TOWARDS ZERO HARM

The Digital Briefing Checklist

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Introduction

Radiation Therapists (RT) have a list of checks for each patient prior to the start of any radiation treatment. These checks are carried out with a paper-based briefing checklist (P-BC). The information from the checklist can either be incorrect or be a contraindication to the start of treatment due to various factors. We observed that the current practice of using P-BC was inadequate to fully stop errors. This checklist is used at three crucial points throughout the patient's radiotherapy journey (in order): CT simulation, Treatment and Follow Up. We decided to embark on a paper-less journey in this aspect with safety as our priority.

Aim

Target ZERO HARM by eliminating manual transfer of patient data seamlessly.

A: Determine significant contributors to Risk Priority Number (RPN)

B: Eliminate errors and reduce RPN

Methods

1. Failure Modes & Effects Analysis (Table 1)

Conducted by RTs from simulation and treatment units, Identify areas of risk with P-BC, causes and determine recommended action

Failure Mode Effects Analysis

Potential Failure Mode	Potential Failure Effects	Severity (SEV)	Potential Causes	*Occurrences (OCC)	Detection (DET)	**Risk Priority Number (RPN)**	Current Process Controls	**Recommended Actions**
Checking if the patient is pregnant.	Irradiating the fetus	10	careless, lack of knowledge	2	4	80	Verbal checks	**Digital checklist**
Check if patient has fasted	Patient choking on vomit if there is a reaction	10	careless	1	1	10	Verbal checks	**Digital checklist**
Check if creatinine serum results are valid	Kidney failure, severe allergic reactions	8	lack of knowledge, complex, multiple factors	9	7	**504**	Senior staff verifies	**Digital checklist**

Table 1. Failure modes and effects analysis of P-BC

2. Create Logic Based Digital Briefing Checklist (D-BC) for CT Simulation (Figure 1)

Draft logic workflow focusing on one treatment site (Breast) and aspect (CT Simulation), determine areas of automation, red-flag errors and inconsistencies in information, transfer information to digital briefing checklist

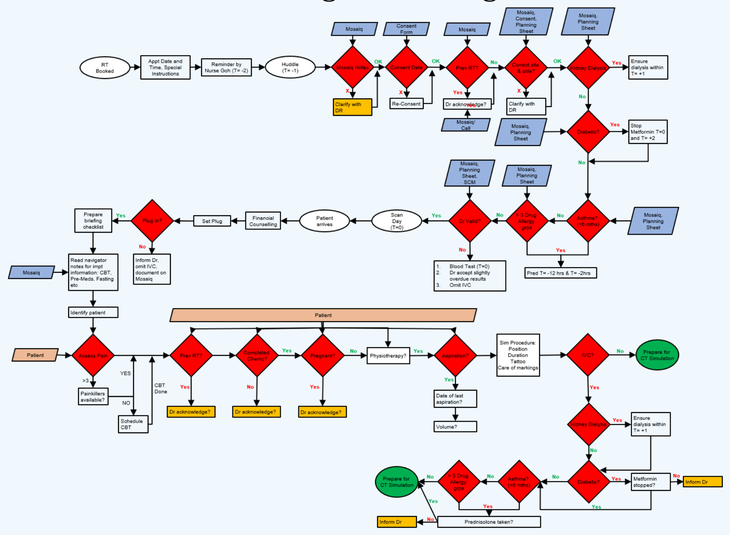
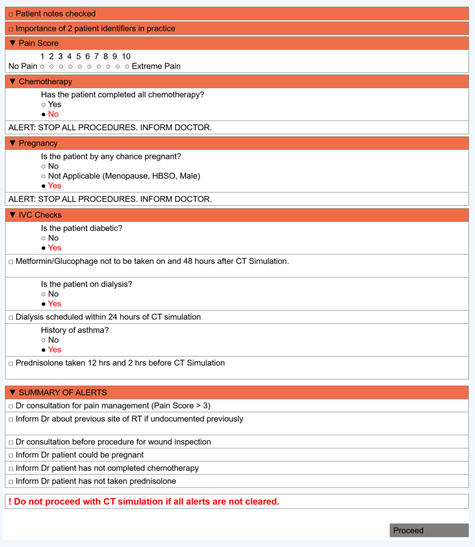


Figure 1. Process map of preparing for breast CT Simulation

3. Validate D-BC

Conducted 6 cycles of validation over a period of 3 months to ensure red-flags are highlighted and information is consistent throughout.



Picture 1. Sample of D-BC during validation phase

4. Pilot Test

Conducted pilot test for 4 weeks at the CT Simulation unit (the first point of contact between RT and patient).

This consisted of 2 weeks P-BC briefing (control group) and 2 weeks D-BC briefing.

This involved 2 RTs (RT A with 1 year experience and RT B with 5 years experience).

An independent RT (8 years experience) will detect, rectify, recorded errors for both P-BC and D-BC.

A post D-BC FMEA was analysed.

Results

A: Significant Contributors to RPN:

RANK	FAILURE MODE	RPN	OCC
1	Check creatinine results validity	504	60%
2	Check if patient is pregnant	80	13.3%

The initial P-BC FMEA (Table 1) revealed that the largest contribution to RPN was failure to check validity of creatinine results with a greater occurrence coming from the less experience RT (RT A=7, RT B=2). The other significant contribution was failure to check if patient was pregnant. Although it only occurred 13.3% (2 out of 15 patients, RT A=2) of the time, the harm caused would have been catastrophic.

B: FMEA Post D-BC (Figure 2)

FAILURE MODE	RPN	OCC
Check creatinine results validity	0	0
Check if patient is pregnant	0	0

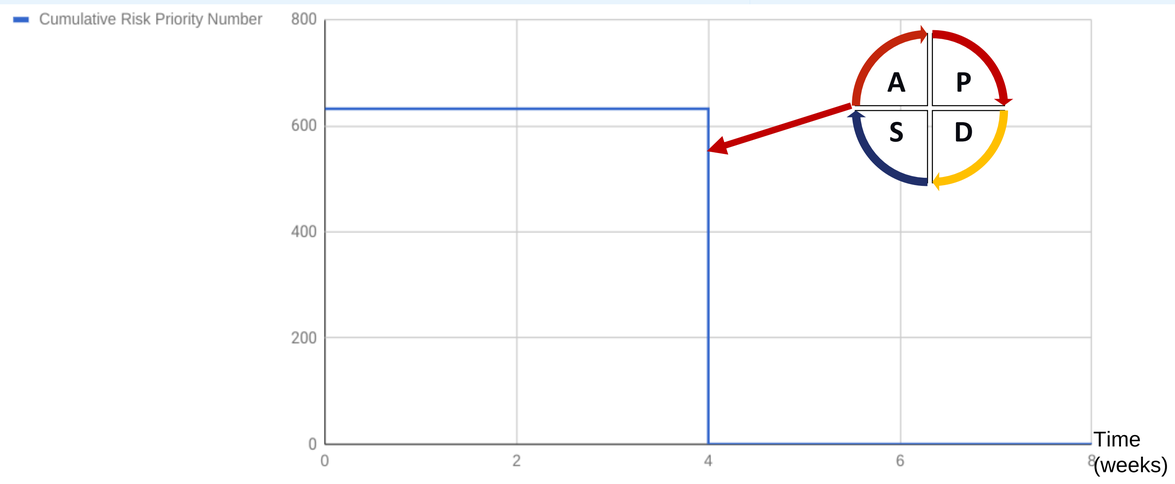


Figure 2. Graph of cumulative RPN against Time (Weeks)

Post D-BC, another FMEA was conducted and revealed that error occurrences and RPN dropped to ZERO for the two highest ranking failure mode detected in Part A.

Future

While the new digital briefing checklist was created with an approved program by the department, it is still in the testing phase and therefore has several limitations. Hence, this has not been rolled out completely to other treatment sites and other aspects of the briefing checklist.

The team is currently looking to improve the digital briefing checklist so as to provide a seamless transfer of information between our treatment information systems which will further enhance our project's aim – targeting zero harm. The results from this study acts as a major stepping stone for us to achieve our aim.

Conclusion

The creation of a logic-based digital briefing checklist allows us to achieve zero harm.