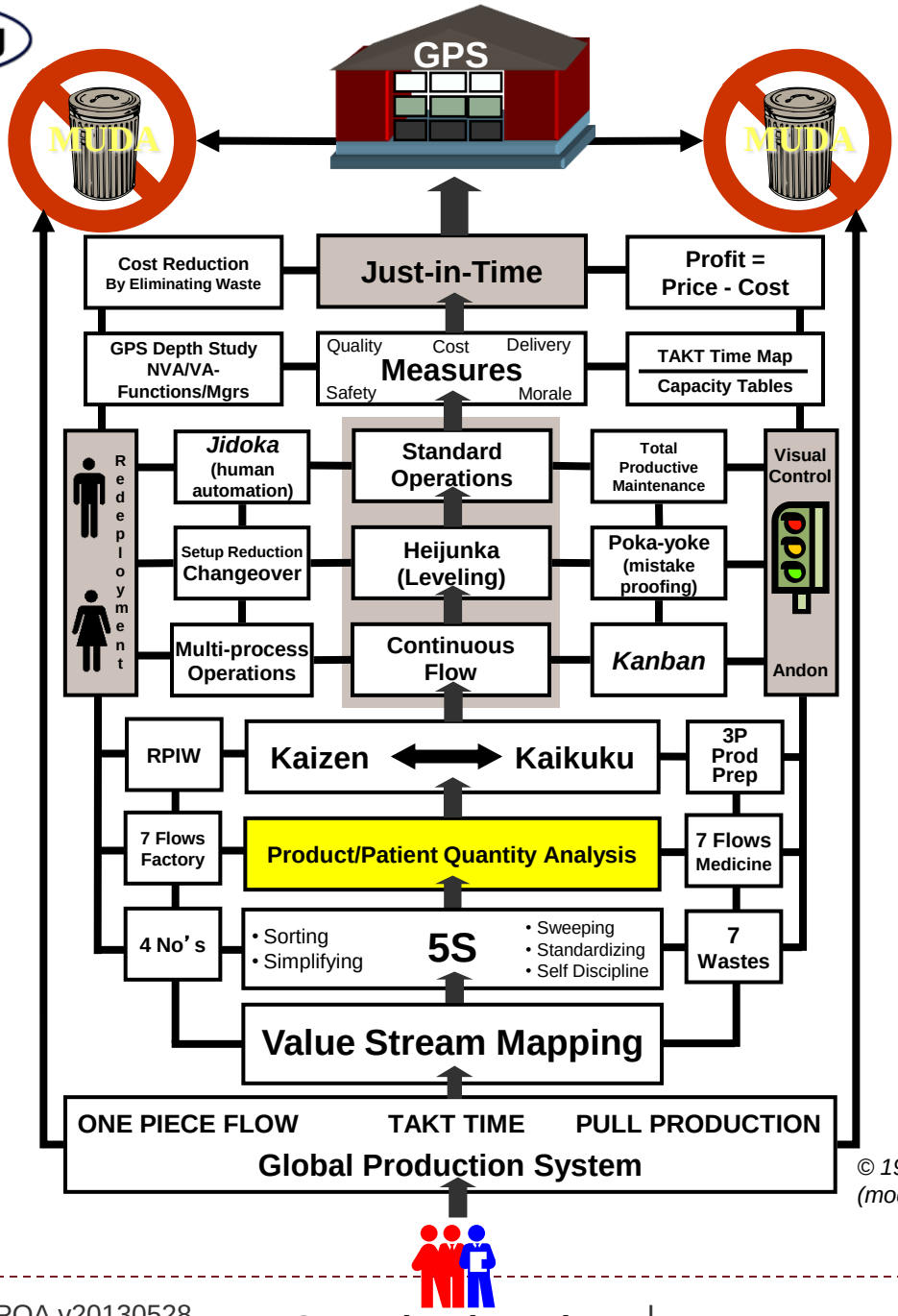


Patient-Procedure/ Quantity Analysis Module 4

Patient Procedure/Quantity Analysis: Key Points

- The purpose of Patient/Procedure Quantity analysis is to separate patients and procedures into common groups in order to:
  - Assist in identification of a specific process or area of focus for improvement work.
  - Provide a health care facility-level macro design for cellular service provision.
- Patient/procedure families are determined based on criteria such as patient grouping, process routing, procedure similarity and volume.
- Patients and procedures are grouped into families and displayed on a Pareto diagram.

Patient-Procedure/Quantity Analysis

Purpose:

This module is designed to help a team of health care providers group patients/procedures, to assist in the prioritization of a specific group of patients/procedures requiring primary focus, to assist in the design for cellular service, or to improve flow.

The details of how the service is provided are covered in other modules (Continuous Flow, Pull Production, etc).

Only enough detail is needed at this time to learn how to apply this method of analysis.

Prerequisites

Before beginning this module, some information will need to be collected.

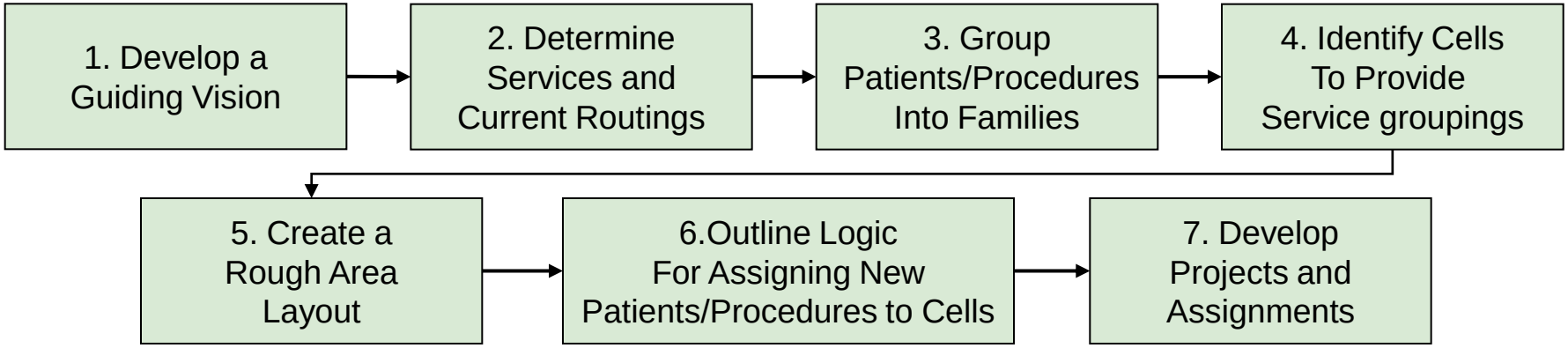
- Information on business objectives for the area.
- A printout of patient/procedure numbers sorted by common routings. Representative patient/procedure numbers may be sufficient.
- Forecasts of future work.
- Drawings showing current equipment layout.
- Blank drawings of the area.
- A list of available equipment.

Deliverables

- Description of each patient/procedure family.
- Drawing showing rough area layout.
- Flowchart showing past assignment logic.

Steps: The flowchart below provides an overview of the Patient-Procedure Quantity Analysis (PQA) process. The following pages explain how to lead a team through each step.

If PQA is being done to assist in identification of an area of the process needing primary focus, all of these steps may not be needed.
In this case, steps 4-6 can be eliminated

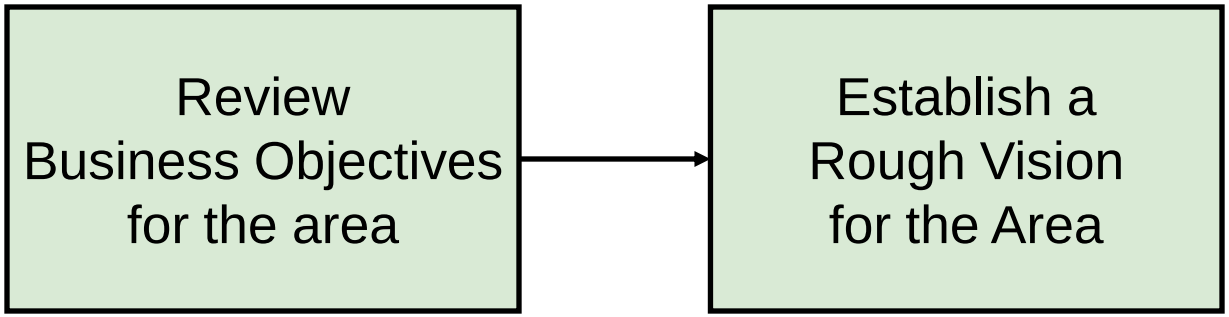


Step 1: Develop a Guiding Vision

Challenge the team to suggest new general operating characteristics of the facility that would provide a vision of the future state. Characteristics might include:

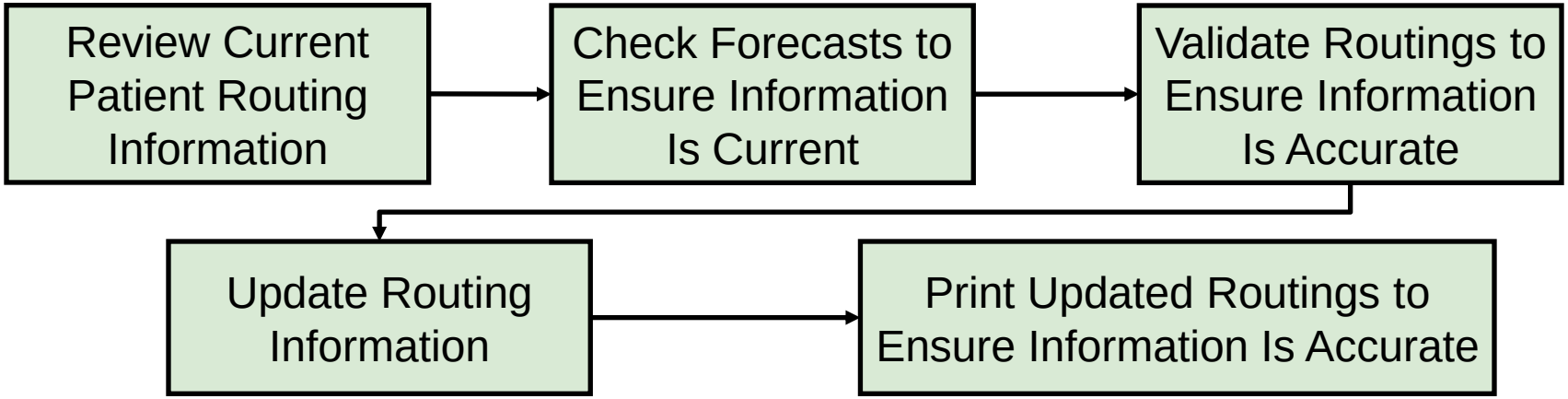
- Reduced lead time for standard procedures.
- Shorter cycle times.
- Implementation of a pull system.

Post the vision on a wall to help guide future decisions.

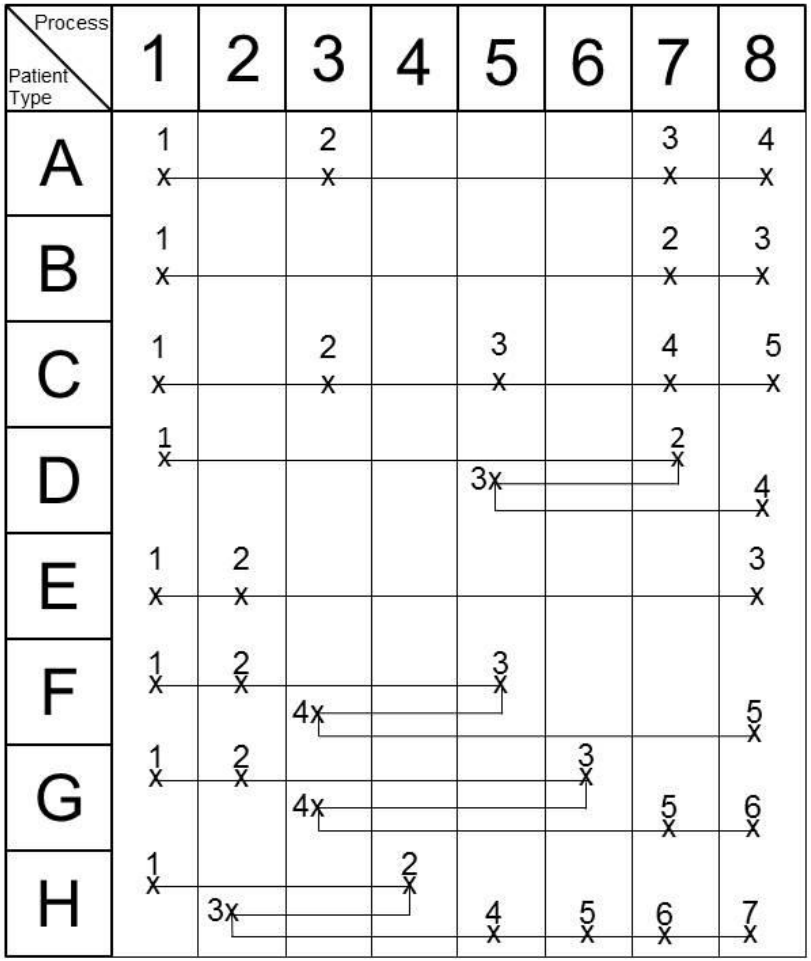


Step 2: Determine Services Provided and Current Routings

- The purpose of this step is to get a picture of what is happening now and what is expected in the future.
- We want to know what services we need to provide and how the patients are routed.
- Once *we* understand what is happening, we will have the data we need to group patients/procedures into families.



Patient-Procedure/Quantity (PQ) Analysis



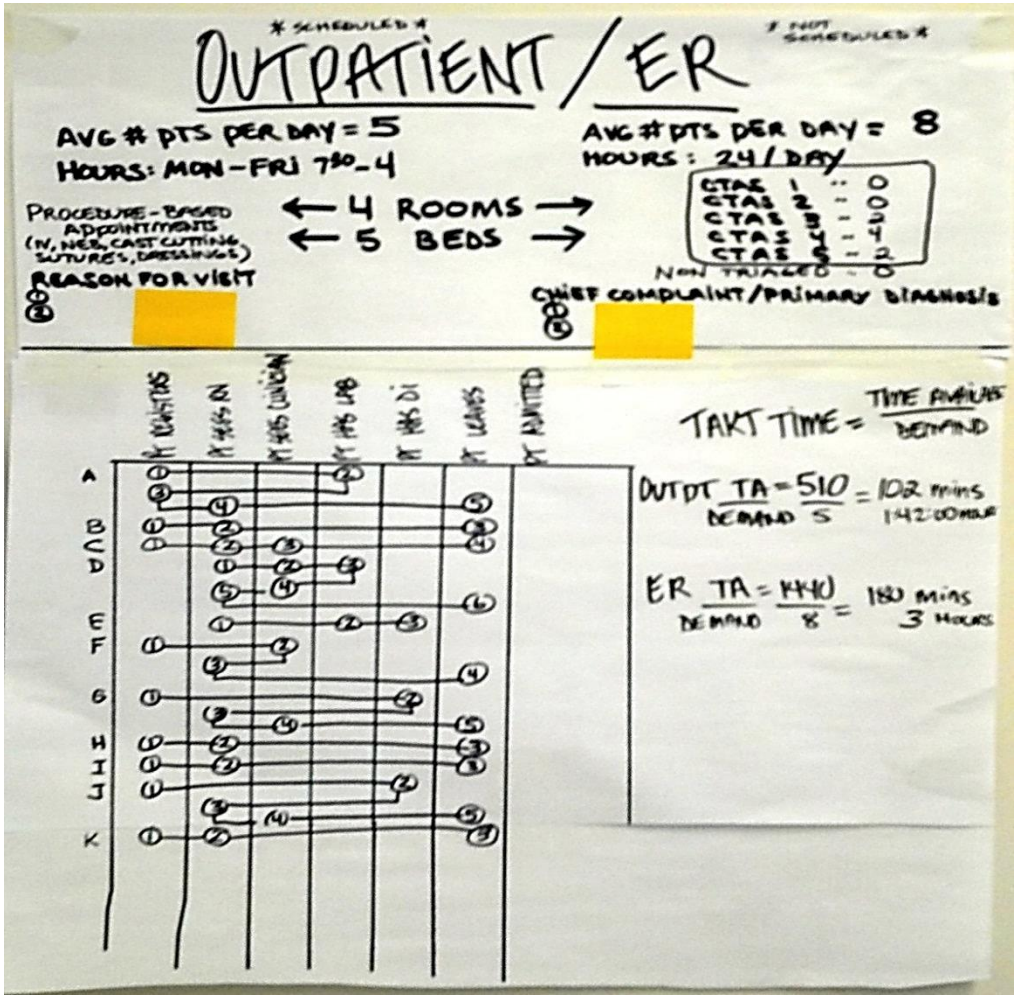
Patient/Process Routing Chart
Emergency Room Patient Flow

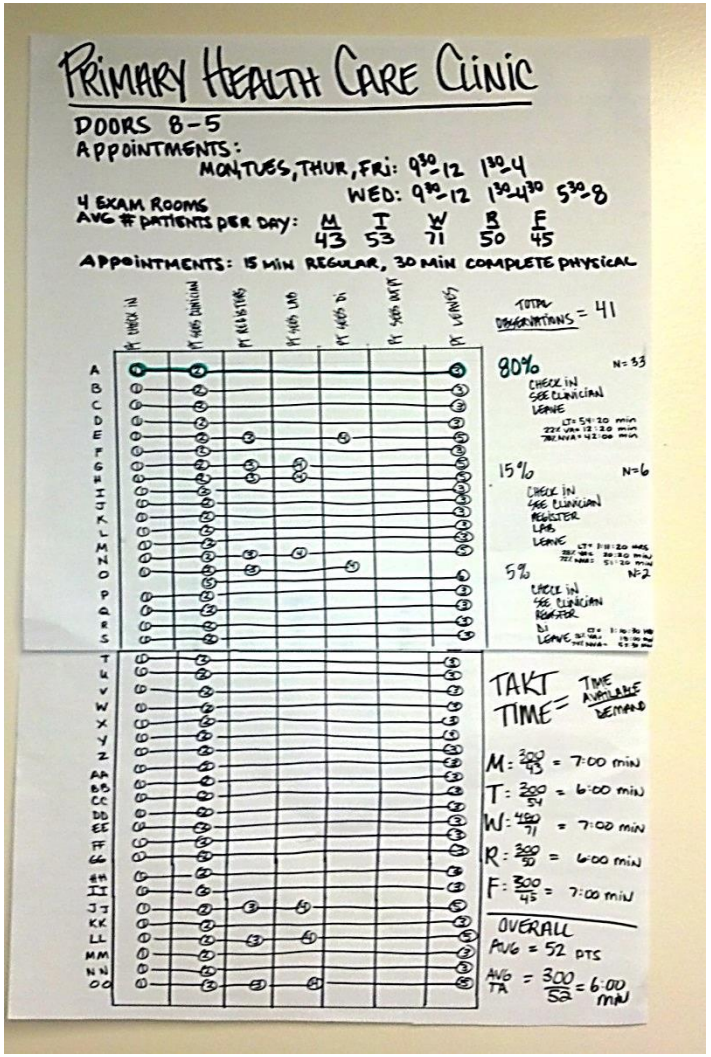
Process:
1. Assessment
2. Lab Testing
3. Diagnostic Imaging
4. ECG
5. IV Infusion/Meds
6. Monitoring
7. Treatment
8. Results/Orders

Patient Type:
A. Minor Skeletal Injury
B. Minor Soft Tissue Injury
C. Major Skeletal Injury
D. Major Soft Tissue Injury
E. Urinary Tract Infection Symptoms
F. Abdominal Pain
G. Upper Respiratory Symptoms
H. Cardiac Symptoms

Patients can be grouped into families based on common routing.
The PQ Analysis process can also help to determine shared equipment needs.

Patient/Procedure Routings





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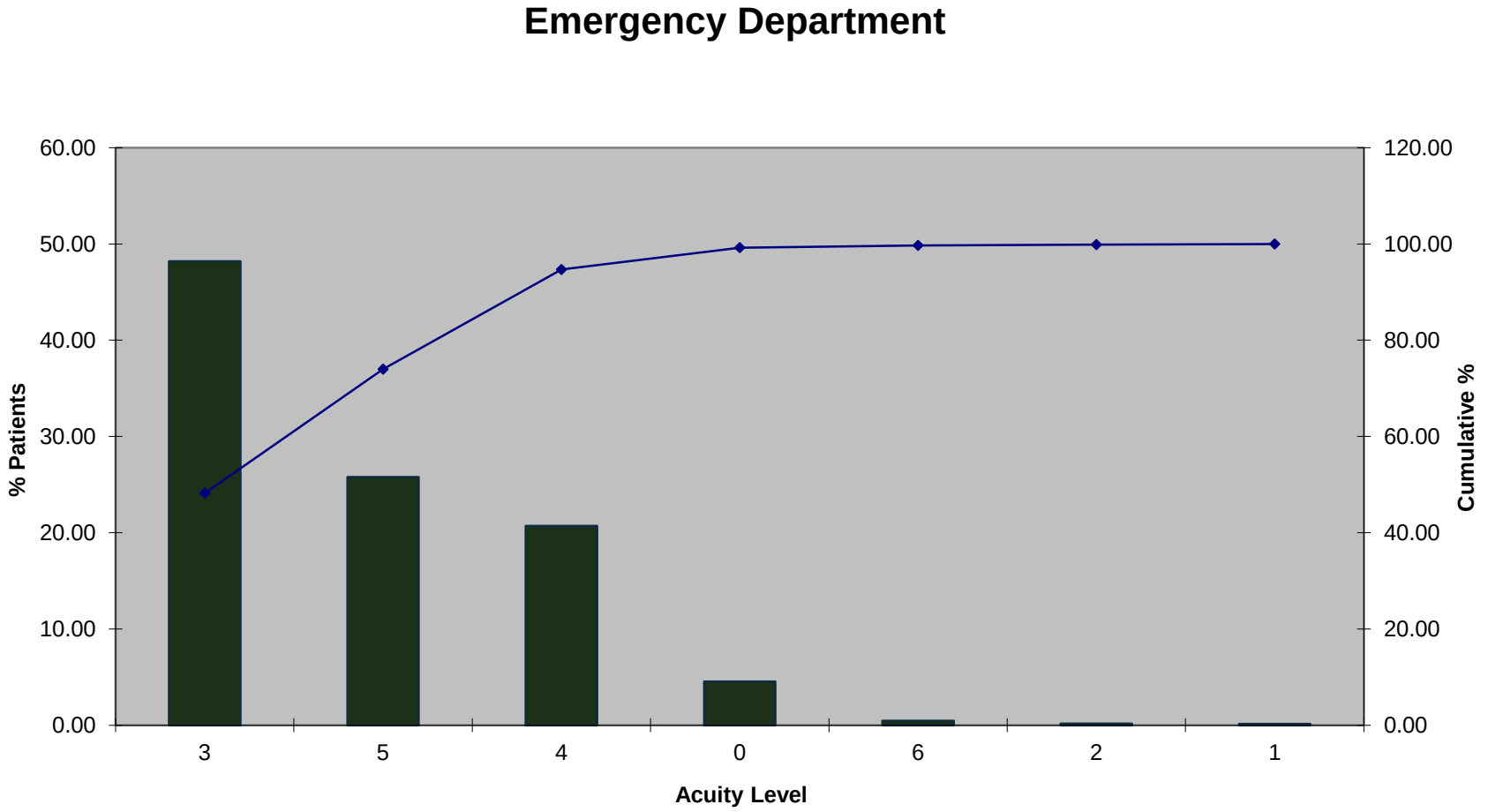
PQ Analysis by Acuity Level



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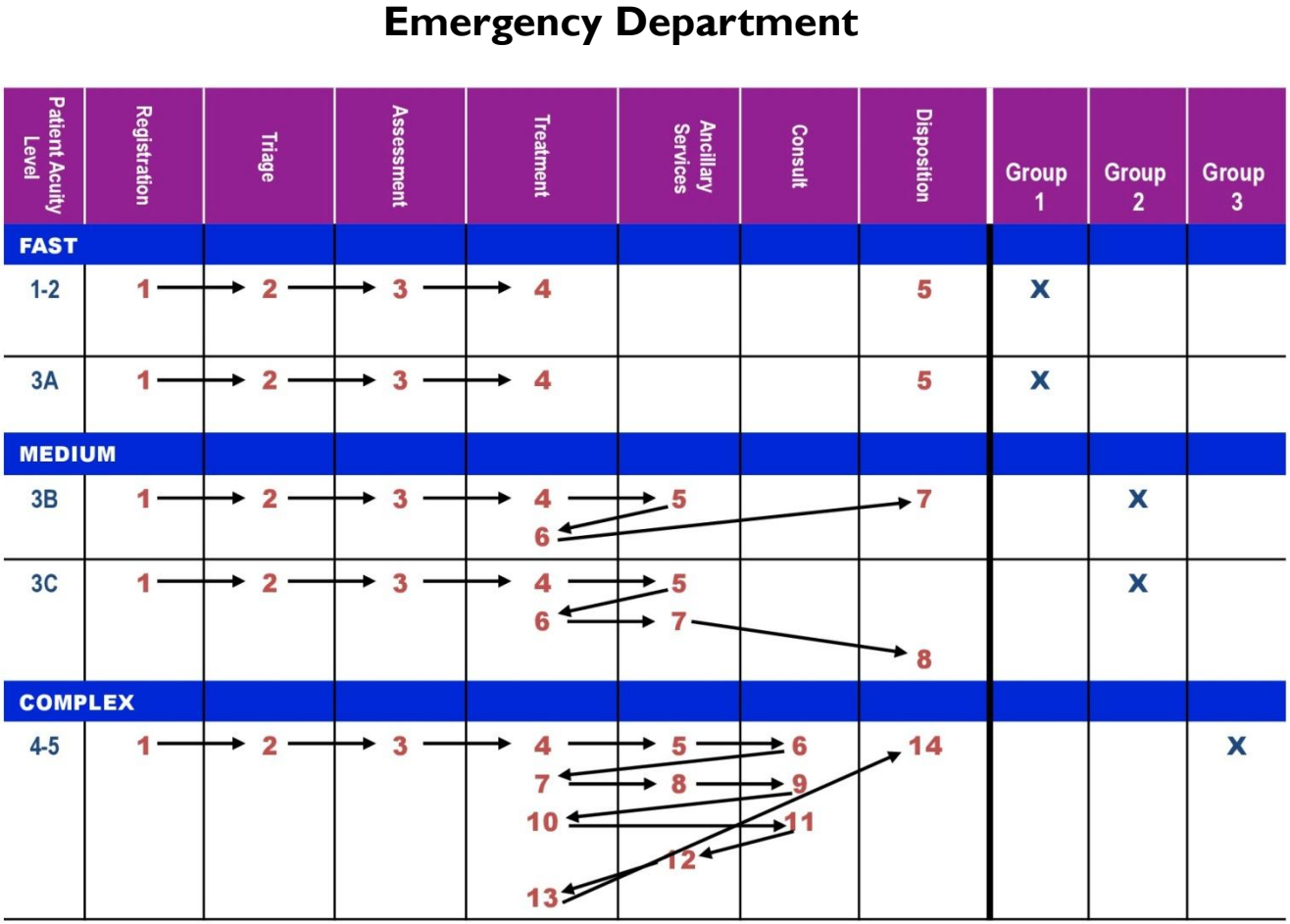
PQ Analysis by Acuity Level



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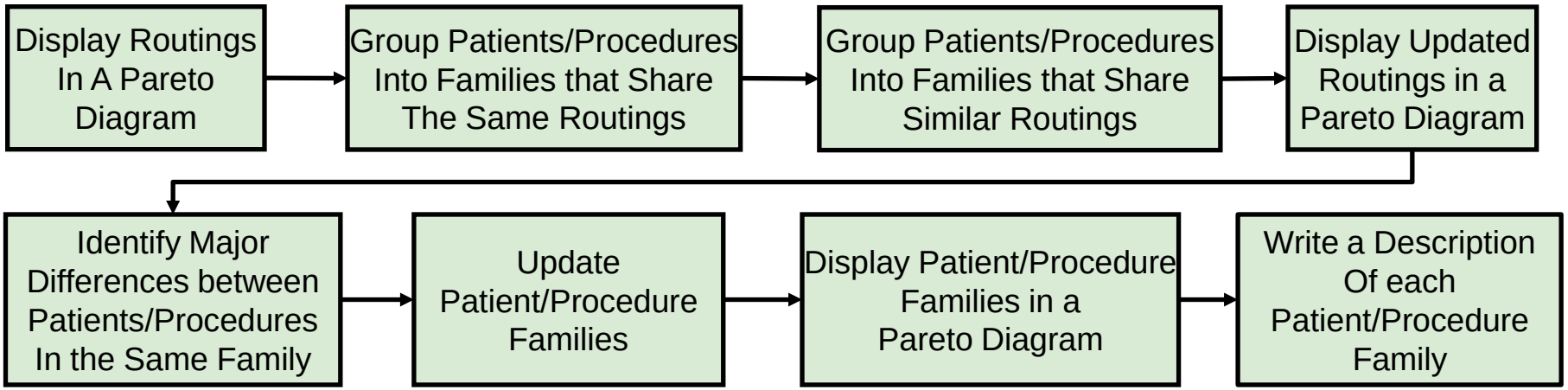
Step 3: Group Patients/Procedures into Families

- The purpose of this step is to group patients and procedures into families.
- Each family will share the same or a similar routing or characteristic, such as diagnosis or lab test requirements.
- Similar routings means that patients go through **most** of the same machines or processes in the same sequence. One might skip a process/machine. Another might go to an additional process/machine. Patients that backtrack through the routing at any point are less desirable. Backtracking makes cell operation more complex.



We looked at **100** patients and found the following:

30 patients with upper respiratory infection symptoms

50 patients with congestive heart failure

20 patients with urinary tract infection symptoms

Patient goes to x-ray

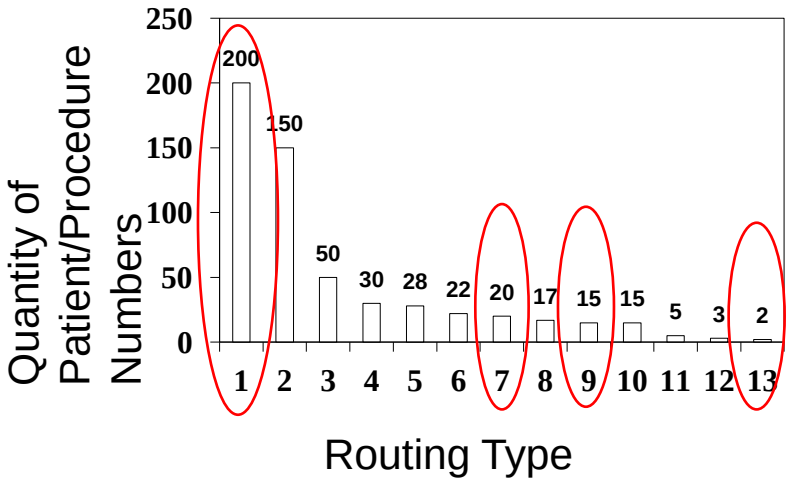
Patient goes to lab

First, create a Pareto diagram to graphically display patient/ procedure routings.

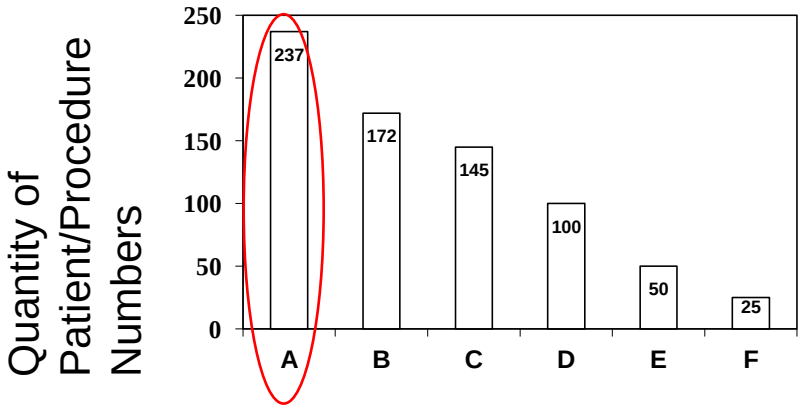
The **purpose** of the Pareto diagram is to be able to quickly see which routings are common to the majority of patients/procedures and which are unique.

The **goal** is to reduce the number of unique routings.

Before Pareto



After Pareto



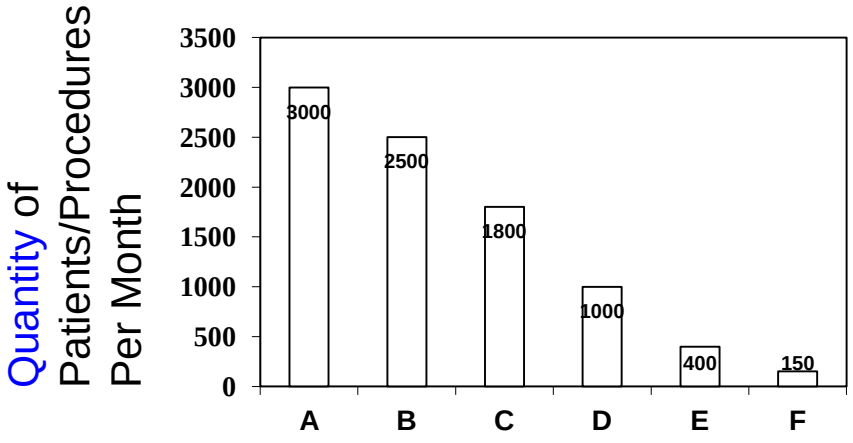
Family Example:
A= Routings 1,7,9, and 13

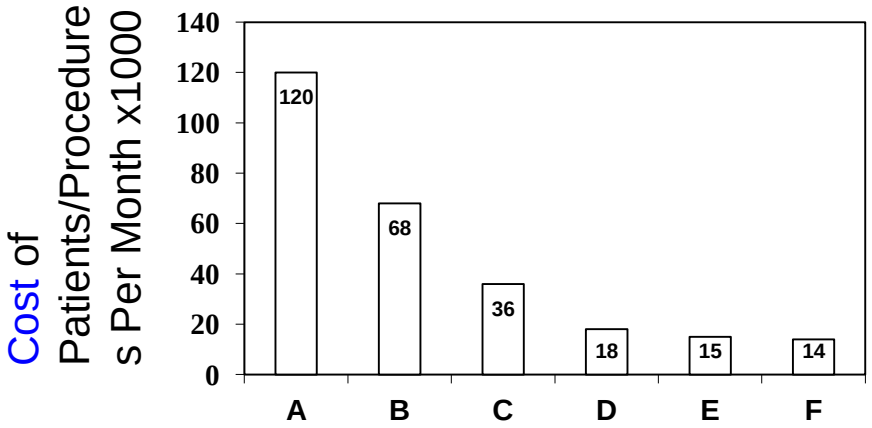
Step 4: Identify Cells to Service Patient Groupings

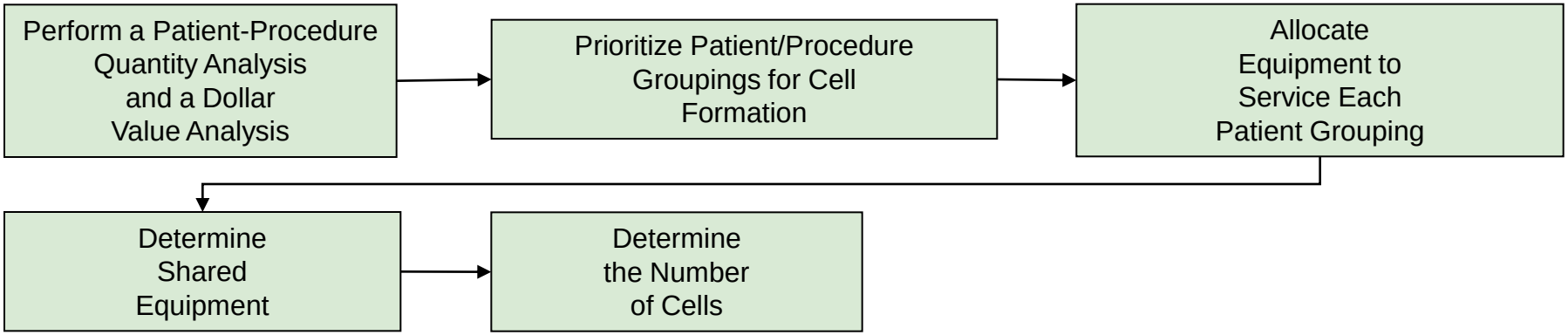
The objective of this step is to identify cells to provide service to each patient group that was identified in Step 3.

Cells should be formed to service those groupings with the greatest quantities and the highest cost first.

Analysis







The following are some common ways to form cells:

1. **Patient Grouping**
   Similar patients provide a logical cell grouping. The patients for these cells often require common procedures.

2. **Similar Process Routing**
   Cells are formed by grouping patients that flow through similar process sequences. For example, patients that require knee surgery and shoulder surgery.

3. **Patient Exceptions**
   These cells are generally less efficient than patient or process cells, but they may be necessary where volumes of similar patients or processes are too low to support a cell.

a. Volume
Cells may be formed for low volume (specialty) patients.
High-volume patients may support a cell of their own.

b. Unique Patients
Cells may be dedicated to specific patients where the number is small or the volume is high.

The design of cells in a facility may include various types in combination:

- Cell A for a specific patient grouping.
- Cell B and C for typical patients.
- Cell D for special patients.

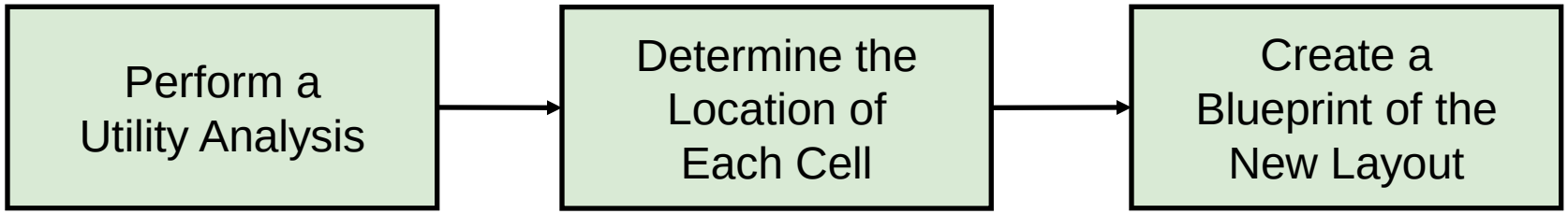
The process of designing cells is an iterative process.

There may be considerable trial and error involved in selecting a design that balances business goals against available equipment.

Step 5: Create a Rough Layout

The objective of this step is to construct a layout of the cells.

It is helpful to have representatives from Support Services (Facilities, IT, Biomedical Engineering, etc.) participate in this step to discuss the feasibility of moving equipment.



Consider the following when planning to move equipment to form cells:

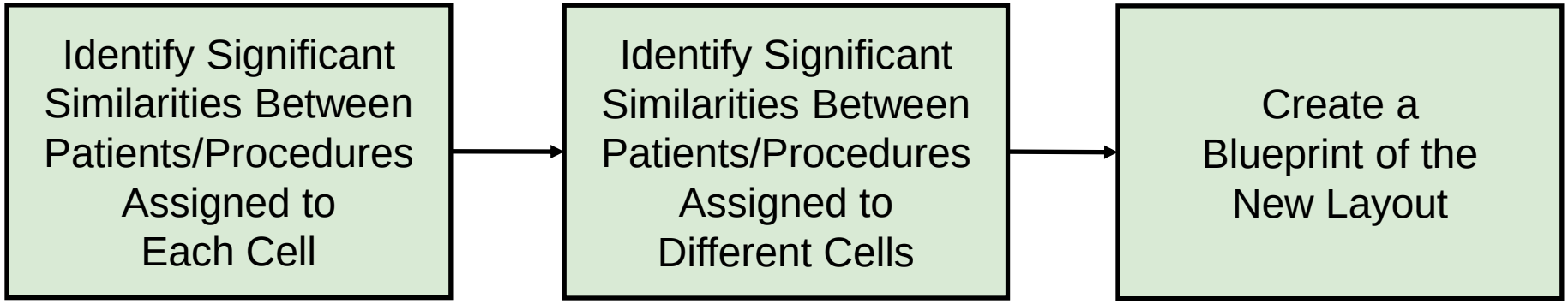
Will moving the equipment:

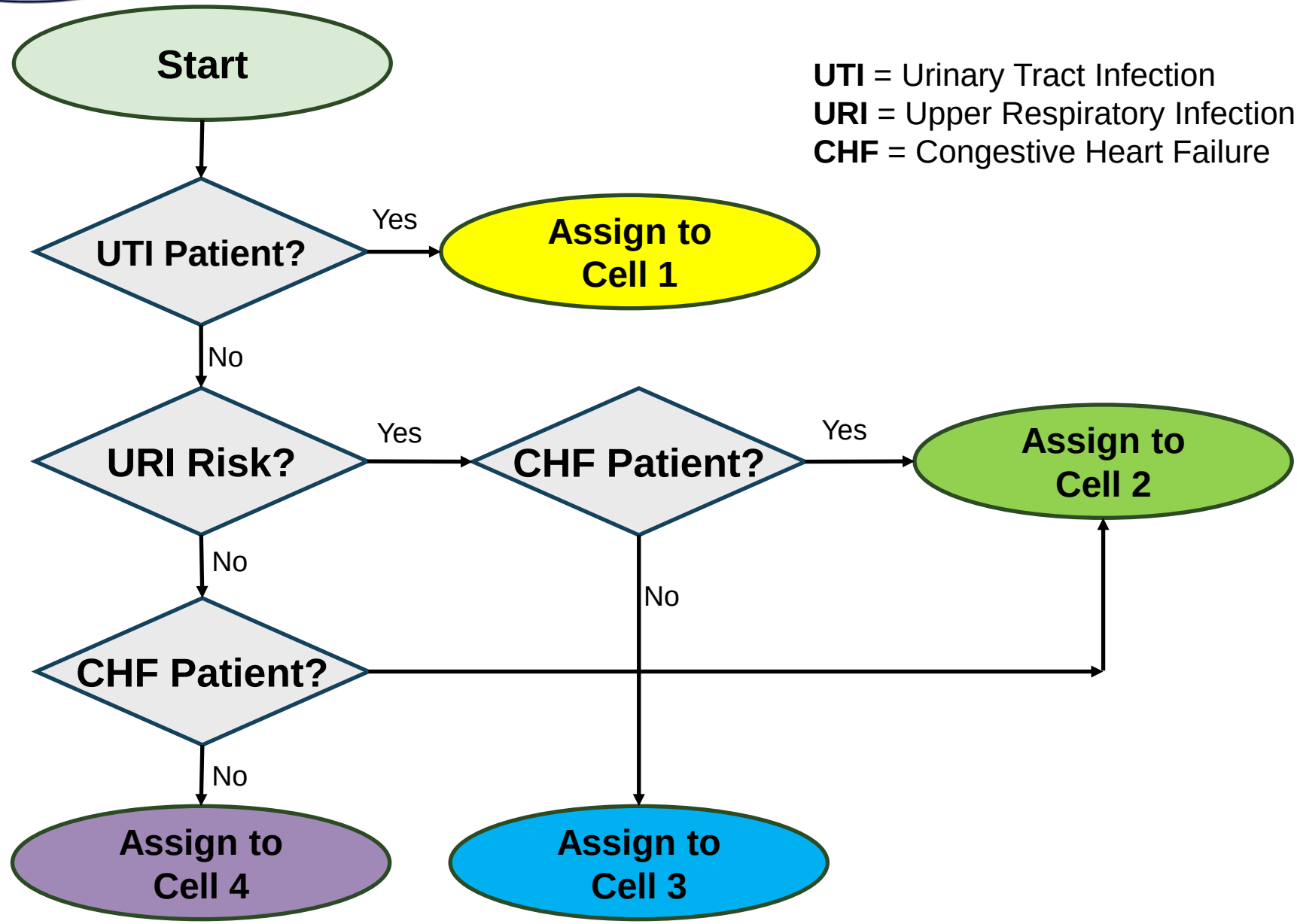
- Eliminate distance to allow one-piece processing?
- Decrease or increase staff waiting time?
- Reduce other wastes such as movement, excessive handling, or inventory?
- Make it easier to move the equipment again to accommodate changing requirements?
- Impact the external environment with discharges such as wastewater, steam, dust, or smoke?
- Be prohibitively expensive?
- Impact the work environment with heat, noise, vibrations, light, or dust?
- Create or ease ergonomic problems, such as requiring the operator to lift, reach, bend, or engage in other repetitive or uncomfortable motions?

Step 6: Outline Logic for Assigning New Parts to Cells

An approach for capturing the logic for assigning patients to a cell is to create a flowchart, based on the similarities and differences that have been identified.

See the following example:

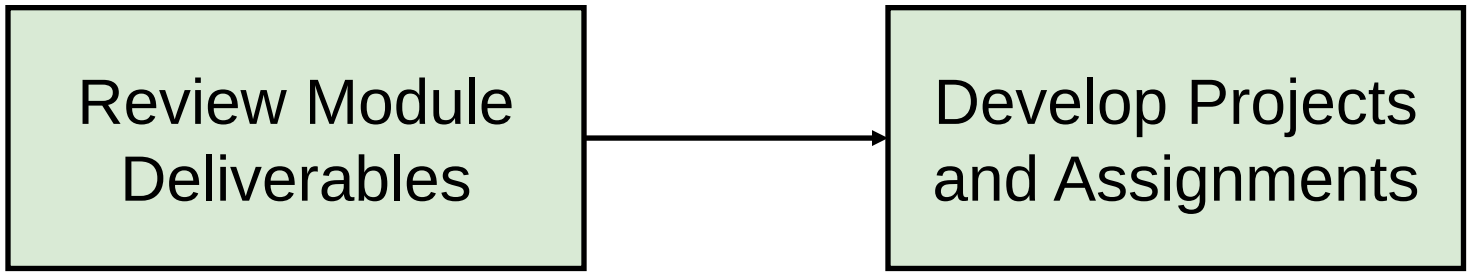




UTI = Urinary Tract Infection
URI = Upper Respiratory Infection
CHF = Congestive Heart Failure

Step 6: Develop Projects and Assignments

The objective of this step is to identify the actions that are needed to ensure that the results of this exercise are achieved.



The **action plan form** is a way to document the actions. See the example below. It is important that a process be established to follow-up, review status, and provide help if necessary.

Without such a process, the objectives and the associated savings will not be achieved.

Action Plan Form

What	Who		How	When		Comments
Action Items	Primary Responsibility	Support Responsibility	Deliverables	Process Check Dates	Completion Date	Further Action
1.						
2.						
3.						
4.						
5.						
6.						

Patient-Procedure/Quantity Analysis Summary

PQ Analysis is a process that can help prioritize improvement focus, design cellular service, or improve flow.

Regardless of the goal, it always starts with a guiding vision and ends with projects and assignments.