# Process Mapping

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# Disclosures

- DB: Founding partner of TreatSafely, LLC.
- EF: None



# Learning Objectives

- To understand why process maps are useful in the clinical environment.
- To become familiar with a few examples of process maps.
- To discuss several important tips for creating useful process maps.



# Process Mapping

Outline

1. What are the benefits of process mapping?
2. Brief look at different process map examples
3. A rough guide for creating process maps
4. Tips for creating useful process maps
5. Walkthrough example



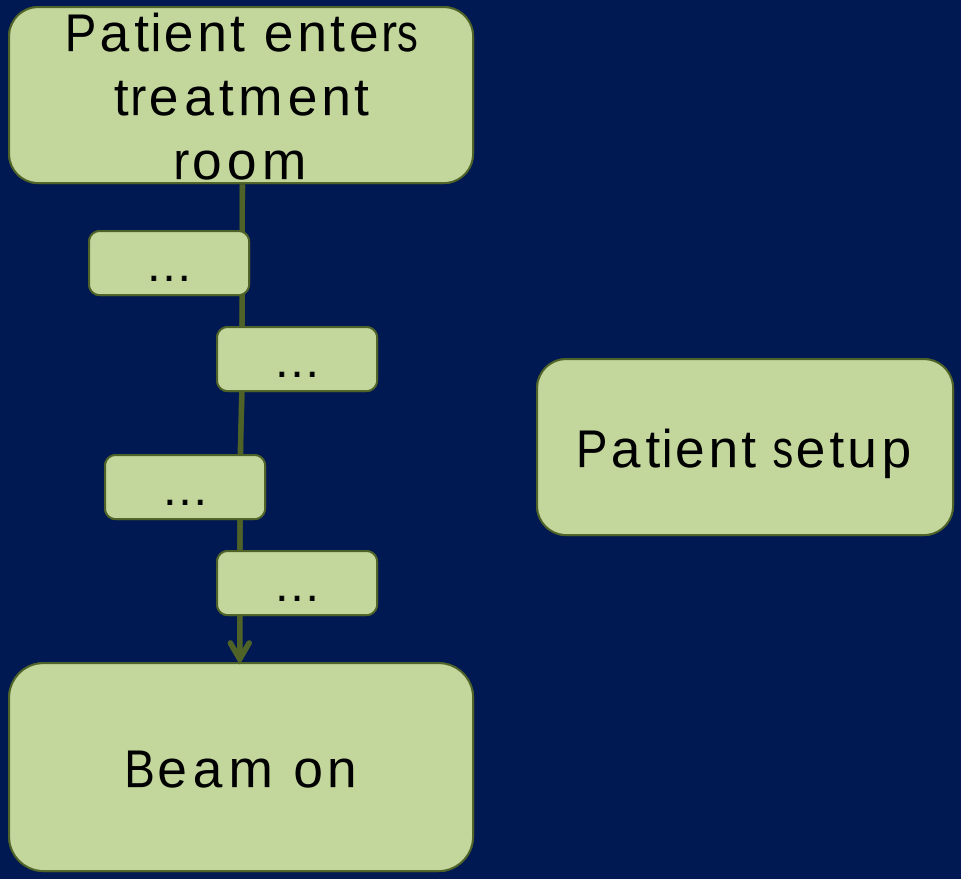
# Process Maps – Why Bother?

Greg

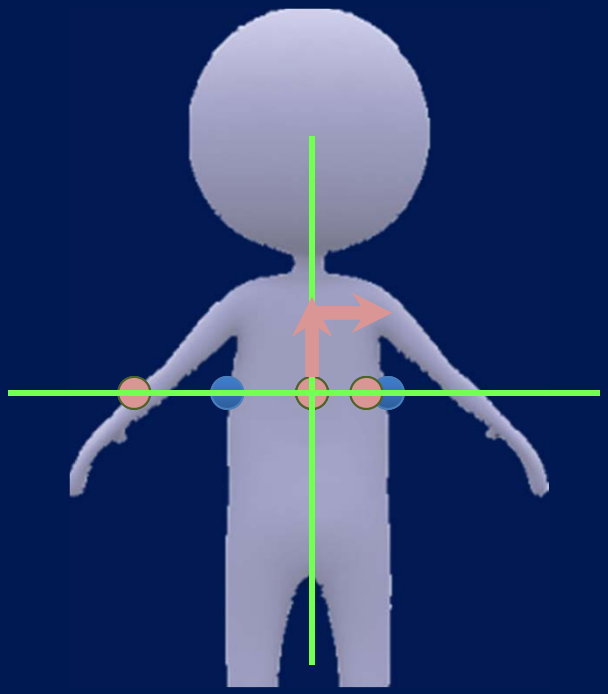
Marsha

- Greg is an experienced therapist – Linac 1
- Marsha is a seasoned veteran therapist – Linac 2

# Process Maps – Why Bother?



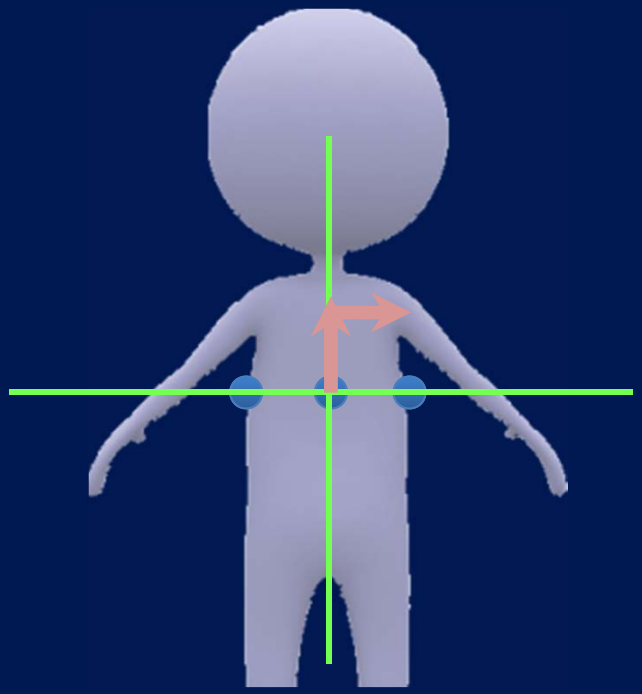
# Process Maps – Why Bother?



Linac 1 – Patient Setup Procedure

Ready to Treat

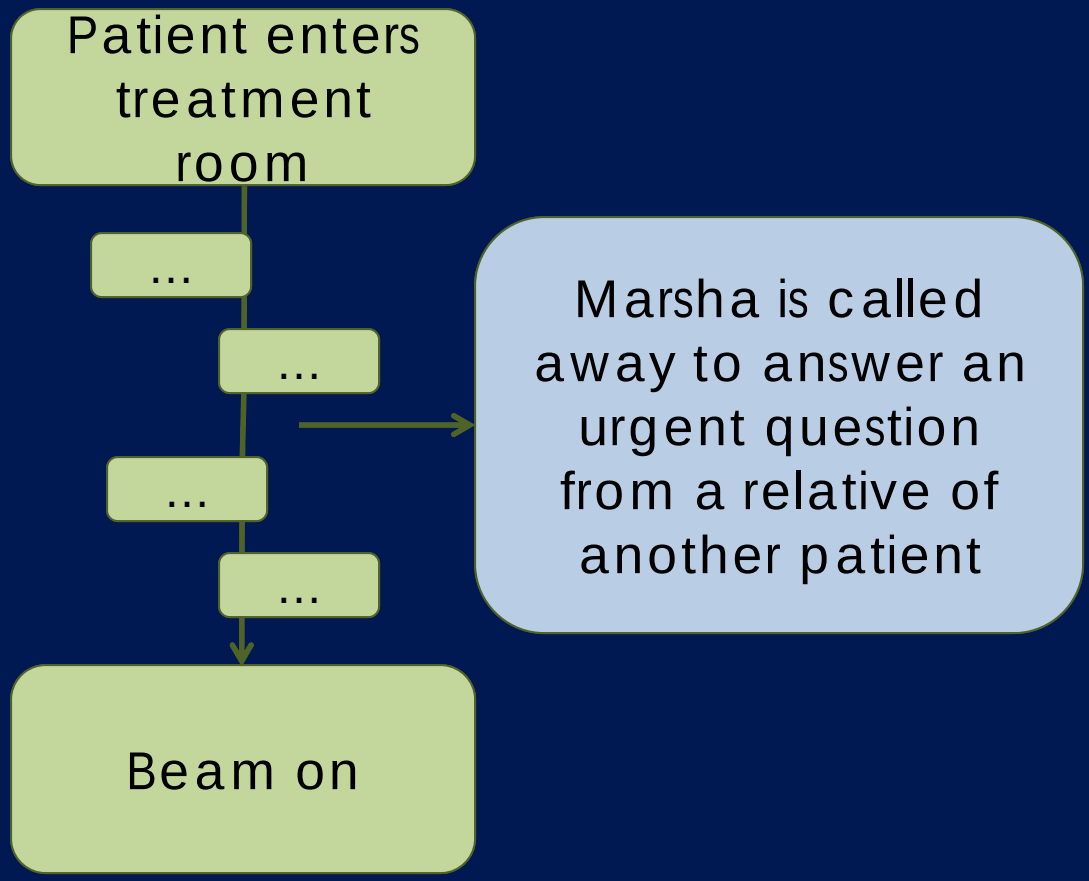
# Process Maps – Why Bother?



Linac 2 – Patient Setup Procedure

Ready to Treat

# Process Maps – Why Bother?



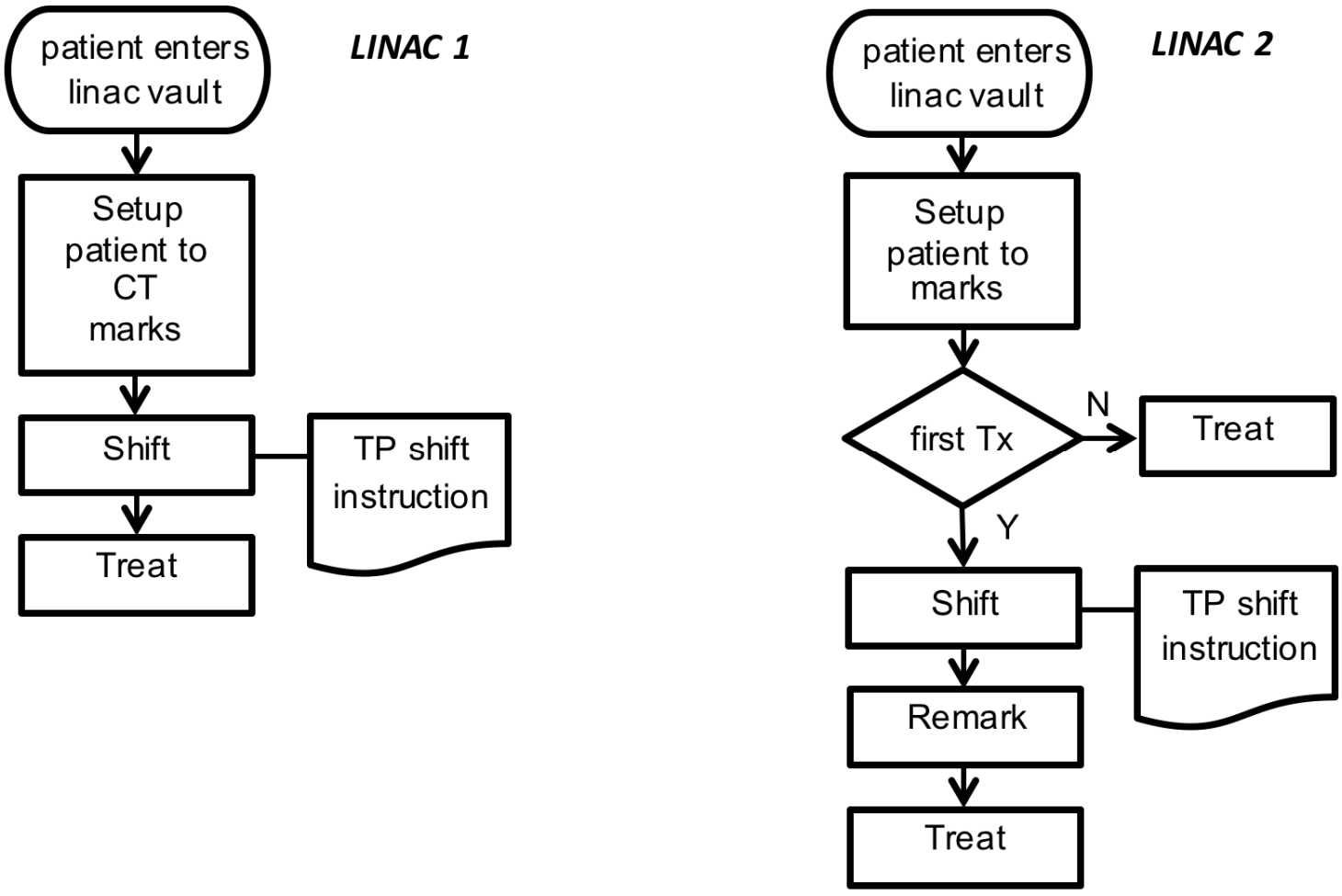
# Process Maps – Why Bother?

- Marsha returns within a few minutes and asks Greg if the patient has been setup correctly

- Greg, always glad to have done the job right, answers yes enthusiastically…



# Process Maps – Why Bother?



# What are the Benefits?

- Immediate benefits
  - Improving communication – everyone is on the same page!
  - Harmonizing clinical practice and ensuring that everyone operates with a shared model.
  - Improving efficiency. Workflow inefficiencies can become obvious when mapped out visually

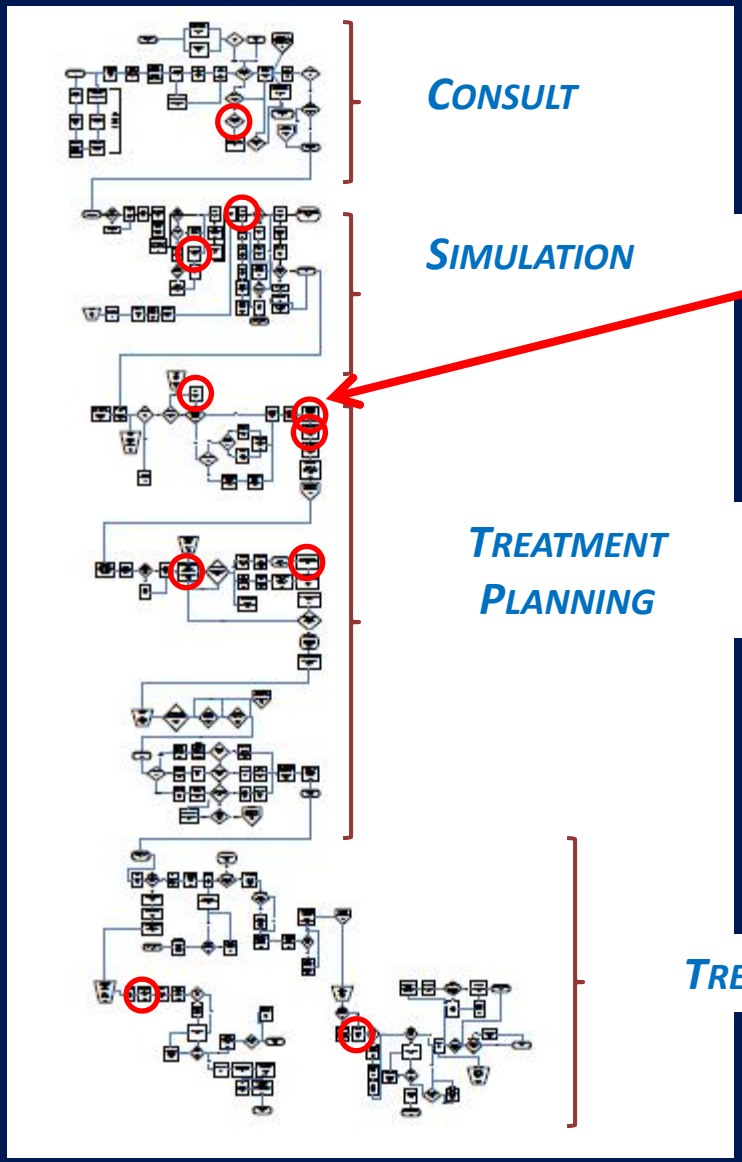


# Process Maps: Applications

- **Failure Mode and Effects Analysis (FMEA)**
  - Assemble team
  - Create process map
  - Identify failure modes
  - Score each for severity, occurrence and detectability

Process maps



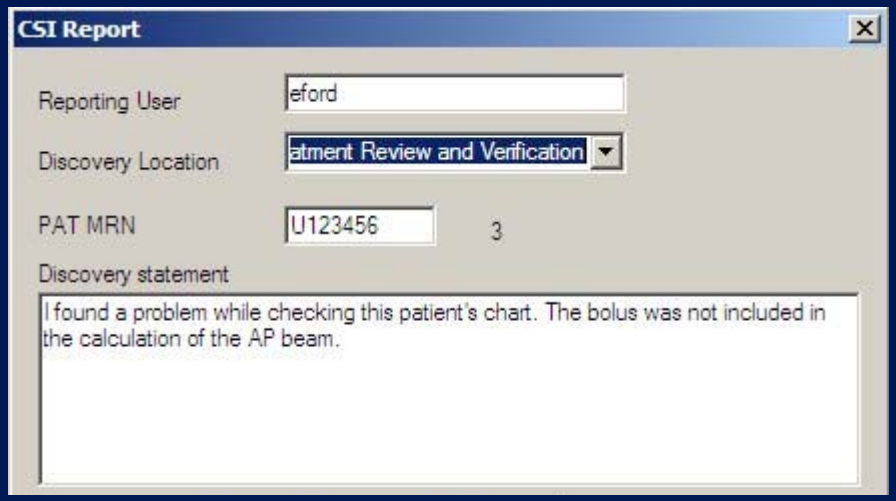


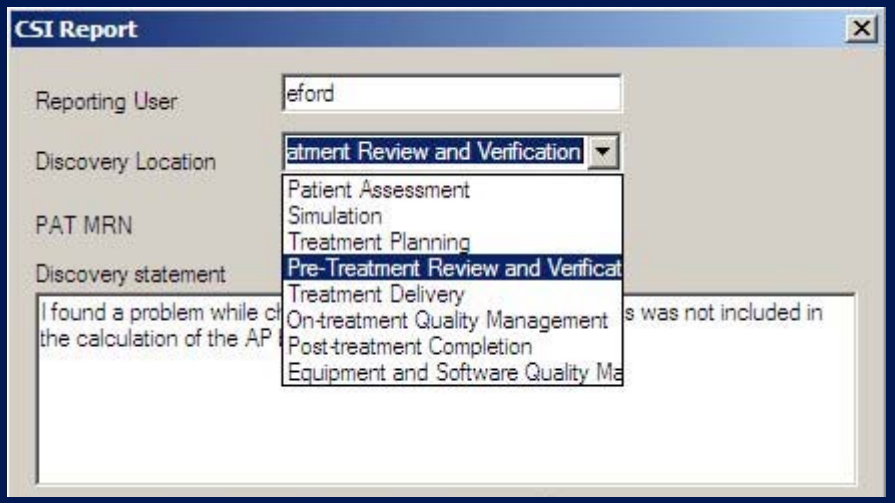

# High-RPN failure modes

Ford et al. Int J Rad Onc Biol Phys 74 (2009) 852 - 858

# Process Maps: Applications

- FMEA
- Codifying events in incident learning



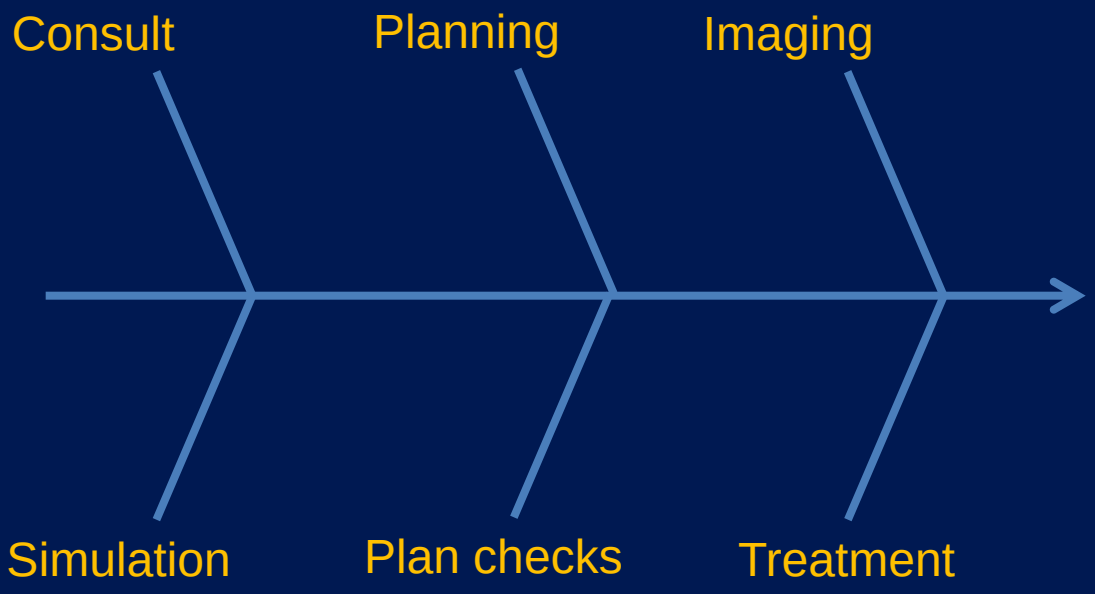
# Process Map

**Sounds great.**
**How do I make a process map?**



# Types of Process Map

## Ishikawa Diagram or "Fishbone Diagram"

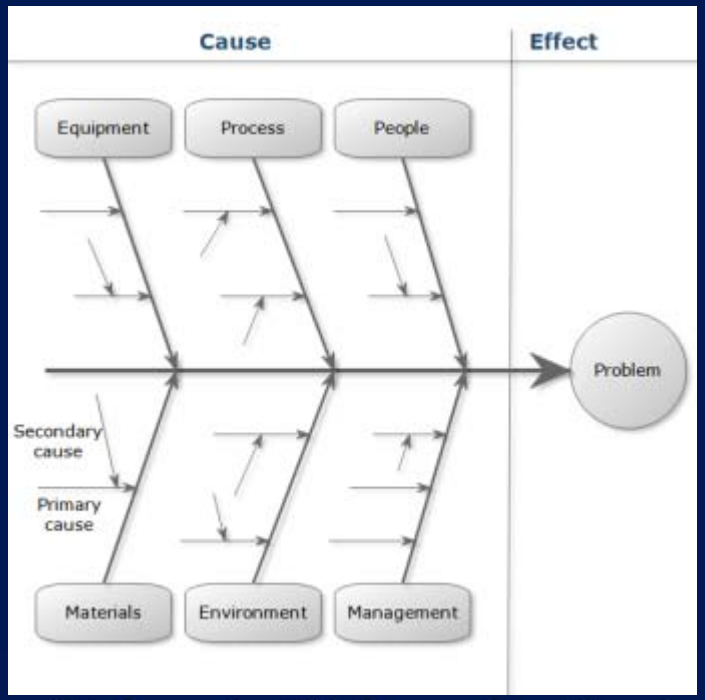



*Kaoru Ishikawa, 1960's, Mitsubishi Motors*

# Types of Process Map

## Ishikawa Diagram

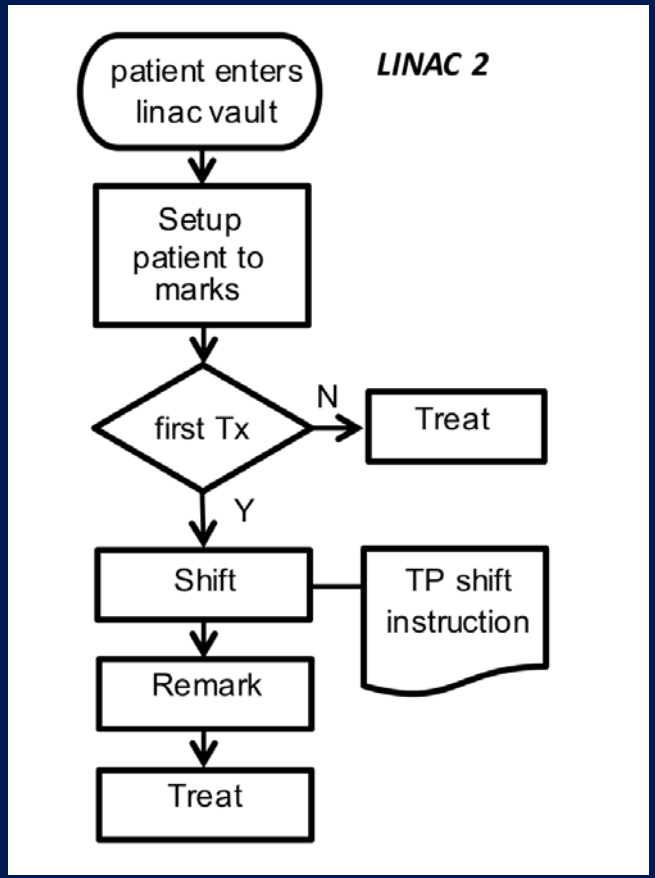
- Can be used to map process
- General use (outside rad onc) is as a cause-effect tool




*nevron.com*

# Types of Process Map

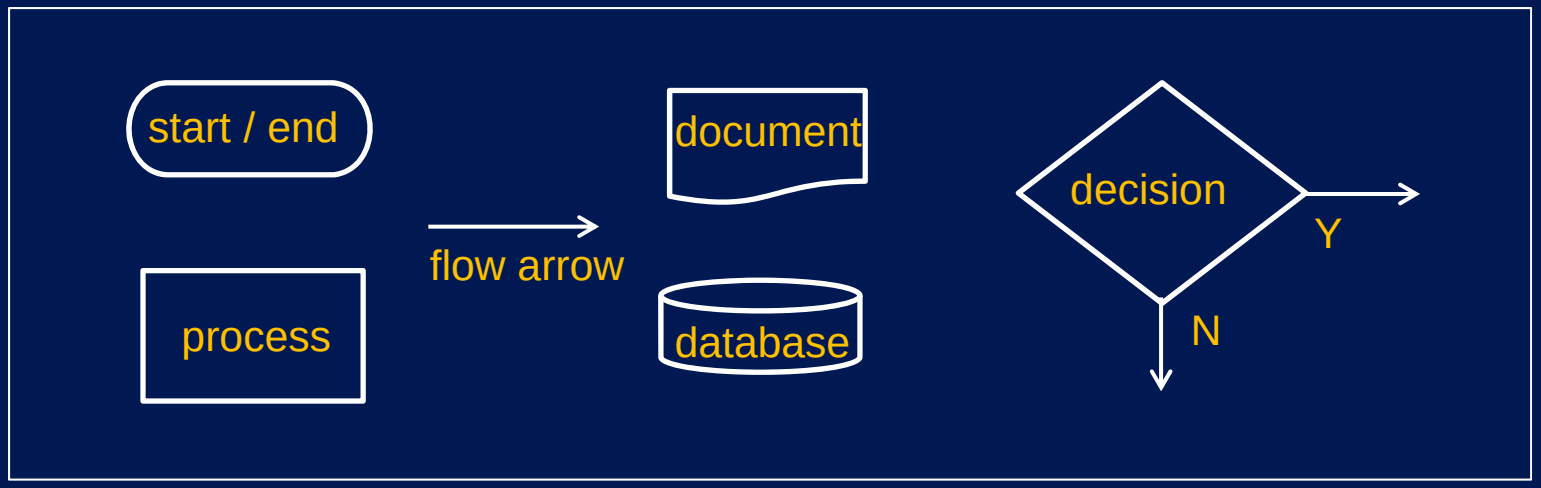
**Process flow diagrams**




*Frank Gilbreth, 1920's, ASME*

# Types of Process Map

## Process flow diagrams



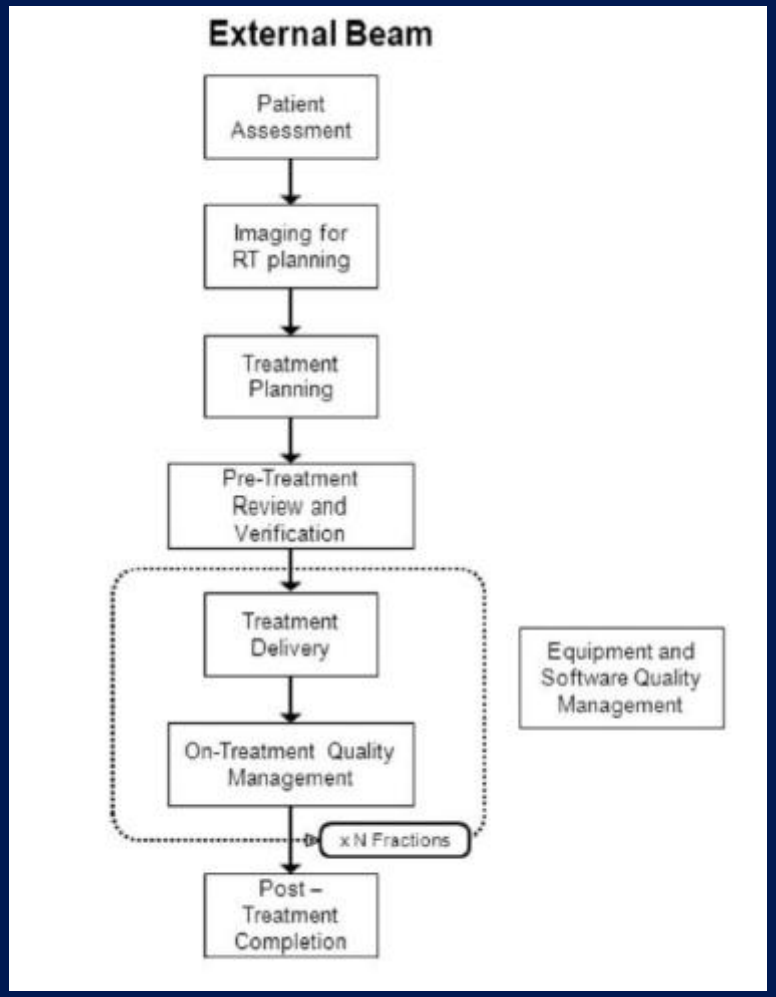

**A dictionary of process map symbols**
*Summer School Proceedings – Chapter 4*

# Process Maps - Examples

- The easiest way to become familiar with process mapping is look at some examples
- Immediately after this talk, we're going to work through a process map together

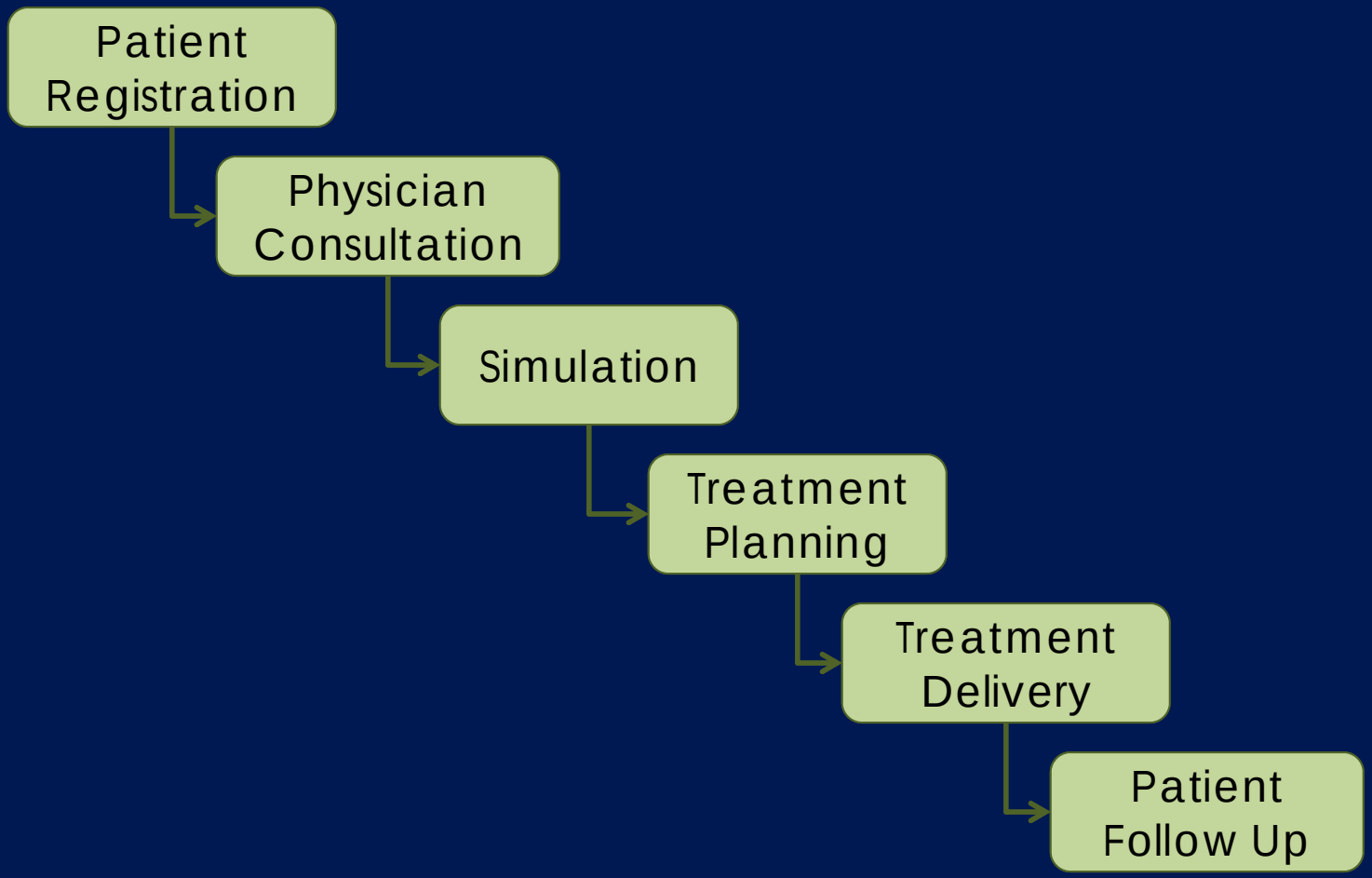


# Process Maps - Examples




Luis Fong de Los Santos 2012
*in Consensus recommendations for incident learning database structures in radiation oncology*

# Process Maps - Examples



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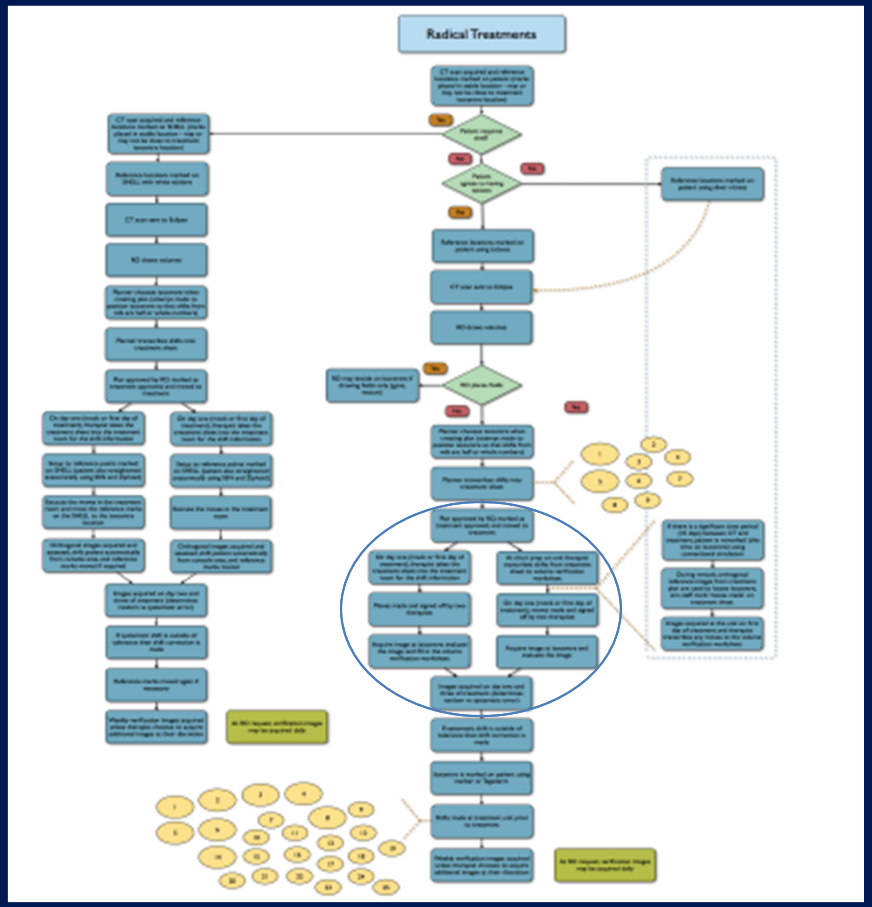

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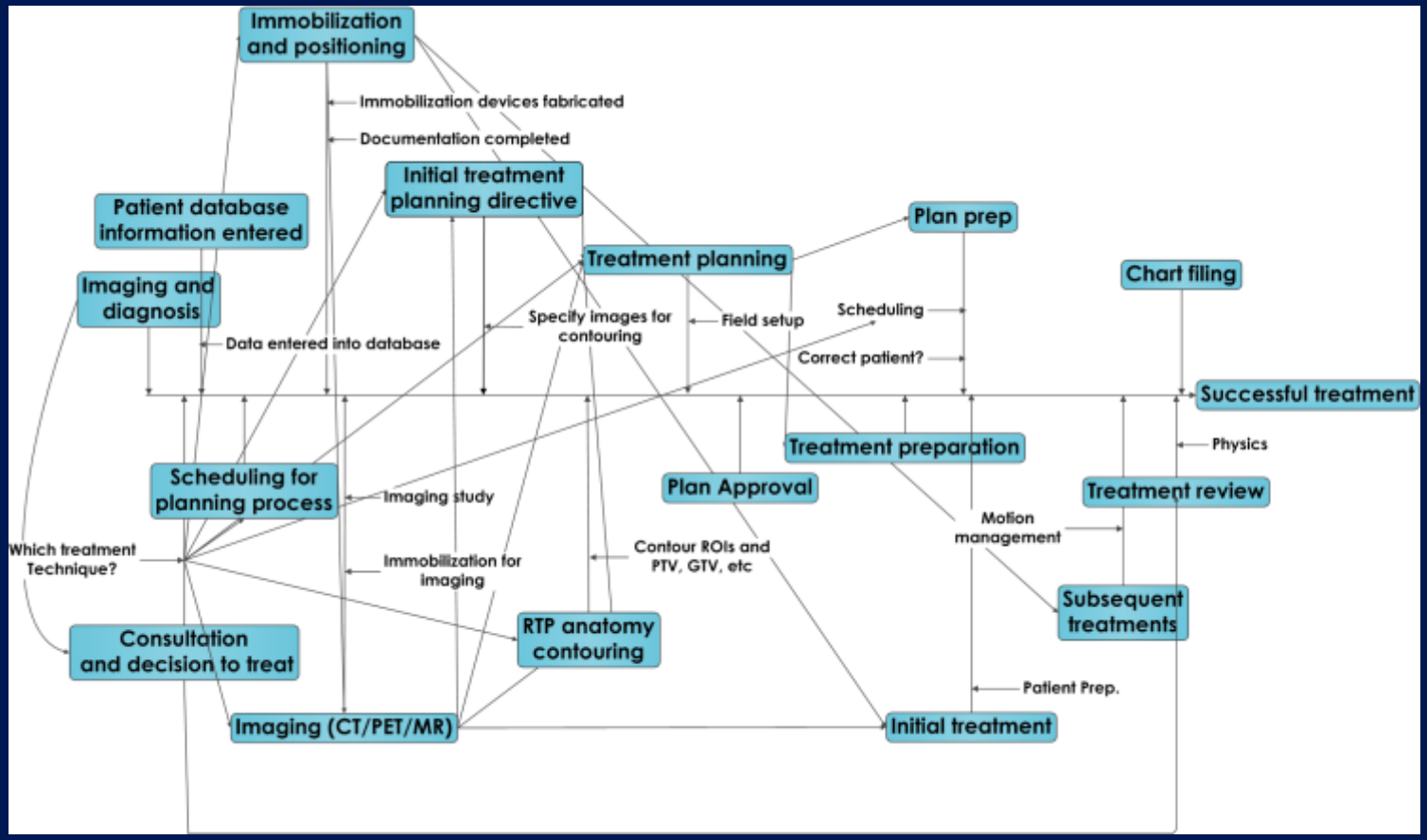
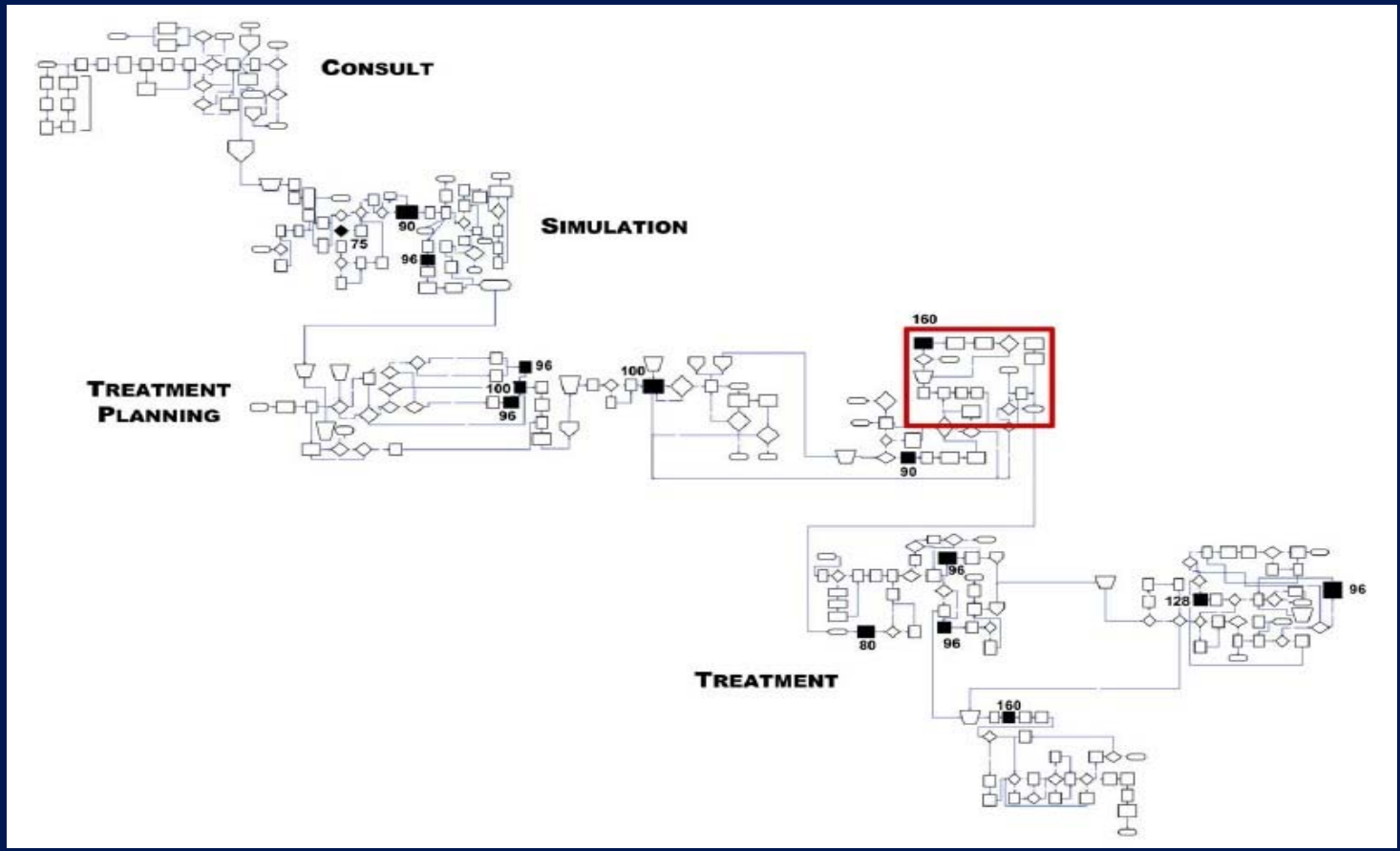



TG-100 IMRT Process Tree

# Process Maps - Examples




Ford et al. Int J Rad Onc Biol Phys 74 (2009) 852 - 858

# The Rough Guide

- **Step 1**: Decide what process to map. The scale of the process is an important concern here. Don't bite off more than you can chew!

- **Step 2**: Form a group and identify a team leader. It is vital that all professional groups are represented in this process. This may include administrators and managers as well as clinical staff.



# The Rough Guide

- **Step 3**: Create an initial process map. It is often useful to make a first draft that does not attempt to capture the entire process in detail but rather the workflow at a more general level.

- **Step 4**: Iterative mapping. The process map is refined with the input of all staff involved.



# The Rough Guide

- **Step 5**: Check with external resources to make sure that no steps have been missed.
- **Step 6**: Use the process map. Examples of this use can be found later in this chapter on FMEA analysis.



# Useful, Usable Maps and Diagrams

- What's important in designing process maps?
  1. In our business it is customary to look at processes from the patient's perspective
  2. For clinical processes a **multidisciplinary team** is necessary for the development of a valid map
  3. The number of sub-processes identified should be the **smallest number** to meet the objective



# Useful, Usable Maps and Diagrams

- What's important in designing process maps?
  4. The users of the map should have the **same understanding** of the meaning of the sub-processes.
  5. Choose the right level of detail. A map that is too general loses its utility, while one that is too detailed becomes unmanageable and staff lose the big picture.
  6. Don't get hung up on fancy graphics. There is value in the **process of creating the map.**



# Process Mapping

- **Summary**
  - We have looked at how process mapping can be a useful tool in the clinical environment
  - We have seen examples of process maps
  - We have looked at tips for creating more useful process maps
  - We have walked through the development of a process map



# Process Mapping Exercise

- The goal of this exercise is to develop a process map for IMRT Treatment Planning, from the time the dosimetrist receives the final region-of-interest contours from the physician to the time the plan is ready to be treated.



# The Rough Guide

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- **Step 2**: Form a group and identify a team leader. It is vital that all professional groups are represented in this process. This may include administrators and managers as well as clinical staff.
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