Improving Performance in Quality Assurance using Automation to Translate Breast X-Ray Simulation Note into Mosaiq (Radiation Oncology Information System) Radiation Treatment Field Setup.

Singapore Healthcare Management 2017

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INTRODUCTION

Before breast radiation therapy begins, the patient will undergo an X-Ray simulation process. Her body will be positioned on a breast board and leg immobilizer.

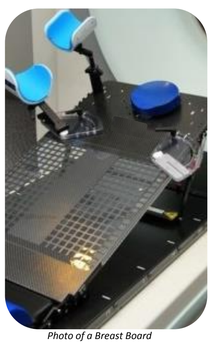


Photo of a Breast Board

Arm positioning like raising the affected side only or both arms are determined by a multitude of factors such as patient's arm mobility, comfort level, treatment technique, disease site and extent. These important simulation information are documented in Mosaiq as Simulation Note.

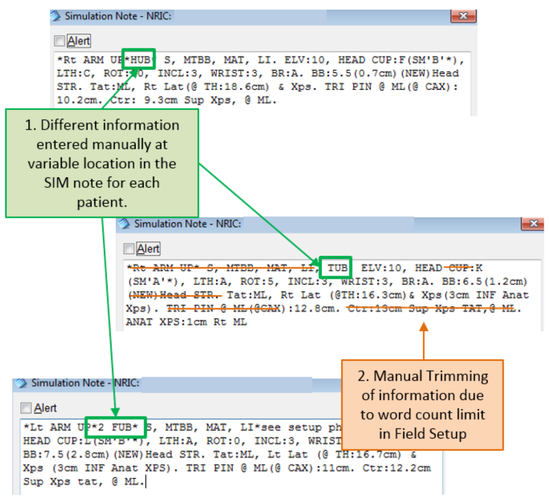
Simulation → Treatment Planning → Quality Assurance

After simulation, the patient's radiation treatment is planned using simulation data. The treatment plan then goes through Quality Assurance (QA) checks before approval for use. Part of the time consuming QA process involves manually merging the simulation note with treatment plan into the radiation treatment field setup. The author designed an algorithm to automate and improve this QA process.

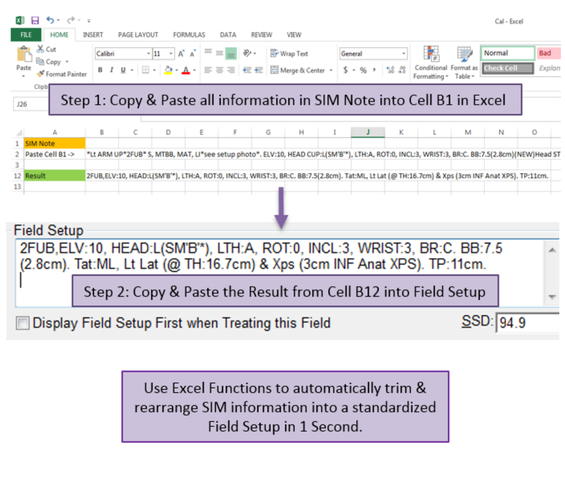
METHODOLOGY

Breast X-Ray Simulation Note translations into Radiation Treatment Field Setup are done manually by the Radiation Therapists using computer. Human factors and different levels of experience by the Radiation Therapists performing this QA process results in varying degree of accuracy and speed.

Before



After



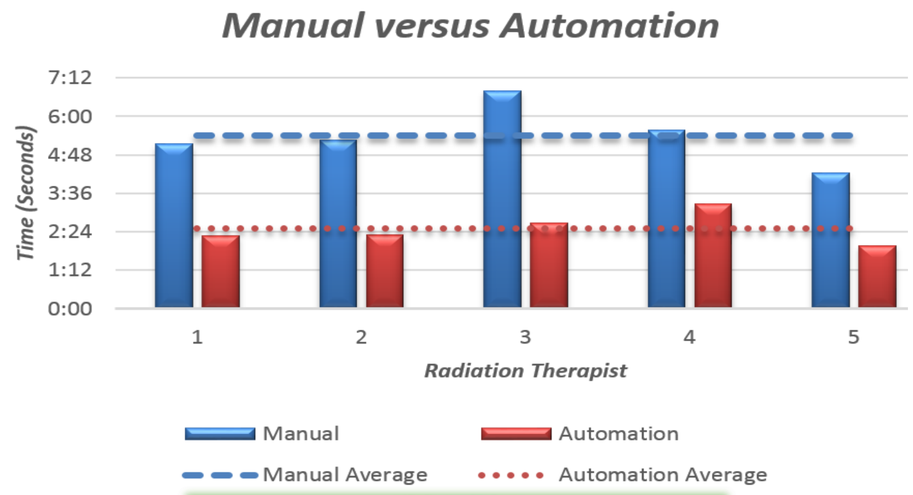
A Microsoft (MS) Excel spreadsheet was programmed using Advance Functions to automate part of this manual process. The times taken by 5 different Radiation Therapists are recorded before and after using this MS Excel spread sheet to measure their speed for comparisons.

AIM

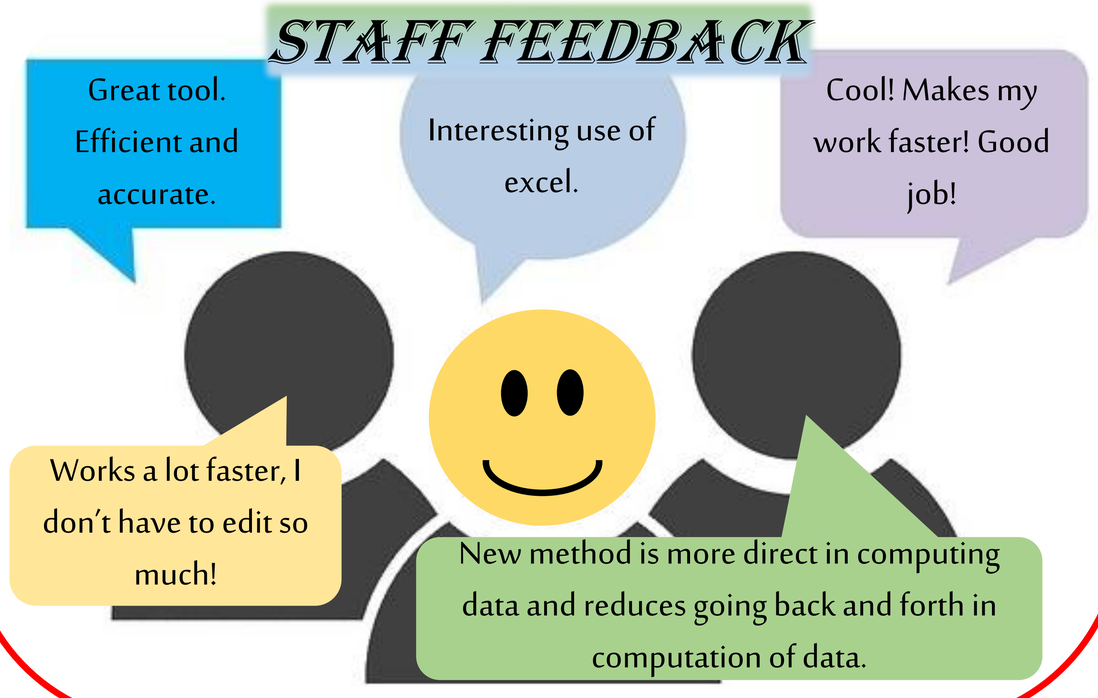
To reduce the time taken to perform Quality Assurance for Breast X-ray Simulation Note translation into Mosaiq Treatment Field Setup by 50%.

RESULTS

The average speed of X-Ray Simulation Note translation was 5.4 minutes before, and 2.5 minutes after using the MS Excel spread sheet. An average reduction of 2.9 minutes was observed.



STAFF FEEDBACK



CONCLUSION

A speed improvement of 54% is achieved using automation. The Radiation Therapists reported more confidence, efficiency and accuracy in performing QA for X-Ray Simulation Note translation using this new MS Excel spreadsheet.

The Division of Radiation Oncology treats about 750 breast cases per year. This translates to a savings of approximately 4.5 working days per annum from performing this QA process.

This algorithm will be evaluated for potential use in improving the performance of QA processes for other disease sites.