

# HDR Surface Brachytherapy

Adaptiiv's enhanced algorithms allow users to automatically design a patient-specific applicator and 3D print it, resulting in hollow catheter trajectories with a constant user-defined stand-off and separation distances. **This customizable module provides a superior tool for optimizing and delivering the prescribed dose to patients compared to other common techniques.**

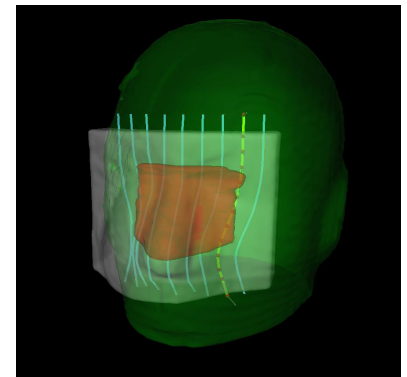


## Key Benefits

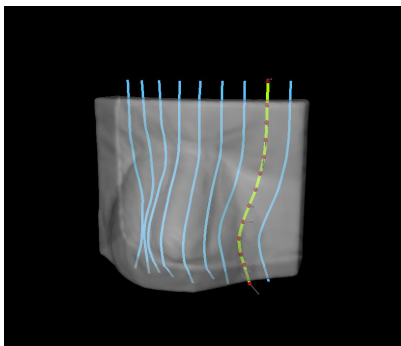
- Point and click software functions enable the user to create customizable catheter trajectories that are specific to the patient's anatomy and treatment plan.
- The module's algorithm allows users to quickly and confidently create patient-specific applicators using tools which allow superior planning and delivery of the prescribed dose to patients compared to other existing methods.
- The only regulated solution that allows users to customize an applicator and seamlessly import the new applicator design back into the brachytherapy treatment planning system to conduct dose validation.
- Adaptiiv eliminates the need for multiple, 3rd party software solutions that require excessive design time, can't be easily verified in your TPS, and do not have regulatory clearance.
- Software optimization eliminates time-consuming and labor-intensive manual fabrication methods, replacing the need for expensive applicators (i.e. Freiburg Flap).

## \*New\* Features in Software Release v3.0

- **Brachytherapy 3D Structure Visualization**
  - 3D viewing of the PTV and OARs (or other underlying structures) when planning and creating custom brachytherapy tunnels.
- **Enhancements to Brachytherapy Tunnel Generation**
  - Enhancements made to the generation of brachytherapy tunnels such as the softening of entrance/exit points for easier catheter placement, stopping a tunnel midway through a trajectory, better tunnel positioning on highly curved surfaces, and numbering of tunnels.



A 3D view of the brachytherapy applicator, PTV (in red), and underlying structures.



Complex iterations to applicator design can be achieved through point and click capabilities.

“The limitations of using wax are worse in brachytherapy cases due to the added complexity of embedding the catheters - it can be difficult to verify both the distance from the surface and the spacing between catheters. Fabrication is also extremely time consuming and can be done only by the most experienced staff.

**The Adaptiiv solution addresses all of these problems and will increase our capacity to use surface brachytherapy.”**

THE CLATTERBRIDGE CANCER CENTRE  
LIVERPOOL, UNITED KINGDOM

## Clinical Benefits

	Radiation Oncologist	Medical Physicist	Radiation Therapist / Dosimetrist	Administrator
<b>Patient Consult</b>	Highlight/ demonstrate use of innovative technology to improve reproducibility and accuracy during treatment delivery.			Highlight/ demonstrate use of innovative technology to promote center's modern approach to treatment.
<b>Applicator Design and CT Simulation</b>	Improves patient comfort through a simplified, faster setup during CT simulation and treatment.	<ul style="list-style-type: none"> <li>- Automated applicator design.</li> <li>- User-defined input specific to each patient.</li> <li>- Increased accuracy, safety, and reproducibility of design.</li> </ul>	<ul style="list-style-type: none"> <li>- Automated applicator design.</li> <li>- User-defined input specific to each patient.</li> <li>- Increased accuracy, safety, and reproducibility of design.</li> <li>- Improves patient comfort through simplified, faster setup during CT simulation and treatment.</li> </ul>	<ul style="list-style-type: none"> <li>- 3D printed applicator meets requirements for existing CPT codes, can be billed as a patient-specific complex device.</li> <li>- Eliminate need to fabricate applicator in the CT suite thereby increasing capacity.</li> </ul>
<b>Treatment Planning</b>	<ul style="list-style-type: none"> <li>- Built-in tools for superior optimization of the RT treatment plan in TPS.</li> <li>- Larger potential for OAR sparing.</li> </ul>	<ul style="list-style-type: none"> <li>- User defined stand-off, separation, tunnel radius and minimum radius of trajectory curvature allow for superior optimization of the RT treatment plan in TPS.</li> <li>- Larger potential for OAR sparing.</li> </ul>		Seamless integration with existing TPS means faster and cheaper setup.
<b>Plan Quality Assurance</b>		<ul style="list-style-type: none"> <li>- Dedicated tools for plan QA.</li> <li>- Modified DICOM RT structure is easily exported back to TPS for dose verification.</li> <li>- Scanning of 3D printed applicator on a patient for set-up verification / TPS verification purposes.</li> </ul>		
<b>Applicator Fabrication</b>	Time efficient and increased throughput.	<ul style="list-style-type: none"> <li>- Improved efficiency, accuracy, safety and reproducibility of fabrication.</li> <li>- Decreased labor requirements.</li> </ul>		<ul style="list-style-type: none"> <li>- Improved efficiency.</li> <li>- Increased throughput.</li> <li>- Cost savings.</li> </ul>

# Why Adaptiiv?

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Adaptiiv offers an advanced 3D printing software solution designed specifically for radiation therapy. Full integration with existing TPS' and clinical workflows enables users to create patient-specific accessories on demand. Our solution provides the following advantages over traditional methods and alternative commercial solutions:

1. Improved treatment accuracy by reducing air gaps that cause underdose.
2. An integrated commercial solution that allows users to view the newly designed patient-specific applicator in their TPS to verify the plan prior to plan sign-off.
3. The only turnkey 3D printing software solution backed by a regulatory cleared QMS. Radiation therapy accessories are created on demand without the need for a highly dedicated staff skill-set or the assumed risk associated with use of multiple versions of open source software.
4. Adaptiiv's software facilitates and amalgamates multiple radiation therapy-specific post-processing features which saves time and eliminates the need for multiple versions of open source software.
5. Adaptiiv is an in-house solution that gives users greater control over commissioning and QA processes compared to external solutions used to design/fabricate medical accessories.
6. Reduced long term cost of fabrication with no shipping costs or delays in treatment when compared to outsourcing.