

Design and development of a novel infrastructure to securely share radiation therapy and imaging data through direct patient data sharing

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Introduction

Who needs healthcare data?

- Patients want to be informed about their care.
- Researchers and clinicians need access to complete patient data.

Results – Research Menu

Studies: Receive study invitations from researchers, which include a study description, researcher contact information and a consent form.

Results – Radiotherapy Menu

Plan Description: Personalized radiotherapy plan description based on treatment parameters. \rightarrow Accordion menus show details about patient-specific treatment set-up, beams,

Problem:

Healthcare data are difficult to access because they are spread out and legally protected.

Objective

Build a data donation platform to empower radiotherapy patients to participate in research. Specifically:

Recruit patients via a Research menu. Give patients their radiotherapy data in an educational manner.

Methodology

- Research and radiotherapy menus were built into the **Opal patient portal app** used at our centre [1].
- Participatory stakeholder co-design methodology was used to ensure an engaging design [2].

- **Reference Material:** View educational material, study updates and results from researchers.
- **Questionnaires:** Answer questionnaires for studies sent by researchers.
- **Consent Forms:** Sign electronic consent forms with Opal app password to enroll in studies.

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- breathing techniques and radiation dose.
- **3D View:** Interactive 3D rendering of a patient's body and treatment beams.
 - \rightarrow Zoom, rotate and pan touch gestures.
 - \rightarrow Skin affected by radiation is highlighted.
 - \rightarrow Each beam can be viewed individually.

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Radiotherapy	Radiotherapy		
Description 3D View	Description 3D View		
Your Radiotherapy Plan On this page you will find details about your radiotherapy treatment plan, which has been carefully put together for you based on your CT scan and your specific disease	Helow is a 3D view of your body from your CT scan and the beams of radiation you will receive during treatment. Beams displayed: 1 2 3 4 5 6		
characteristics. The treatment will be repeated over 16 sessions.			

Contextualizing treatment plans: 1) Treatment parameters were extracted from *DICOM-RT PLAN* files and mapped to appropriate explanatory text.



- Beam data were extracted from DICOM-RT PLAN files and reconstructed in 3D.
- 3) Body contour data were extracted from DICOM-RT STRUCT files and an algorithm was created to triangulate the



Fig. 1: Screenshots of the Research menu and a sample study.

Discussion & Conclusions

Access to explained treatment plans has the potential to reduce patient anxiety and increase willingness to share data with researchers.

Library Account

General

- Researchers will be able to more easily recruit patients for their studies.
- By prioritizing patient education and access to data, our platform



Fig. 2: Screenshots of a radiotherapy plan's personalized description and interactive 3D render.

Acknowledgements



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Award for Innovation





fosters an important sense of trust between the patient and

researcher that will empower patients to contribute to research.

[1] Opal Med Apps. URL: <u>opalmedaps.com</u>. References

[2] J. Kildea et al. DOI: <u>10.2196/11371</u>



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