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NHS Royal Surrey NHS Foundation Trust

The Implementation of InBore SGRT

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The Royal Surrey Cancer Centre

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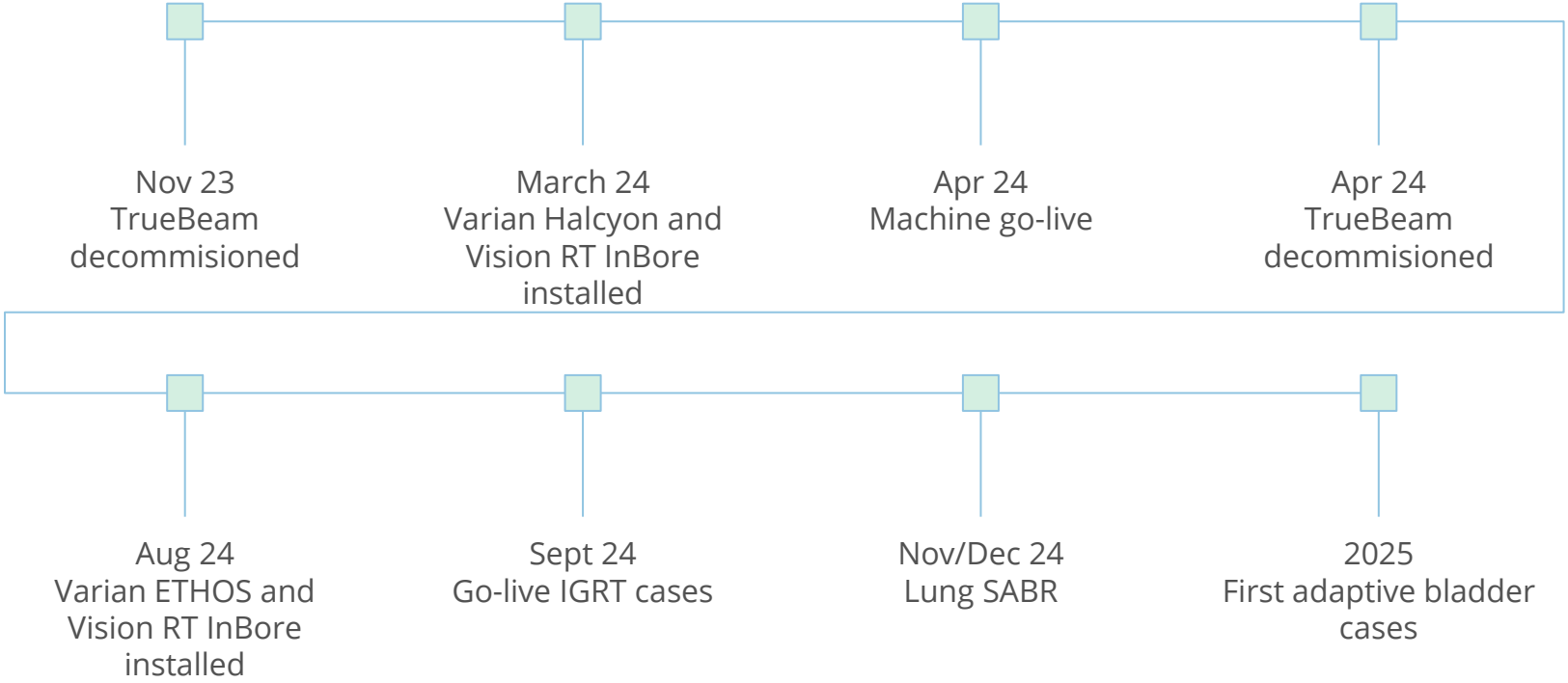
7 Linac department

2 sites – Guildford & Redhill

Replaced 2 c-arm linacs in Redhill with 2 ring gantry linacs

Continuing our linac replacement over the next few years, more SGRT installations

Machine replacement roadmap



Why AlignRT InBore?

Research

- Presentation from 3 vendors
- Comparison of specifications and research evidence available

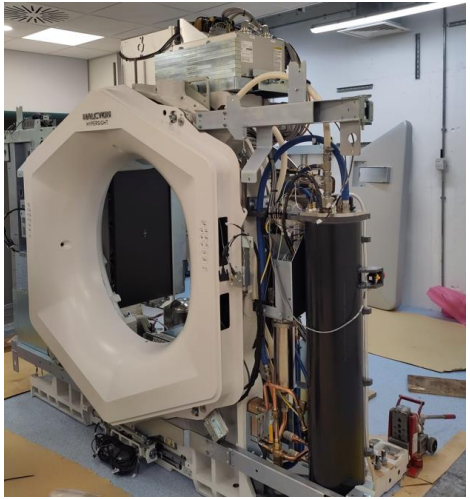
Considerations

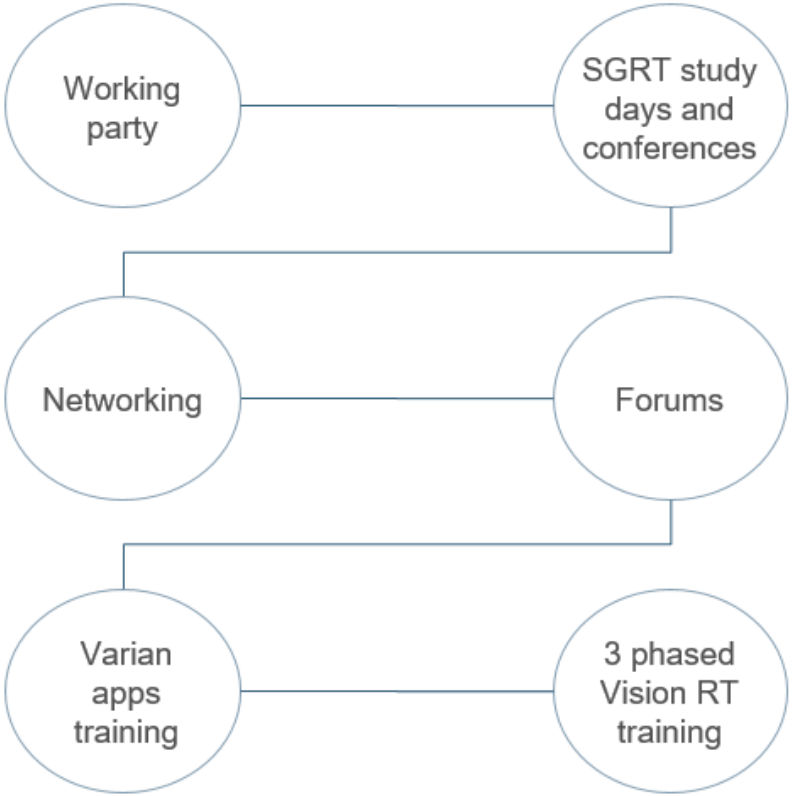
- Ease of use
- Communication with machine
- Quality of training
- Future proofing

Site specific

- Small bunkers
- VisionRT offers only clinically available in bore solution

Installation Project





Staff training

3 Phased training programme

1 WORKSHOP AND SITE VISIT

- Warsaw presentation and demonstrations
- ROI training
- Site visit to Oulu

2 ONLINE MODULES

- Presentations from Vision RT
- Online E-Learning for all staff
- Work instructions created

3 GO LIVE

- Vision RT on site for Day 1
- Phantom demonstrations
- Troubleshooting guidance
- Departmental competency pack

Staff feedback

Ease of use

Simple set ups
Time efficiency

Accuracy

Real – time monitoring

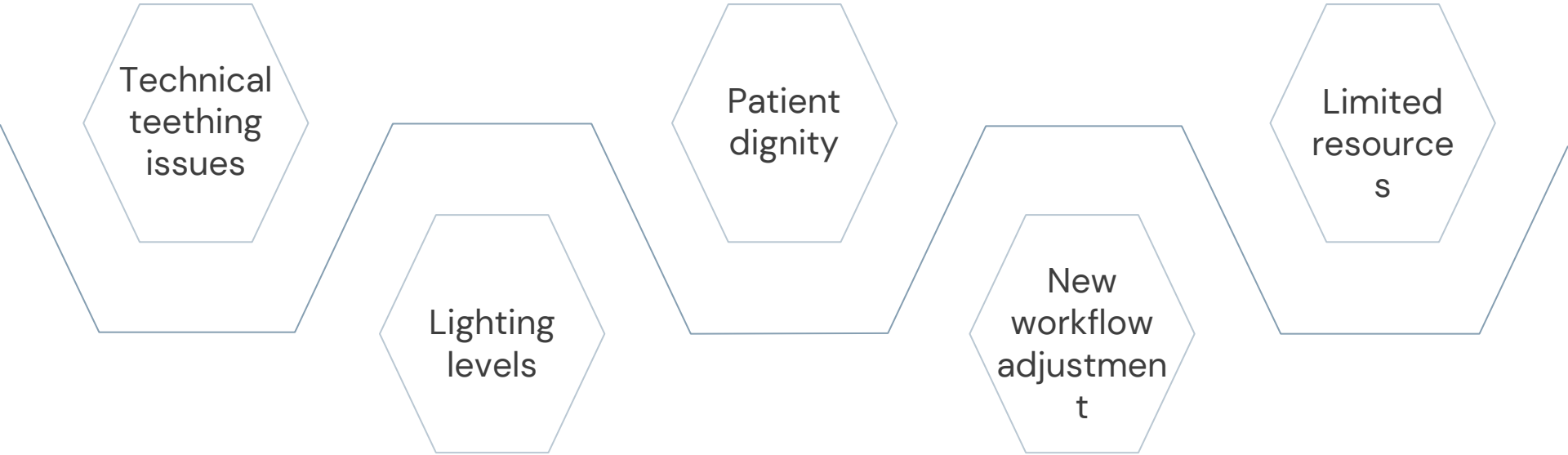
Less physical contact

Manual handling
Infection control

Troubleshooting

Optimising tools available
Reflections due to clothing

Challenges


Technical teething issues
Lighting levels
Patient dignity
New workflow adjustment
Limited resources

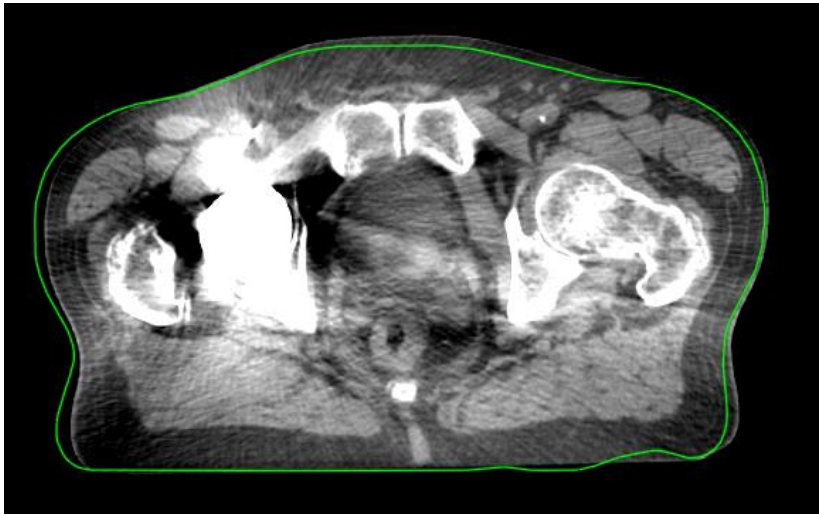
Ease of use

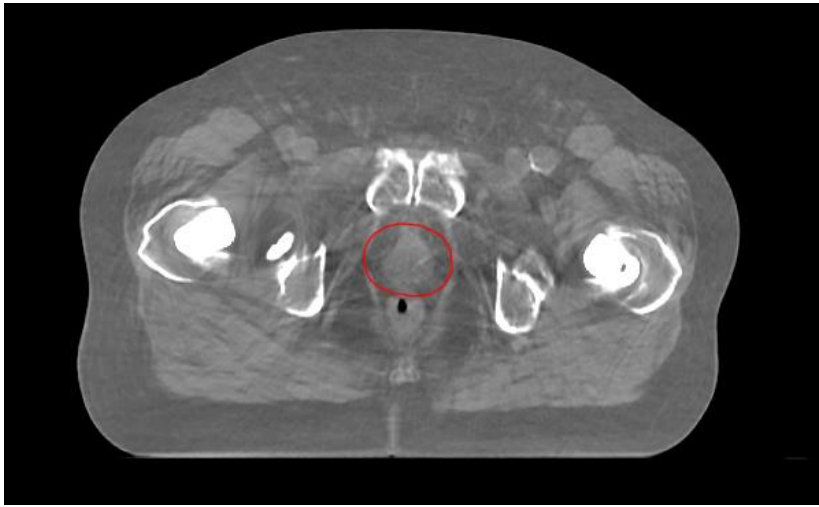
HyperSight Imaging

Delta-Couch Shift

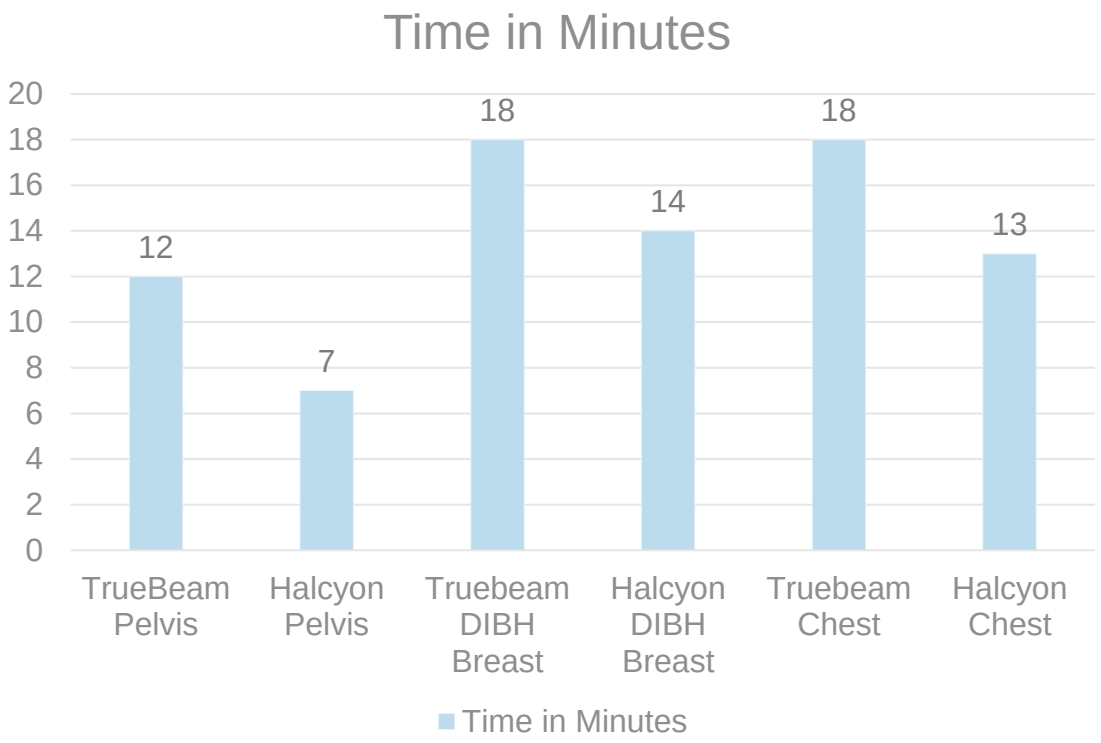
Increase capacity

Fewer delays





Time in motion audit



- Treatment type– IMRT vs RapidArc
- Pelvis – reduction of 4-5 mins
- DIBH Breast – reduction of 4 mins
- Chest – reduction of 5 mins

Introduction of DIBH Breast

- Previously used RPM
- SimRT confidence in CT Sim – 2 scan protocol
- Introduced slowly into workflow
- Planning team needed time to adjust the planning for Halcyons
- Vision RT on site for demonstrations of workflow
- Cascaded training to rest of team
- Introduced 1-2 more DIBH breast patients a week to continue training and get planning team training complete too.

DIBH Workflow

Free breathing set up	Set up in free breathing to free breathing CT body
DIBH set up	Switch to DIBH ref body and patient breathes in
Load	Load the patient in to the bore
InBore position	Check the patients FB and DIBH position against the RTD
Take CBCT in DIBH	Patient to be in DIBH for CBCT and when applying moves – take a ‘this session only’ capture
Treatment	Deliver treatment in DIBH with real time monitoring

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DIBH Workflow video

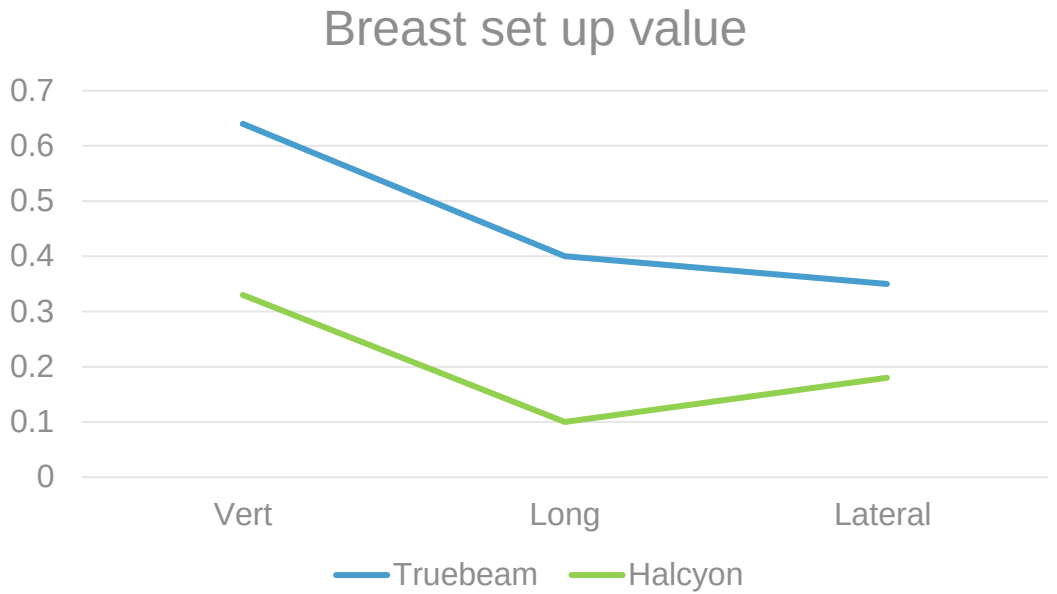
Set –Up Accuracy Audit

Breast patients

Tattoo set up on Truebeam VS SGRT on Halcyon

Patients set up to tattoo - Imaging isomoves ranged from 0.5-1.5cm

Patients were up to 2.5cm distance from their reference marks
Average imaging isomoves for all SGRT were under 0.4cm



Lung SABR

- MDT Team
- No departmental planning experience on Halcyon
- Logistics of staffing and training
- No 4DCBCT on Halcyon/ETHOS
- Transportation of equipment
- Halcyon automation
- SGRT set up with multiple isocenter
- Stable ROI
- Audit for SGRT data

Audit data

- Real-time deltas (RTD) values noted at each stage of imaging and treatment
- Compared the imaging values to the RTD offline
- Reviewed patient movement during treatment and imaging

- 1st patient – average 0.25cm difference in RTD vs imaging values

- 2nd patient – average 0.2cm difference between RTD vs imaging values

- 3rd patient currently on treatment, 3 more patients booked – more data to follow

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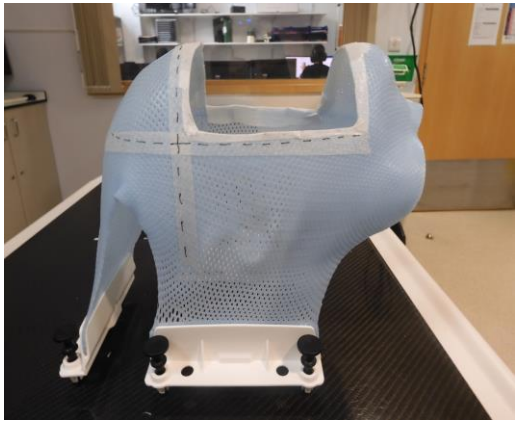
Open-faced mask case study

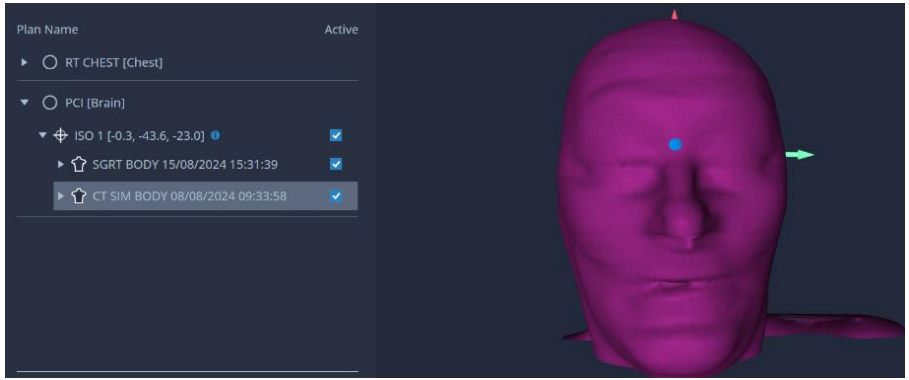
Before cutting

- Patient refused radiotherapy
- Prescribed medication
- Music and verbal distraction
- Mask cut to duplicate open face style mask



After cutting

Open-faced mask case study



CT Sim body contour

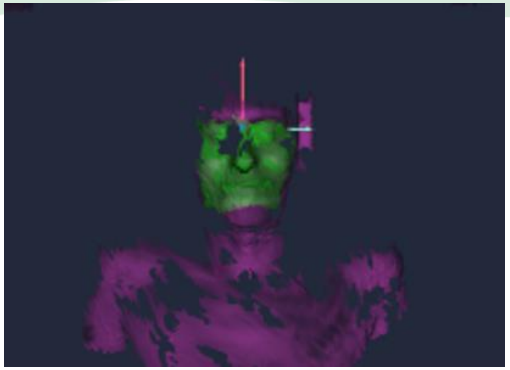
SGRT body contour

A new SGRT body contour was created due to mask on CT Sim body contour

Workflow

Set up

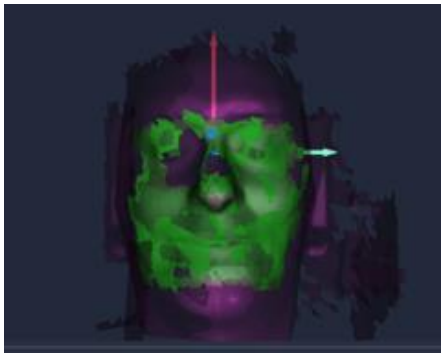
- Align to reference marks



- Set up camera reference capture

Reference capture

- Take a ‘this and future sessions’ reference capture



- InBore camera reference capture

Load in to the bore

- Switch to treatment cameras

Control room

- Image, apply moves and treat.

Our SGRT journey so far

Current cases

- All pelvis patients
- Chest
- Breast/SCF/DIBH/IMC +/- bolus (multi-isocenter)
- Palliative (all sites)
- Haematology H&N
- Abdomens
- PA nodes
- Radical brains
- Limbs
- Lung SABR

Future cases

- Adaptive bladder treatment
- Tattooless radiotherapy
- Nodal SABR
- Open-faced masks

REFERENCES

HyperSight | Varian

AlignRT InBore | Dedicated SGRT Solution for bore based linacs (visionrt.com)

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Questions

THANKS

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slidesgo