

Patient Safety Use Case

- 1) Patient's plan is created by Planner in the Treatment planning system (TPS). and reviewed and approved on screen by Physician.
- 2) Plan file is exported to EMR and second calculation check done (eg. MUCheck/ Radcalc).
- 3) Plan is checked by medical physicist.
- 4) IMRT plan is verified in phantom using a variety of methods (based on institutional preference) for comparison of planned dose vs delivered dose prior to patient treatment.

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- 6) Treatment data is verified on screen by therapist.
- 7) Partway through treatment after x of 25 fractions a change is made to the plan and approved on TPS screen by physician. However, the first machine is down so the plan is transferred to another machine. It is exported, but the new QA is not completed before treatment.
- 8) Error with the data transfer of the second plan occurs (e.g. Incomplete transfer of complex plan data).
- 9) Patient is overdosed due to lack of transfer of the MLC data in the plan that was not detected.

Potential Solutions

- EMR should have a transfer completeness check
- Machine characterization check for deliverability of incoming plans
- Default certain imported plan types (eg IMRT) as hidden/undeliverable until appropriate user approved (eg. Physicist/physician) .
- For 3D IGRT (e.g. cone beam), a flag could be raised if off -center plan isocentre necessitates couch motion to image the patient volume safely

Issues for Discussion

- Variability of training: global and even national training standards of users acting in radiation therapist and physicist roles vary.
- Increasing reliance on technology: users are more trusting that technology will work without allowing mistreatment due to shift from 'mechanized tool mindset' to faith in increased intelligence within devices used daily (mobile phones, cars)
- MLC not transferred but only the field size- should they be linked to avoid this in the future?