

# TG100 Implementation Guide – Process Maps

## Process Maps

“What is a process?”

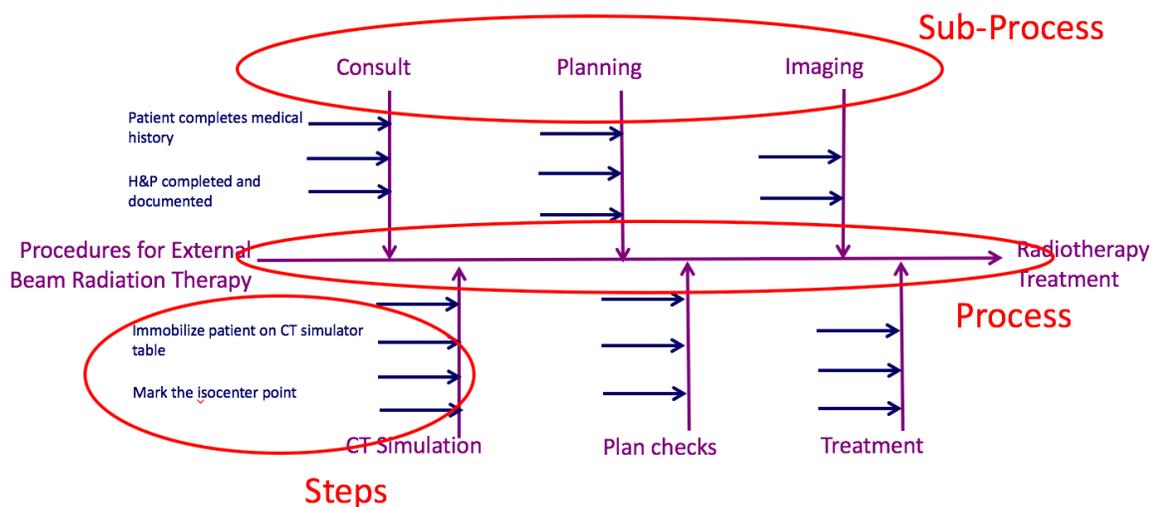
- A process is a series of steps or actions. A set of logically related tasks performed to achieve a specific goal.

“What is a process map?”

- A process map can be a number of things: it can simply be a picture of the steps of a process arranged in order, a display of the flow of information, or a diagram displaying the interrelationships between steps. A process map is created by simply taking the steps of a process and turning them into a visual display with a logical order. A process and each step within it can have inputs and outputs.

Let’s consider the following process map:

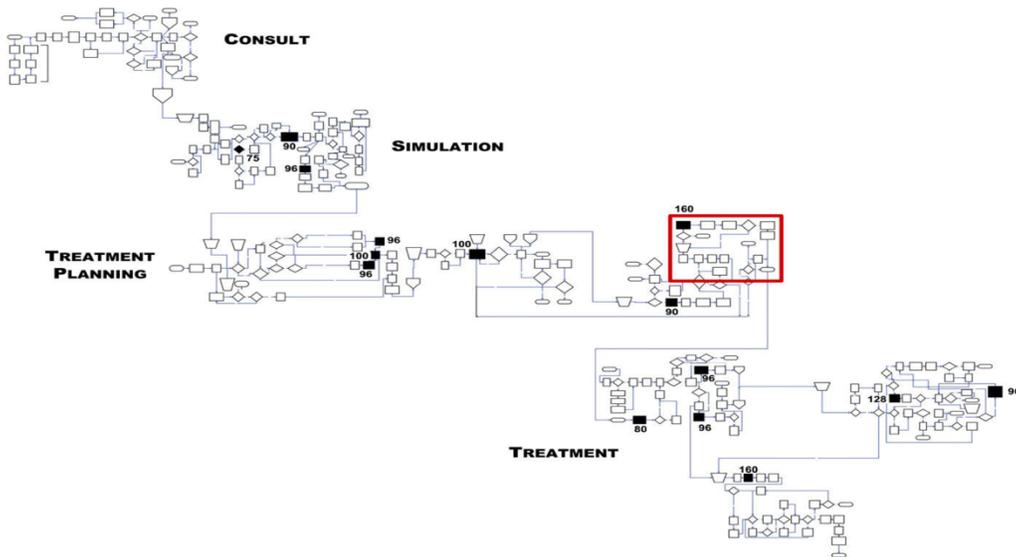
This one is created to describe the procedures for external beam radiation therapy with the endpoint being the completion of radiotherapy treatment. The main trunk of this tree is considered the process. We can have sub-processes that branch off from the main process. The sub-processes that occur in preparation for a patient’s treatment are: Consult, CT simulation, Planning, Plan checks, Imaging or IGRT and Treatment. Each sub-process can have steps that go into it. For example, during Consult, the patient may complete a medical history. Then, the history and a physical exam (H&P) are completed and documented. This particular process map shows how these major steps are related in a temporal order as they go from left to right. A process map can take on many other forms - anything that facilitates the understanding of a process.



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The next example of a process map is from Ford et al. It was also built to describe the external beam treatment process. The authors used the process map to understand the flow of information as the patient moves through the department and the handoffs that can occur between different groups.

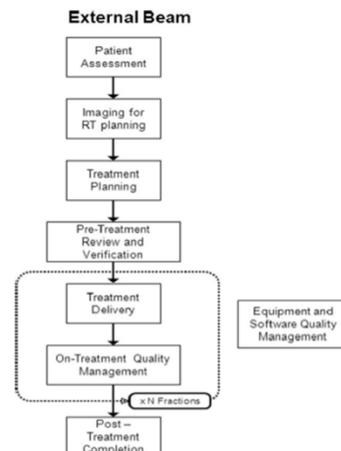
- Process Map from Ford et al., Int J Radiat Oncol Biol Phys, 2009



A few more examples –

This one is used in the AAPM Incident Learning System Consensus document. The process map highlights the major steps in the external beam process.

## AAPM Incident Learning System Consensus Document

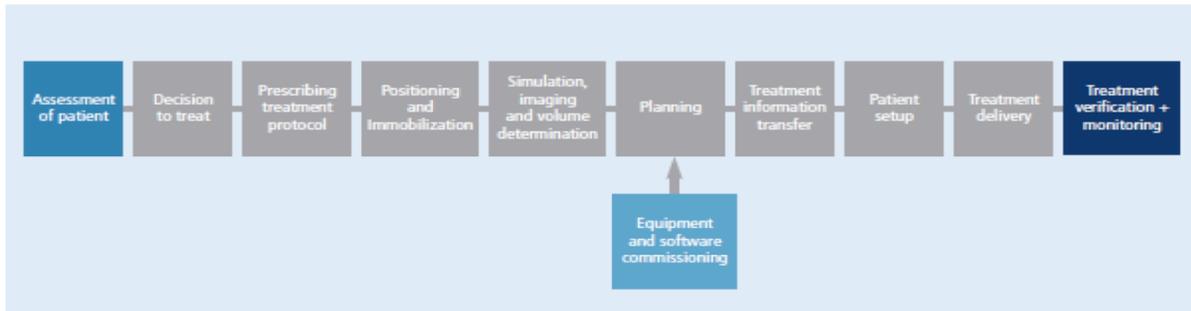


Medical Physics 39, 7272-7290. 2012

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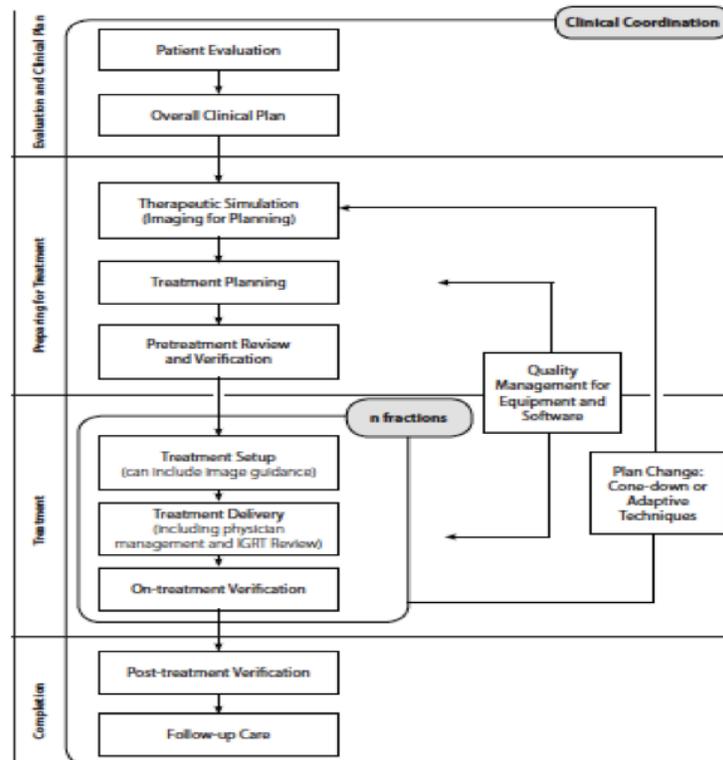
This process map is describing the same workflow but from the World Health Organization's Radiotherapy Risk Profile.

# WHO Radiotherapy Risk Profile



This one is as published in ASTRO's Safety is No Accident.

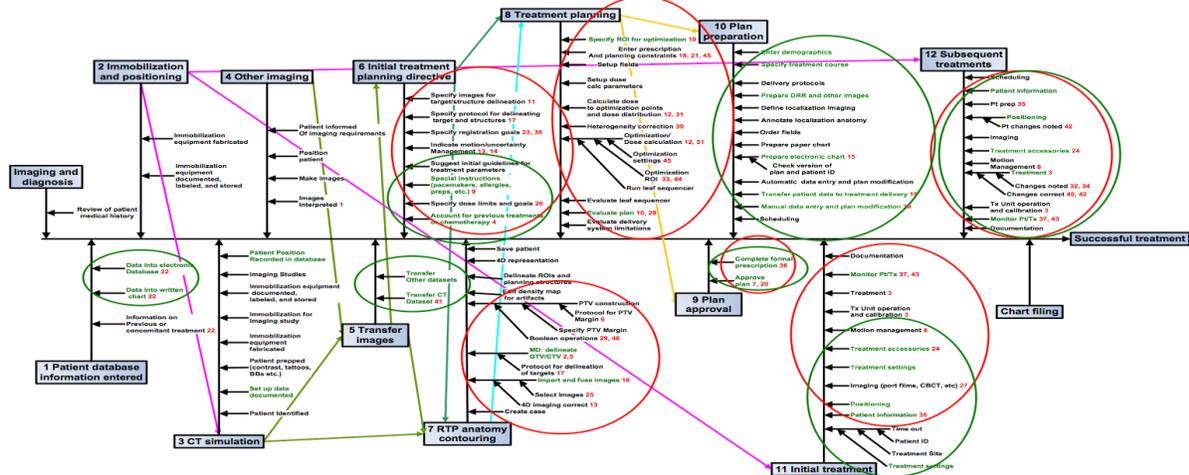
# ASTRO's Safety is No Accident



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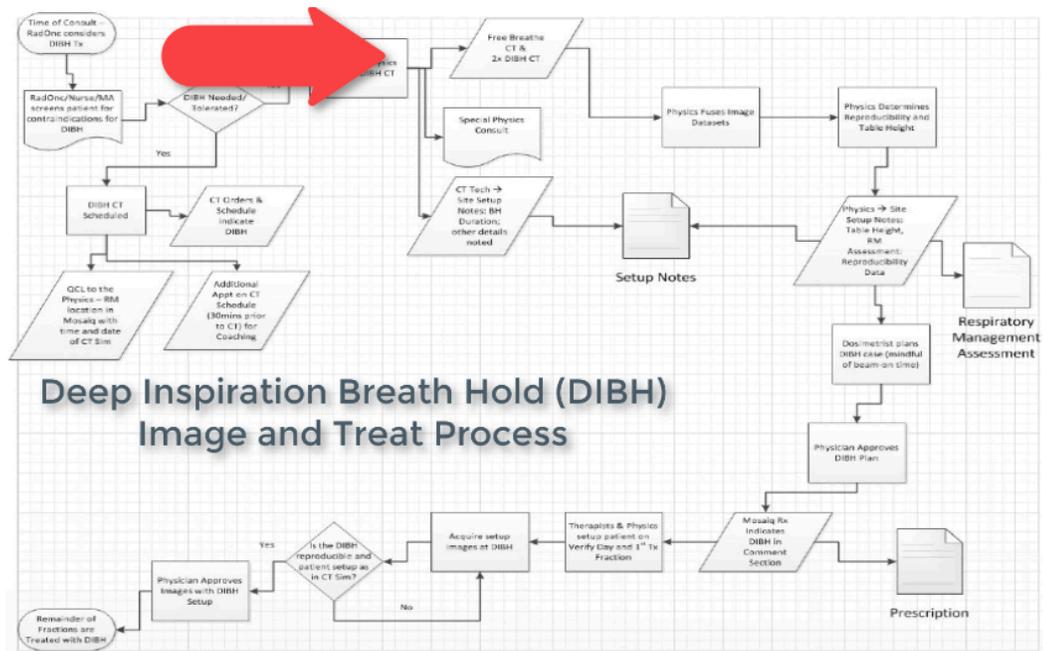
Finally, this process tree is from TG100, describing the steps involved to treat a patient with IMRT. Note the difference between this tree and the previous maps.

## TG100's Process Tree



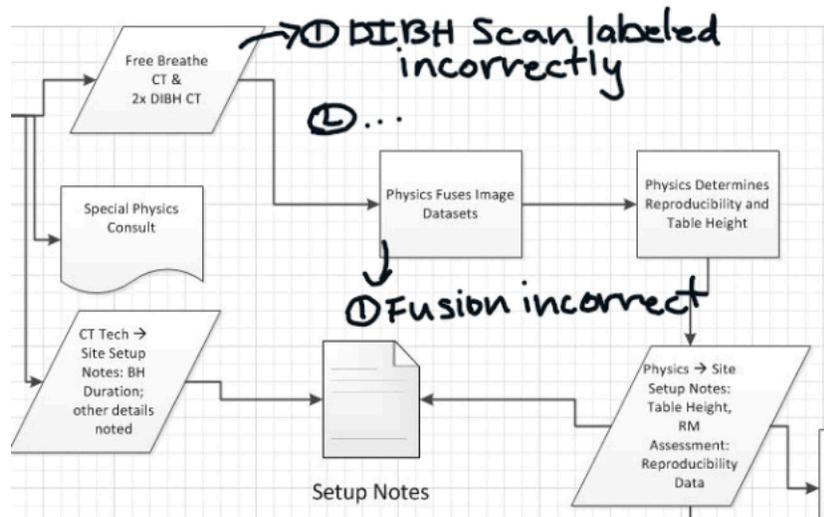
“What is the purpose of a process map?” and “How does it relate to my safety and quality goals?”

- The first purpose is to provide a common understanding of a clinical process. You may find that people in your department are performing the same task but are doing so in a different way. This can be very useful when considering the risk of each task. The second purpose is that it is the starting point for Failure Modes and Effects Analysis (FMEA). For example, in using a process map for FMEA, let's consider this map which describes the steps involved to image and treat a patient using a Deep Inspiration Breath Hold (DIBH) technique. The best way to collect failure modes is to think through each step in a process and consider the various ways each step could go wrong.



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- In one of the steps, we acquire free-breathing CT and two breath-hold CTs. A possible failure mode for this step is that the scans could be labeled incorrectly. Or, in the step where physics fuses the scans together, the fusion may be done incorrectly. The process map is crucial in walking through various ways in which a process can fail.



“How do I create my own process map?”

- A number of tools are available with the easiest being a paper and pen. One could also use commercial products. Products that allow for the use of flow chart symbols and connectors are the most useful. Do not get too caught up in fancy graphics. The overall goal is to have a process map that is clear and easily understood in order to move on to the next step in the risk analysis.

A few tips to get started on Process Maps:

- Form a team. The team should have members from multiple disciplines and be cross-functional. The team could consist of radiation oncologists, medical physicists, dosimetrists, therapists, nurses, IT personnel or administrators. Various team members from the department will bring a different perspective to the process. A facilitator familiar with risk analysis tools and process mapping is helpful but not necessary. Consider providing training for the multidisciplinary team. You can use slides from a workshop attended or even use this guide.
- Next, select a process to map. Start with a small, simple process. Look for opportunities in that process to make improvements. Notice how many steps it takes to get to the end goal. With experience, move on to more complex processes.
- “You don’t learn to process map; you process map to learn.” – Myron Tribus