Single Improvement Plan

Patients Performance People Productivity Partnerships

NHS
Lancashire Teaching Hospitals
NHS Foundation Trust

Motion Management experiences at Rosemere Cancer Centre

Safdar Hassan – Radiotherapy Physicist

Excellent care with compassion

Always Safety First

International Symposium Birmingham 2026
Breathing Control for Motion Management in Radiotherapy and Imaging

@LancsHospitals

Introduction

- Serve population of ~1.6 m population in Lancashire and South Cumbria
- 8 Linac centre, grown over last 29 years
- 2 [illegible] ers, XStrahl S

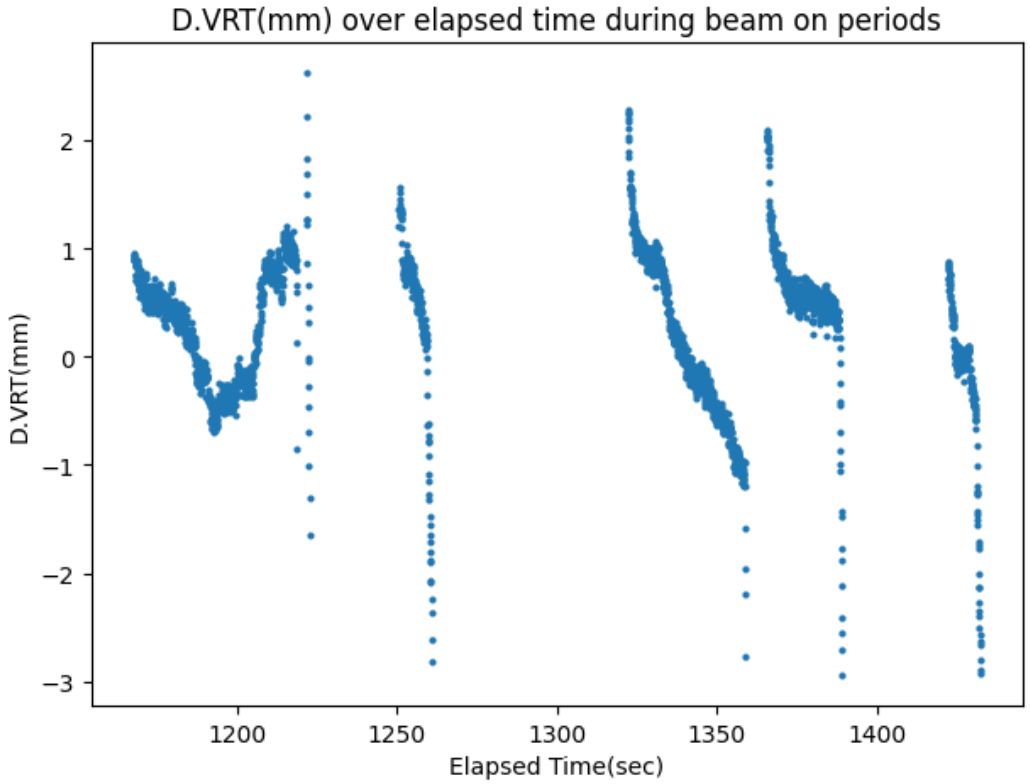
Motion management tools

- Free breathing
  - 4DCT since 2015
  - Varian marker block
  - Philips bellows

- Breathold
  - ABC
    - SABR Lung (inferior only)
    - SABR oligomets (where appropriate)
  - VisionRT - voluntary with Real Time Coach (RTC)

DIBH for breast patients

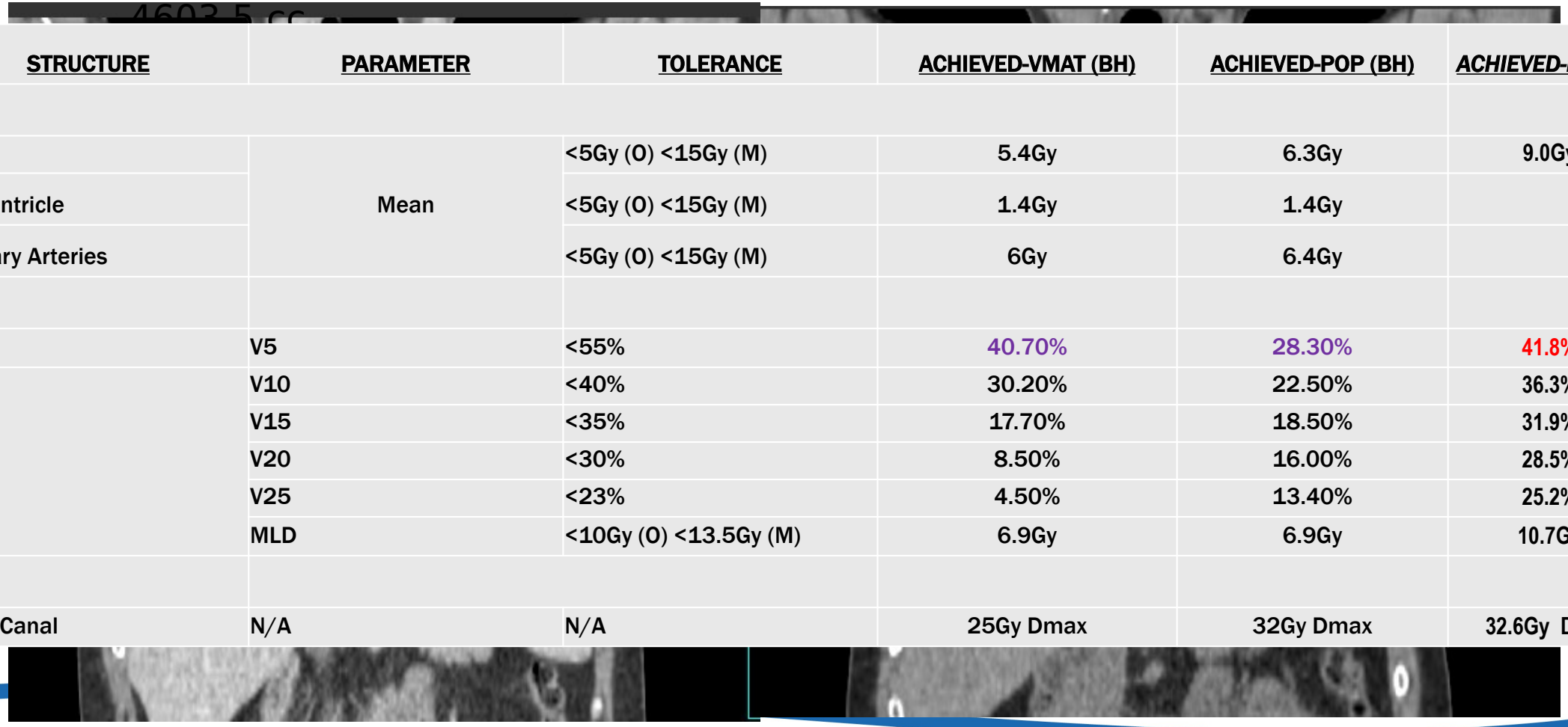
- Can we drop CBCT in favour of SGRT exclusively?
  - 48 CBCTs reviewed to compare clinical match with skin surface
  - Mean agreement of 0.7 mm (1.0 mm stdev) with SGRT
- SGRT data extracted 81 fractions analysed.
  - Generally achieve 30 second breath-hold
  - Mean range of motion in breath-hold of 5.3 mm
    - +/- 3 mm positional tolerance
  - Grand mean position from reference capture = 0.1 mm



Mediastinal Lymphoma

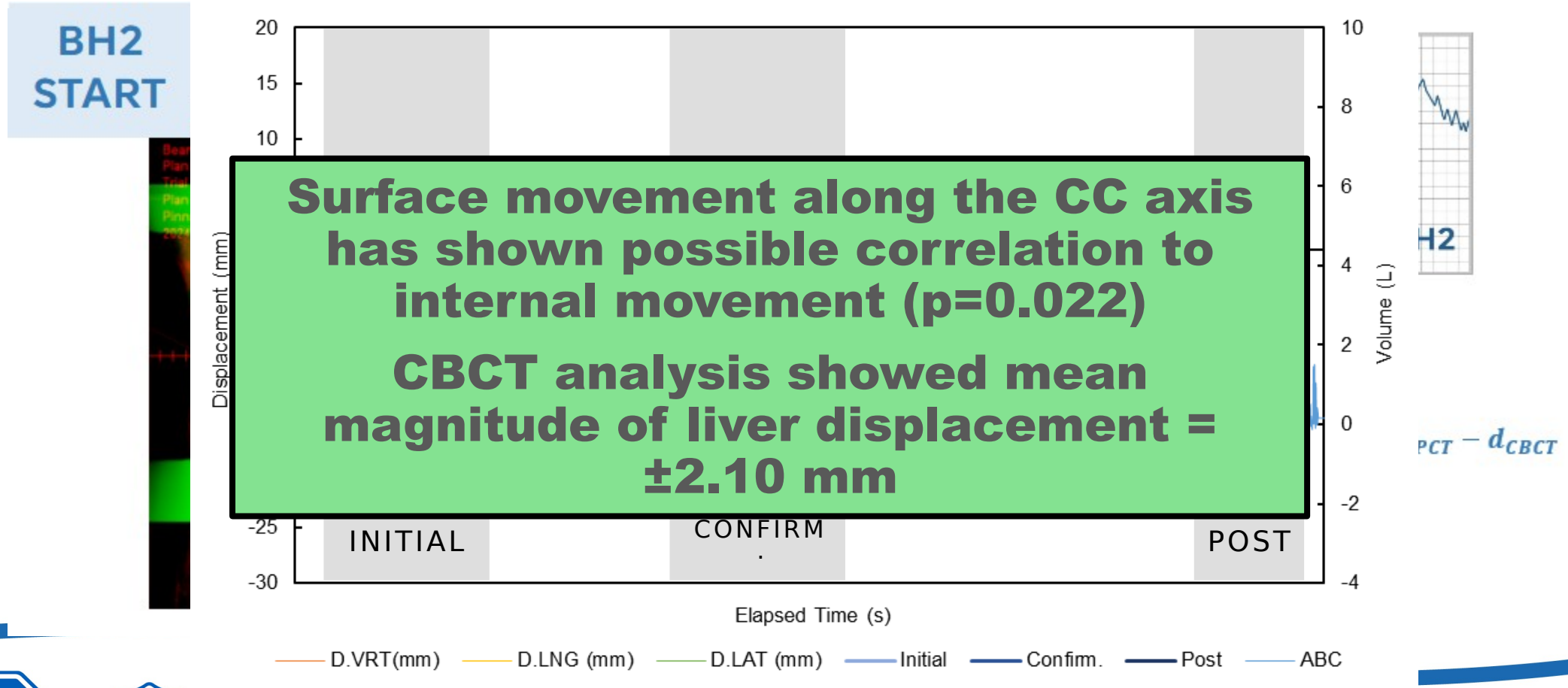
LUNGS – GTV VOLUME = 4603.5 cc

LUNGS – GTV VOLUME =



STRUCTURE	PARAMETER	TOLERANCE	ACHIEVED-VMAT (BH)	ACHIEVED-POP (BH)	*ACHIEVED-POP FB*
Heart	Mean	<5Gy (O) <15Gy (M)	5.4Gy	6.3Gy	9.0Gy
Left Ventricle		<5Gy (O) <15Gy (M)	1.4Gy	1.4Gy	
Coronary Arteries		<5Gy (O) <15Gy (M)	6Gy	6.4Gy	
Lung	V5	<55%	40.70%	28.30%	41.8%
	V10	<40%	30.20%	22.50%	36.3%
	V15	<35%	17.70%	18.50%	31.9%
	V20	<30%	8.50%	16.00%	28.5%
	V25	<23%	4.50%	13.40%	25.2%
	MLD	<10Gy (O) <13.5Gy (M)	6.9Gy	6.9Gy	10.7Gy
Spinal Canal	N/A	N/A	25Gy Dmax	32Gy Dmax	32.6Gy Dmax

SABR Liver Oligometastases



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CPAP-DIBH Research Project

- Led by Dr Tai-Chung Lam
- Use of CPAP assisted voluntary DIBH for stage 3 lung cancer patients
  - Aim for > 75% compliance
  - Dosimetric comparison FB vs CPAP-DIBH
  - BH duration throught treatment
  - Inter and Intra-fraction DIBH variability
  - Clinical outcomes (RP, fibrosis, PFS, OS, LC)

Thankyou

Acknowledgements

Dr Jennifer Dobson
Jayne Fletcher
Lisa Telford
Catherine Abbot
Luke Acton
Dr Ashoke Biswas
Dr Tai-Chung Lam
Jacquiline Hudson
Mitchell Train
Amber Dixon