

Increasing availability of Gynaecological brachytherapy appointments by 25%

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INTRODUCTION

BACKGROUND

Brachytherapy is a very specialised and complex radiation treatment procedure that requires an undivided attention from each member of the brachytherapy team. The brachytherapy team in the Department of Radiation Oncology (DRO) consists of a Radiation Oncologist (RO), Radiation Therapists (RTs), Oncology Nurse and Radiation Physicist.

CURRENT SITUATION

Brachytherapy is an essential part of the treatment regime for Gynaecological patients after External Beam Radiation Treatment and/or surgery. Hence, gynaecological patients forms the main bulk of brachytherapy cases treated in DRO with occasional cases of prostate and neck implants.

PROJECT SELECTION

A PROBLEM WORTH SOLVING

"High seasons" patient load usually results in a long waiting time for Gynaecological patients requiring brachytherapy alone after surgery (vault brachytherapy) which will compromise on the radiobiological effectiveness

REASONS FOR PROJECT SELECTION

- To anticipate the increasing number of gynecological patients who require brachytherapy as part of their treatment regime.
- To better manage "high seasons" patient load.

MISSION STATEMENT

To increase the number of daily Gynaecological Brachytherapy cases by 25% in 6 months.

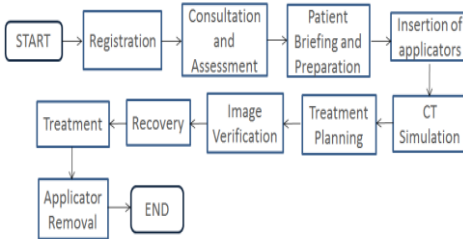
METHODOLOGY

STAGE 1 - TEAM FORMATION

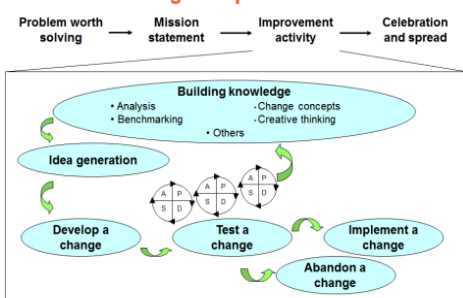
TEAM Leader and Members

S/No	Name	Designation	Role Descriptions	Type of Task & Level of Involvement
1	Yusnita Omar	Assistant Manager of Radiation Oncology	Leader	Ad-hoc Member
2	Nur Farhanah	Radiation Therapist	2 nd leader	Core Member
3	Jeannie Lin	Radiation Therapist	Core Member	
4	Huang Huishan	Senior Radiation Therapist	Core Member	
5	Estella Au	Radiation Therapist	Ad-hoc Member	
6	Jorene Liew	Senior Staff Nurse	Core Member	
7	Dr Yap Swee Peng	Senior Consultant	Core Member	
8	Foo Yong Wee	Radiation Physicist	Ad-hoc member	

STAGE 2 – UNDERSTANDING CURRENT SITUATION



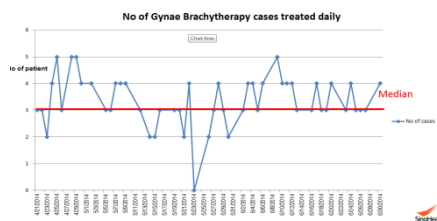
Problem Solving & Improvement Framework



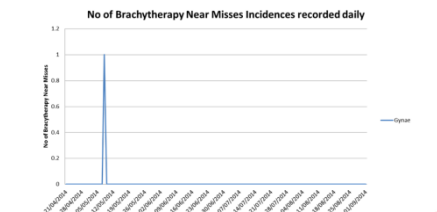
Adapted from Langley, Moen, Nolan, et al The Improvement Guide, 2nd Ed. Jossey-Bass

BUILDING KNOWLEDGE – BASELINE DATA

Baseline data,
Collected data for the number of Gynae brachytherapy cases treated daily from 21st April till 30th June in NCCS, Department of Radiation Oncology

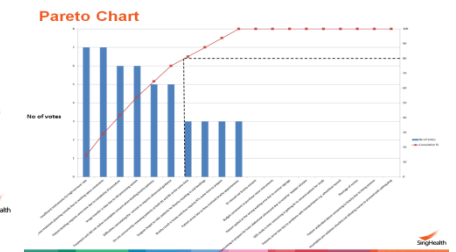


Baseline data for balancing concern,
Collected data for the number of Brachytherapy near misses incidences daily from 21st April till 30th June in NCCS, Department of Radiation Oncology



STAGE 3 – PRIORITISING OF CAUSES AFTER IDENTIFYING IT USING PARETO CHART

Problem Statement: Insufficient slots daily for Gynae Brachytherapy patients
Categories: Process, Manpower/Resources, Environment, Others and patient related



6 causes voted

Cumulative percentages calculated.
80% cutoff identified.

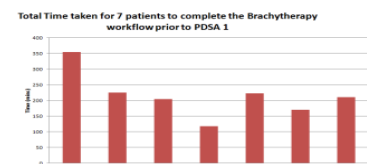
- 6 vital causes were focused on
- Insufficient Instruments for high turnover rate
- Only one treatment planning console due to working space constraints
- Patient briefing requires some time due to complexity of procedure
- Treatment unit did not realise incomplete consent when briefing brachytherapy patients
- Image transfer is slow due to old processing system
- Patient's veins is difficult to cannulate for set plug

APPLYING PLAN → DO → STUDY → ACT (PDSA)

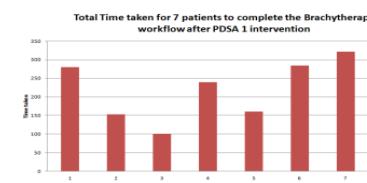
PDSA 1

To brief patients undergoing external beam radiation therapy in advance before 1st day of brachytherapy.

Before PDSA 1(23 July to 7 Aug)



After PDSA 1(7 Aug to 19 Aug)

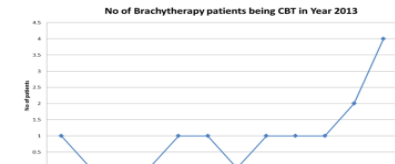


From the results after PDSA 1, we deduced that there is no significant reduction in the total procedural time.

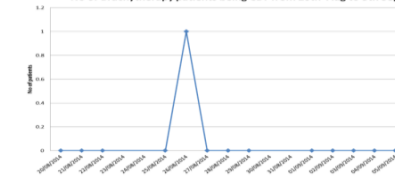
PDSA 2

To ensure all brachytherapy consent are completed at least 1 week in advance.

Before PDSA 2. Baseline data
Collected data for the number of brachytherapy patients being CBT in year 2013 in NCCS, Department of Radiation Oncology



After PDSA 2 (20th Aug to 5th Sept)

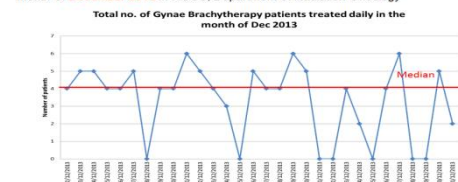


With the results from PDSA 2, we deduced that there is no significant reduction in the total procedural time. Thus, does not significantly reduce the "SEE BEFORE TREATMENT" consent.

PDSA 3

We look at the Data over the month of December in 2013 last year where we treated more than 4 patient. We analyze the combination of Brachytherapy cases, simple vs complex. We collate the Data for the Balancing Concern during those period and we asked ourselves this question : "Is there a formula that we applied for those 1 month ?"

Baseline data,
Collected data for the number of Gynae brachytherapy cases treated daily for the month of December 2013 in NCCS, Department of Radiation Oncology

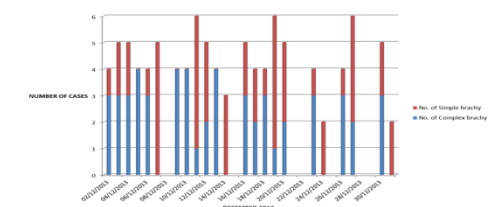


Baseline data for balancing concern,
Collected data for the number of Brachytherapy near misses incidences daily for the month of December 2013 in NCCS, Department of Radiation Oncology



Data analysis

Combination of Simple and Complex Brachytherapy patients treated in the month of December 2013



Data analysis for December 2013

Date	Total no. of cases	No. of gynae patients	No. of Complex brachy	No. of Single brachy	Open lunch?	Time down/turnover	Overturn (min)	Additional nurse to cover 1 hour lunch
21/12/2013	4	4	1	3	2.5	15.00PM	77%	
22/12/2013	3	3	1	2	2.5	1.00PM	40%	
23/12/2013	4	4	1	3	2.5	1.00PM	25%	
24/12/2013	4	4	1	3	2.5	1.00PM	18%	
25/12/2013	4	4	1	3	2.5	1.00PM	18%	
26/12/2013	4	4	1	3	2.5	1.00PM	18%	
27/12/2013	4	4	1	3	2.5	1.00PM	18%	
28/12/2013	4	4	1	3	2.5	1.00PM	18%	
29/12/2013	4	4	1	3	2.5	1.00PM	18%	
30/12/2013	4	4	1	3	2.5	1.00PM	18%	
31/12/2013	4	4	1	3	2.5	1.00PM	18%	

RESULTS

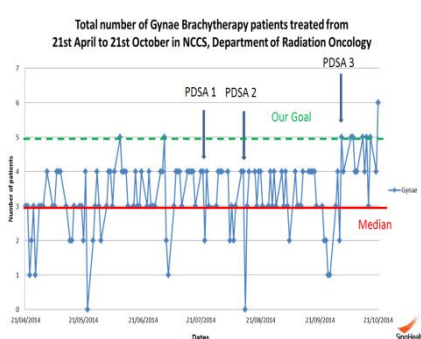
Interventions : Generating, Testing & Implementing

We learnt from analyzing the previous data that we have collated from December 2013. The Brachy team sat down and look through the bookings from 7th October to 21st October. The date that we have put aside to try out the intervention.

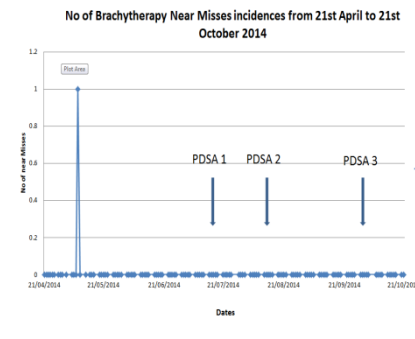
We briefed the Nurses, Radiation Oncologist, Physicist and the management team in the department to prepare them for this period that we have identified. We look through each cases to identify the combination of its complexity to achieve our goal.



Results after the 3 PDSA Cycle



Results after the 3 PDSA Cycle on the Balancing Concern



Conclusion

We have discovered the formula to increase our productivity to facilitate high season patient load . This formula will only work out with proper planning on case combination and distribution of resources across the services. In this way we can be lean with our resources. As Brachytherapy is a specialized and complex radiation treatment, it is important to ensure that increasing productivity doesn't compromise on the safety deliveries. This is a priceless saving on our end as incidences pertaining to Brachytherapy may lead to a sentinel event base on the high radiation dose that we deliver. Therefore the balancing concern data that we have collected has given us the reassurance of high compliance of safe practices among our staff within the Brachytherapy Team.