Planned Adaptive
Innovative change in radiation therapy

More than just an image...

• The TomoTherapy® Hi•Art System® combines on-board fan beam CT imaging with conformal radiation therapy for both optimal planning and precision in the treatment of cancer patients.

• With the ability to quickly and accurately calculate delivered dose on the daily CT, TomoTherapy Inc.’s Planned Adaptive software allows clinicians for the first time to do highly efficient quantitative analysis and modification of a patient’s treatment at any point during the treatment course.

• True Adaptive Radiation Therapy (ART) must come from a highly-integrated planning and delivery system. The TomoTherapy Hi•Art System was designed from the beginning with this evolutionary path in mind.
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In this example of an oropharyngeal case, both the right and left parotid glands move medially during the course of treatment, progressively over-lapping the high dose region, as seen by the rising dashed curves in the DVH three weeks into treatment.

TomoTherapy Inc.’s Adaptive Radiation Therapy (ART) takes image-guided radiation therapy (IGRT) one step further. True ART requires more than just accounting for anatomic movements by repositioning the patient. True ART demands clear analysis and precise adjustment of the treatment plan to account for changes over time—subtle changes in patient anatomy as well as tumor size and location that can have a significant impact on the delivered dose.

Stick to the Plan
With our innovative Planned Adaptive application, clinicians can monitor and maintain the originally prescribed treatment plan with each and every fraction. Patients lose weight, organs move relative to the tumor, and daily anatomical variations mean dose is not always distributed as planned. True ART may be as simple as comparing today’s delivered dose with the original planned dose, or as sophisticated as re-optimizing the plan to correct for higher accumulated dose in regions at risk due to patient weight loss.

A Forward-Thinking Foundation
TomoTherapy Inc.’s highly integrated tools make the evolution to ART a natural step. The single database stores information from both planning and delivery, making it easy to create and utilize new “hot” and “cold” dose structures. The MVCT images used for daily registration yield highly accurate density information that is well-suited for treatment planning, while the system’s robust dose isolation tools are designed to streamline the process of re-optimization. Our precise dose computation algorithm ensures dose accuracy throughout the treatment process.

High Accuracy, Every Day
Our revolutionary Planned Adaptive application makes it possible to analyze progress throughout the course of a patient’s treatment. The plan can be adapted to correct any unacceptable deviations, efficiently and effectively closing the loop in the adaptive radiotherapy process.

TomoTherapy Inc.’s Planned Adaptive: True ART from the first treatment to the last.

After three weeks of treatment a significant volume of both parotid glands are receiving a higher dose than the original plan due to patient weight loss.

After identifying new “hot” and “cold” regions, the treatment plan can be re-optimized to compensate for any unacceptable deviations.