SABR lung Workflow at ARC
There’s more than one way to skin a Cat…

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Background

- Stereotactic team consisting of representatives from all craft groups → credentialed internally
- SABR/SRS - Lung, liver, brain, spine → 70 SABR lung
- Majority SABR lungs VMAT and 6FFF
- 5 x Elekta Agility BLDs
  - 1 with Hexapod all others have precise
  - 3 FFF
  - XVI 5.0.3 – Symmetry, Intrafraction
  - ABC3 capable – currently not gating
- Completed GC internal and external audits and trials throughout for credentialing/accreditation
SABR Lung – Clinical intent

Deliver tumoricidal dose

Reduce toxicity to OARS and normal tissue exposure

Ablative dose – Precision – Accuracy
Elekta Versa HD

- 2014 a whole new world…
  - VMAT and FFF
  - Hexapod 6DOF couch
  - MV & kV imaging + 4D CBCT

*Improve patient outcome and experience*
SABR Program Inception - 2014

- Key aspects
  - Appropriate TPS/dose engine
  - Immobilisation
  - Target delineation
  - QA procedures
  - Motion management

SANS 4DCT...
• Dose escalation → tight treatment margins
  – Too large → introduce complications to normal tissue
  – Too small → Inadequate dose coverage
An open source solution for an in-house built dynamic platform for the validation of stereotactic ablative body radiotherapy for VMAT and IMRT

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Motion management - Investigation

**Fig. 1** Schematic of acrylic tumour surrogate

**Fig. 2**
- a CIRS thorax phantom depicting largest section.
- b CIRS phantom section on top of the platform.
- c Complete platform
End to End Results

Fully leveraging available technologies?

What about the patient?

Timeliness?

Efficiency?

Fig. 8 Measured EBT3 film profiles vs. Pinnacle\textsuperscript{3} exported planned profiles. a IMRT X-axis, b IMRT Y-axis, c VMAT X-axis, d VMAT Y-axis
Elekta Symmetry – silver bullet

• Key tool for end to end verification
• Offered imaging on a relevant platform
• No need for external markers or complex set-up
• Powerful tool for margin verification and reduction
• On treatment day → uninterrupted patient set-up and treatment delivery
Current workflow with tweaks…
In conclusion…

- Symmetry was the key piece of equipment for validating SABR lung protocol
- Symmetry has been a valuable tool in achieving quality and safety in current practice
- RTs spruik the ease of use for matching and registration for treatments
- Positive feedback from Oncologists incorporating MIM maestro
Future work…

The great flooding of 2017
- In the hours between 22:00-23:00…
Future work...

- Wide bore
- 4D capability
- Metal artifact reduction
- Investigation of 4D image acquisition across two platforms
THANKS

FOR YOUR ATTENTION
Symmetry in action…