SGRT implementation: tips and tricks for staff adhesion

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Introduction

Surface guided radiotherapy (SGRT) was an unknown technology in our institution before 2020. The implementation of SGRT in our radiotherapy department brought lots of change in practice that have been accepted with varying degrees of difficulty. For most treatments before SGRT, patients were treated with lasers and skin marks positioning method for a long time. It was a major change to call into question skin marks method in favour of a new technology.

At early stage, we encountered some challenges that were nearly close to transforming all the project into a failure.

Between organizational difficulties and change in habits, **the aim of this work is to feedback our implementation and give some tips to improve acceptance of the SGRT**

Materials and methods

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Equipment		Our team		~ 2 200 patients	
TrueBeam	2	RTT	28	3D CRT	50 %
Novalis	1	Physicist	7	VMAT	24 %
Trilogy	1	Dosimetrist	4	SRT	26 %
MRIdian	1	Physicians	11		

The first AlignRT system was installed in a Truebeam in the middle of 2020.

Due to software version of our TrueBeam, move couch and auto beam hold were not allowed at the beginning (updated after October 2020).

The second system has been installed in March 2022 with Horizon cameras.

Implementation

The deployment of SGRT in our institution was carried out in two phase. First phase (Phase A) began after our first accelerator was equipped by AlignRT cameras. The second phase (Phase B) began after some failures in implementation of the system and before implanting the second SGRT system.

During the phase B, **human resources were readjusted in order to always have a referent during all treatment schedule**:

Phase A (Mid 2020 – Early 2021)	Phase B (Mid 2021 - 2022)
Referents :	Referents :
- 2 RTT	- 7 RTT
- 2 Physicist	- 2 Physicist
- 1 Physician	- 1 Physician

On both systems, all treatments are done with 3D-CRT or VMAT techniques excluding stereotactic radiation therapy (SRT). All clinical sites (except those with masks) are done on these accelerators and every patient was treated with SGRT and a daily CBCT to quantify residuals shifts.

Results

During first 3 months, AlignRT was only used with the presence of one of the two RTT referent (RTT_R) and without connexion between the SGRT system and the TrueBeam. During the phase A, RTT_R faced the following difficulties :

Organizational constraints	→	RTTs rotations too frequent	→	Lack of experience / Training to be repeated at every RTT rotation / Overwork for RTT_R
Schedule constraints	→	Extended timeslot for treatment / Important flow of patients	→	Not enough time to correctly appropriate the system / SGRT workflow not apply in case of important delay
Clinical use	→	Few cases of discrepancy between SGRT and IGRT checks	→	Experienced RTT mistrusted the system / Some RTT became reluctant to the system
		Easier setup for whole breast and limbs treatment	→	Less IGRT check / Timeless and more accurate setup

An important flow of patients, no setup time reduction and modest improvements in positioning efficiency compromised the project. **The allocated time to practise and master the SGRT technique in phase A was probably not enough** leading to frustration for the referent RTTs and rejection of the system for other staff members as reported in literature[1]. After few months of use, the system was abandoned in favour of a complex compromise between skin marks and surface guide methods. To face the problems, a meeting between users and referents was planned where it was decided to :

Organizational constraints	→	Train more RTT_R (with experienced RTT) + additional training sessions	→	Reduce workload of referents and improve the efficiency of knowledge transmission
Clinical use	→	Define a clear flowchart	→	Easier decision making
		Introduce a large ROI with the whole body	→	Improve accuracy setup with Deformation
		Study post SGRT CBCT-shifts for whole breast treatments	→	Reinforced confident in SGRT[2]

All these changes and the dedicated time allowed to a new start before the implementation of the second device (phase B). **A dynamic group of referent built an efficient positioning and decision-making workflow.** They became proficient at using the system and started demonstrating to others colleagues its interest and added value. The confidence in the system rose and complicated setup started to be done with SGRT. In several cases of difficult patient setups which would have required a new simulation, successful use of SGRT allowed preventing delays in patient care.
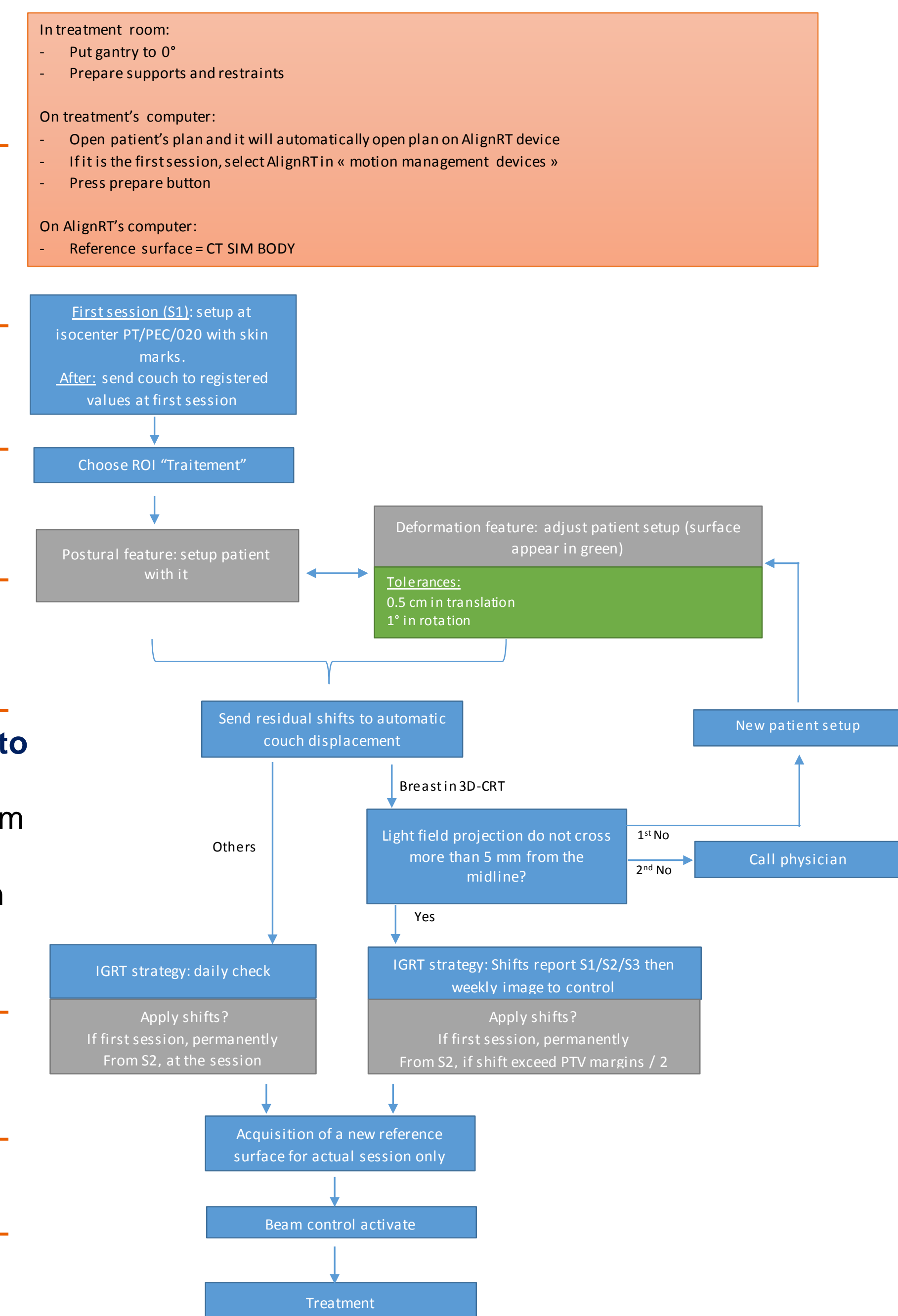
Conclusion

The use of SGRT was a major change in practice and not all staff had the same difficulties to use this new approach. **Support, dedicated time and communication was an important keys to success**. Finally we achieved unanimity regarding the improvement brought to the patient positioning with SGRT systems. This experience has reinforced our confident in SGRT and now we cannot imagine to go back to older methods to setup patient. This technology became the way to install patient in the case of difficult patients and unusual setups.

References

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