Overview of TG262 on Electronic Record Keeping & Clinical Experience with ARIA

March 7, 2016
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Chair, TG-262
Overview

• TG262 overview
• ARIA as an information repository
• ARIA as a workflow and communication manager
• ARIA connectivity and IT considerations
  – TPS integration
  – Linac integration
  – Hospital EMR integration
Sources

- TG262 internal survey
  - 2015 educational course
- TG201 rapid communication
- MSKCC physician survey
- MSKCC experience
- ARIA documentation
- Mechalakos J. Dieterich S., “Quality and the EMR in radiation oncology” from “Quality and Safety in Radiation Oncology”, Dicker, Williams, Ford, eds., Demos Medical Publishing- to be published


TG262 charges

• To provide guidance in the administration, design, and implementation of electronic charting for simulation, planning and treatment using external beam radiotherapy and brachytherapy.

• To provide guidance in maintaining safe clinical processes and communication when designing an electronic charting system - both during the transition to the new system and once the system is implemented.

• To provide guidance in implementation and management of electronic charting in the context of other systems in the clinic and other programs in the hospital (billing, IT, medical records).

• To provide a list of desired features for a robust electronic charting system and potential pitfalls based on accumulated clinical experience.
TG262 current work

- Internal survey - white paper in progress
- Groups
  - Implementation, training, and QA
  - Information repository- documents, forms, checklists
  - Workflow management and communication
  - IT considerations-connectivity
  - Brachytherapy and non-standard txt devices

ARIA as an information repository
ARIA as an information repository

• "The biggest challenge was where to document all the items that were documented in patient's treatment section of the paper chart." - TG262 internal survey
• Birds eye view
• Before treatment- H-EMR vs RO-EMR (ARIA)
• The prescription
• The treatment plan
• The treatment history
• The journal
• QA functions
Birds Eye View

- Appointments and Tasks
- Plans
- Reference Points
- Alerts for the therapist

Txt courses and diagnosis
### Dynamic Documents

#### ARQA - Patient Manager

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<table>
<thead>
<tr>
<th>Date of Service</th>
<th>Template Name</th>
<th>Document Type</th>
<th>Signed By</th>
<th>Approved By</th>
<th>Approved Date</th>
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<td>RIGHT BREAST</td>
<td>MD - Consent</td>
<td>MD</td>
<td>MD</td>
<td>06 AM</td>
</tr>
<tr>
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<td>RTT - Setup Doc</td>
<td>MD</td>
<td>MD</td>
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</tr>
<tr>
<td>09 AM</td>
<td>MD - Simulation Note</td>
<td>Sim Notes</td>
<td>MD</td>
<td>MD</td>
<td>09 AM</td>
</tr>
<tr>
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<td>MD - Prescription</td>
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<td>MD</td>
<td>10 AM</td>
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<td>MD</td>
<td>11 AM</td>
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<tr>
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<td>RIGHT AXILLA / UPPER CW</td>
<td>RTT - Daily Doc (02)</td>
<td>MD</td>
<td>MD</td>
<td>12 AM</td>
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<td>Sim Notes</td>
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<td>MD</td>
<td>MD</td>
<td>01 PM</td>
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<td>QA</td>
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<td>MD</td>
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<td>4 AM</td>
<td>EBR RT - RIGHT BREAST</td>
<td>QA</td>
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<td>QA</td>
<td>04 AM</td>
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<td>Physical QA</td>
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<td>14 AM</td>
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<td>DIBH FLOT</td>
<td>Setup Docs</td>
<td>MD</td>
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<td>15 AM</td>
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<tr>
<td>15 AM</td>
<td>PIC LEFT BREAST</td>
<td>Physics QA</td>
<td>MD</td>
<td>MD</td>
<td>15 AM</td>
</tr>
</tbody>
</table>
```

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Prescription

Document

Customizable

Inte grated
In your electronic chart policy, who is allowed to edit the prescription? (select all that apply)

- Attending physicians-11
- Resident physicians-6
- Physicists-7
- Dosimetrists-3
- Therapists-1

Approve?
- Attending physicians-11
Prescription workflow

- The tyranny of electronic approval
  - Move non-essential information
  - Use templates
- What if the prescription is changed?
  - Communication is vital between attending, machine, and physics but compliance isn’t 100%

Require concordance between timestamp reported in alert and Rx document timestamp
TG262 survey:

• How are modifications to the prescription managed?
  – A modification to the prescription automatically triggers a treatment hold until it is reapproved-4 (all MOSAIQ)
  – A modification to the prescription triggers a warning message but not a treatment hold-0
  – A modification to the prescription does not trigger a treatment hold.-7 (6 ARIA, 1 MOSAIQ)
“If a prescription which has been linked to a plan is edited, the treatment plan automatically reverts to a planing approved status so that the plan linked to the original prescription is not able to be treated without a revision.”

“ARIA 13.6 Prescribe Treatment Video”, available via myVarian website- document AI 13.6-VID-04-A
How effective is the OIS for QA?

<table>
<thead>
<tr>
<th>QA Functions</th>
<th>Importance</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forcing functions and constraints (e.g. interlocks)</td>
<td>4.3</td>
<td>2.3</td>
</tr>
<tr>
<td>Automation and computerization (templates, indexing, statistical process control features)</td>
<td>4.2</td>
<td>2.5</td>
</tr>
<tr>
<td>Protocols, standards and information (e.g. checklists, communication)</td>
<td>3.9</td>
<td>2.5</td>
</tr>
<tr>
<td>Independent double check systems (e.g. ease of performing physics QA)</td>
<td>4.1</td>
<td>2.5</td>
</tr>
<tr>
<td>Rules and policies (e.g. scheduling assistants)</td>
<td>3.6</td>
<td>2.6</td>
</tr>
<tr>
<td>Education (i.e. build in policies, help features)</td>
<td>3.4</td>
<td>2.3</td>
</tr>
</tbody>
</table>


https://www.ismp.org/newsletters/acuteCare/articles/19990602.asp
Plan documentation

- Cover sheet
- Plan, algorithm, ref pt info
- DVH info
- Ind. MU
Plan approval

Plan Checker

Attending

Planner
“There are some infrequent instances where the communication is dropped between the delivery system and the RO e-chart system. If this is not discovered on time, there is the potential to treat the patient for another fraction. We have processes in place to avoid this issue.” – TG262 survey

“Clinics should have policies and procedures in place to handle treatments that are interrupted by network or software problems” – TG201 rapid communication

The journal

- It is an easy way to document planning, QA or treatment related items or notes
- Anything that would have been written as a note in the paper chart - for example setup checks, early txt completion, etc
- For everything that we have not found a good place for
- Admin. or nursing use as a communication note section
QA documents

- Dynamic document
- Questionnaire
- ARIA checklist
Questionnaires

• ARIA users- do you use questionnaires?
  – Yes (Please explain how) 5
    • document initial chart check
    • for time out before tx, sbrt rounds,pacemakers, hdr audits, theraspheres, eyeplaque for second checks, sim check list, srs pre treatment qa and weekly physics checks.
    • tried to, only one that stuck was resident chart round tasks
    • EOT
    • It is useful to standardize the input of information and also since it is structured data, this information can be queried and use for future data gathering and analysis for outcomes.
Weekly checks

Can use a checklist (ARIA checklist, ARIA questionnaire or document)
ARIA as a workflow and communication manager
ARIA as a workflow and communication manager

• Bird’s eye view
• TG-262 workflow issues
• Physician workflow issues
• TG262 communication issues
• Physician communication issues
Care path, activities specific to patient

Simulation

Ad hoc task and appt

Treatment Planning
Pending - It’s not time yet, all the tasks before have not been completed or cancelled
Available - I’m ready when you are
In progress - being worked on
Completed - done
Cancelled - self explanatory
Design linked care paths with workflow and compliance in mind

Electronic task based workflow is difficult to use and often ignored by physicians—simplification and ongoing education needed—TG262 survey

Separate low compliance tasks from the main flow.
Generic Users

Used to keep track of tasks associated with rotating responsibilities such as EOT- rather than assigning to a specific person, it is assigned to a generic ID and users on that rotation monitor for that generic ID.
Ad Hoc tasks

MD approval tasks
- Sends the message
- Hyperlinks for navigation

For documentation issues
- For on-call cases
- For emergent planned cases

Alerts planning teams
- For replans due to chart rounds
- Alerts therapist/physics to acquire/review pt specific QA
- For cases exceeding standard dose constraints
- For late volumes, issues causing loss of planning time
Physician carepath comments

- Filters not set properly - miss tasks
- Task completion is manual
  - Seen by many as redundant - completing the activity should complete the task
  - Sometimes causes confusion, for example plan approval task appears after plan has been approved (“carepath should be updated instantly”)
  - Volumes, plan approval, prescription task not autocompeted, either an issue completing or forgot
  - More tasks like physics weekly which can autogenerate a task via data administration
- More annotation requested in task note
  - Multiple sites/multiple tasks - use the note more
- Due dates must be managed if they are to be respected (tasks without due dates are like “looking at the sky and waiting for a comet”)
- System does not work well for covering attendings - “when someone is covering for me, I get the task and the covering gets the email”
TG262 and MD comments on communication

- Are there common failure/near-missed events relating to communication using the electronic chart? If so please specify.
  - A task based workflow has holes, email vs task an ongoing issue
    - Email vs task
      - People split 50/50
      - Email group visits ARIA less frequently
      - Task group gets too many emails
    - multiple forms of communication lead to message not reaching RTTs-
      - 80% email creates expectation of 100% email
      - Covering attendings sometimes get mixed messages
    - Not enough communication/human interaction since we went electronic.
      - One TG262 site has a planner/physician plan review checklist that must be reviewed together
ARIA Integration and Connectivity
Hospital EMR Integration

- Hospital EMR
- RO Init Consult
- RO Status check
- Review of systems
- Pathology, etc

- ARIA
  - Sim order
  - Prescription
ARIA integration with planning systems

- Eclipse/ARIA integration
  - Pros - no data transfers
  - Cons -
    - minor non-dosimetric changes affect the signed plan
  - Concurrent users
- There may still be manual entry of some items such as bolus thickness - it is advised to make these manual entry items part of a checklist

ARIA integration with planning systems

- External planning system integration- some recommendations from TG201:
  - Workflow should include checkpoints at all data exchange interfaces.
  - Perform pt specific verification of treatment parameters in the txt database prior to approval. This ideally includes all control points.
  - CIAO doesn’t chk all control points
  - Manually entered items should be in a checklist
  - Data transfer should be checked after software upgrades using benchmark cases
  - An independent review is required when the prescription is changed after the plan is entered into the system

## Changes that can be made to a txt approved plan - v13

From “ARIA 13.0 Treatment Preparation Workbook”, p110-112, available at my.varian.com

### Non-Dosimetric Data change for Treatment Approved plan with Advanced Feature Set OFF

<table>
<thead>
<tr>
<th>Treatment Preparation Workspace</th>
<th>Parameters Workspace</th>
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<tbody>
<tr>
<td>Couch Vrt, Lat, and Lng can be edited</td>
<td>No edits possible</td>
</tr>
<tr>
<td>Setup Notes can be edited or deleted; and added</td>
<td>No edits possible</td>
</tr>
<tr>
<td>Dosimetrically Equivalent Machine can be added</td>
<td></td>
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<tr>
<td>Reschedule Treatment Session or Imaging</td>
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</table>

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<tr>
<td>Setup Notes can be edited or deleted; and added</td>
<td>Setup Notes &amp; photos can be added, edited, deleted</td>
</tr>
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### Non-Dosimetric Data change for Planning Approved plan; No History; Advanced Feature Set OFF

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<thead>
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<tr>
<td>Couch Vrt, Lat, Lng can be edited</td>
<td>Field IDs and names</td>
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<td>Couch Imager Position can be edited</td>
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<td>Delta Couch Shifts can be edited or added</td>
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<tr>
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<tr>
<td>Setup Fields can be added or edited</td>
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</tr>
<tr>
<td>Gating Flag can be selected</td>
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### Non-Dosimetric Data changes for Planning Approved Plan; No History; Advanced Feature Set ON

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Thank you!