

IMRT Set-up & Assist

Policy:

To provide therapist staff with guidelines on proper procedures to use the setup and assist program in IMPAC. This process is to be used for all patients receiving IMRT treatments.

Procedure:

A. Before process can be done initially:

1. Physics must provide orthogonal fields
2. Site setup must be done on treatment fields
 - a. Under eChart, select Diagnosis and Intervention.
 - b. Double click on a treatment field under each prescription listed.
 - c. "Treatment field definition" will appear for that field. Right click and choose "site setup." Fill in patient's orientation.
 - d. Site setup must be put in under a field for each prescription on the D& I page.

B. Taking films

1. **Orthogonal films (AP & Lateral)** must first be taken daily prior to treatment and sent from the IVIEW station to IMPAC. Port films must be taken using graticule.

Initially, points or curves must be placed on orthogonal films prior to completing setup and assist if these points or curves are to be used daily for treatment.

2. **Image registration methods must be selected on DRR and port films.**

These areas of reference can be selected as:

- a. **Points** refer to fiducials such as gold seed implants used in IMRT prostate patients. Three fiducials must be selected.
- b. **Curves** refer to outlined selected areas of anatomy within the treatment area. Three curves must be drawn.
- c. **Manual** refers to manually merging the DRR with the port film to check alignment of the patient.

After orthogonal films are taken and sent to IMPAC, the setup and assist process can begin.

C. Setup and assist

1. Select "eCharts," then Images. Click on port film, and then hit space bar.
2. Repeat with other port film. An asteric should appear beside both port films. Select "review" from the column to the right.
3. DRR will appear on the right of the screen, and port film on the right,
4. Click "Patient Offset" tab in the bottom right corner, then "Assist." It will then ask you if you want to also use setup and assist on the other port film. Click on

“Select.” Four images will appear.

D. Point & Curve Methods-1st Treatment ONLY

1. Click on a DRR. Under “Image Registration Method,” select either “Point” (prostate patients with gold seeds) or “Curve” (patients with bony landmarks within treatment fields)

a. Point Method:

Listed under “Image Registration Method,” select “Point.” Click on the pencil icon with an X above it. This tool is used to select fiducials. Once the tool has been selected, click the 3 points on each orthogonal field DRR. A number and red “X” will appear over the point selected. The icon eraser will delete the selected areas if changes need to be made. Points **MUST** be selected on the DRR’s prior to using setup and assist initially.

b. Curve Method:

Listed under “Image Registration Method,” select “Curve.” Click on the pencil icon with an X above it. Holding down the left mouse button, curves of bony anatomy within the treatment field can now be drawn. (Ex: vertebrae, outline of femur, etc.) Curves should be around 2-3 cm each. 3 areas should be outlined for each orthogonal field DRR. The eraser icon will delete the selected areas if changes need to be made. Curves **MUST** be selected on the DRR’s prior to using setup and assist initially.

E. Before each treatment after 1st day

1. Images on the left will be the DRR films and to the right will be the port films taken for the day.
2. Under the tab “Filter,” select “AHE” for better contrast. The window lever can also be altered to change the contrast of the images.
3. Click on a port film to select the image. Under “Image Registration Method,” select either “Point” or “Curve.” If neither is to be used, click “Manual.”
4. Previously drawn points or curves will now appear on the DRR images. Using the pencil icon, points or curves can now be placed on the port films. The image that is activated will appear in a red box. An image can be selected by placing the cursor inside the image and clicking the left mouse.
5. After points and curves have been drawn on both port films, click the “+” icon in the upper right tool area. Click on the isocenter on each port film.
6. Under “Image Registration Method,” click “Manual.” Make sure the “Manual”

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Icon is activated for both port films. Next, click “Assist.”

7. Both the DRR and port films for each orthogonal field will now be merged. The image in red is the port film, while the image in grayscale is the DRR film.
8. The port film now has to be scaled to the same size as the DRR film. Left mouse click within the field and choose the option “Scale.” Hold and drag the mouse to the left or right to rescale the port film. The “Zoom” icon can be used to magnify the image if needed. The graticule markers can be used to determine if both images are the correct size.
9. After both merged set of images have been scaled, click the “Show Beam Isocenters” icon and the “Show Point” or “Show Curve” icon, depending upon which was used.
10. Curves and points placed on both the DRR images and port films will now appear. The red lines or points will be from the port films. Left click the mouse inside the image and select “Translate.” Using the left mouse, hold and drag the port film to align the points or curves from both the DRR’s with the port films. Align both orthogonal fields using this method. If points or curves were not used, manually line up the patient’s anatomy.
11. In the lower right corner, a list of shifts will appear. If shifts are greater than 0.5 cm for any direction, the patient should be adjusted and the setup and assist process will begin over.

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