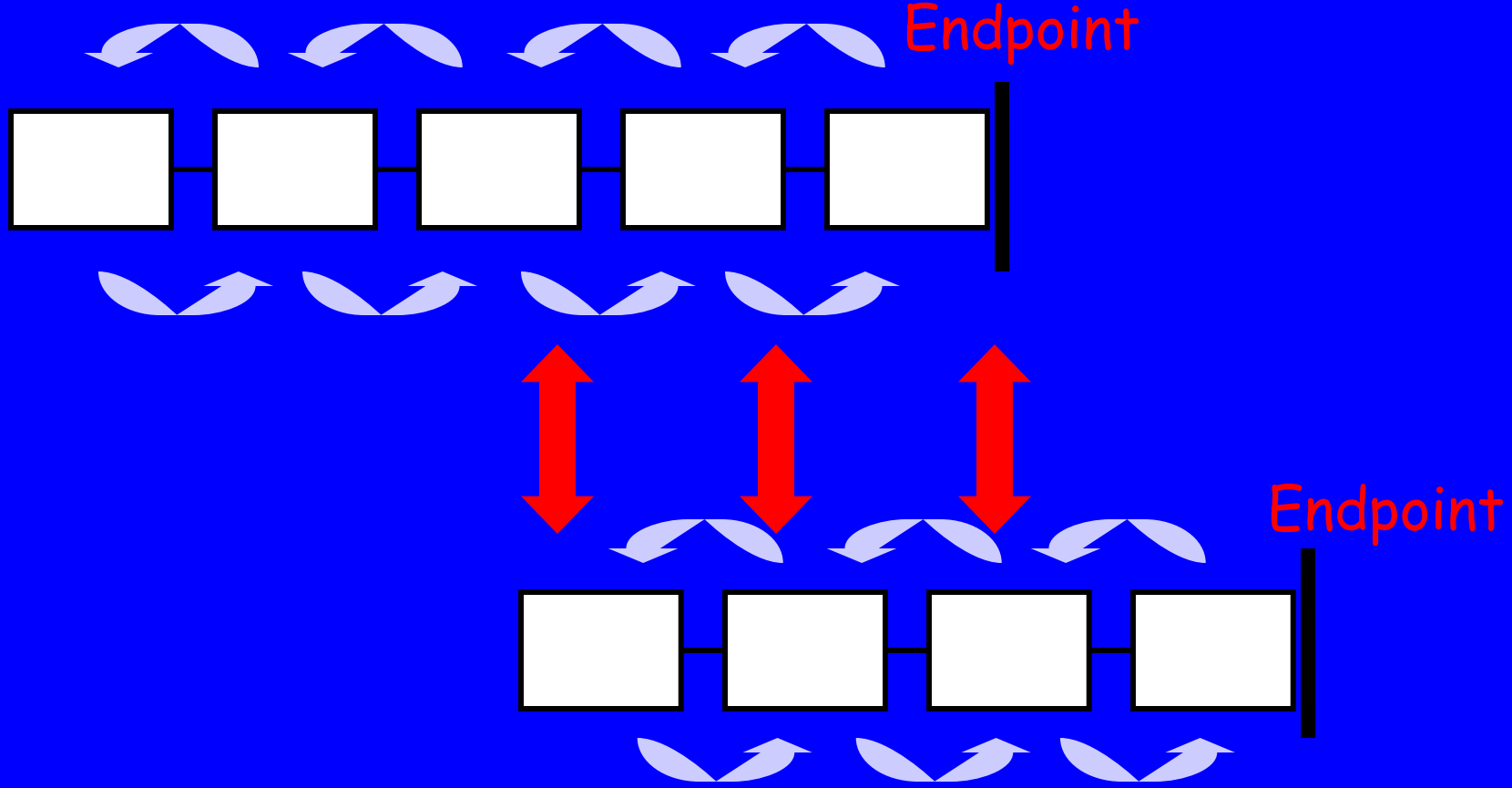
- **Identify** where batching takes place on your flow analysis map
- Which batch has the **biggest impact** on flow?
- Can you **eliminate it** (batch size = 1)?
- If not, what could you **reduce the batch size** to?
- How can you **measure** the impact

# Linked processes

- Current processes often operate in isolation from each other, particularly departments and directorates

- Each area needs to be linked to the one before, to ensure that they always have capacity to deal with what they are receiving

# Linkages are important both within each individual process… …and between processes



# Setting the pace

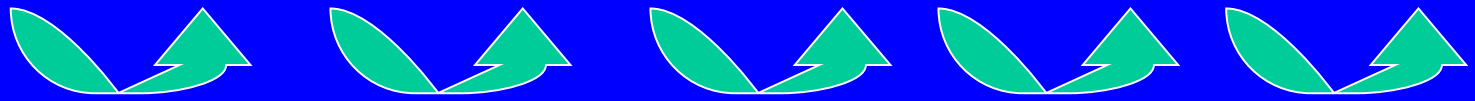
- Key stages that need to be set or balanced are often identified by the value adding line

- For example - clinical assessment - investigations - clinical decision - admission - treatment - discharge


101
125
120
AP

# Setting the Pace

| Clinical assessment | Investi-gations | Clinical decision | Admi-ssion | Treat-ment | Dis-charge |
|---|---|---|---|---|---|



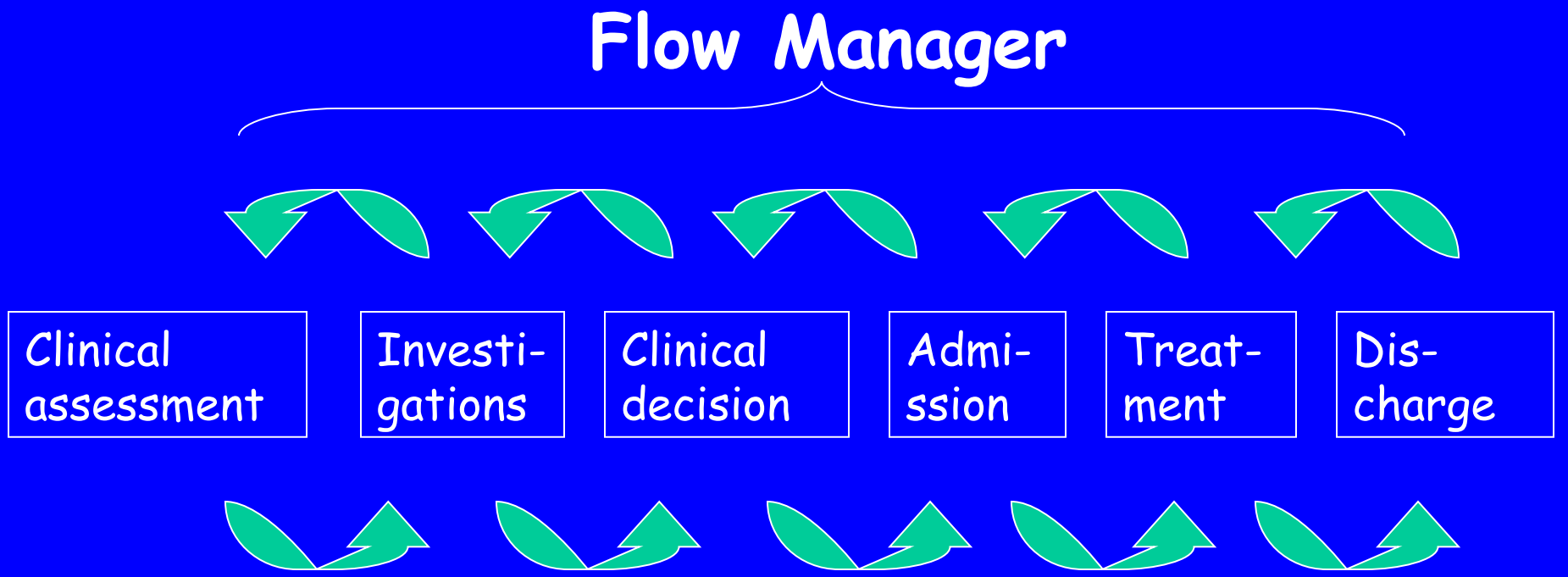
If 5 patients arrive an hour, 5 patients need to move between each step each hour

If 10 patients arrive an hour, 10 patients need to move between each step each hour

# Overall Co-ordination

- Flows that have a single individual/team/area responsible for the whole flow from start to finish work best
- It makes clear the notion of the flow as the unit rather than each individual department as the unit
- This enables action to be taken at the place where problems are being experienced quickly

# Overall Co-ordination



# Aim to

**Add** value

**Remove** waste

# Develop the characteristics of smooth flow

**Small batch size**

- patients move in groups of as near to one as possible

**Linked processes**

- Each stage of the process linked to the previous one

**Setting the pace**

- each part of the process able to deal with the same level of demand
- patients move from one part of the process to the next at the same rate

**Overall co-ordination**

- Whole process co-ordinated by one individual
- High level of visibility of how the flow is working

# What do we need to do?

- Start local Process Mapping and Flow Analysis
- Undertake patient tracking
- Walk the patient journey
- Identify who needs to attend the training session at LWS 1
- Make any simple changes using PDSAs

# Activity:

Review the toolkit material

Start to plan how you are going to take this forward

Questions?
Comments?