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Process Mapping

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Disclosures

- Vice President, Center for the Assessment of Radiological Sciences (CARS)
  - A non-profit organization dedicated to improving quality and safety of radiotherapy and radiological imaging.

Learning Objectives

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

What is a Process?

- A process is a series of steps or actions performed to achieve a specific purpose.
  - process has inputs and outputs
- A process can describe the way things get done.

All clinical workflows involve many processes.

What is a Process Map?

- A pictorial representation of the sequence of actions that comprise a process.

Process Maps are used to

- Document processes.
  - Provide a reference to discuss how things should be done
  - Describe and understand the clinical workflow

- Analyze and improve on processes.
  - Identify areas of complexity and ambiguity
  - Identify failure modes and areas of re-work
  - To generate ideas for safety barriers
  - Illustrate process improvements

Why is Process Mapping Important?

- It provides an opportunity to learn, standardize, and improve clinical processes
  - Clinical processes if not clearly documented can be ambiguous and subject to multiple interpretations

"You don't learn to Process Map, you Process Map to learn". Myron Tribus Quote

What are the Benefits?

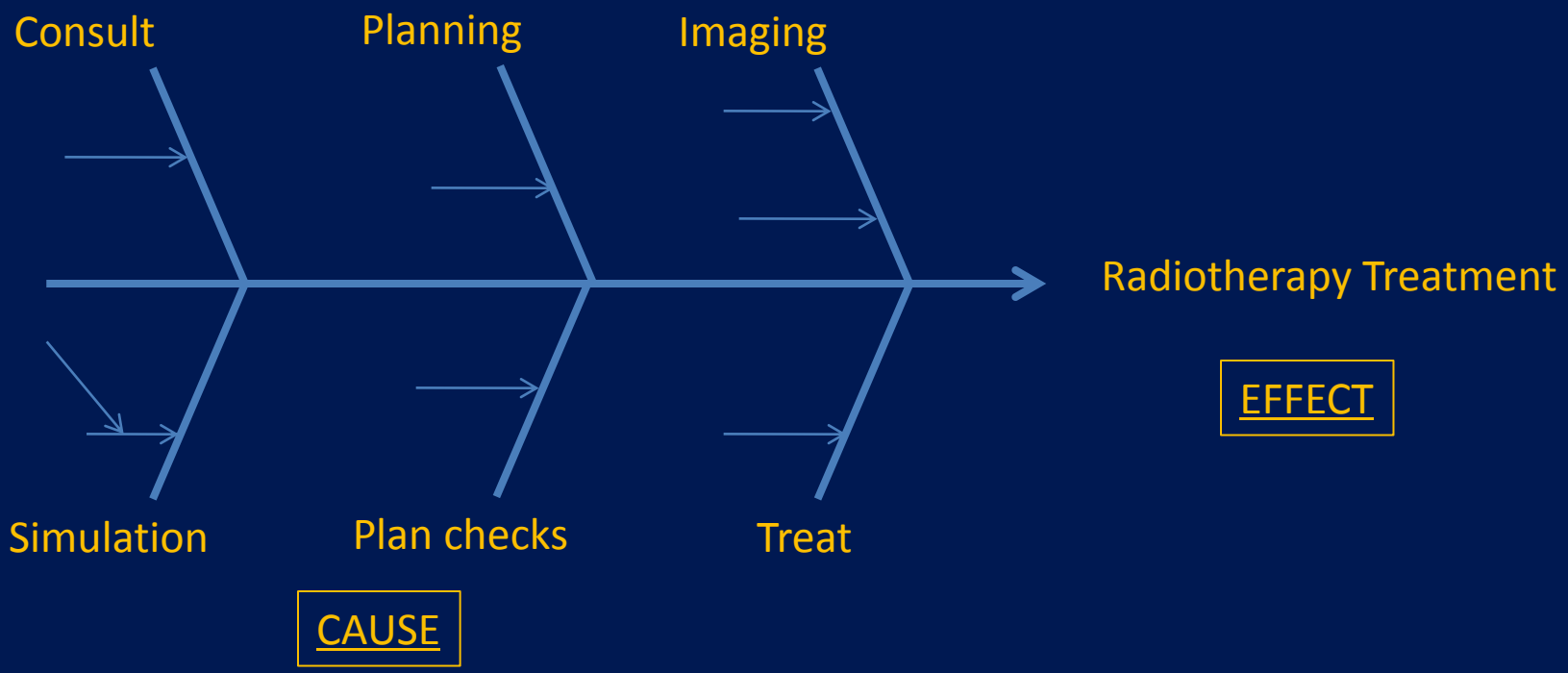
- Immediate benefits
  - Improving communication – everyone is on the same page!
  - Harmonizing clinical practice and ensuring that everyone operates with a shared model.
  - Improving efficiency. Workflow inefficiencies can become obvious when mapped out visually

Preparing to Process Map

- Assemble the Team.
- Agree on which process you wish to process map.
- Agree on the purpose of the process.
- Agree on beginning and ending points.
- Agree on level of detail to be displayed.
- Start by preparing a narrative outline of steps.
- Identify other people who should be involved in the process map creation, or asked for input, or to review drafts as they are prepared.

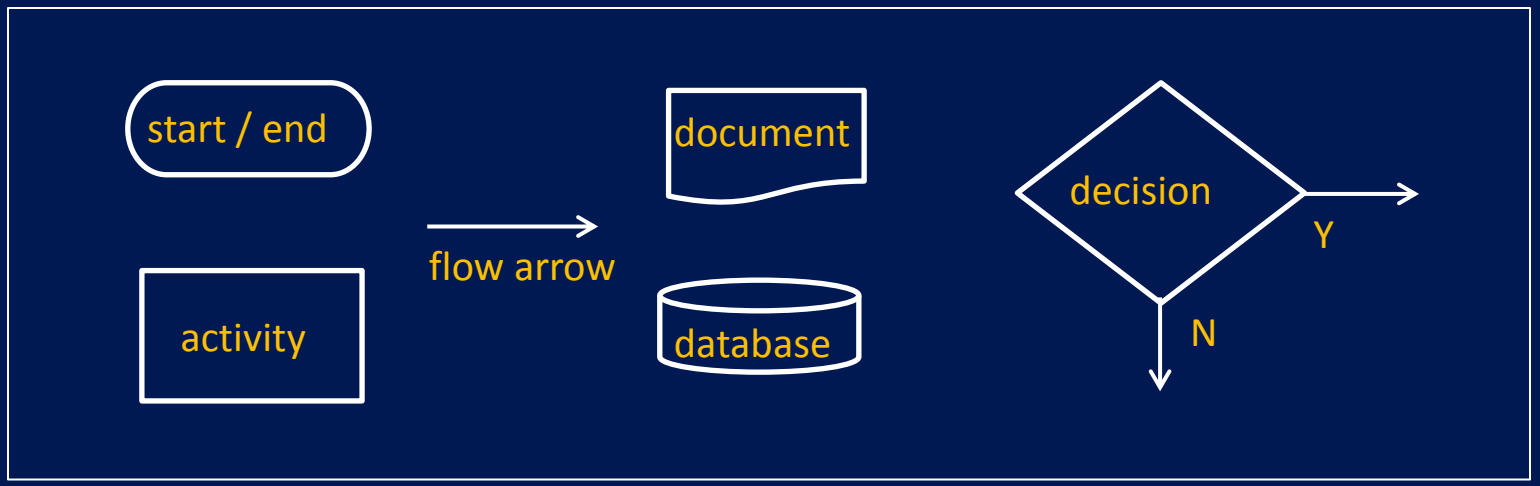
Ishikawa or "Fishbone" Diagram

- General use is as a cause-effect tool
- Can be used to show the variables that go into a process



Kaoru Ishikawa, 1960's, Mitsubishi Motors

Symbols Used to Process Map



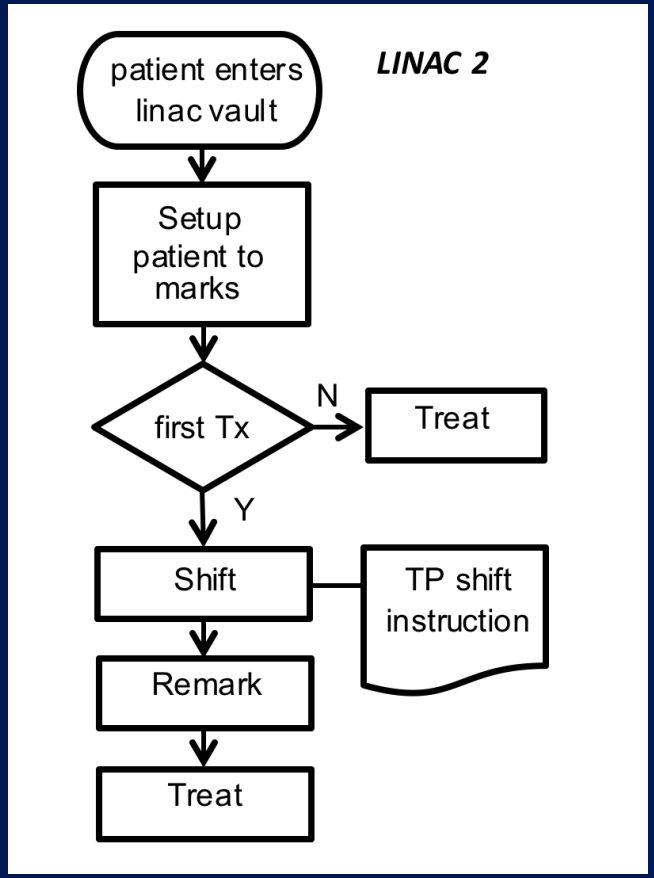
Start & End: An **oval** is used to show the materials, information or action (inputs) to start the process or to show the results at the end (output) of the process.

Activity: A **box or rectangle** is used to show a task or activity performed in the process. Although multiple arrows may come into each box, usually only one arrow leaves each box.

Decision: A **diamond** shows those points in the process where a yes/no question is being asked or a decision is required.

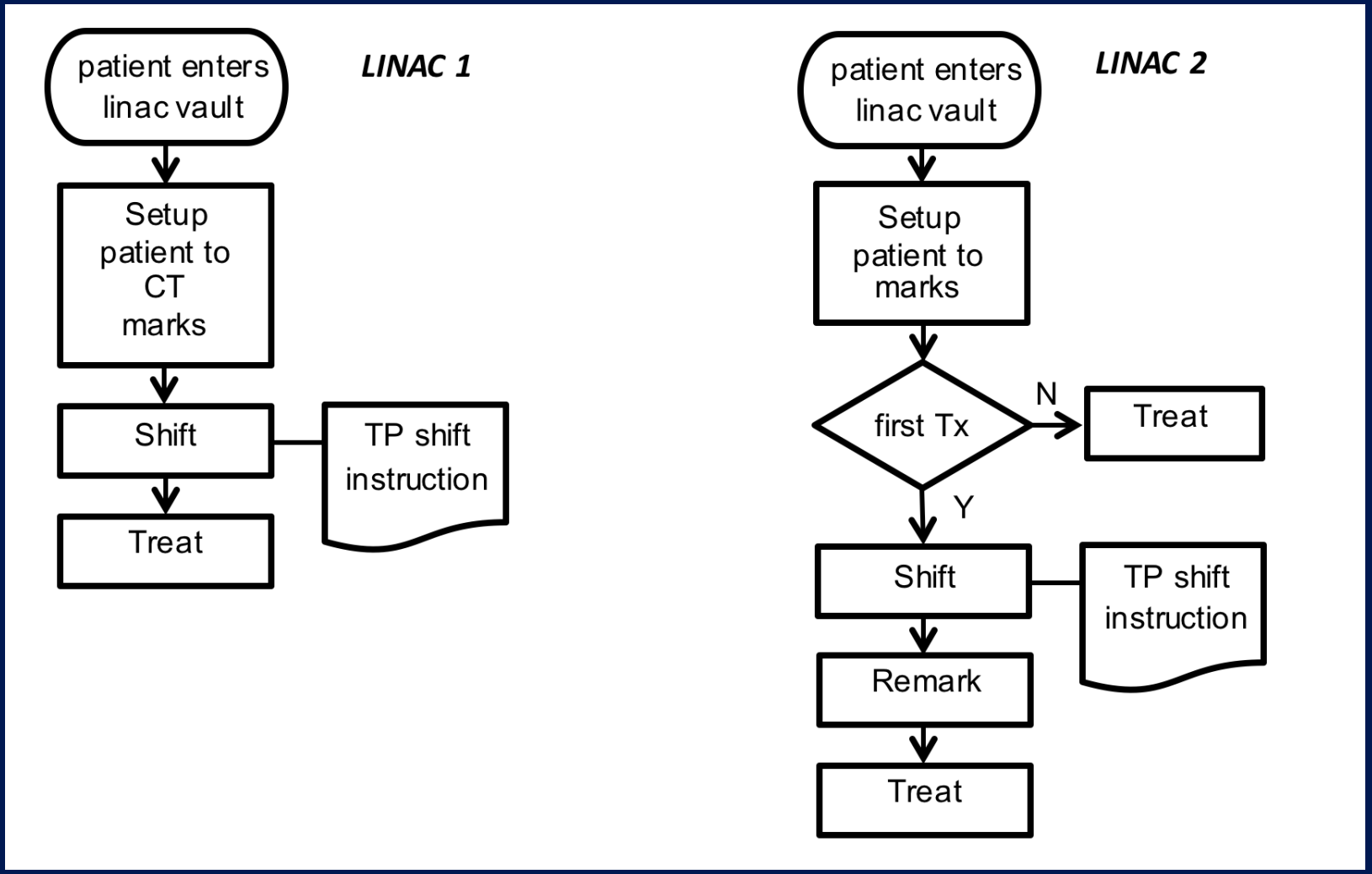
Process Map of Patient Setup

Process flow diagrams



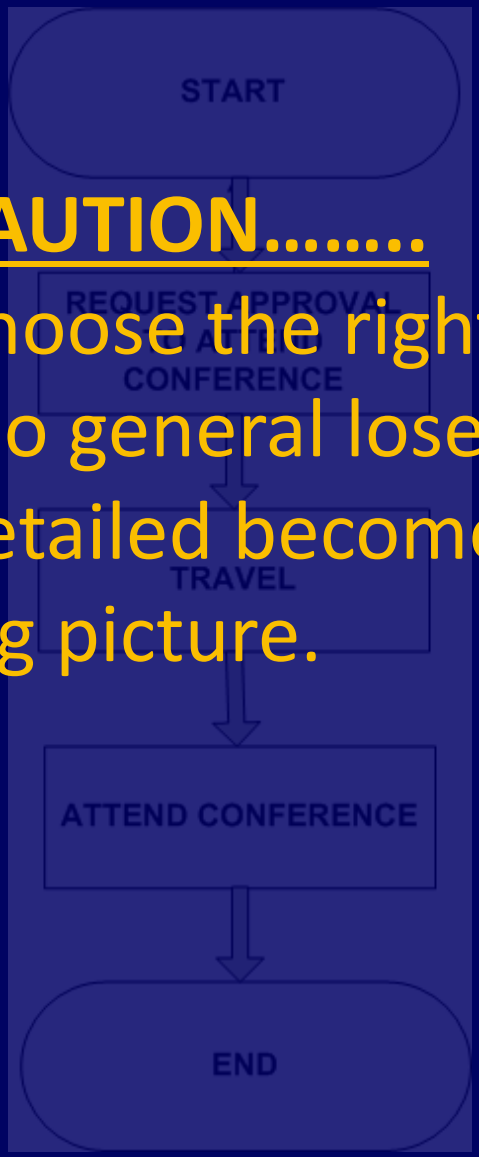
Courtesy Derek Brown, UCSD

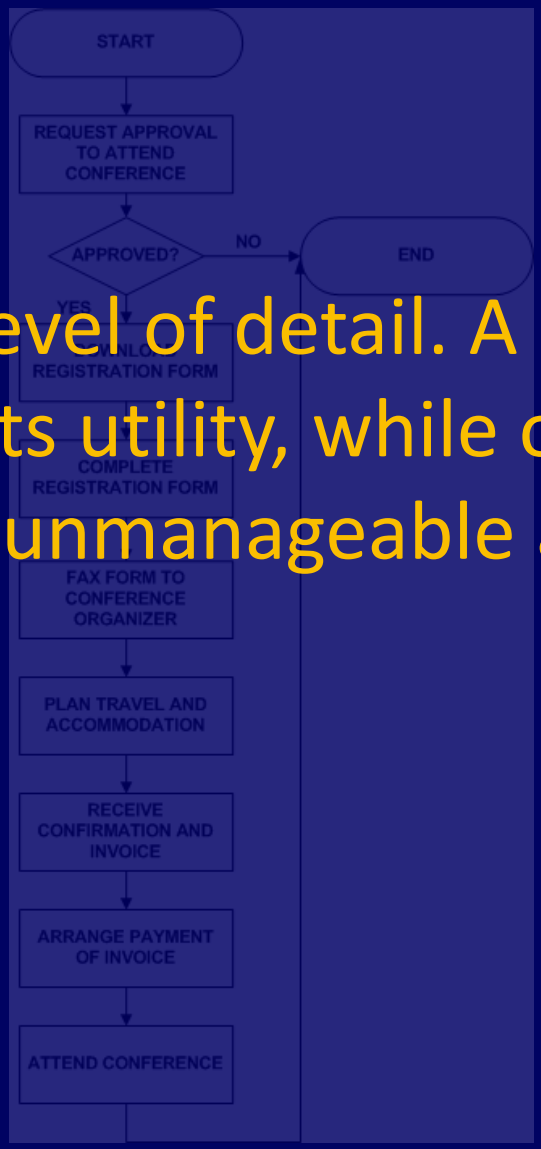
Process Maps – Why Bother?

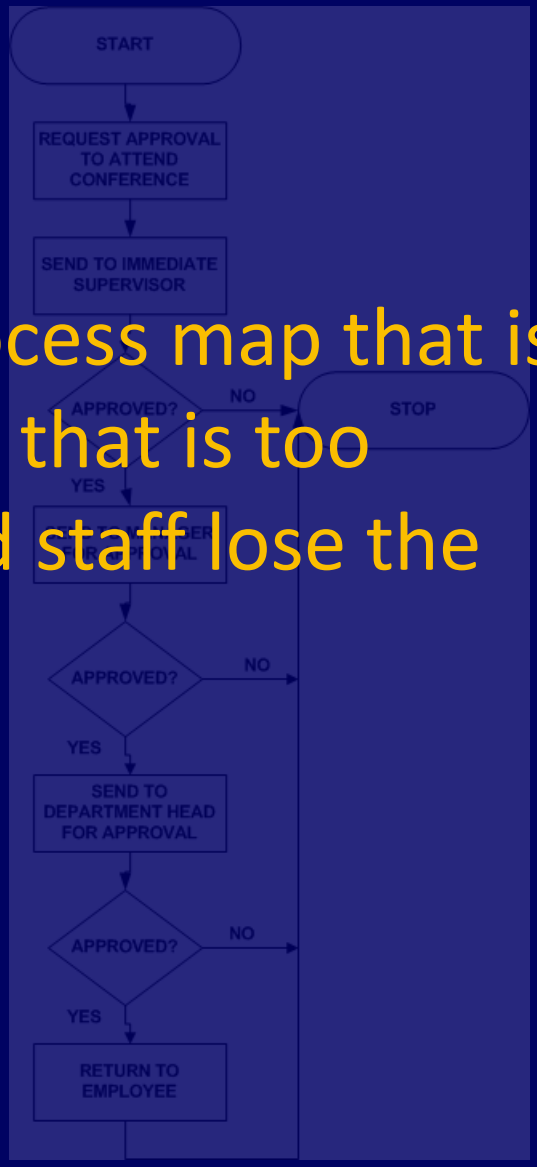


Courtesy Derek Brown, UCSD

Process Map of Conference Approval







CAUTION……..

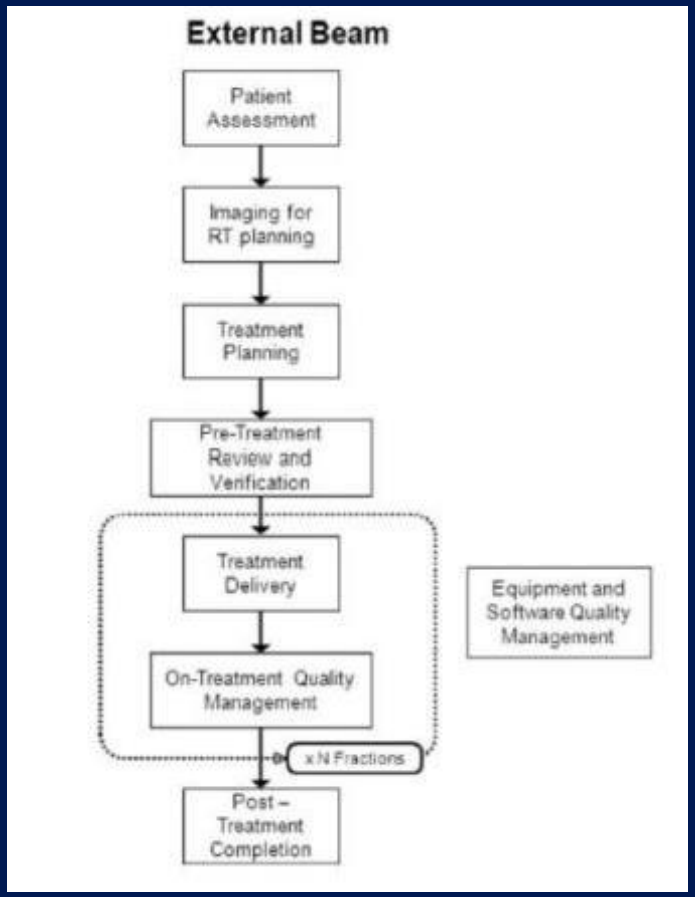
Choose the right level of detail. A process map that is too general loses its utility, while one that is too detailed becomes unmanageable and staff lose the big picture.

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

Process Maps - Examples



Patient Registration

Physician Consultation

Simulation

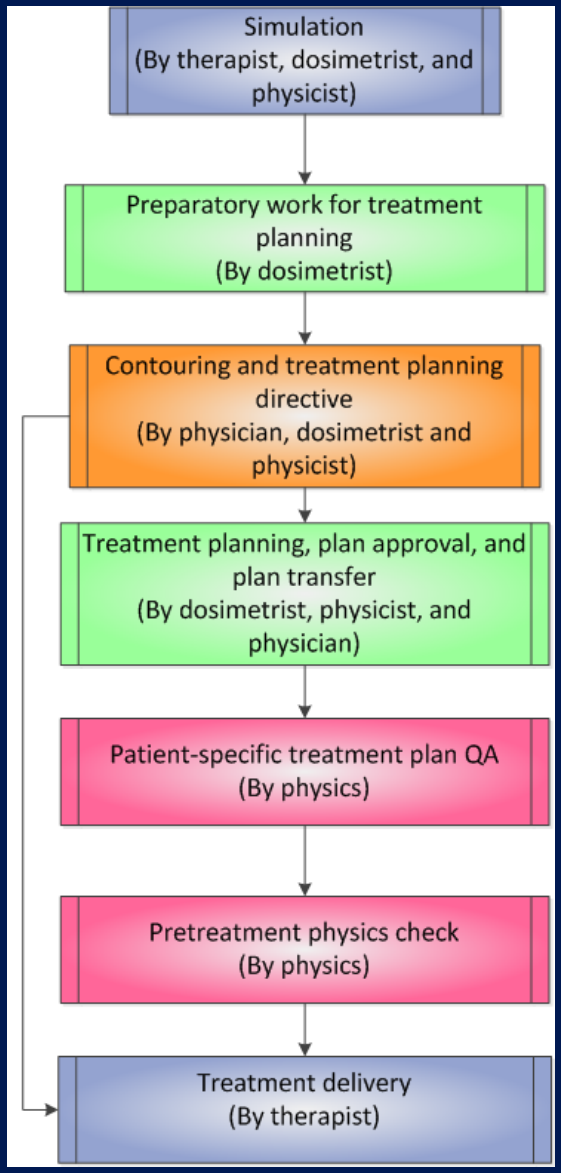
Treatment Planning

Treatment Delivery

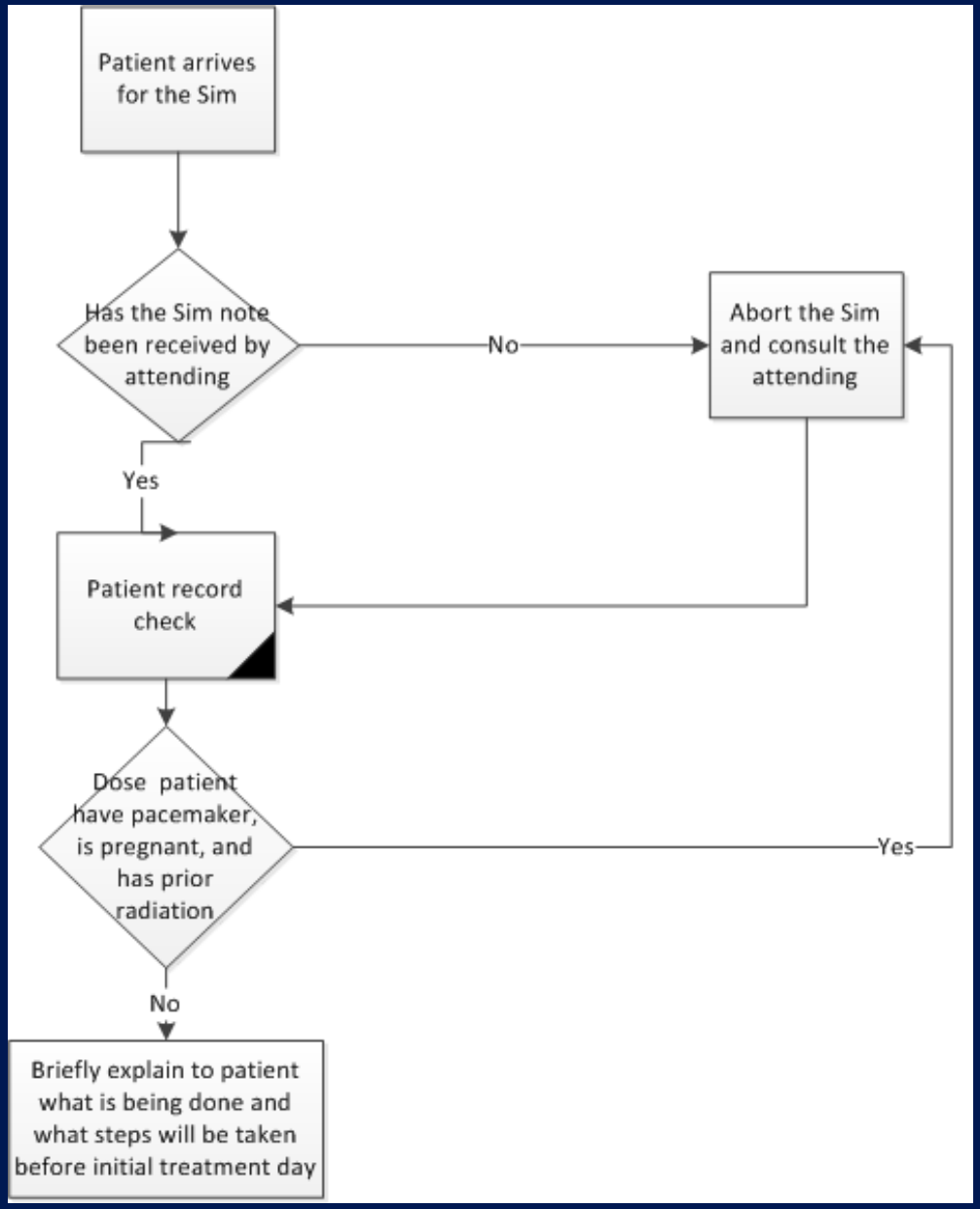
Patient Follow Up

Ford EC et. al , Med. Phys. 39 (12), 2012
"Consensus recommendations for incident learning database structures in radiation oncology"

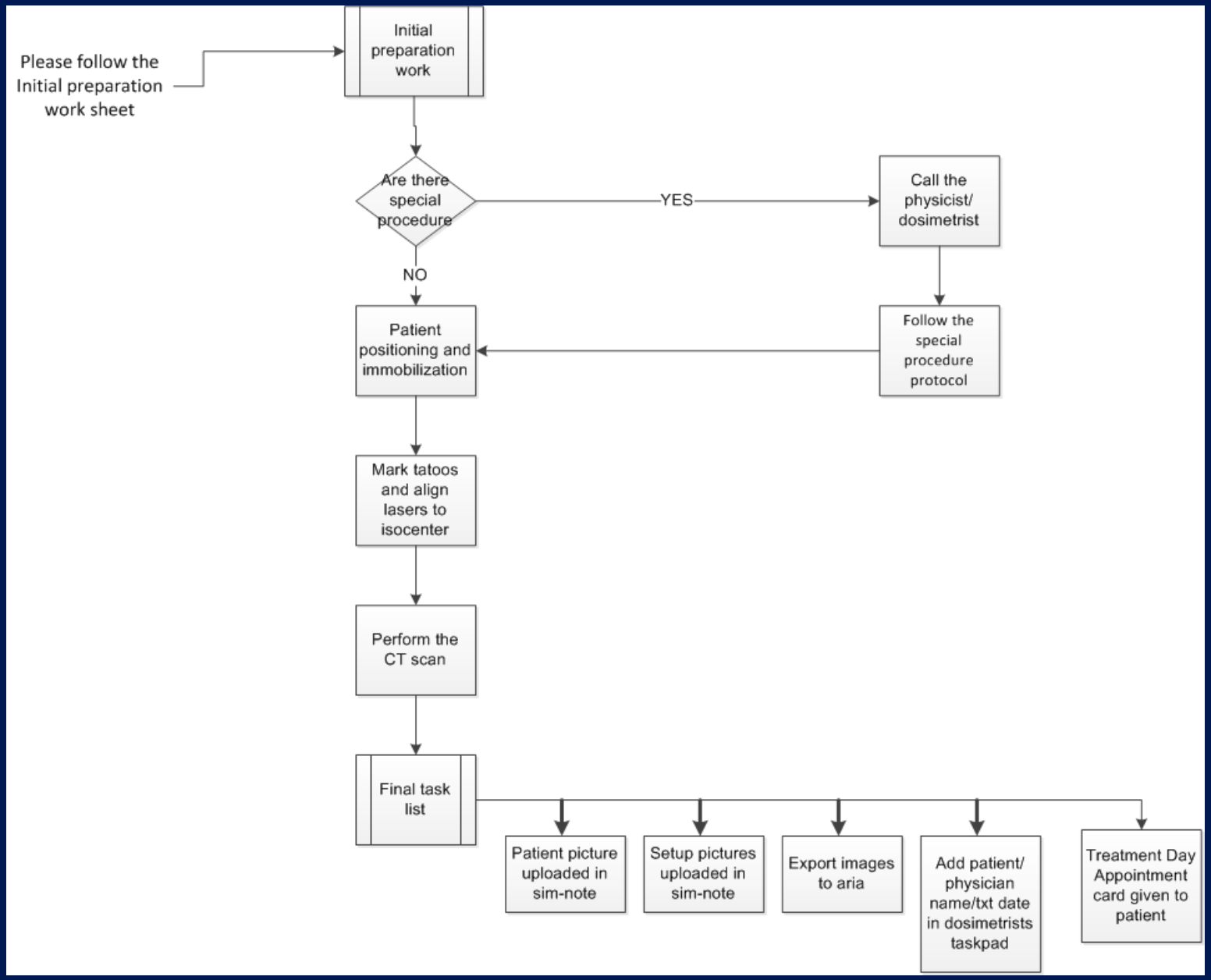
IMRT Process Map at VCU



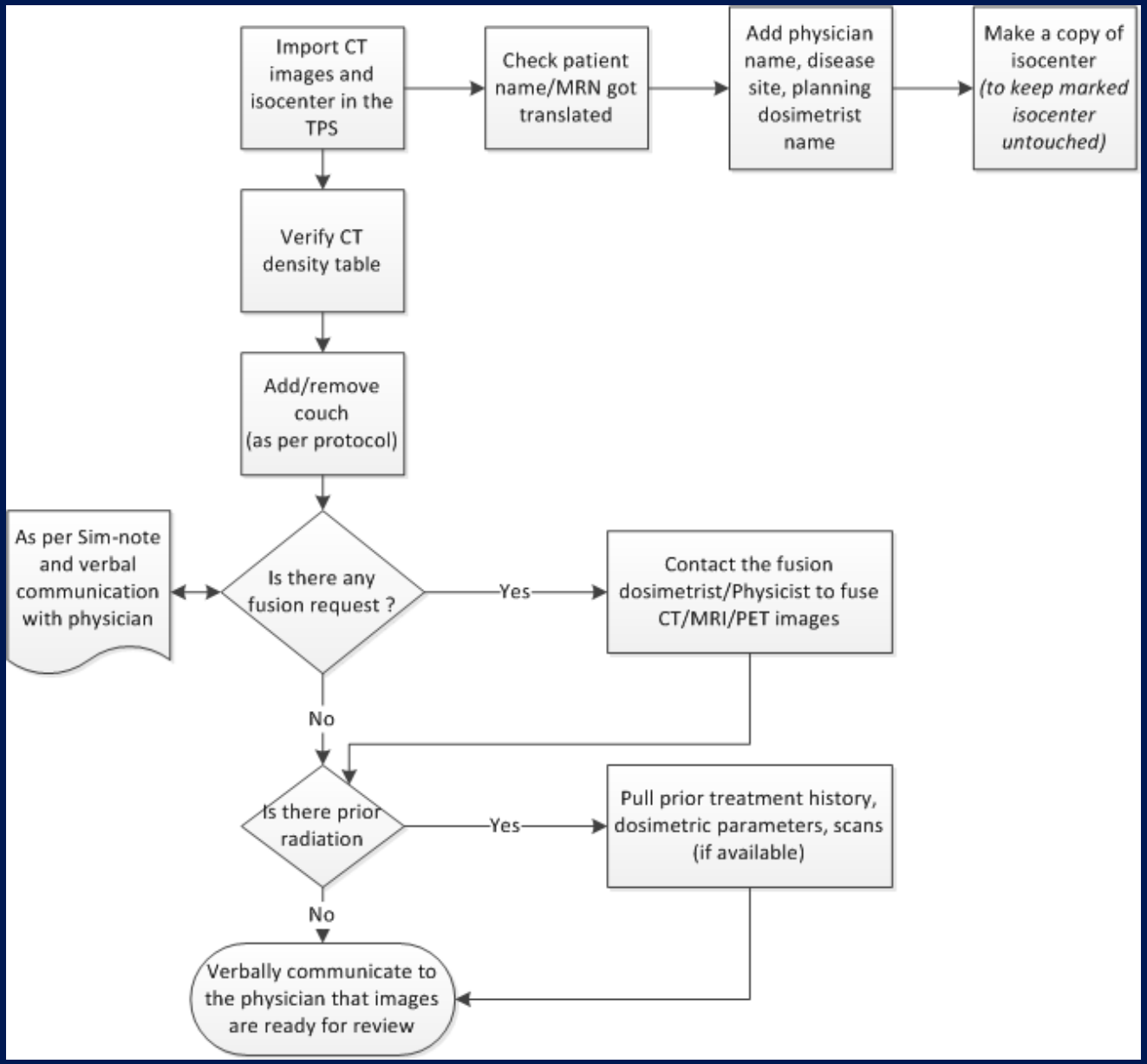
Preparatory work for CT Simulation



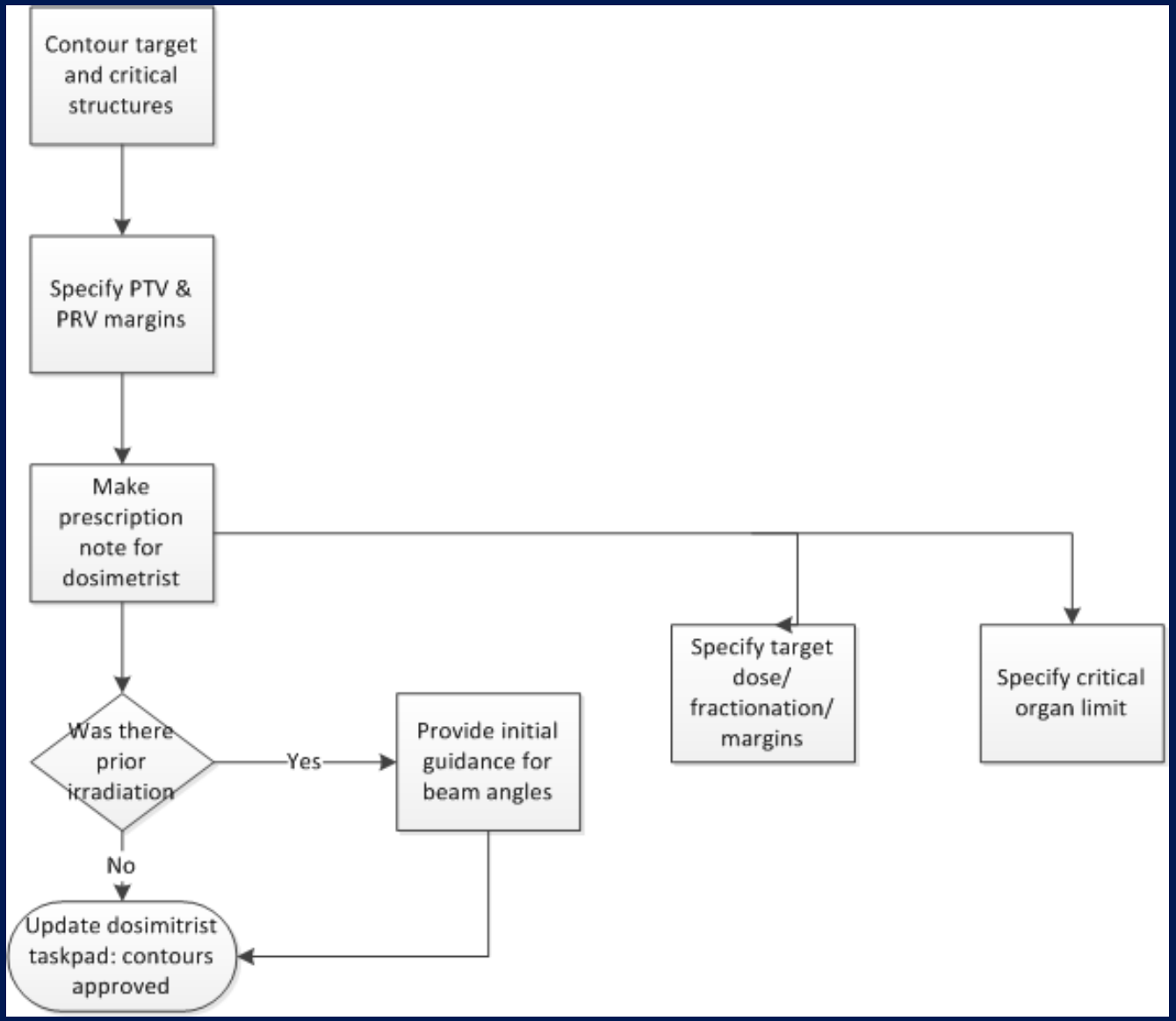
CT Simulation



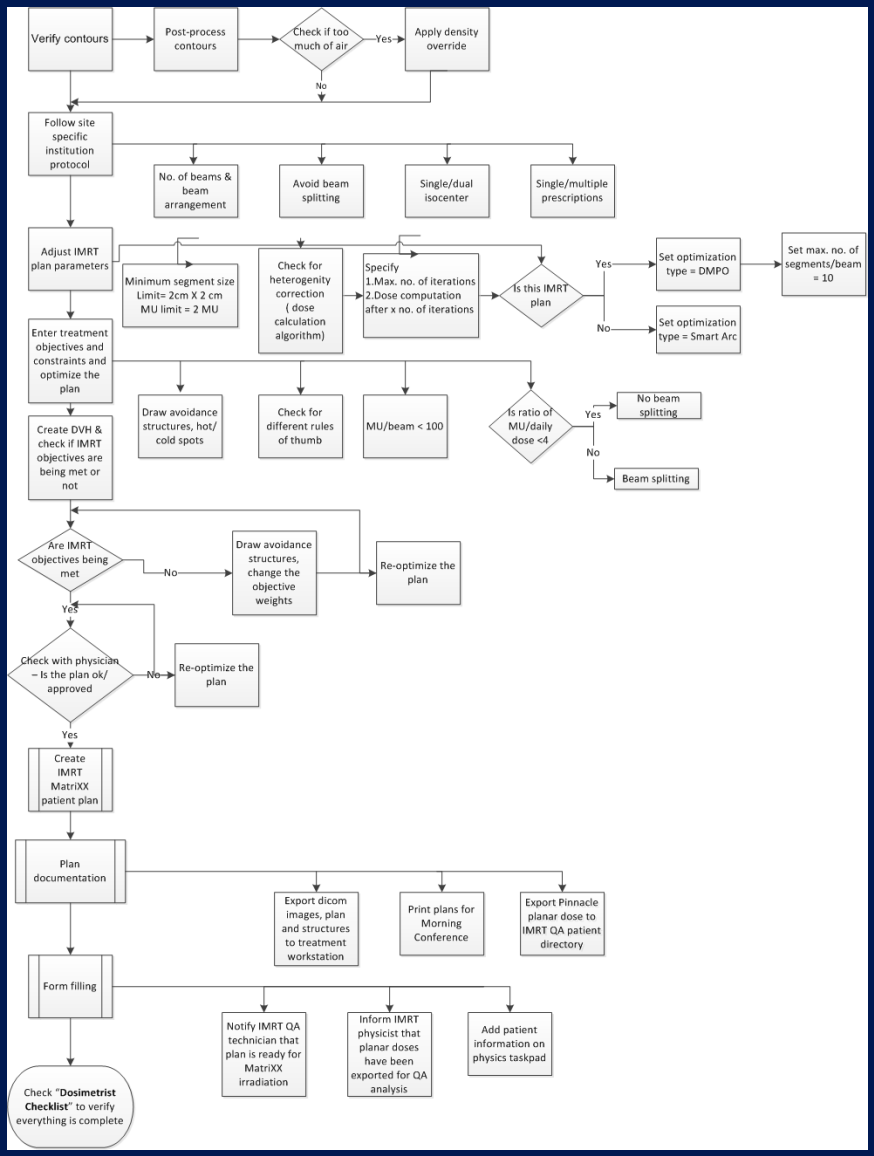
Preparatory Work for Treatment Planning



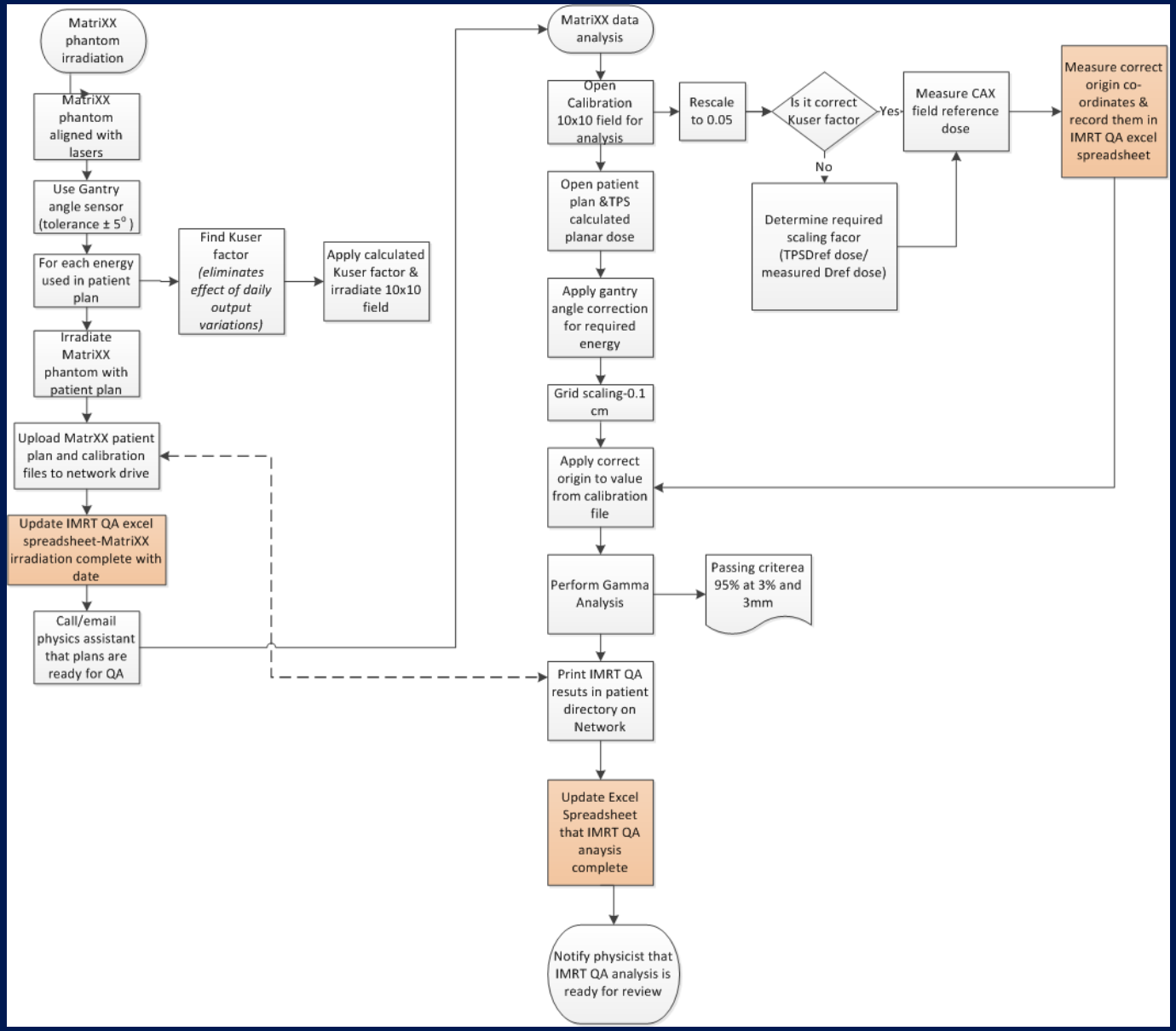
Contouring and Treatment Planning Directive



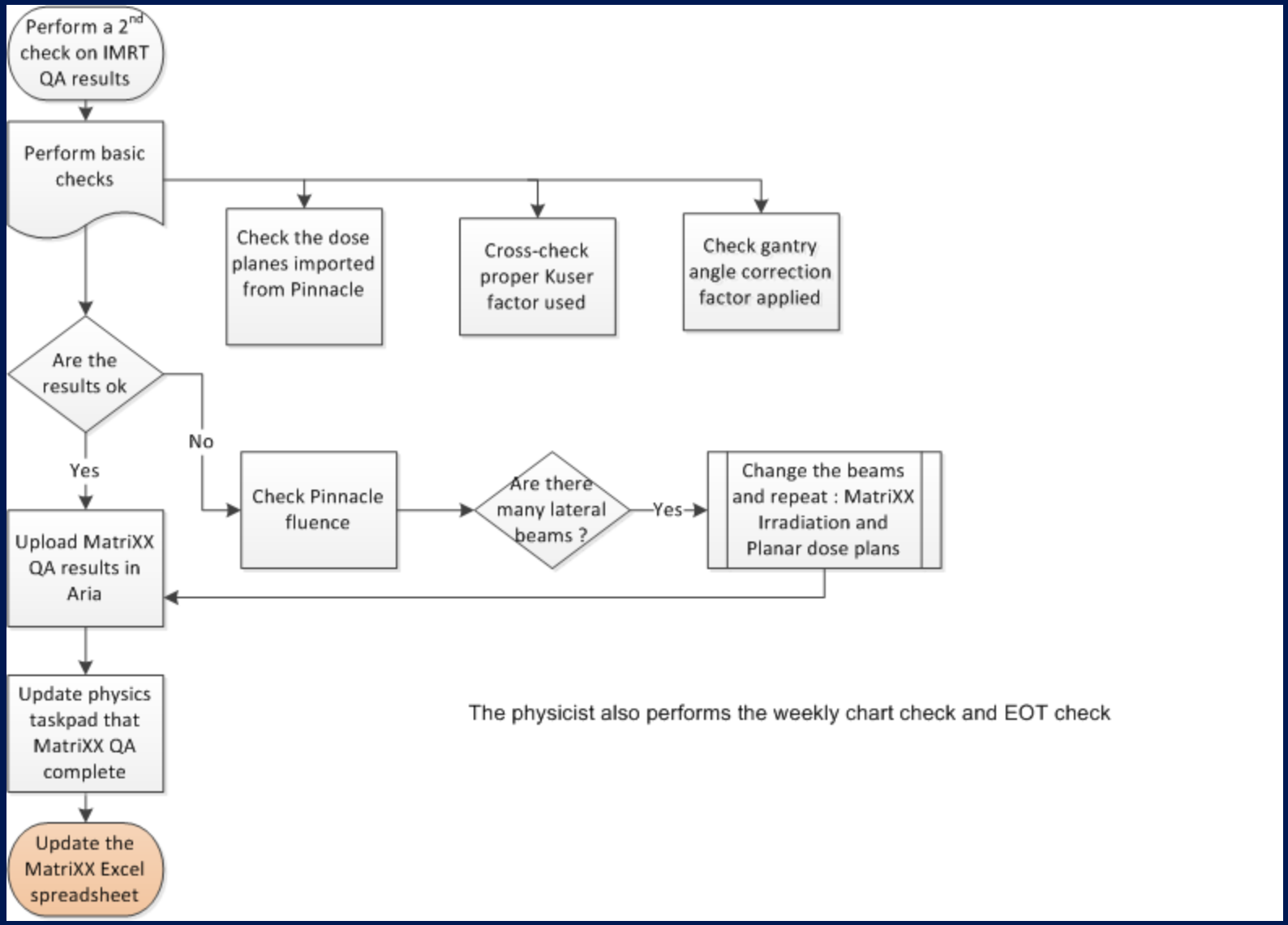
Treatment Planning, Plan Approval and Plan Transfer



Patient Specific Quality Assurance

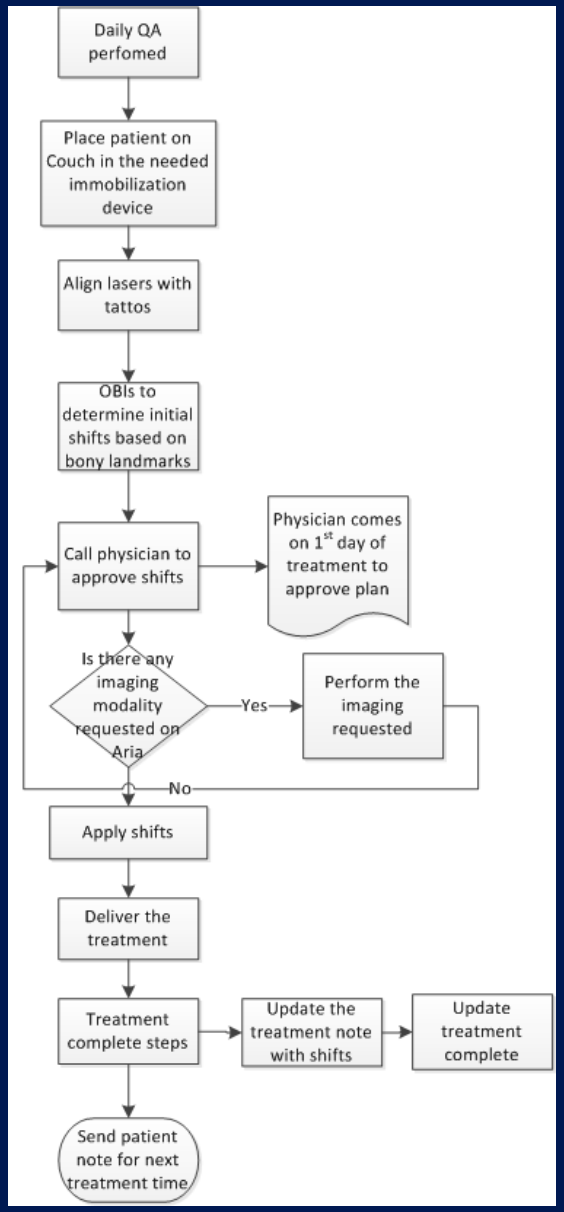


Pretreatment Physics Check



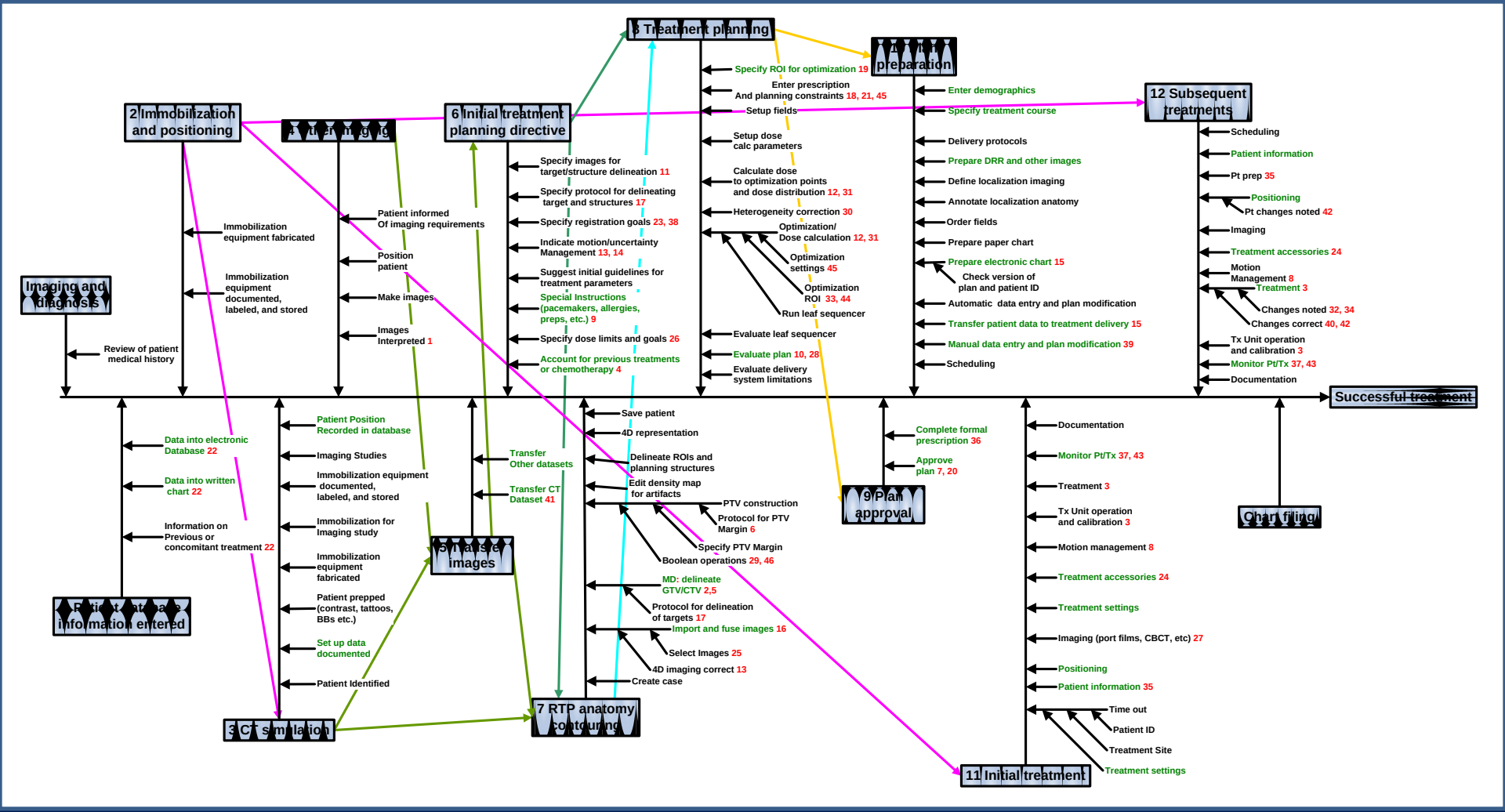
The physicist also performs the weekly chart check and EOT check

Treatment Delivery

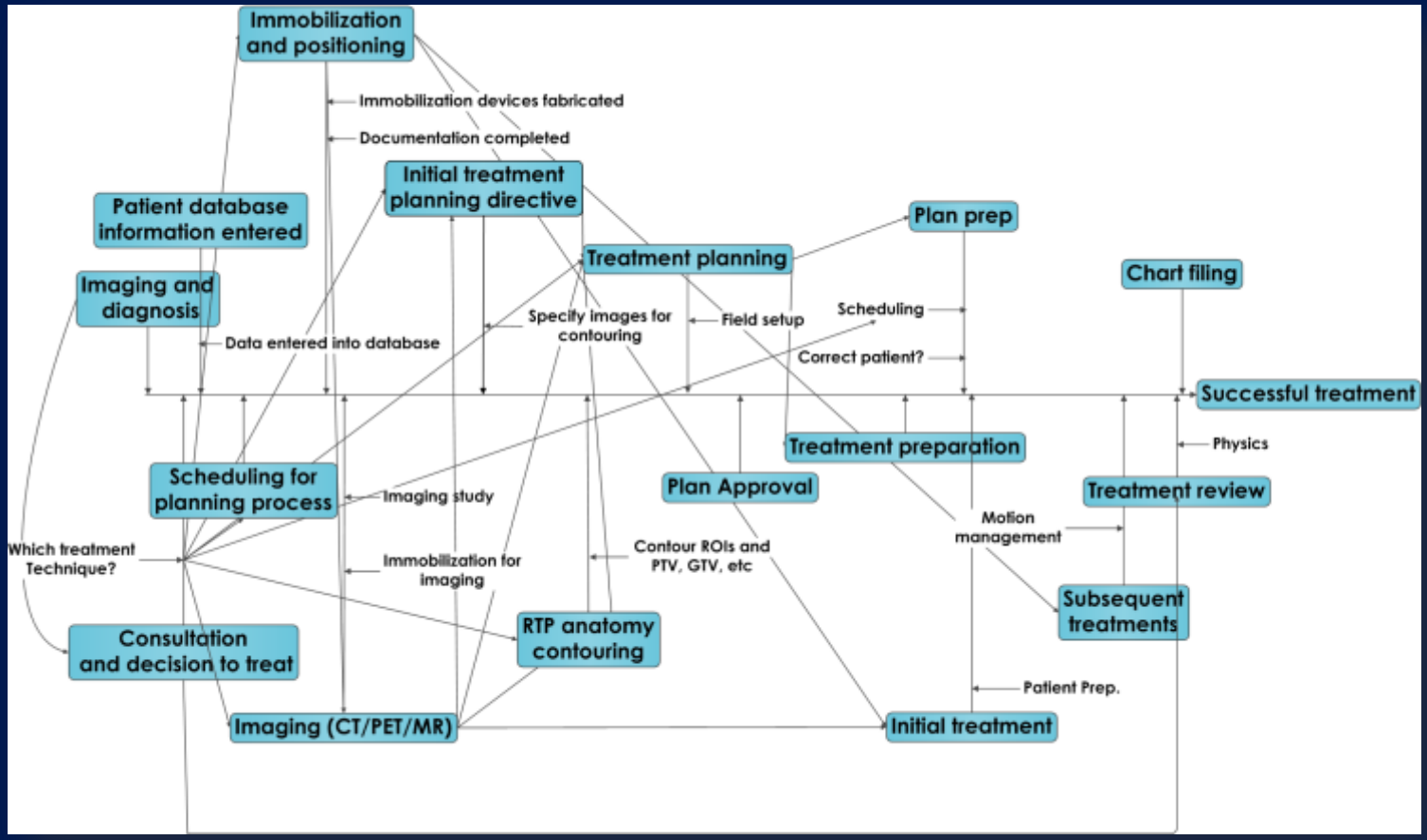


Process Map for IMRT

(TG 100 Example)



Process Maps - Examples



TG-100 IMRT Process Tree

Useful, Usable Maps and Diagrams

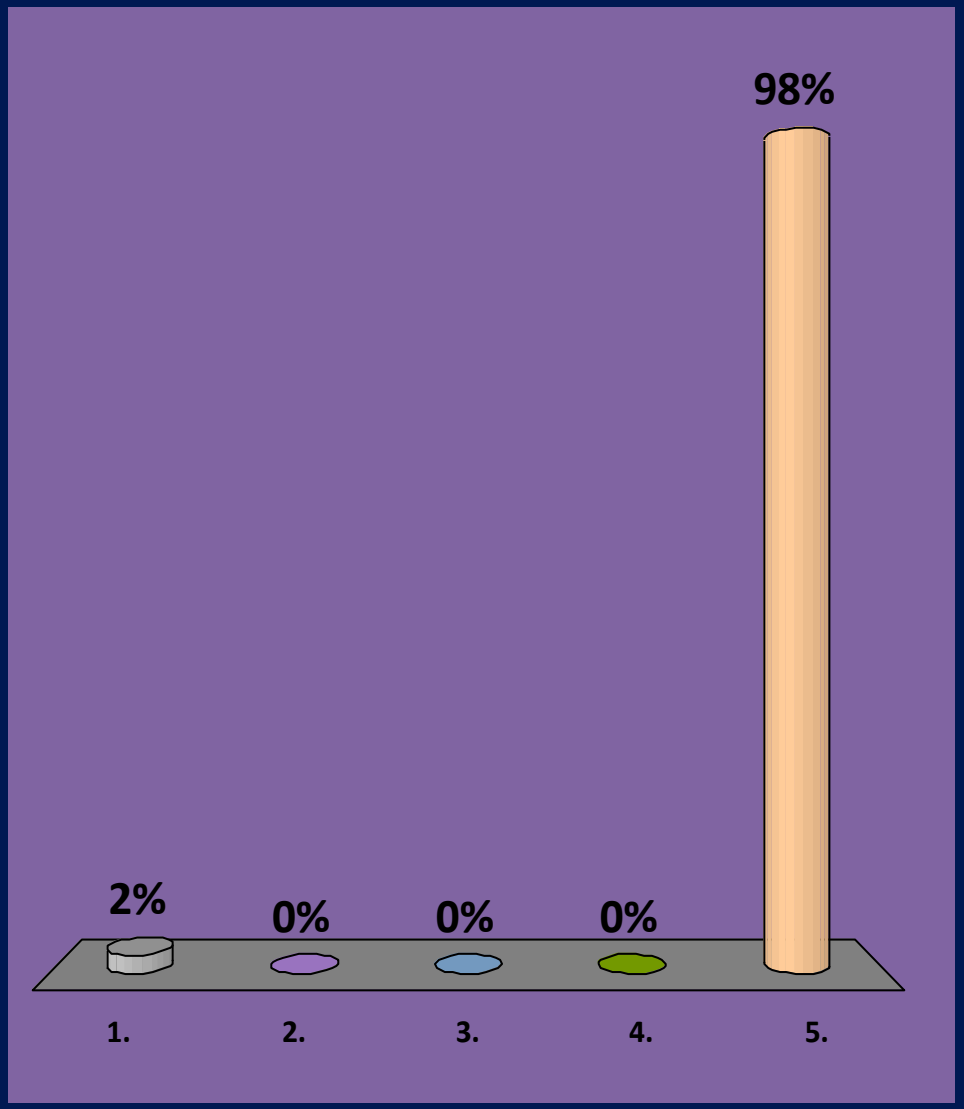
- What's important in designing process maps?
  1. In healthcare it is customary to look at processes from the patient' s perspective
  2. For clinical processes a **multidisciplinary team** is necessary for the development of a valid map
  3. The number of sub-processes identified should be the **smallest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

1. Visualize whether the steps of a process are logical
2. Uncover problems or miscommunications
3. Develop a common base of knowledge about a process
4. Bring to light redundancies and pathways that would otherwise remain unnoticed or ignored
5. All of the above



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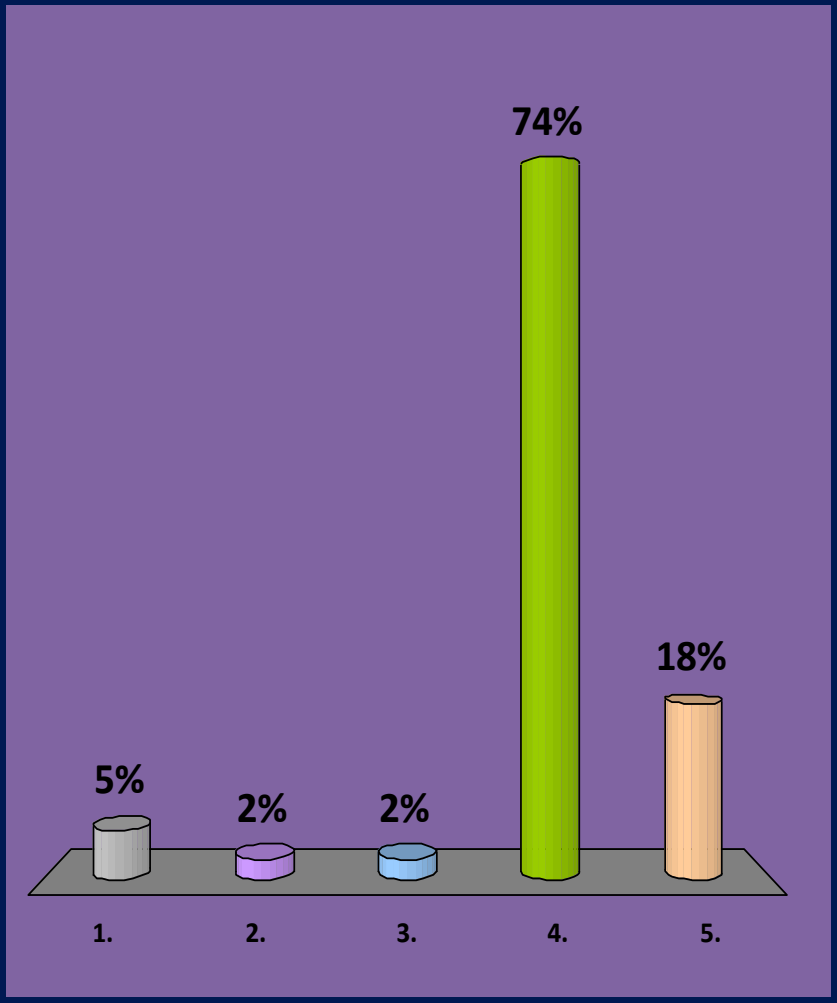
Reference: The Basics of Process Mapping, 2nd ed. By Robert Damelio

Process maps can still be useful:

1. If they are not accurate
2. If team members are afraid to describe what actually happens
3. If the team is too far removed from the actual working of the process
4. If they do not capture the entire process in detail but rather the workflow at a more general level
5. if some steps in the process have been missed



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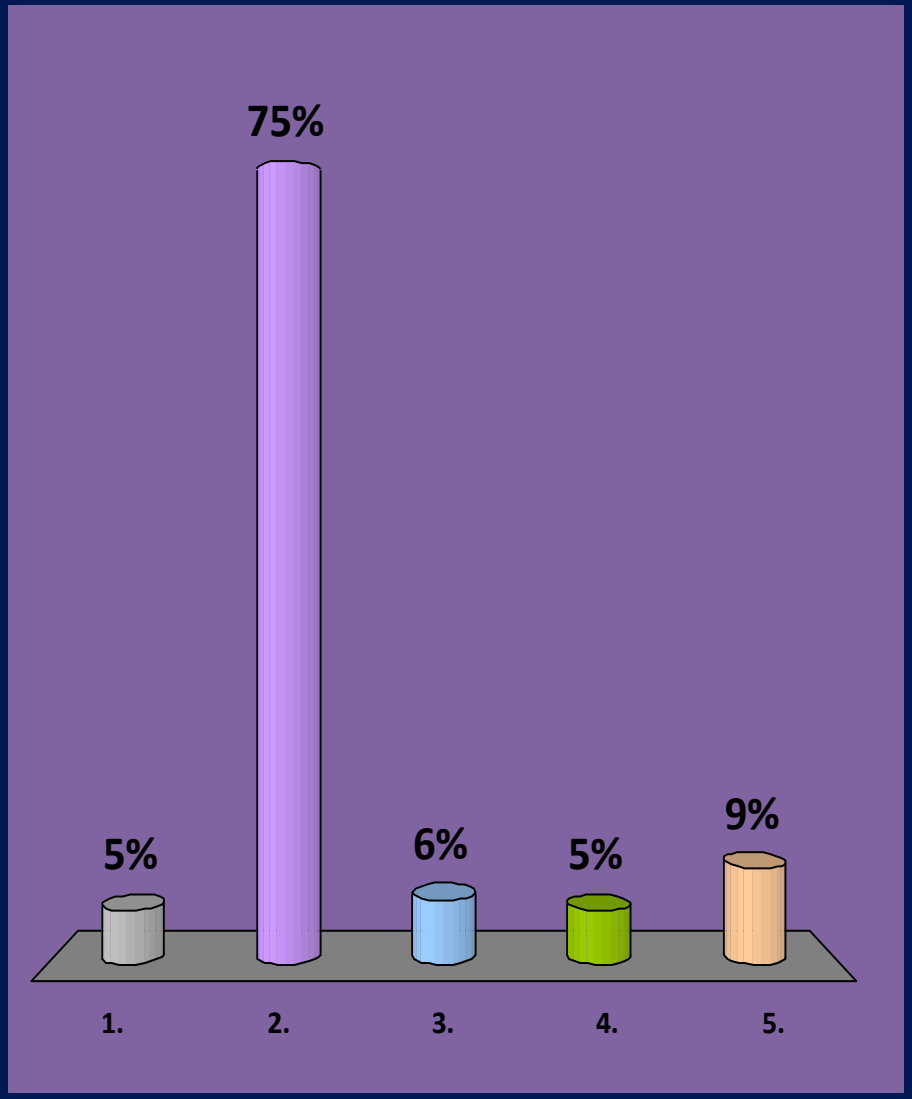
The first activity of a process improvement is:

1. Making a process map
2. Putting together a team representative of the process of care
3. Giving everyone a clear understanding of the process
4. Performing a FMEA
5. Understanding roles and responsibilities of each team member



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Reference: Slide # 9

Closing Thoughts

- Brainstorming and Affinity Diagrams can be used to identify processes you wish to Process Map.
- There is no single right way to Process Map. It is a tool to standardize clinical workflow to minimize mistakes
- Process Maps can be used in a variety of settings outside Quality Improvement, such as:
  - Orienting new employees
  - In-service presentations
  - Brainstorming possible process changes
  - Creating or revising policies and procedures that support the process
  - Creating measures
  - Identifying logical outcomes of a process