# Optimizing the introduction of AlignRT: Trouble shooting

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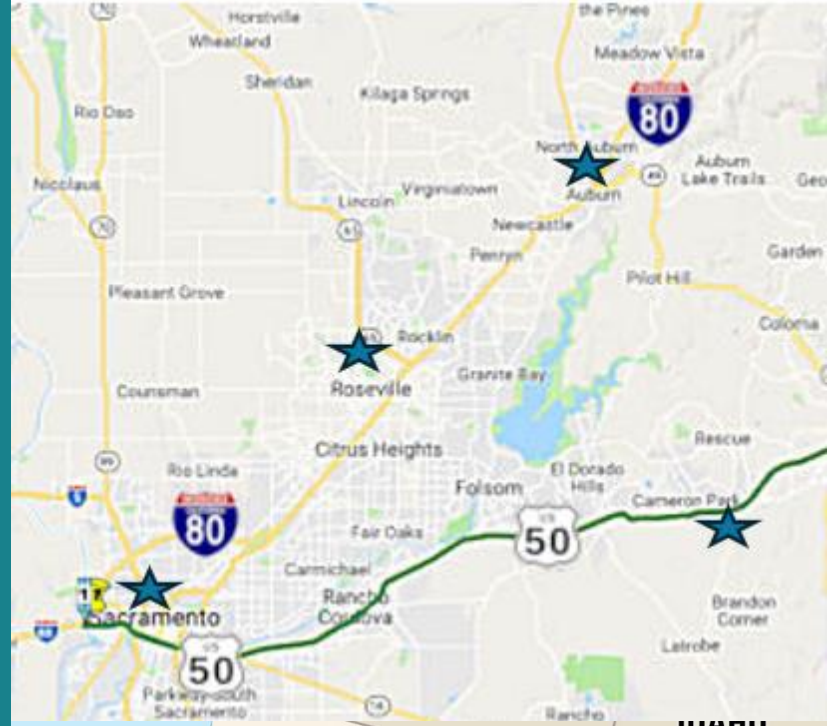
# Sutter ROC (formerly RAS)

- Auburn
  - Varian Truebeam w/ AlignRt, MOSAIQ, Philips Big Bore
- Cameron Park
  - Varian Truebeam w/ AlignRt, MOSAIQ, Philips Big Bore
- Roseville
  - Varian Truebeam w/ AlignRt & ExacTrac, Varian Truebeam w/ AlignRt ,MOSAIQ, Philips Big Bore
- Sacramento
  - Varian Truebeam w/ AlignRt & ExacTrac, 2 Varian Truebeam w/ AlignRt, MOSAIQ, Philips Big Bore




# About us

## AlignRT Champion Group:

A committee group established within radiation therapy department to encourage feedback, participation in workflow improvements and drive standardization, as well as updates to policies and procedures.

The AlignRT champion group was established as AlignRT is used across all machines and treatment sites and plays a vital role in the clinical workflow.


# Troubleshooting clinical issues Agenda

- Regions of interest (ROI) options
- Treatment reference capture function
- Send to couch function for free breathing (FB) cases
- Use of send to couch function to treat two isos from one CBCT
- Send to couch function for breath hold (BH) cases
- H&N tips

# Troubleshooting regions of interest (ROI)

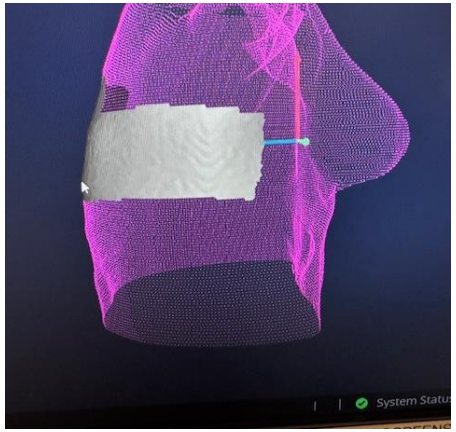
# ROI

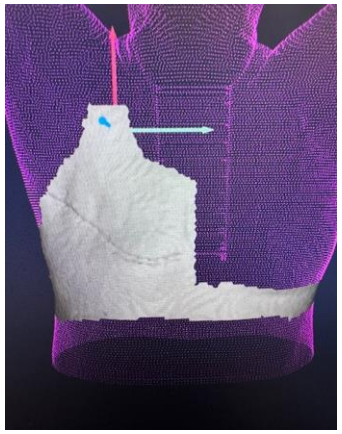
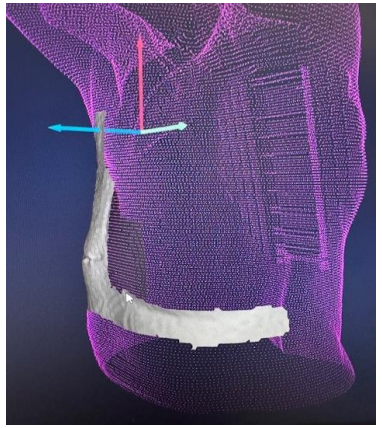
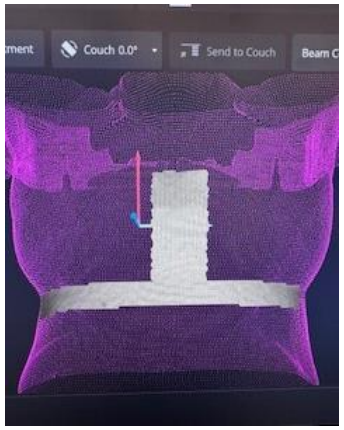
## What makes a good ROI?

- ROI needs to always be visible to at least 2 cameras
- Cover a relevant area without being too large or too small
- Include prominent features while avoiding anomalies
- Check postural alignment for regions that may be blocked from cameras and edit those regions out
- There isn’t one ROI that fits all
- Don’t be afraid to change on the fly

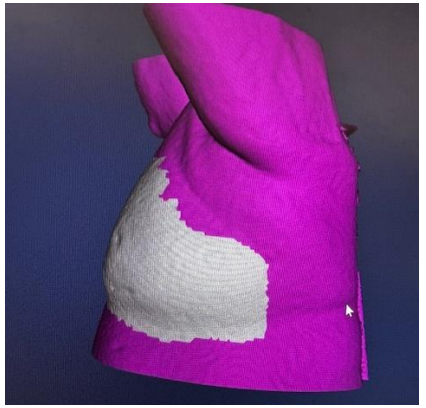
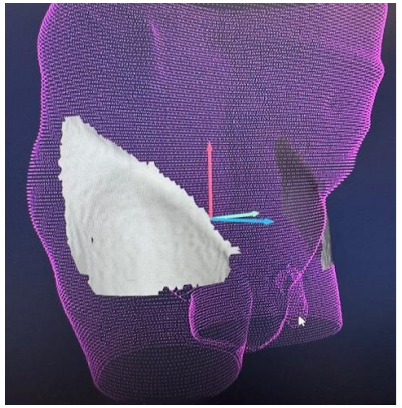
# Options:

- Adjust ROI on contralateral side to allow the side camera to read ROI

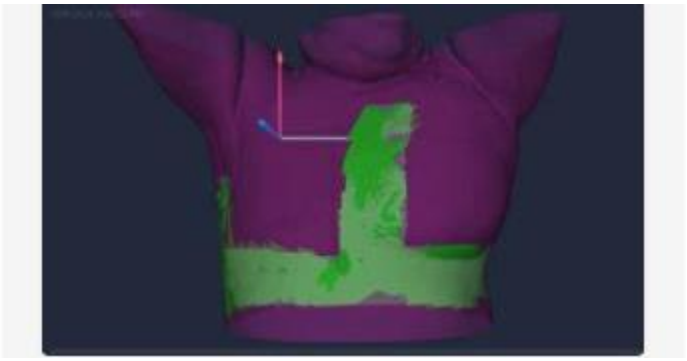



- Draw ROI mid-lateral on patient

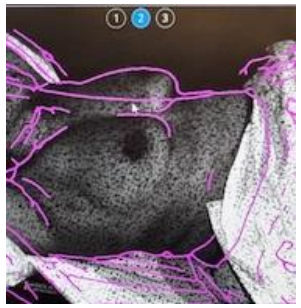



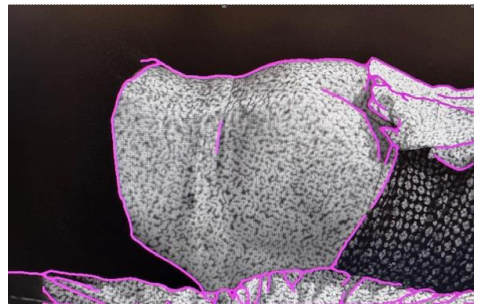
- Include prominent anatomical structures



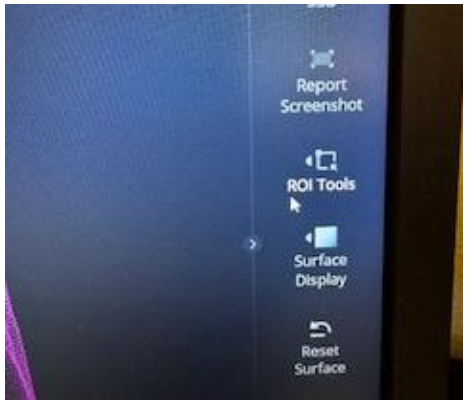

# Options:

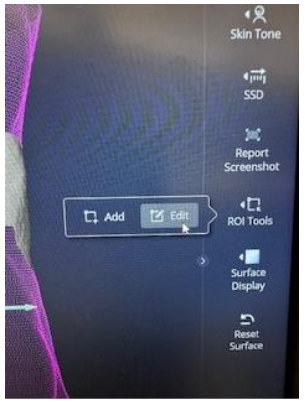
- Verify external contours with video to ensure the ROI is reading appropriately





- Adjust ROIs on the fly



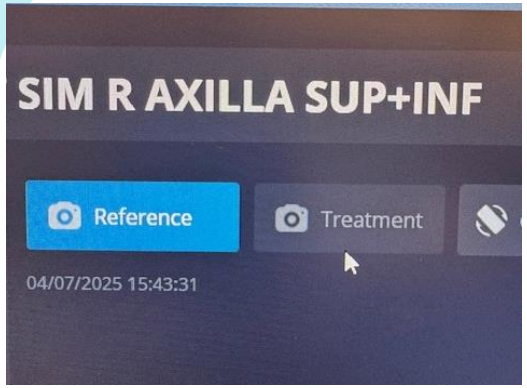




- Image patient to confirm new ROI

# Treatment reference capture for troubleshooting patient positioning

# Treatment reference capture

- A 3D still frame reference of the patient's current position versus the position at simulation
- Planned position appears purple and current position appears green
- Provides a snapshot of positioning adjustments to be made
- Quick reference that can be "snapped" as many times as necessary
- A real time reference that is not saved, unlike an SGRT capture

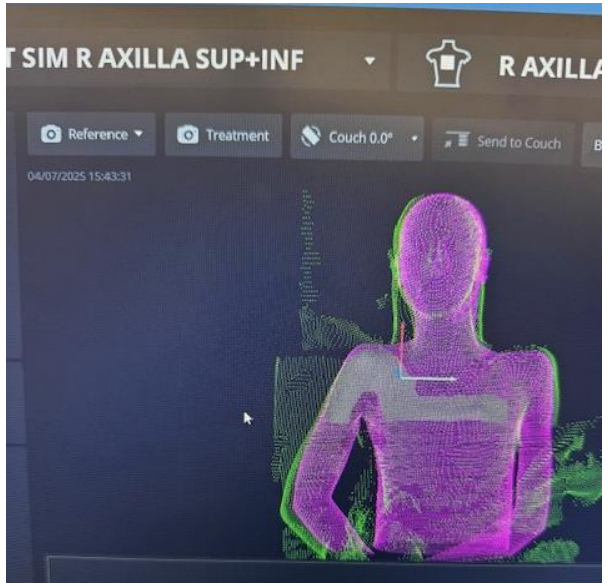



# Treatment Reference Capture

- Tool to use during set up to assist with patient positioning

## Steps:

- Patient open in treatment
- Begin monitoring
- Align the patient to isocenter
- Pause monitoring
- Select the treatment icon to capture the treatment reference image
- Adjust patient to treatment capture position (purple is the planned position)
- Resume monitoring and setting up of the patient




# ‘Send to couch’ function

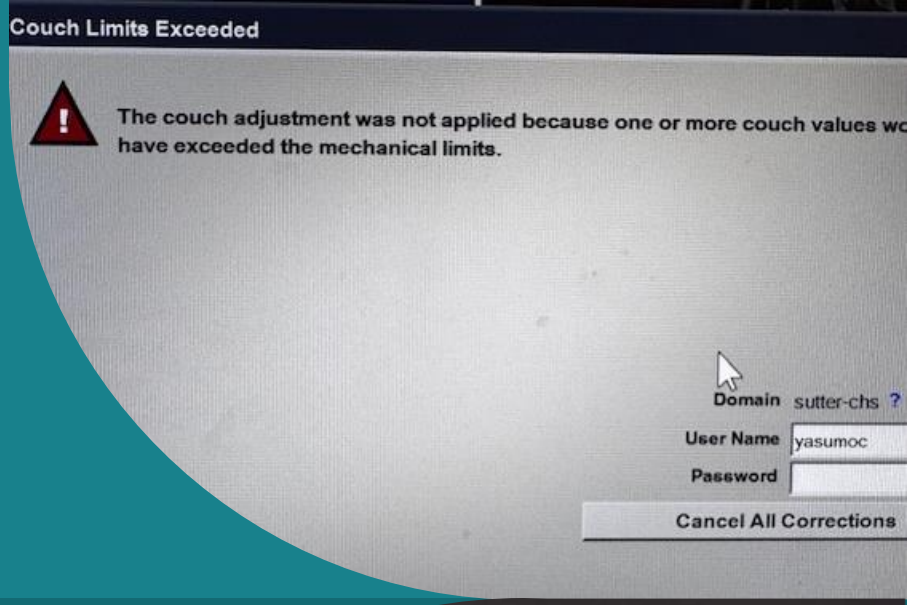
# What is send to couch?

The send to couch function allows for shifts with 6DoF to be sent from AlignRT directly to the treatment couch. This allows for real time adjustments to the patient from inside or outside of the treatment room.

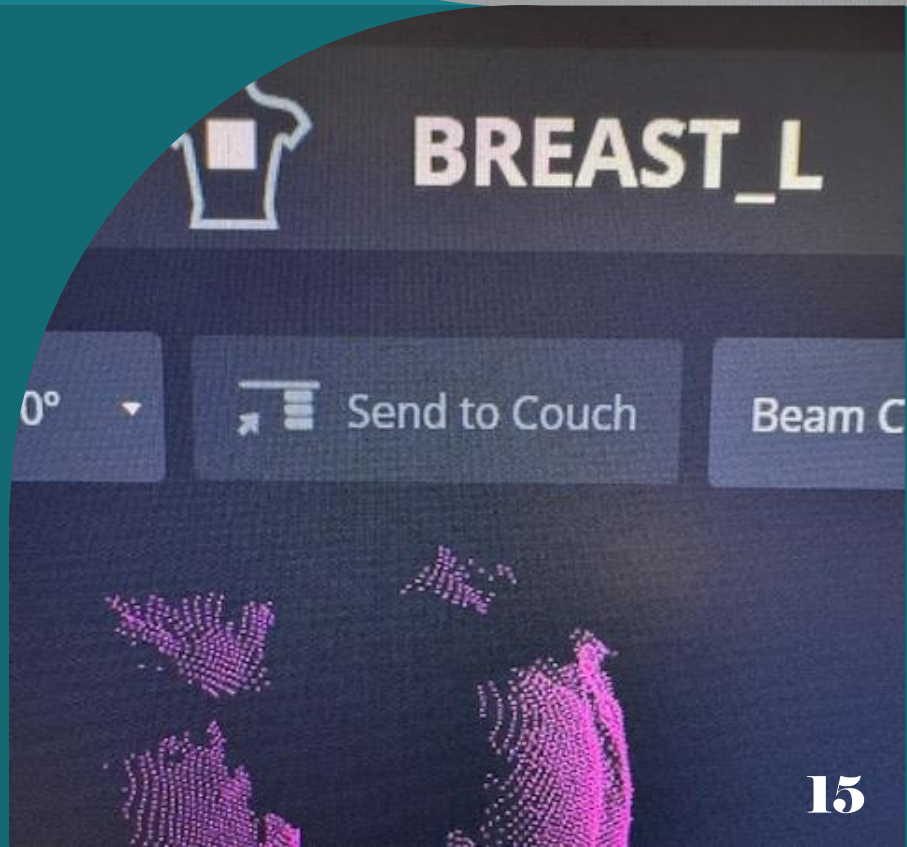
# Utilizing send to couch:

- During set up if manual adjustments are not aiding in achieving deltas within tolerance
- RTTs have walked out of the treatment room, and the patient has settled
- Patient coughs or sneezes and moves out of tolerance
- Patient drifts out of tolerance during treatment
- Mono isocentric treatment with more than one prescription

# Send to couch function

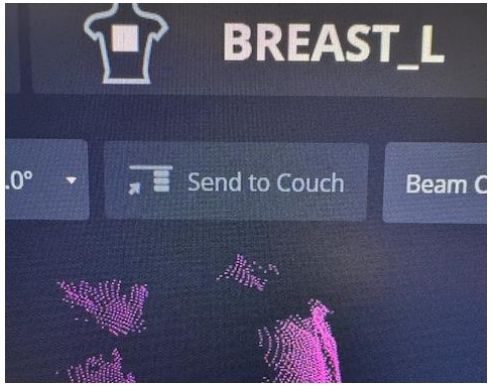



- The send to couch feature acts as if it is an imaging shift
- It is based off Varian's table tolerances that are set by physics
- This can influence what types of shifts you are able to make
- If tolerance is 3 degrees on the Varian side, Varian will require you to sign off on any shift that is greater than 3 degrees for rotation, pitch and roll

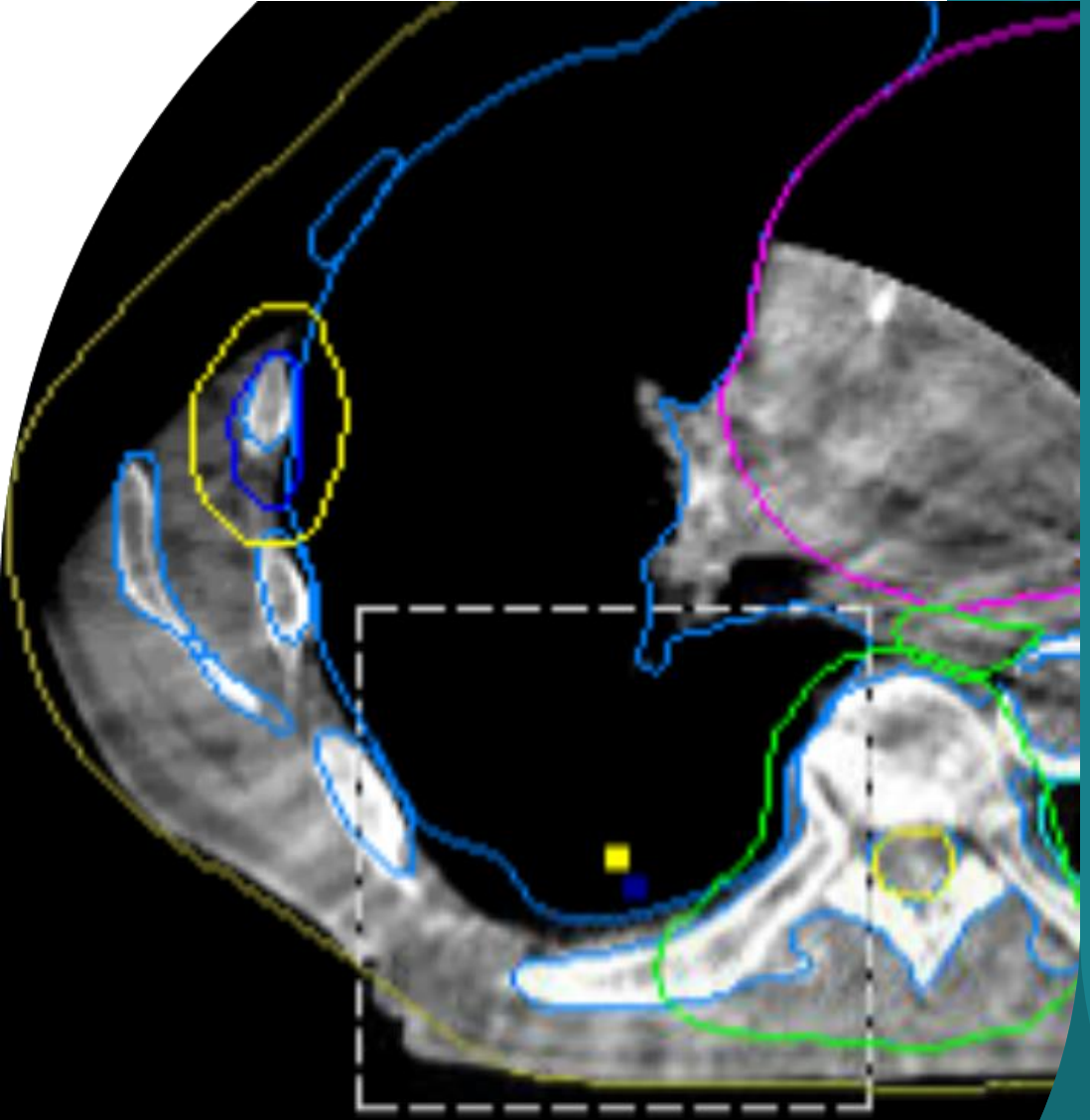


# Steps for ‘send to couch’

1. Patient open in treatment
2. Select ‘prepare’ at treatment console for treatment or imaging field
3. Align the patient close to isocenter
4. Begin monitoring- align patient until deltas are under 2cm
5. Select ‘send to couch’ icon
6. Deltas dialogue box displays
   - Delta values = based on real time delta values at the time ‘send to couch’ icon is selected. Select the values that will resolve the misalignment of the surface.
7. Select ‘send’. Absolute target couch values are sent and planned couch values are updated.
8. Follow the standard method for applying a couch shift on the Linac and move the couch to the new position.




# Using ‘Send to Couch’ to Treat Two Isos from One CBCT



# Implication

- 2 isocenters are visible in one CBCT, allowing for the visualization of both targets. If both targets align within one CBCT, the ‘send to couch’ feature can be used to negate the need for a second CBCT and reduce dose while also expediting workflow.

# Process

- Planned shifts from PDF should be written in treatment field note for the 2nd iso to be treated.
- Set up 1st iso with Align Rt.
- CBCT and make shifts from CBCT.
- Treat the 1st iso.
- Enter treatment room, DO NOT ZERO COUCH. Leave all rotational values as is and make manual 3DoF shifts from plan to the 2nd iso (verifying all shifts with partner before move).
- Capture SGRT for 2nd iso after 3 DoF shifts are made.
- At console, use send to couch feature outlined on slide 16 and select a “0.0” value to send to couch. This will imitate sending imaging shifts to clear necessity for override in the treatment console.

# Troubleshooting ‘send to couch’ function for breath hold cases

# Question:

Can we ‘send to couch’ the vert while on the breath hold (BH) or just on free breathing (FB)?

# Answer:

Vert should **ONLY** be sent on **FB**

# Reasoning:

- ‘Send to couch’ is a tool to set up the patient while still ensuring the same inspiration BH is achieved as it was done during the treatment planning simulation.
- If sending to couch on BH with the vert included, this moves the table rather than having the patient achieve the same BH that was taken in simulation.

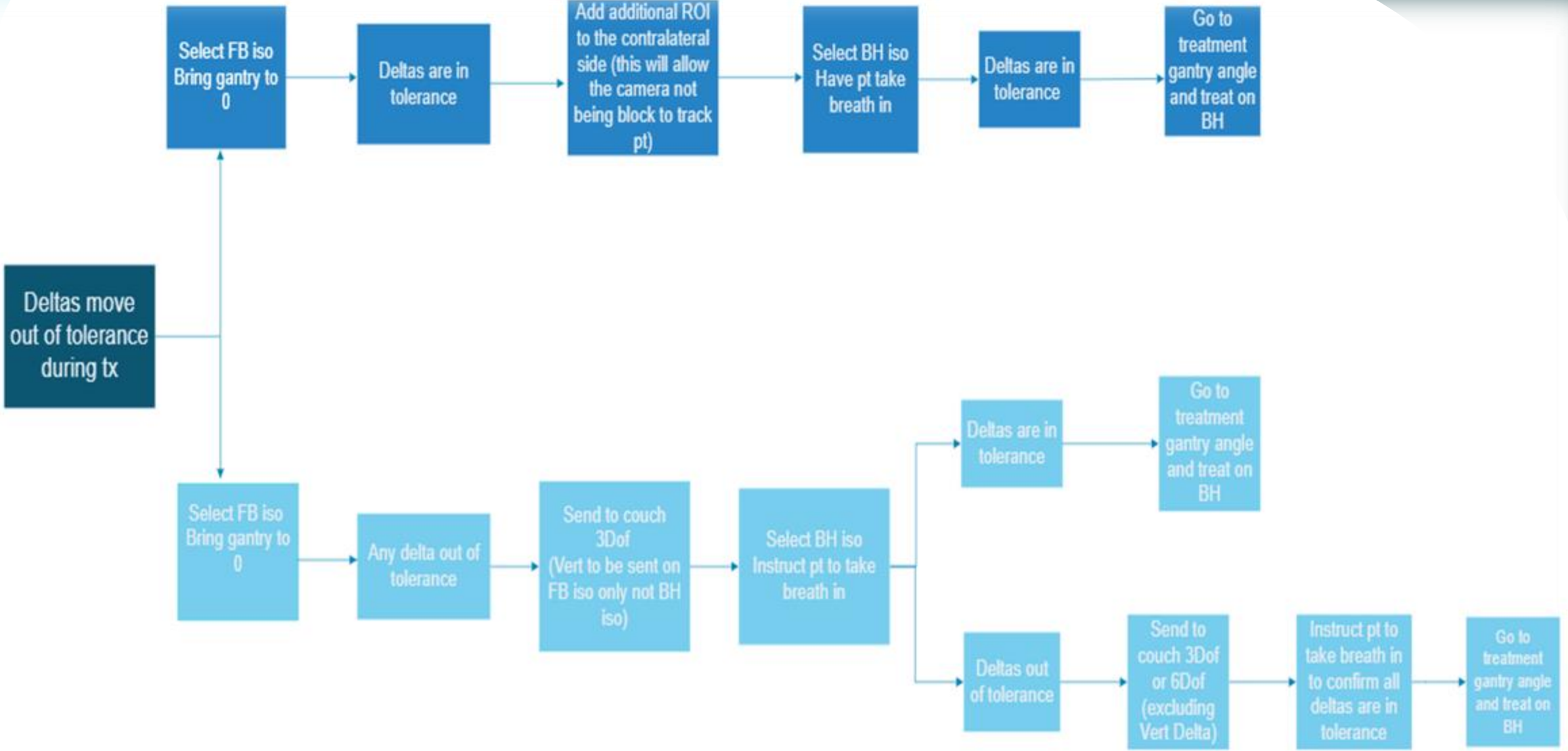
# Steps for BH 'send to couch'

- Follow 'send to couch' steps 1-5 from previous slide then proceed to these steps:
- On FB- send the 3 degrees of freedom (DoF) (VRT, LAT, LNG) to ensure most optimal delta parameters on FB
- Once FB parameters are in tolerance, select BH iso on AlignRT
- On BH- send to couch 6Dof and unselect the VRT
- Once 6Dof is sent and shift applied you may only need to re-send 3Dof and unselect the Vert to fine tune deltas



# If patient's deltas fall out of tolerance during treatment:

- **Select FB iso** and bring gantry to **0 degrees**
  - If deltas are **in tolerance** → add additional region of interest (ROI) to the contralateral side on both FB and BH ROIs → select BH iso, have patient take a breath in and confirm deltas are in tolerance on BH, pt may then breath→ go to the treating gantry angle and treat on BH.
  - If VRT is **out of tolerance** → 'send to couch' only the VRT (ensure sending the VRT is done on the FB iso only) → select BH iso, ask patient to take a breath in and 'send to couch' LAT and LNG if needed (do NOT send VRT on BH)


Deltas move out of tolerance during tx
Select FB iso Bring gantry to 0
Deltas are in tolerance
Add additional ROI to the contralateral side (this will allow the camera not being block to track pt)
Select BH iso Have pt take breath in
Deltas are in tolerance
Go to treatment gantry angle and treat on BH
Select FB iso Bring gantry to 0
Any delta out of tolerance
Send to couch 3Dof (Vert to be sent on FB iso only not BH iso)
Select BH iso Instruct pt to take breath in
Deltas are in tolerance
Go to treatment gantry angle and treat on BH
Deltas out of tolerance
Send to couch 3Dof or 6Dof (excluding Vert Delta)
Instruct pt to take breath in to confirm all deltas are in tolerance
Go to treatment gantry angle and treat on BH

# USING ALIGN RT FOR H&N CASES

- ALIGN PT W/O MASK
  - IF USING A CLOSED FACE MASK, ALIGN PT W/O MASK & THEN PLACE MASK
- USE POSTURAL ALIGNMENT OR TREATMENT REFERENCE CAPTURE TO ADJUST SHOULDERS

# Beam On!

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