PreciseART™
Adaptive Radiation Therapy Option

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PreciseART™ Adaptive Radiation Therapy Option

- Planning CT
- Planning Contours

Treatment Planning

Treatment Delivery
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- Planning CT
- Planning Contours
- Fan Beam MVCT
- Positional Shifts

Treatment Planning → Treatment Delivery

PreciseART

Accuray confidential.
PreciseART™ Adaptive Radiation Therapy Option

Automatically generates easy to read reports

- Daily Dose
- Cumulative Dose
- Dose Metrics
- Trending Data
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Efficiently monitor and adapt plans

Quantitative Images

Integrated Solution

Automated Workflow
Adaptive Radiotherapy with Integrity

Quantitative images

The Radixact™ Treatment Delivery System’s uniquely designed Fan Beam MVCT enables accurate dose calculations on the daily registration image.

- Fan Beam MVCT provides the integrity of Hounsfield units
- Common imaging and treatment isocenter on ring gantry eliminates need for imaging isocenter QA
- System automatically creates “merged” images
- Daily patient treatment shifts are incorporated in the adaptive software calculations

Integrated PreciseART™ Adaptive Radiation Therapy

Fully integrated adaptive solution

Integrated delivery and planning systems support the easy, efficient, and accurate monitoring of the effects of anatomical changes and generation of a modified treatment plan as necessary.

- Quantitative MVCT images enable accurate dose calculations using the daily registration image.

- Target and OAR statistics provide information on anatomical changes that occur over the course of treatment.

Reviewing the daily registration of a treatment planning CT and Fan Beam MVCT, we see anatomical changes have taken place.
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Automated and efficient

Automated features

- Deforms the planning VOIs onto the daily image
- Deforms and accumulates the daily dose on the treatment planning CT

Efficient evaluation

- Generates user-defined reports
- Flags the fraction for review if any delineated structure exceeds user-defined dose or dose-volume tolerances

Review the results of the daily dose (plan re-calculated on the MVCT with deformed contours) relative to the planned dose

The PreciseART™ Option provides the most pertinent information in an easy-to-review format, helping clinicians to determine when a new treatment plan needs to be created.
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Workflow-getting started
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Workflow - getting started

When a treatment plan is saved as “Deliverable” the patient can be enrolled in the adaptive process.

Patients can also be enrolled retrospectively which will automatically process all completed treatments.
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Workflow - dashboard

The dashboard enables quick review of each enrolled patient’s treatment and status of each delivered fraction.

**Patients**

**Fractions**

- **Green** = Fulfilled all user constraints
- **Yellow** = Marginal pass
- **Red** = Failed 1 or more constraints
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Automated and efficient

Click Workflows to evaluate dose and image registration
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Workflows - dose and registration review

Customizable daily summary report
- Daily dose statistics versus plan, trending data, volumes, dose (maximum, mean, V95, etc.) and treatment offsets

Daily registration review
- Evaluate the results of the daily MVCT registration

Daily dose review
- Treatment image with calculated dose and VOIs warped from the planning image and dose difference versus scaled plan

Cumulative and projected dose reviews
- Dose summed back to the planning KVCT with isodose curves, DVHs, dose statistics and dose difference compared to either scaled plan or projected plan
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Workflows - adapting the plan

If re-planning is indicated

• Create a new “adapted” plan utilizing original plan data mapped to a new treatment planning CT
  • Deform original plan contours
  • Use the plan template from original treatment plan to help efficiently develop the new adapted plan

Continue the adaptive monitoring workflow process

• Software accumulates dose across original and all new re-plans
Adaptive Radiotherapy with Integrity

Quantitative images

Summary

• Automated, offline adaptive dose monitoring

• Integrated solution in partnership with MIM:
  ‒ Accuray developed the deformation algorithm for warping dose and VOIs
  ‒ MIM Software Inc. provides tools for VOI and dose warping, and sophisticated reporting

• Fully automated computation of daily results:
  ‒ Dashboard
  ‒ PDF reports
  ‒ Interactive image viewers
Thank you