

Maintaining Safety and Quality for Electronic Medical Records in Radiation Oncology

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Learning Objectives

- Define the functions of a paper chart
- Identify the equivalent functions in an electronic medical record (EMR) system
- Learn which tools are available to supplement EMR functions
- *Disclaimer: I am showing examples in EPIC & ARIA because these are in use at Stanford. This is not to be interpreted as commercial endorsement.

Chart Function I: Information Repository



Information about patient

CATEGORIZED information about patient!

EMR needs functions to store information for easy retrieval (search functions)

Chart Function I: Information Repository

- 1st EPIC implementation:
 - Notes (e.g. weekly, Tx summary, consult, ...)
 - Media (outside records, consent forms ...)
- Consequences:
 - Non-compliance
 - Wasted time
 - Safety risk
- Lesson learned: **Develop good filing system!**

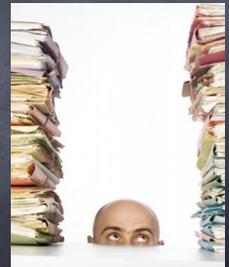


Chart Function II: Checklist

- MD signatures
- Physics 2nd/weekly check
- How many Tx have been given
- CBCT frequency
- Bolus BID?
- Path/Consent/Staging



Chart Function II: Checklist, Paperless

- Checklists (Questionnaires)
- Questions, responses and timestamps all stored in DB

•Visibility?

•Check of list

1st Day of Treatment

M.C.

Yes No

Block

Yes No

- Check MUs
- Check field parameters
- Treatment field energies
- Field Port/IGRT/Electron Photo Images Taken
- Take and Input Treatment Field Photos into AR1A
- Physicians Intent Reviewed by Attending
- Consent Signed

Chart Rounds

Stanford Pathology

Yes No N/A

Staging sheet

Yes No N/A

- Radiation therapy treatment consent
- Radiation therapy treatment summary

Chart Function II: Checklist, Paperless

Sam Brain, PhD:

- Perl
- 14 production programs,
- ~20k lines of code
- Alerts via e-mail
- Run daily, weekly, monthly
- Linux platform

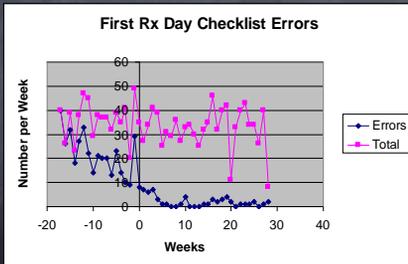


Chart Function II: Checklist, Paperless

Checks of checklists:

- Prescription Written
- Isodose Plan and 2nd Check
- Chart Rounds QA Checklist
- First Treatment Day QA Checklist

Chart Function II: Checklist, Paperless



Checks of checklists works! Efficient?

Chart Function III: Workflow Task

- Chart on your desk -> expectation to *act* on it
- Visualizes workflow hold-up
- Helps prioritize

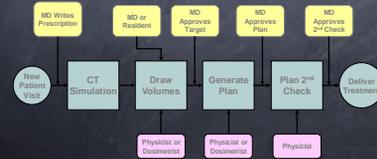


Chart Function III: Communication

- Information and communication are different!
- E.g.: Conedown plan without bolus
- *Information* is in the plan
- *Communication* to RTT to remove bolus taped on mask?
- **Lesson learned:** Defining and improving how critical information gets conveyed.
- !!! EMR systems have multiple communication channels!!!



Chart Function IV: Workflow Task

- ARIA tasks for:
 - Plan assignment
 - 3D/IMRT plan
 - QA measurement
 - 2nd check
- Email/page for contouring, plan approval
 - Lack of ARIA access in clinic
 - Functionality not available in EPIC

Parallel Charting Systems

- Larger hospital
- ARIA does not have functionality for inpatient workflow & needs
- Hospital system does not have function for Rad Onc flow & needs
- Stanford:
 - ARIA in Rad Inc
 - EPIC in Stanford Hospital
 - Cerner for Lucille Packard Children's Hospital



Parallel Charting Systems

- Need information flow between systems
- HL7 interface /IHE efforts
- Which interfaces needed:
 - Billing
 - Scheduling
 - Documentation
- Which patient information goes where?
- Budgeting/maintenance of interface install



Summary

- Electronic charts will be in your future
- Great potential for workflow, communication, patient education
- 50 years of paper charts means built-in safety systems
- New safety systems have to be created

•Physicists:
central in workflow
IT skills
understand RadOnc

