

## **Project Title**

Care Redesign of Pelvic Image Guided Radiotherapy using Design Thinking

## **Project Lead and Members**

Project lead: Francis Ho Cho Hao, Consultant

Project members:

- David Chia, Consultant
- Jeremy Tey, Senior Consultant
- Ooi Kiat Huat, Consultant
- Tan Teng Hwee, Registrar
- Chiau Ye Lin, Senior Staff Nurse
- Mohammed Hafiz Ahmad Fuad, Senior Radiotherapist
- Dr Diana Ramos Santos, Senior Manager

## **Organisation(s) Involved**

National University Cancer Institute, Singapore (at Tan Tock Seng Hospital)

## **Project Period**

Start date: Sep 2016

Completed date: Ongoing

## **Aims**

To improve the experience of patients undergoing pelvic radiotherapy

## **Background**

See attached

## **Methods**

See attached

## **Results** (see attached for more)

- A significant decrease in unplanned CBCT
- Each patient now receives 6 less CBCT, which is equivalent to 3,000 chest X rays per patient saved and the average throughput time is reduced by 159 minutes.
- Staff only take 3.5 minutes to complete the bladder scan, as opposed to 15 min of CBCT.
- The considerable reduction in manhour and unplanned CBCT have also created 321 new RT slots.
- As patients no longer have to spend longer waiting time undergoing unplanned CBCT in radiotherapy centre, patient's experience has greatly improved.

## **Lessons Learnt**

- Traditionally, we have used the Cone Beam Computerised Tomography (CBCT) as form of verifying bladder filling in the radiotherapy treatment of our patients with pelvic cancer. This is because our radiotherapy machines have the capability to accurately assess bladder filling. This is still an essential step in Radiotherapy treatment because the CBCT also ensures that the tumour targeted is within the radiotherapy field. However the CBCT becomes a highly inefficient process when it is repeated for simply inadequate bladder filling 80% of the time. In order to save the precious radiotherapy machine time, staff time, we have gone in a scientific fashion to address this problem with rigorous methodology. Using the CPIP methodology, we correctly identified the root cause to our problem. However, the key of our success was the identification and implementation of readily available technology in the form of the automated bladder scanner to solve our problem. We chose to innovate the use of the bladder scanner for non traditional indications. The bladder scanner has been used routinely in the inpatient setting of assessing urine volume in patients with bladder issues. Although the bladder scanner is not as accurate as the cone beam CT, it served as a very successful screen for the bladder fullness which is critical to establish prior to pelvic radiotherapy.

- 6 months on, the unplanned CBCT remains below 5%, just one quarter of previous rates. The outcome of this project has also justified the purchase of this bladder scanner in our department. We have since also made this a new standard of care for all patients who are undergoing pelvic radiation to undergo bladder scanning.

## **Conclusion**

This project showcase how design thinking can be an integral part of quality improvement in Singapore healthcare.

## **Additional Information**

Design Thinking is a proven methodology is solving problems and innovation in many other industries. In healthcare, it is in its infancy stage. We hope with this project to showcase the capabilities of design thinking in care redesign and improving the quality of care delivered to our patients. We believe that this methodology is translatable and scalable to other specialties in medicine and it can have a significant impact without costing a bomb.

## **Project Category**

Care Redesign

## **Keywords**

Care Redesign, Quality Improvement, Improvement Tool, Design Thinking, Patient Journey Mapping, Patient Experience, Radiology, Oncology, Cost Savings, Time Savings, Safe Care, Waiting Time, National University Cancer Institute, Pelvic Cancer, Pelvic Radiotherapy, Cone Beam Computerised Tomography, Bladder Filling, Radiation Exposure

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