SGRT BIG BENEFITS BETTER WORKFLOWS

SURFACE GUIDED RADIATION THERAPY
SGRT COMMUNITY

Advances in AlignRT: Enhancing SGRT Precision, Safety and Workflow

Adi Robinson

AdventHealth Celebration

AdventHealth

Advances in AlignRT: Enhancing SGRT Precision, Safety, and Workflow

Adi Robinson Ph.D. DABR

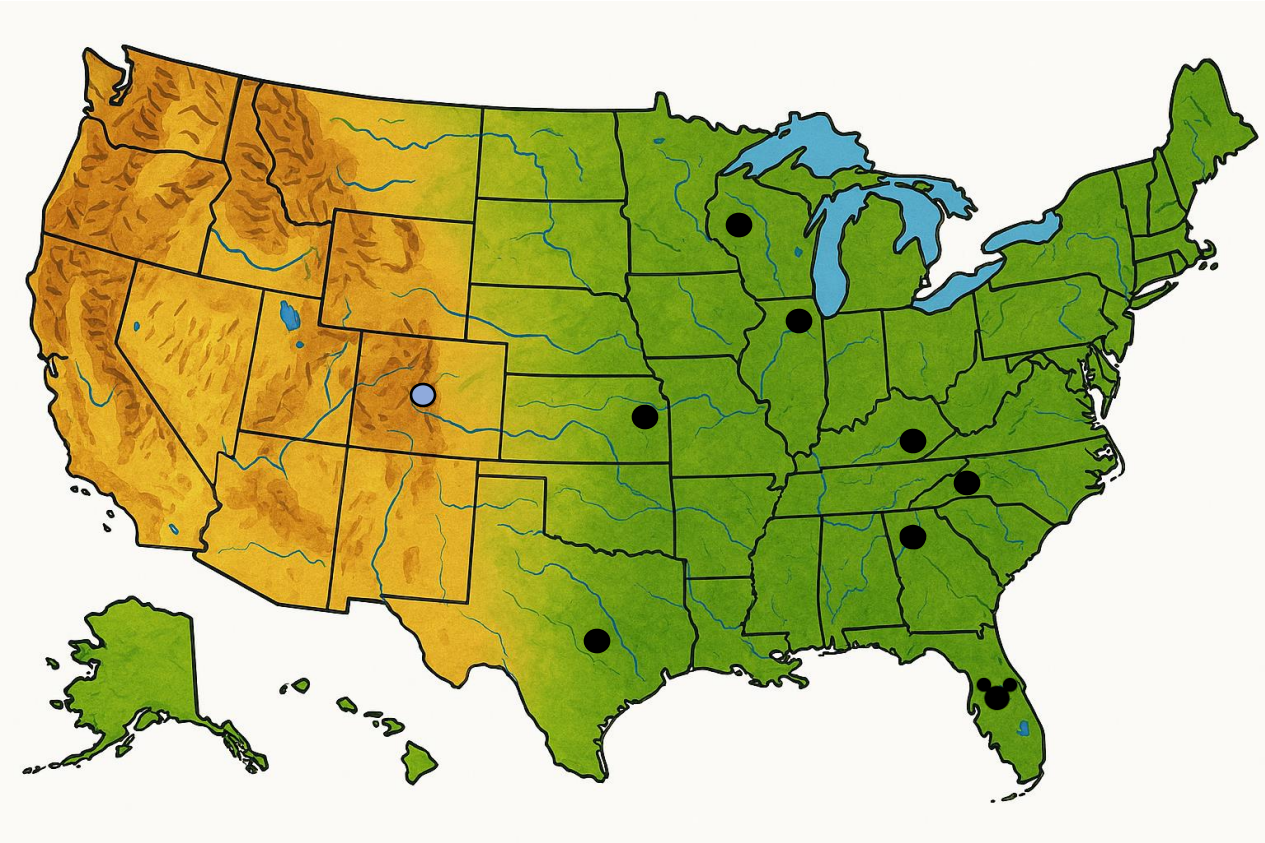
AdventHealth Celebration

Florida, USA

Disclosures

- AdventHealth Celebration maintains a Center of Excellence (COE) agreement with VisionRT.
- AdventHealth Parker maintains a Professional Services Agreement (PSA) with VisionRT
- The content presented reflects clinical experience and independent evaluation.
- This presentation was not influenced by financial incentives.

AdventHealth Hospitals



AdventHealth Cancer Institute:

- 52 Campuses in 9 States
- National leader in SGRT implementation
- Focuses on innovation, safety, and patient experience

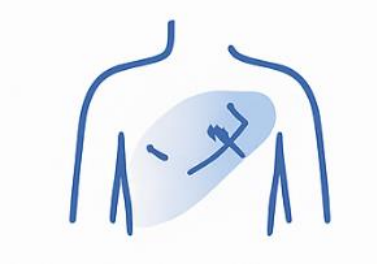
SGRT in Modern Radiation Therapy

- Surface Guided Radiation Therapy (SGRT) uses optical imaging to register real-time 3D surfaces of a patient to a reference surface (TG302).
  - Cameras project structured light onto the patient's surface
  - Real-time 3D surface capture compares patient position to reference datasets
  - Submillimeter accuracy maintained throughout treatment.

The AlignRT Advantage

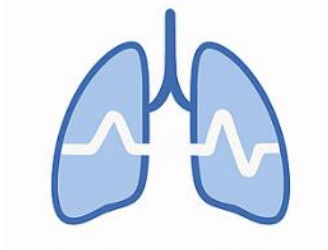
Enhanced Patient Setup

- Biometric facial recognition
- Postural video
- Markerless setup (3D surface vs. tattoos/marks)



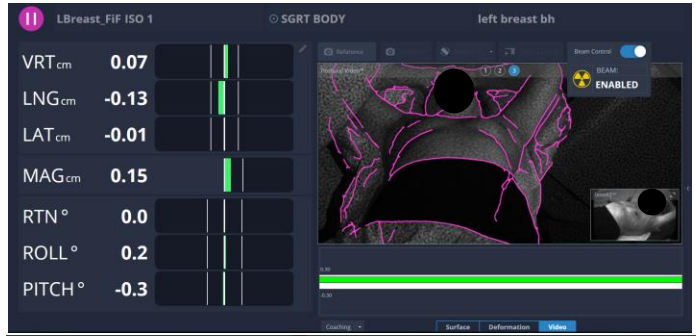
Adaptive Monitoring

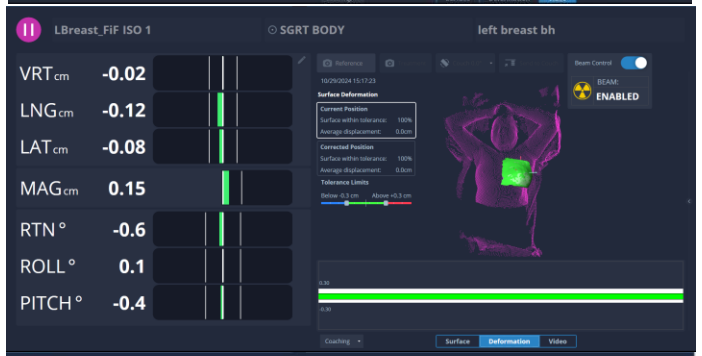
- Deformation view
- Submillimeter accuracy from head to toe

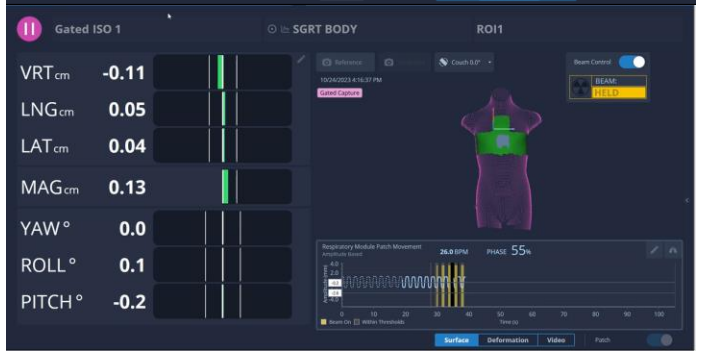


Motion Management

- Respiratory gating with automated beam hold
- Continuous real-time motion monitoring







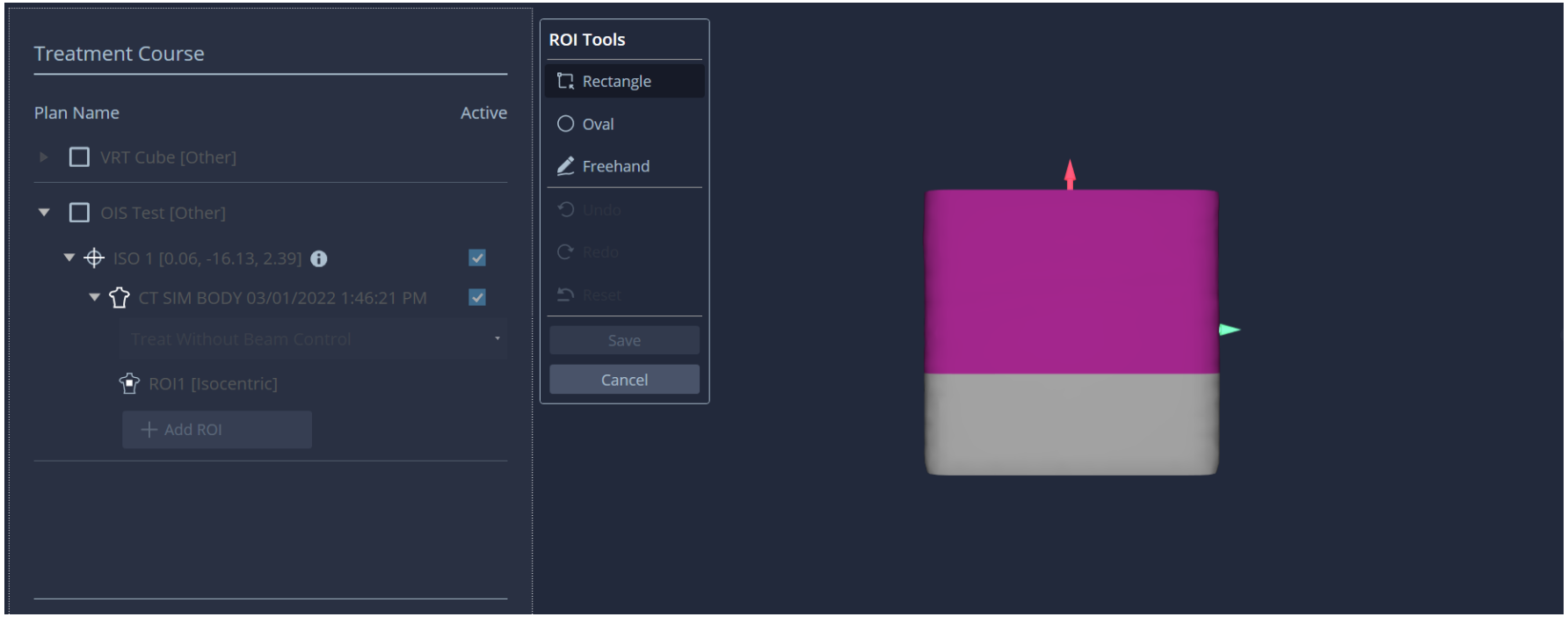
Challenges and Solutions

- AlignRT currently provides precise setup and monitoring
- However, challenges remain:
  - Manual ROI creation
  - Separate documentation system
  - Limited plan/dose visualization during patient setup.

- Recent AlignRT innovations address these workflow limitations
  - Beam Guide™: Visual overlay of treatment fields onto PV
  - OIS Reports: Automated SGRT documentation
  - AutoROI™: Fast and accurate ROI generation

Region of Interest (ROI) for AlignRT

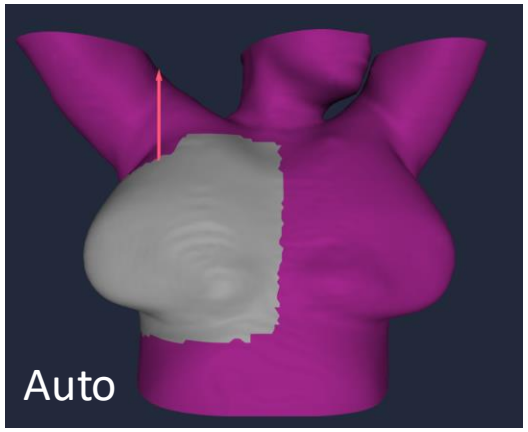
- Region of Interest (ROI) is the specific area on the patient's body that the system uses to compare the current vs. reference position of the patient.
- A well-defined ROI ensures AlignRT can accurately track the patient's position

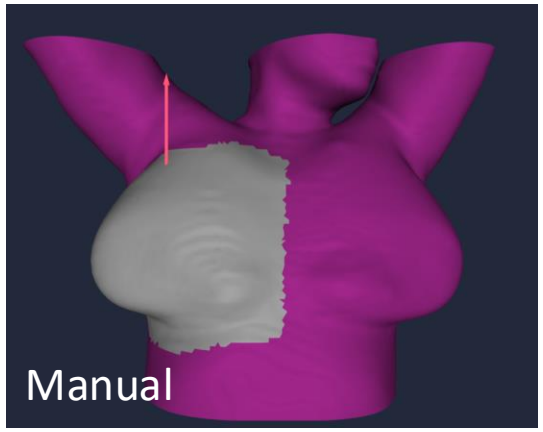


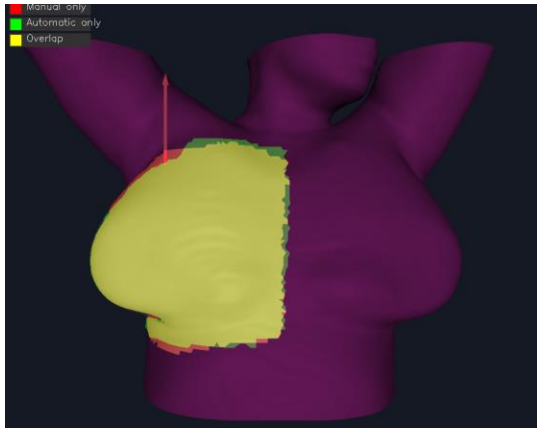
AlignRT AutoROI™ Module

- Protocol based automatic ROI generation. Provides 3-5 ROI options per protocol
- 90% clinically acceptable ROIs with minimal edits
- Introduces ROI consistency among staff
- Reduces ROI creation time from minutes to seconds
- AutoROI™ is 510k pending

AlignRT AutoROI™ - Breast

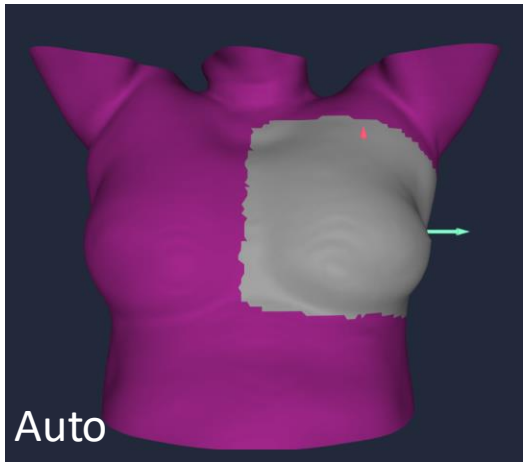


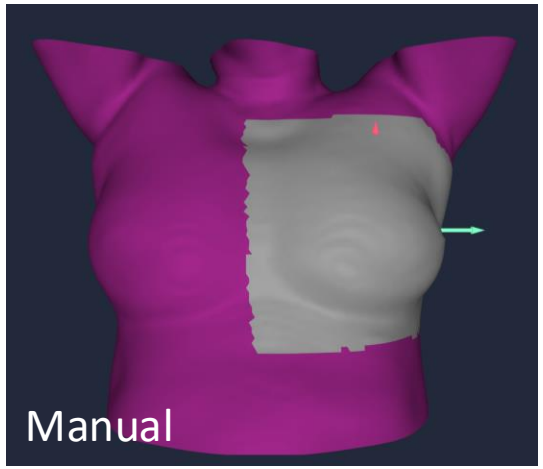


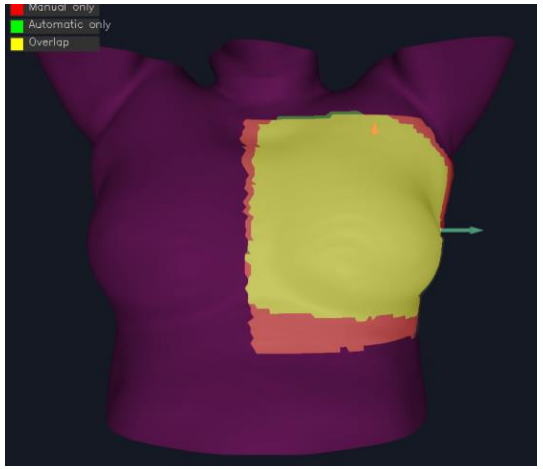


Right Breast

- Dice coefficient: 0.967
- RTDs: Clinically Equivalent
- Contour Time:
  - Auto: 8 seconds
  - Manual: 95 seconds



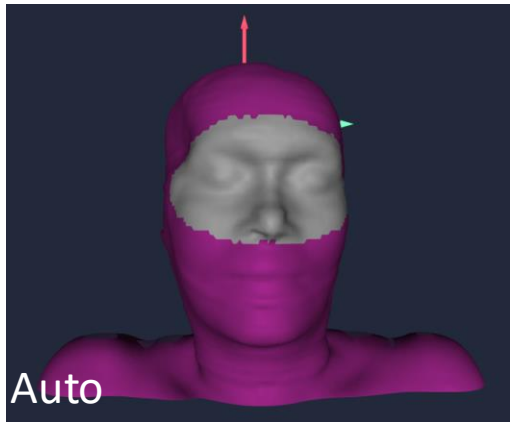


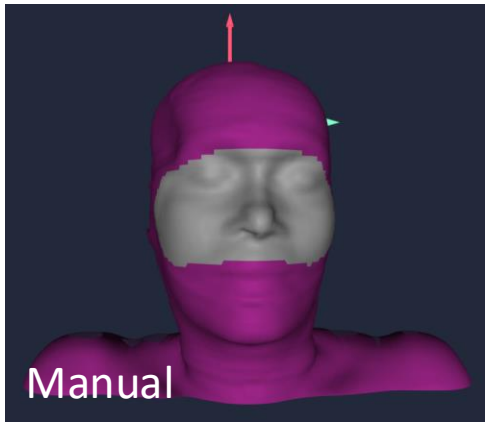


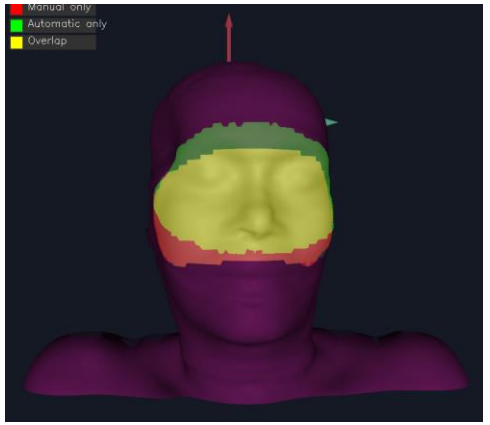
Left Breast DIBH

- Dice coefficient: 0.901
- RTDs: Clinically Equivalent
- Contour Time:
  - Auto: 10 seconds
  - Manual: 100 seconds

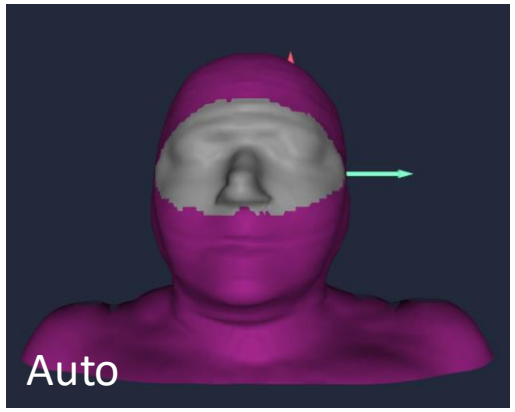
AlignRT AutoROI™ - Brain

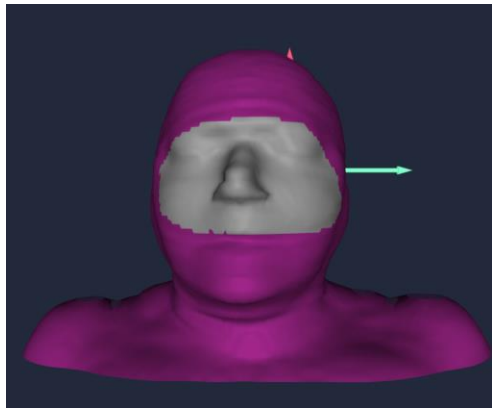


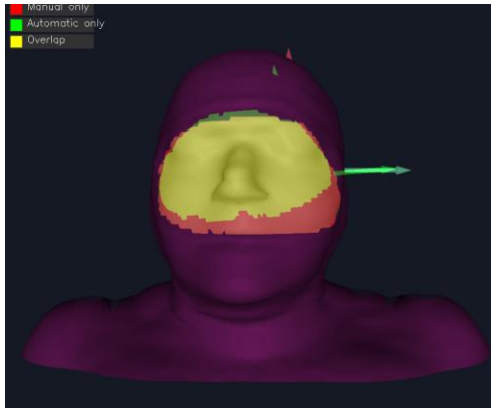




Brain
- Dice coefficient: 0.873
- RTDs: Clinically relevant
- Contour Time:
  - Auto: 5 seconds
  - Manual: 70 seconds

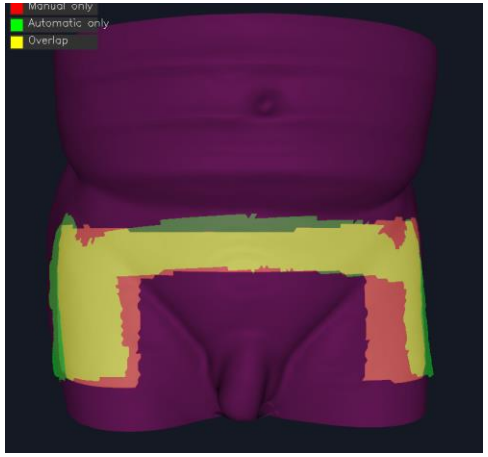


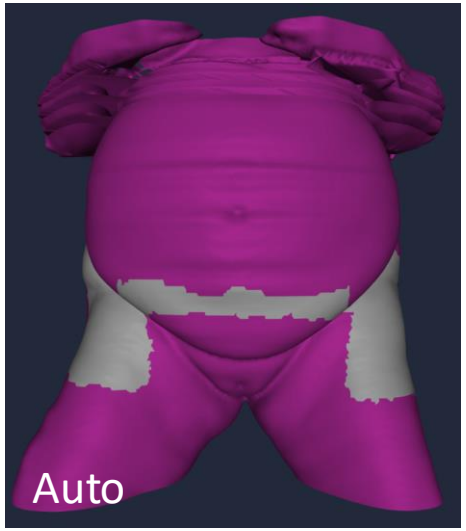




Brain
- Dice coefficient: 0.856
- RTDs: Clinically relevant
- Contour Time:
  - Auto: 5 seconds
  - Manual: 65 seconds

AlignRT AutoROI™ - Pelvis





Pelvis (Male)

- Dice coefficient: 0.780
- RTDs: Clinically relevant
- Contour Time:
  - Auto: 10 seconds
  - Manual: 105 seconds

Pelvis (Female)

- Dice coefficient: 0.845
- RTDs: Clinically relevant
- Contour Time:
  - Auto: 12 seconds
  - Manual: 85 seconds

AutoROI™ Early Clinical Experience

Broad Adoption Across Protocols

- Implementation in breast, brain, pelvis, and abdomen.

Efficiency Gains

- ROI creation reduced from minutes to seconds.

Consistency & Standardization

- Eliminates inter-user variability with surface driven, repeatable ROIs.
- Ensures uniformity across multi-system operation.

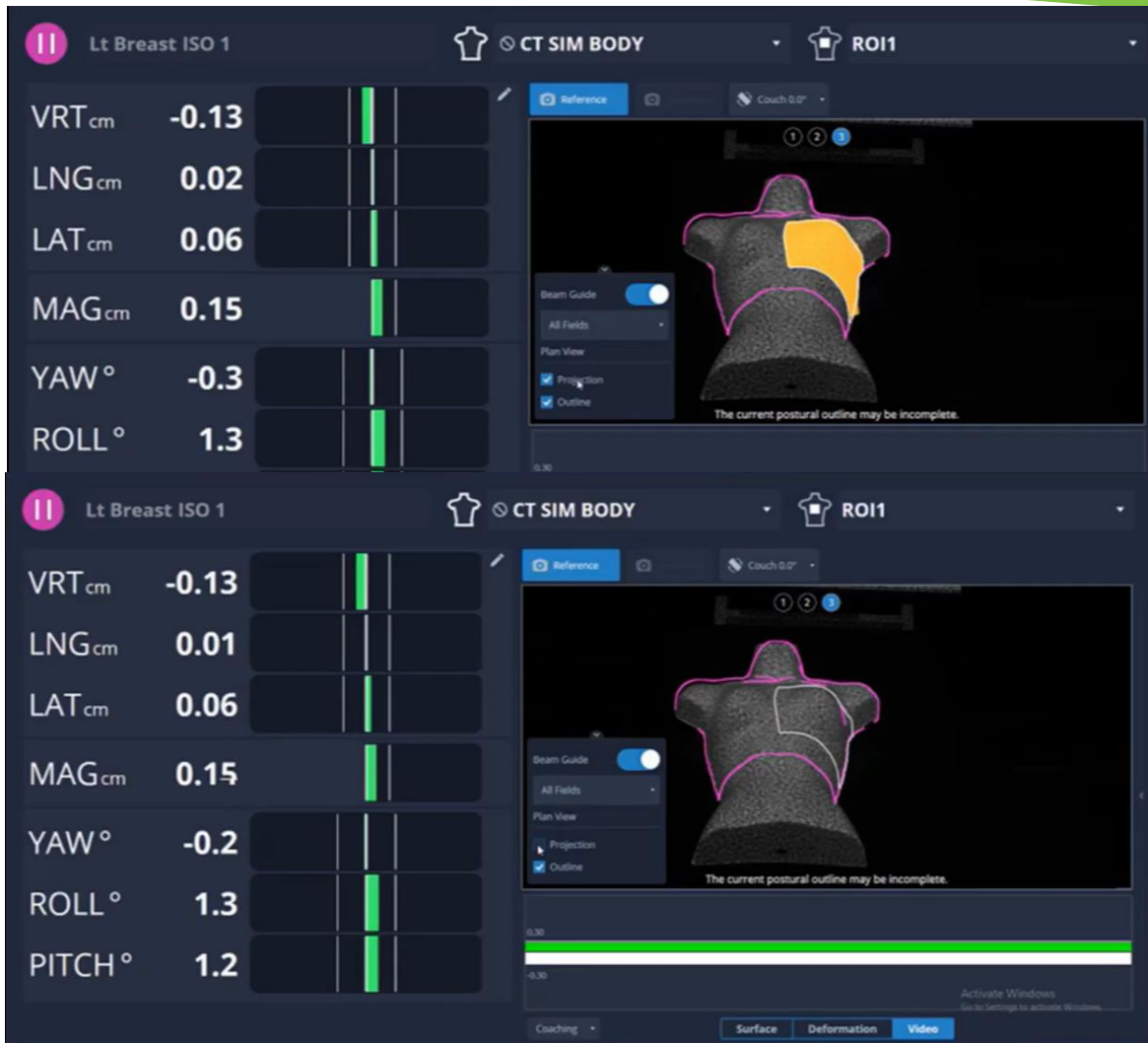
User Feedback

- Confidence in reproducibility and quality of ROI.
- Minimal manual adjustments required to achieve clinically acceptable ROIs.

Beam Guide™: Expanding AlignRT's Setup Tools

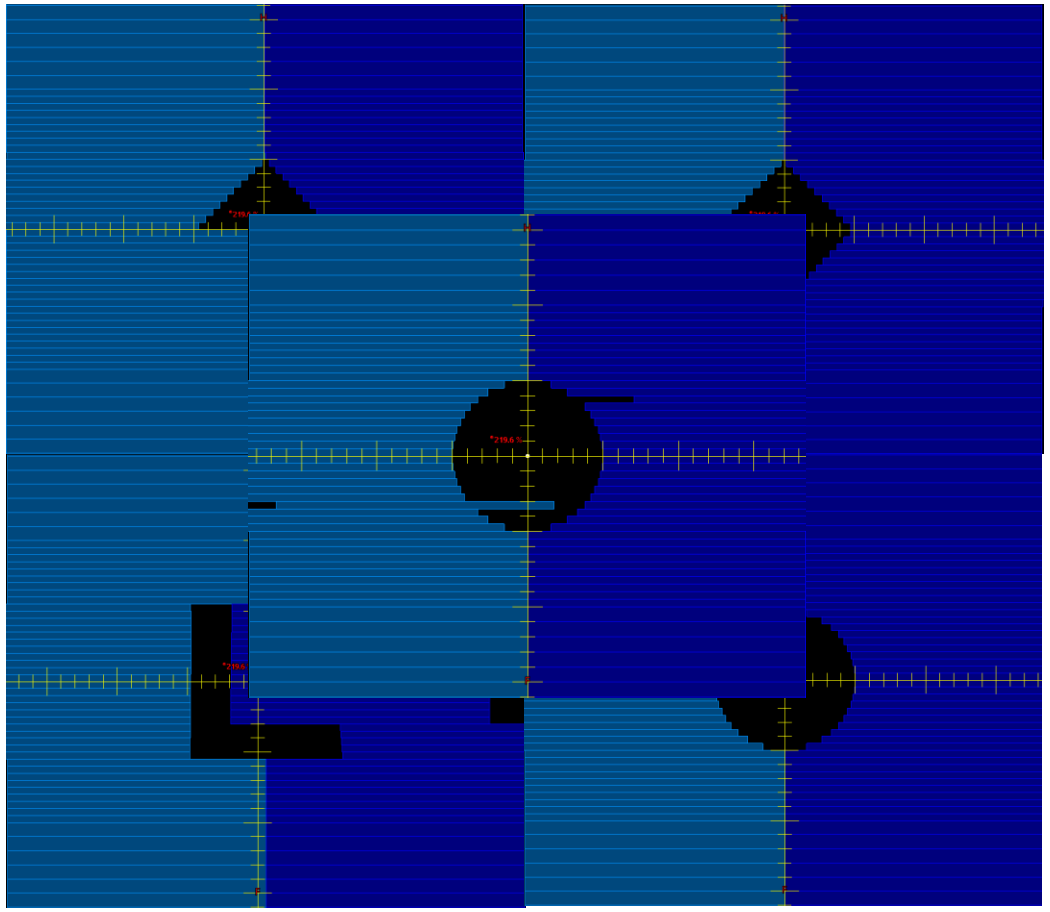
- Overlays treatment fields onto real-time postural video
- Improves accessory placement verification
- Reduces field overlap/gap errors

- Beam Guide™ is 510k pending

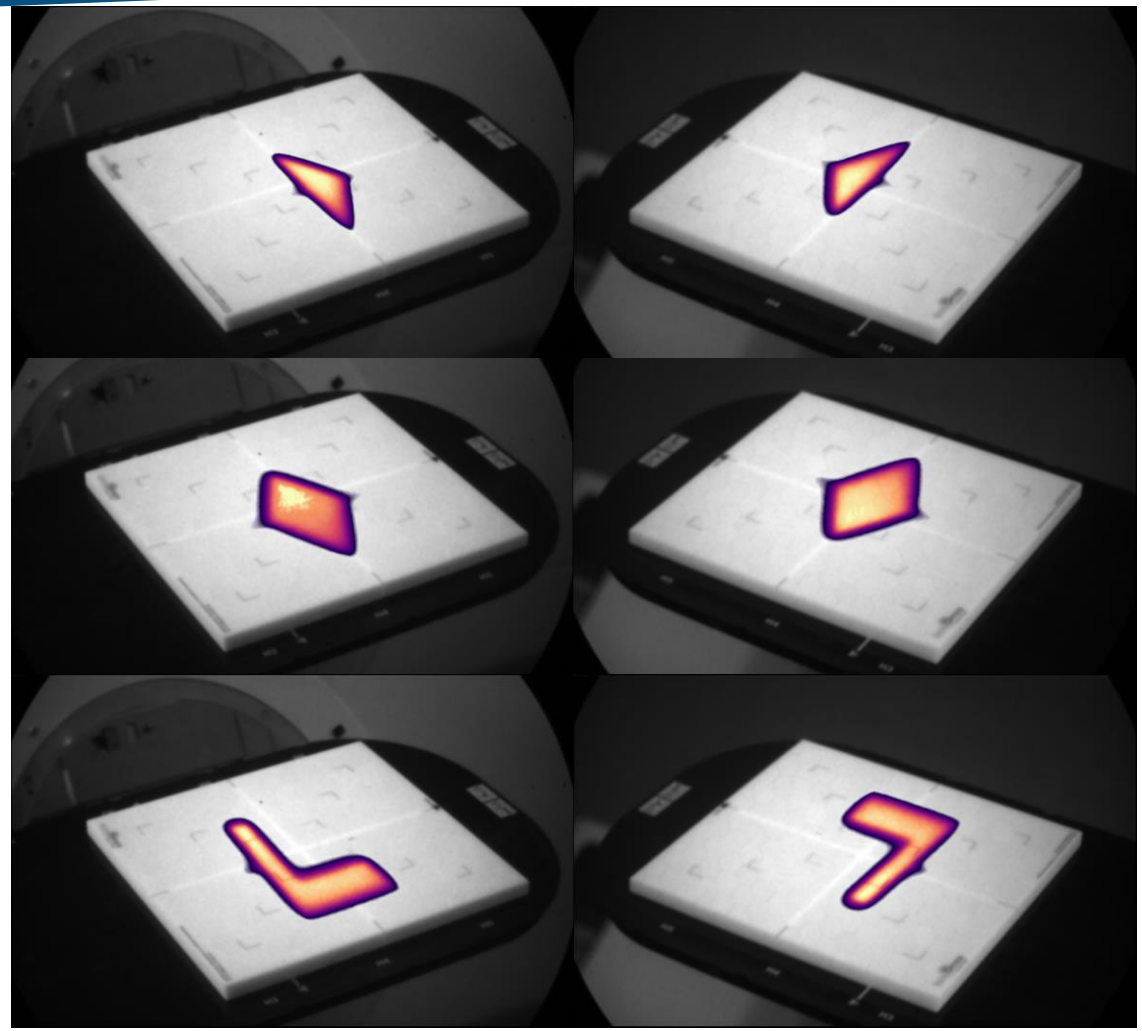


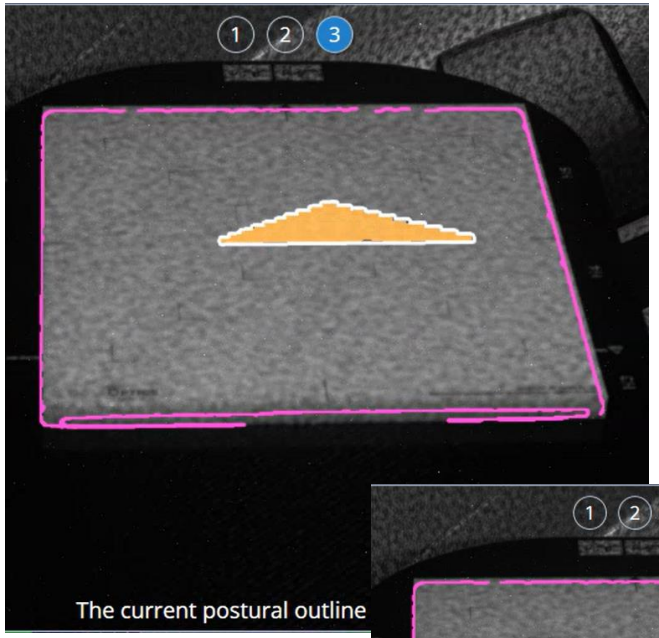
Beam Guide™: Clinical Validation

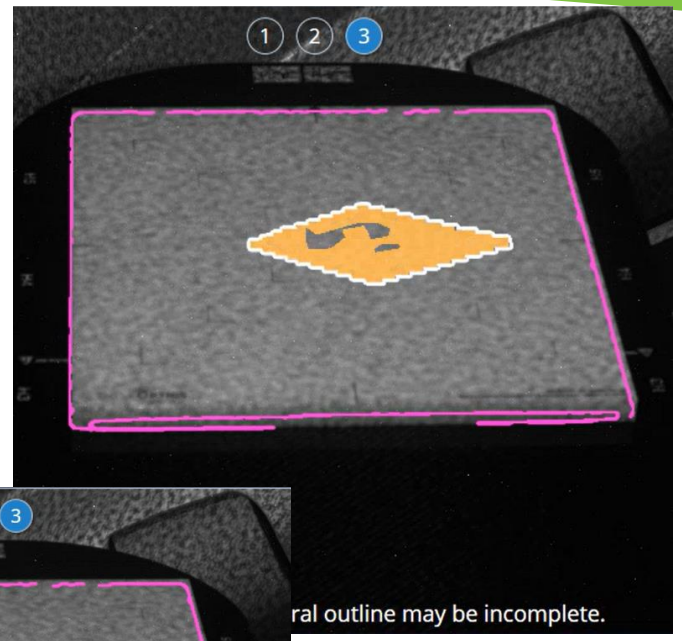
- Compare Beam Guide's plan outline and projections to pre-planned "shapes"
- Test in different clinical scenarios and applications.
- Compare results with other clinical tools (ex. DoseRT)

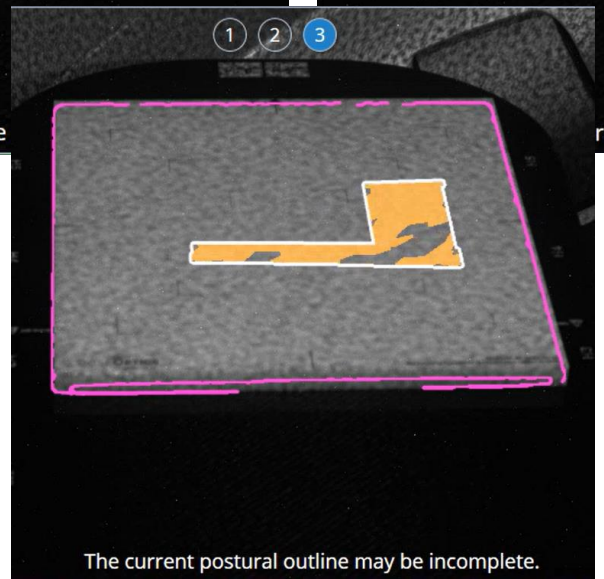


Beam Guide™ and DoseRT

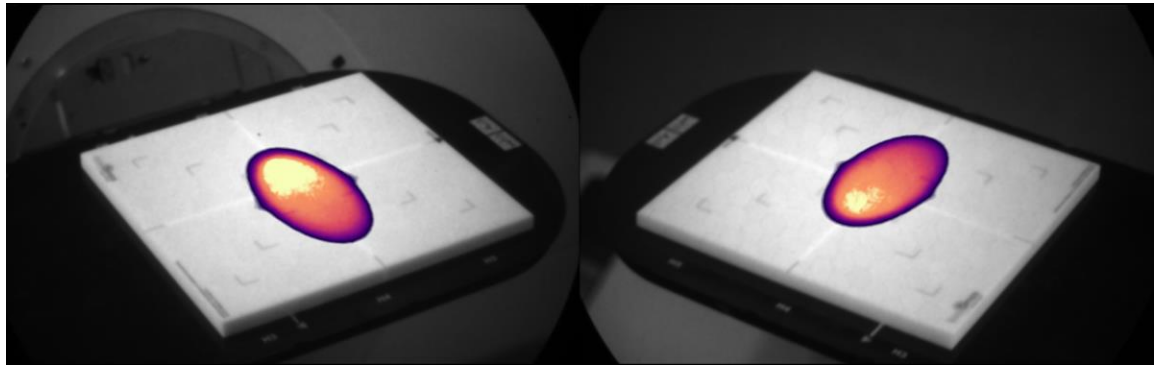


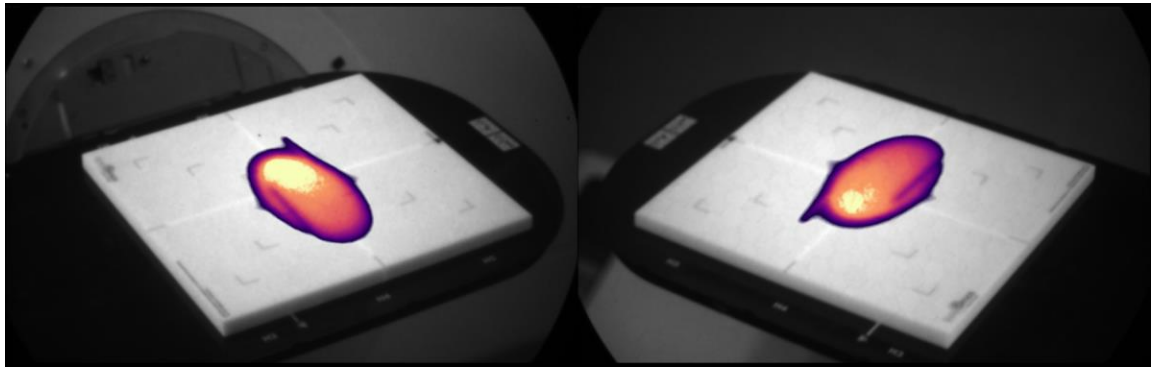


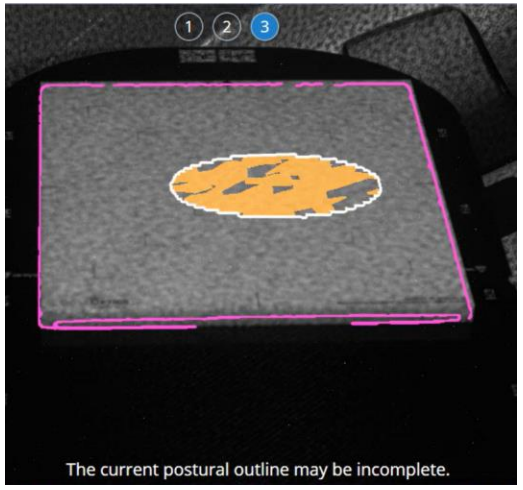


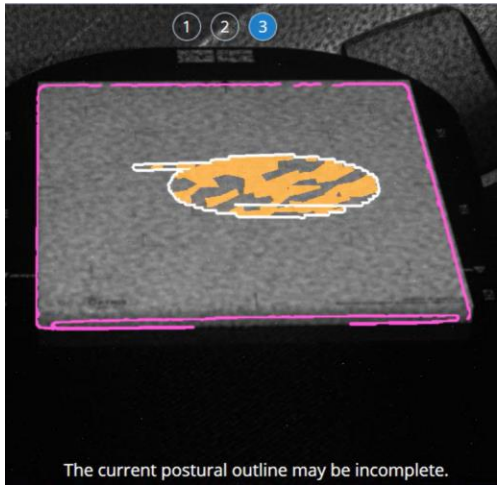


Beam Guide™ and DoseRT

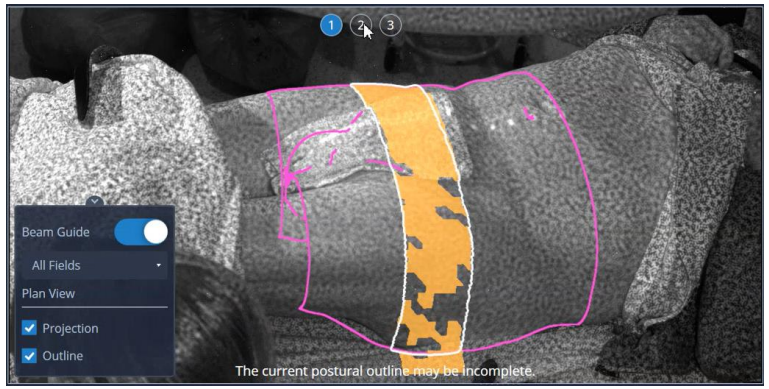


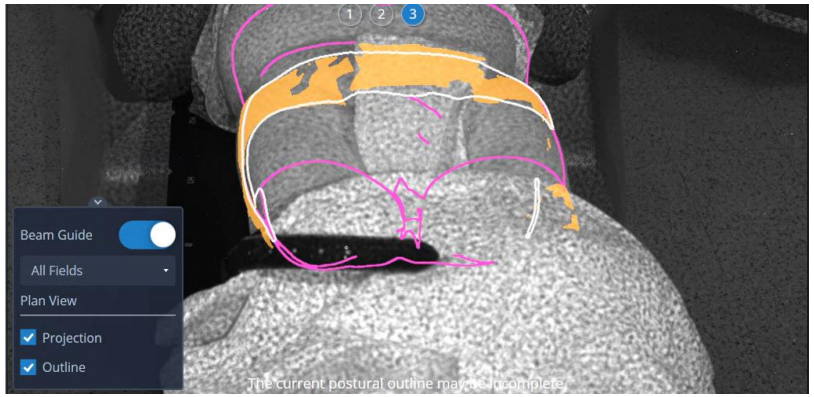


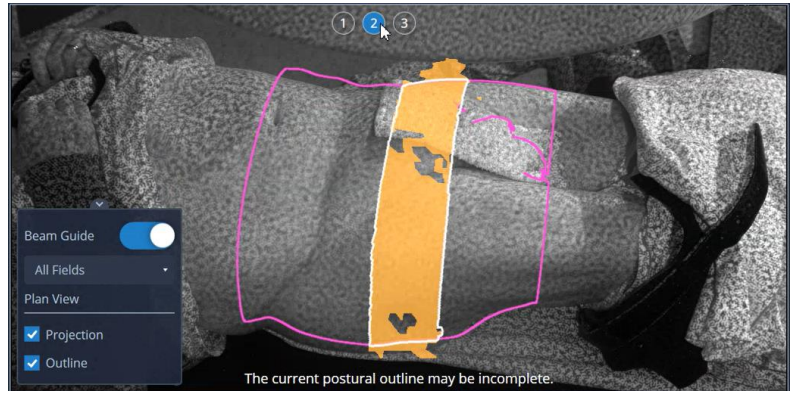


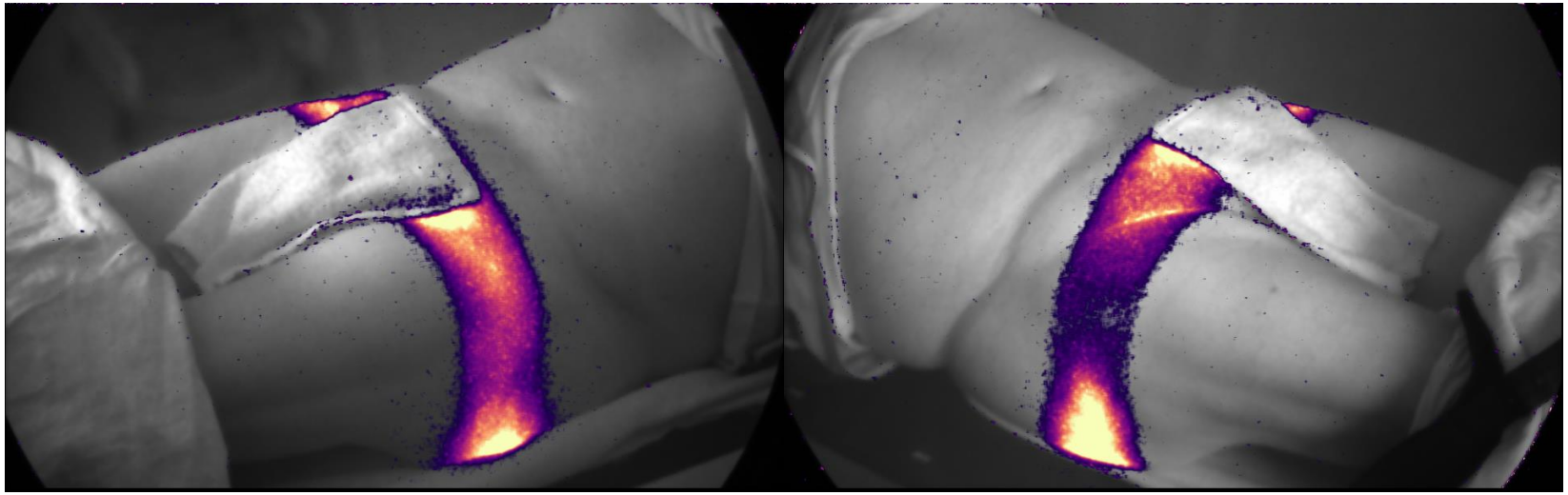


Beam Guide™ Clinical Example: Pelvis

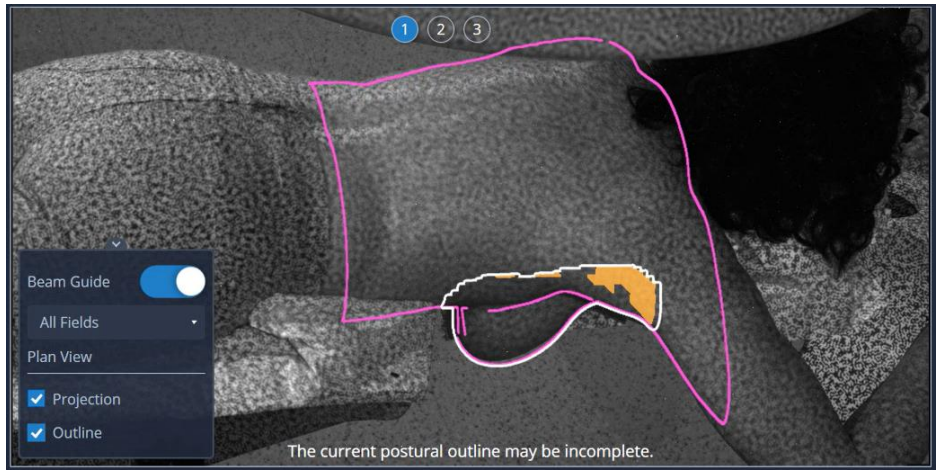


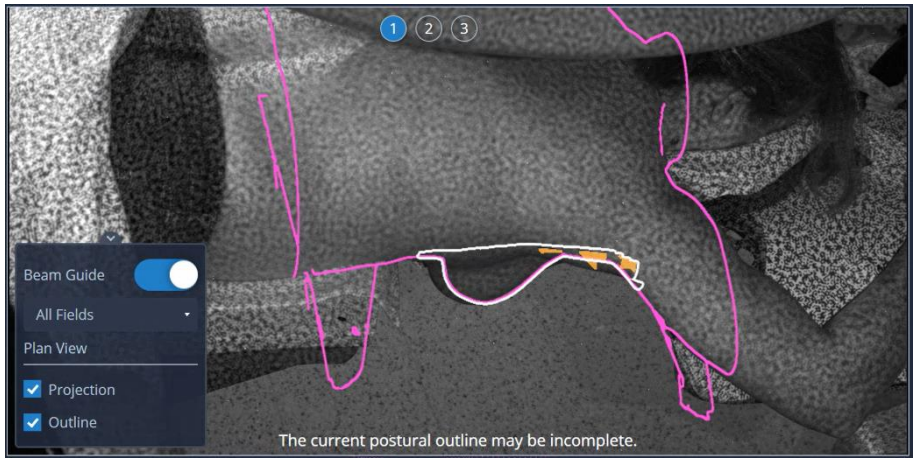


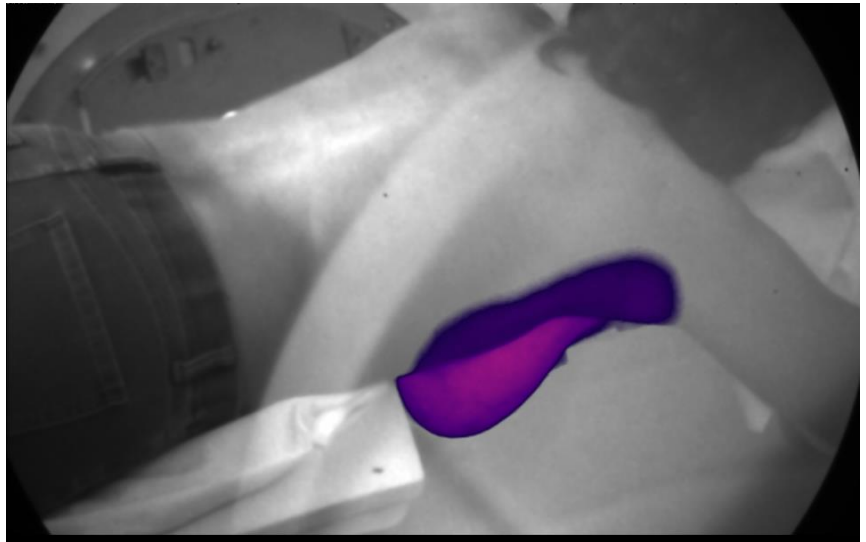


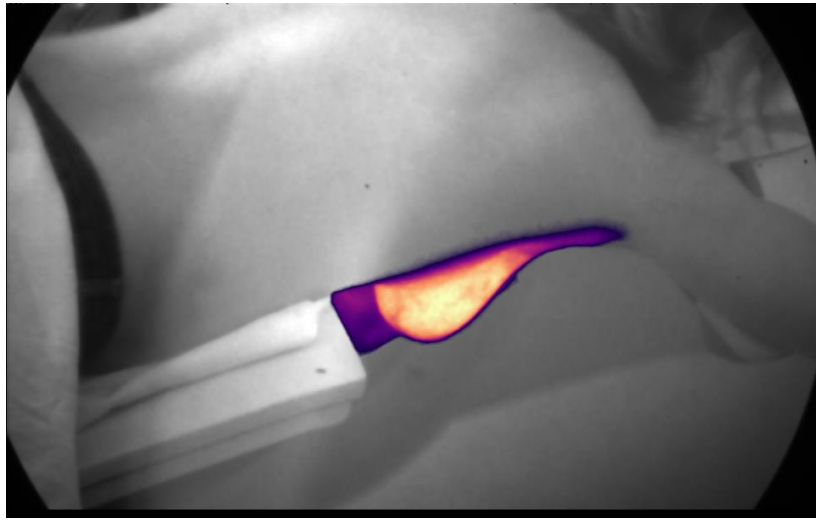


Beam Guide™ Clinical Example: Prone Breast

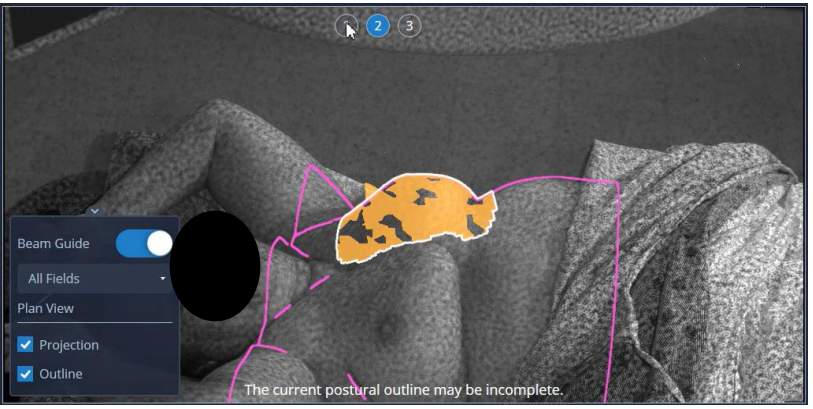


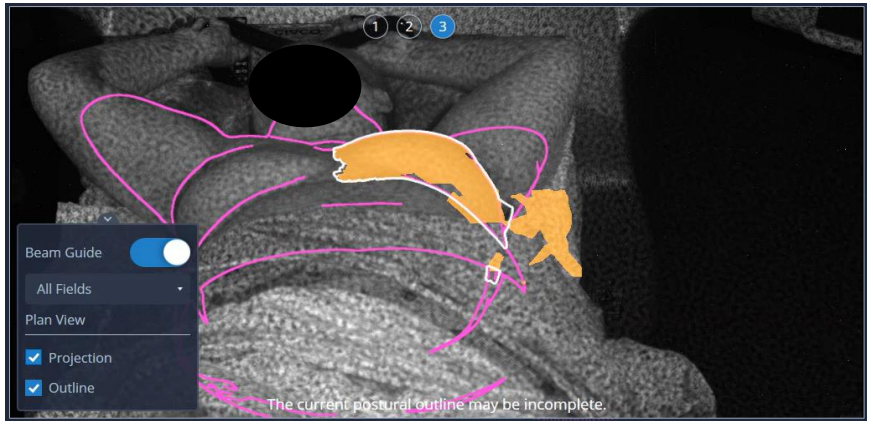


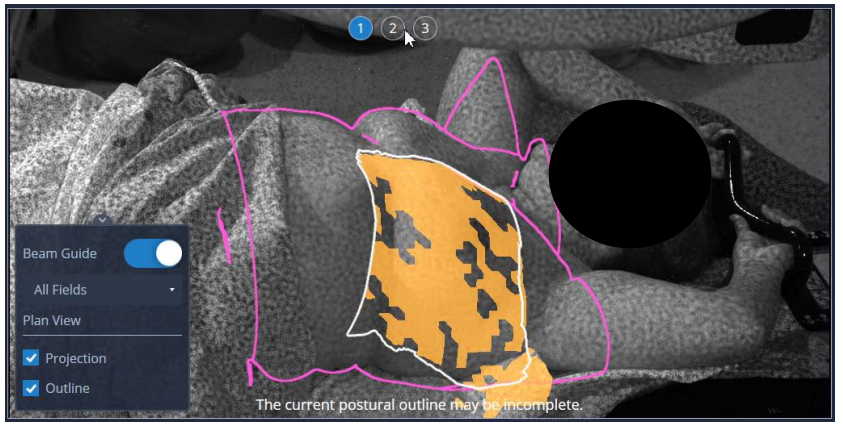


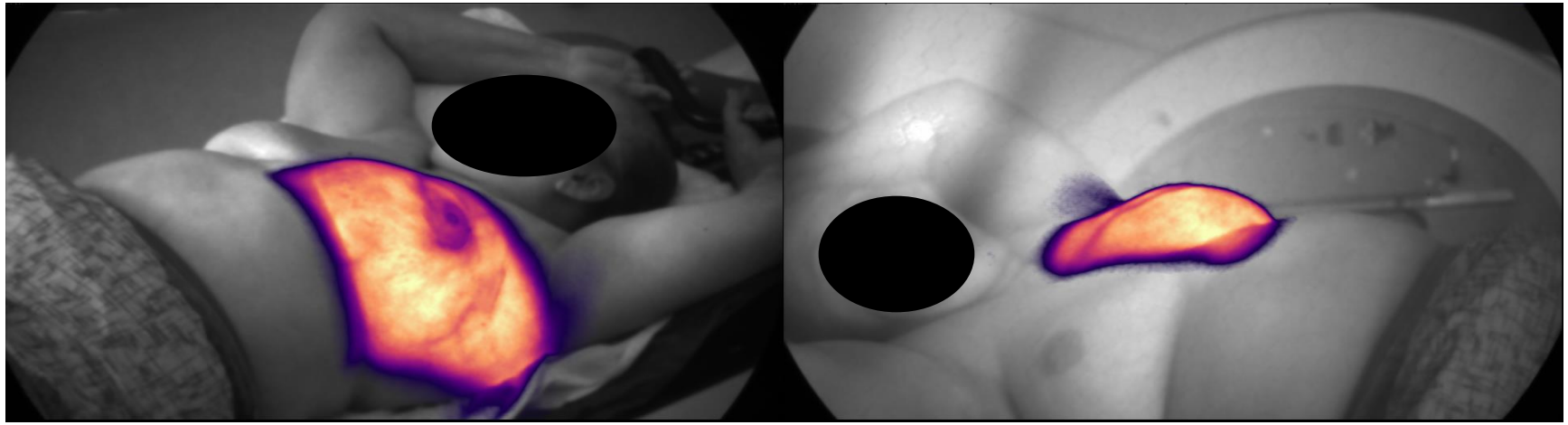


Beam Guide™ Clinical Example DIBH Breast

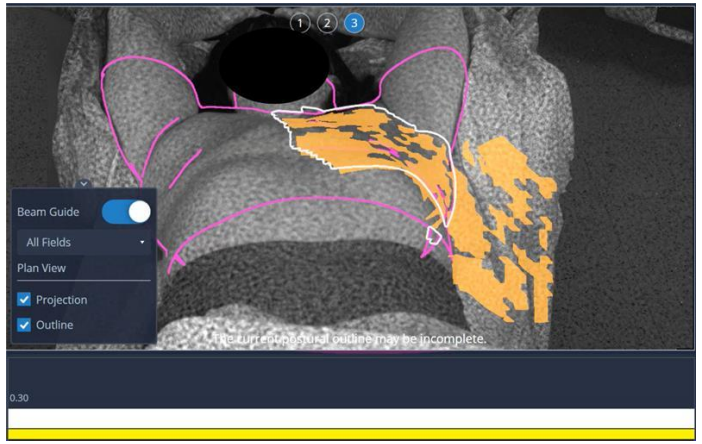


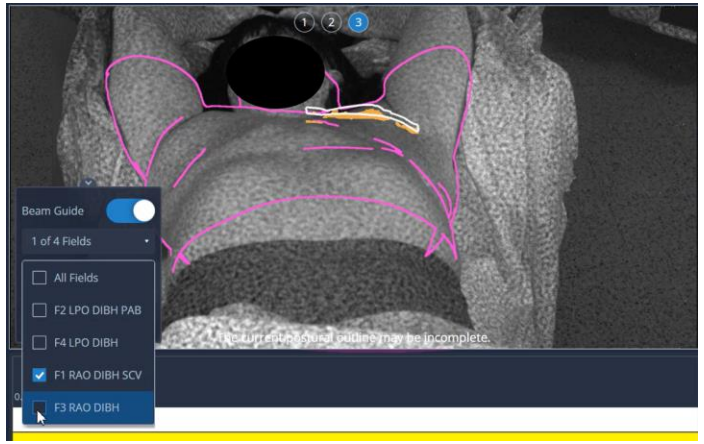


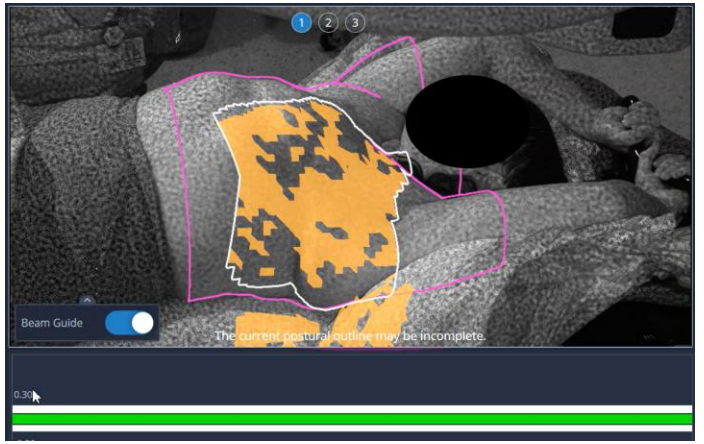


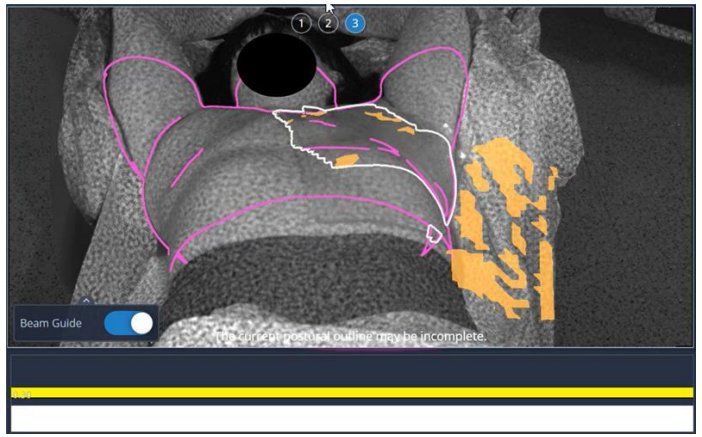


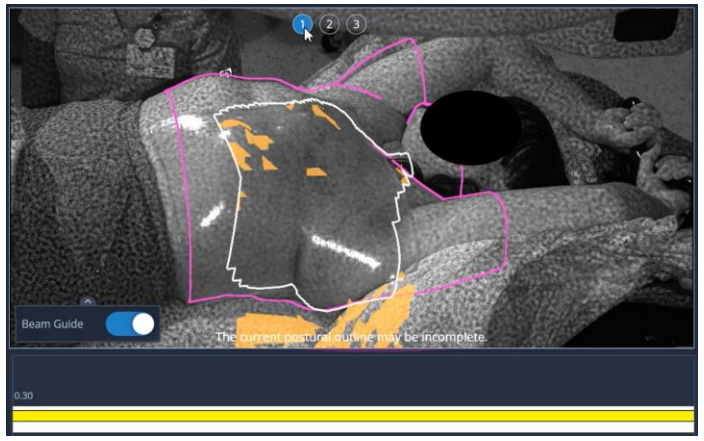
Beam Guide™ Clinical Example: Breast DIBH with Bolus

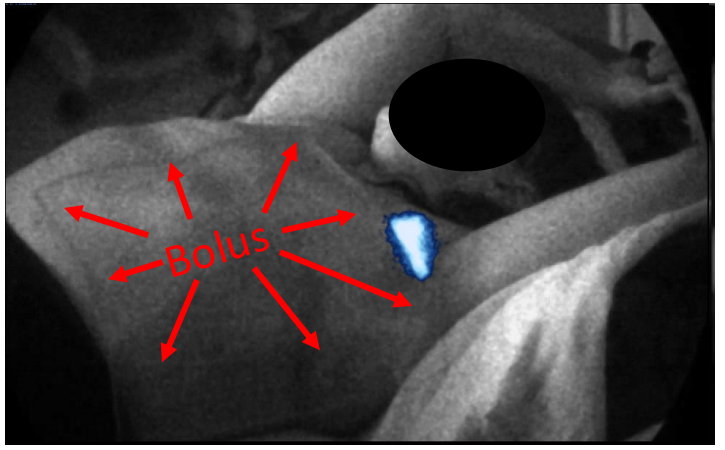












Beam Guide™ Early Clinical Experience

Adoption & Use Cases

- Incorporate into all workflows.
- Can be used during initial setup and throughout beam delivery
- Most useful in accessory placement and abutting fields.

Workflow Efficiency

- Improved patient setup accuracy without changing the workflow.
- Quicker setup time with accessory placement or plans with field verification.

Improvement in treatment confidence

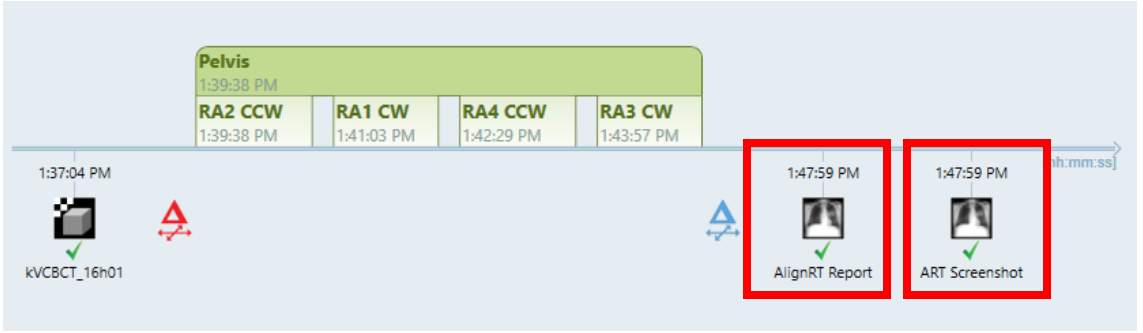
- Provide immediate visual confirmation of beam entry/exit.
- Enhances therapist confidence during first day setup and complex or new techniques.

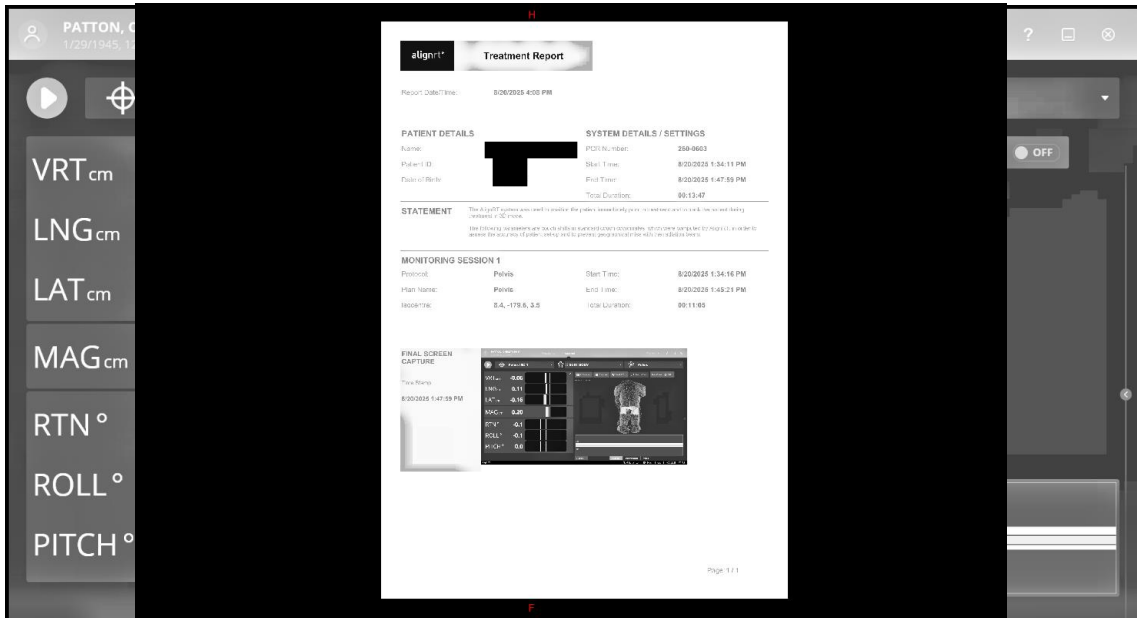
User Feedback

- Therapists reported this as a “must have” during testing
- “seeing the plan at setup will prevent errors before beam on”

AlignRT OIS Reports Module

- Automatic documentation into the Oncology Information System (OIS) (Mosaiq/ Aria).
- Eliminates manual file transfer errors
- Physician can approve SGRT along side IGRT.
- Significantly reduces documentation tine, streamlining clinical workflows





Conclusion

- The integration of Beam Guide™, OIS Reports Module, and AutoROI ™ into AlignRT represents a significant advancement in SGRT-supported radiation therapy.
- Together, these tools enhance treatment verification, streamline clinical documentation, and automate key setup tasks, contributing to improved precision, safety, and workflow efficiency.
- We recommend that other institutions consider early adoption to maximize the benefits of these tools.
- Future work will focus on analyzing clinical implementation metrics, assessing impact on patient throughput and conducting multi-center validation studies.

Questions?

Thanks to Mike Tallhamer and the Adventhealth physics team

Adi.Robinson@adventhealth.com