Guy's and St Thomas' NHS
NHS Foundation Trust

TOHETI
re-imaging care

Transforming Outcomes and Health Economics Through Imaging (TOHETI Programme):

An overview

December 2019

Fit for the Future – Safety – Quality – Efficiency

KING'S HEALTH PARTNERS

Guy's and St Thomas' NHS
NHS Foundation Trust

KING'S College LONDON

GUY'S & ST THOMAS' CHARITY
A CATALYST FOR INNOVATION IN HEALTH

TOHETI in numbers

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5- year project

1 MR-guided High Intensity Focussed Ultrasound (HIFU) system

1 PET-MR scanner
one of very few in the UK

> 50 Radiographers
including 5 trained in recruiting and consenting patients to research

>10 Clinical Leads

>30 Consultant Radiologists including 2 acting as Chief Investigators for research studies

>50 Emergency Nurse Practitioners trained in recruiting and consenting patients to research

3 hospitals involved
including Guy's, St Thomas' and King's College Hospital

2 3T MRI scanners installed in 2016

3 CT scanners installed in 2016

2 CCGs

90 GP surgeries across Southwark and Lambeth

1 University

4 key TOHETI workstreams

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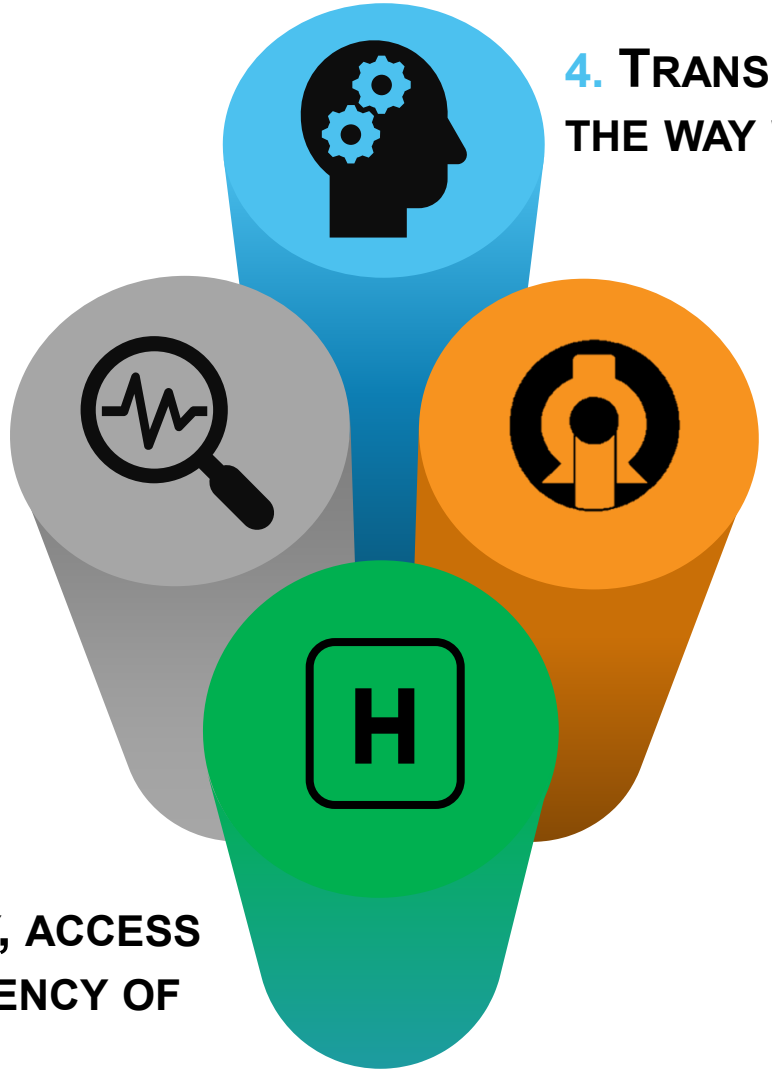
4. TRANSFORMING THE WAY WE WORK

2. BETTER TARGETING OF TREATMENTS

3. IDENTIFY INEFFECTIVE TREATMENTS



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1. QUALITY, ACCESS AND EFFICIENCY OF CARE

1. Quality, access and efficiency

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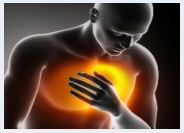
Research Study	Study Question/Design	Proposed benefits
Chronic Headache 	Evaluating **direct access from GPs to MRI imaging services** for patients with chronic headach	Reduction in waiting times Reduction in Neurology appointments Supports patient management within the primary care setting due to MRI reassurance effect
Colon Cancer 	**Replacing colonoscopy with CT colonography** for patients symptomatic for colon cancer.	Increase early detection and improve prognosis. Lower risks and discomfort to patient. Address capacity issues, and release optical colonoscopy capacity to focus on high-risk patients.
Lung Cancer 	**To identify high-risk patients in the smoking population** aged between 55-80 years (current and former smokers) **and offer low-dose CT scans.** Patient identification and engagement methods will include GP records & Community Pharmacies.	Increase engagement and enable early detection Explore possibility of direct access for GPs to low dose CT. Increase understanding of non-compliance, and potential barriers to uptake of low-dose CT screening
Acute Chest Pain 	To **assess the use of CT Coronary Angiography (CTCA) in patients with Acute Chest Pain (ACP) and no myocardial ischaemia** referred from the A&E department to the Rapid Access Chest Pain Clinic (RACPC).	Increase the efficiency associated with the management of patients discharged from A&E following a non-ischaemic ACP episode Improve clinical care by enhancing the completeness of diagnosis, ruling in or ruling out Coronary Artery Disease (CAD) as the underlying cause of ACP
Scaphoid Fractures 	Assessing **MRI, alongside plain x-rays, on presentation** for patients with suspected scaphoid fracture	Improves the diagnostic pathway for suspected scaphoid fractures, to enable appropriate and timely treatment Cost of additional MRI scan predicted to be offset by savings made in decreasing the amount of unnecessary diagnostic and treatment procedures
HIFU Research	**MRI guided high intensity focused Ultrasound** for palliative treatment of painful bone Metastases	Innovative treatment for end of life cancer patients Pilot study investigated the safety and efficacy of MRgHIFU, compared to standard palliative pain treatments.

Medical imaging as the **driver for change** across several clinical pathways.

Suspected scaphoid fracture: **before**

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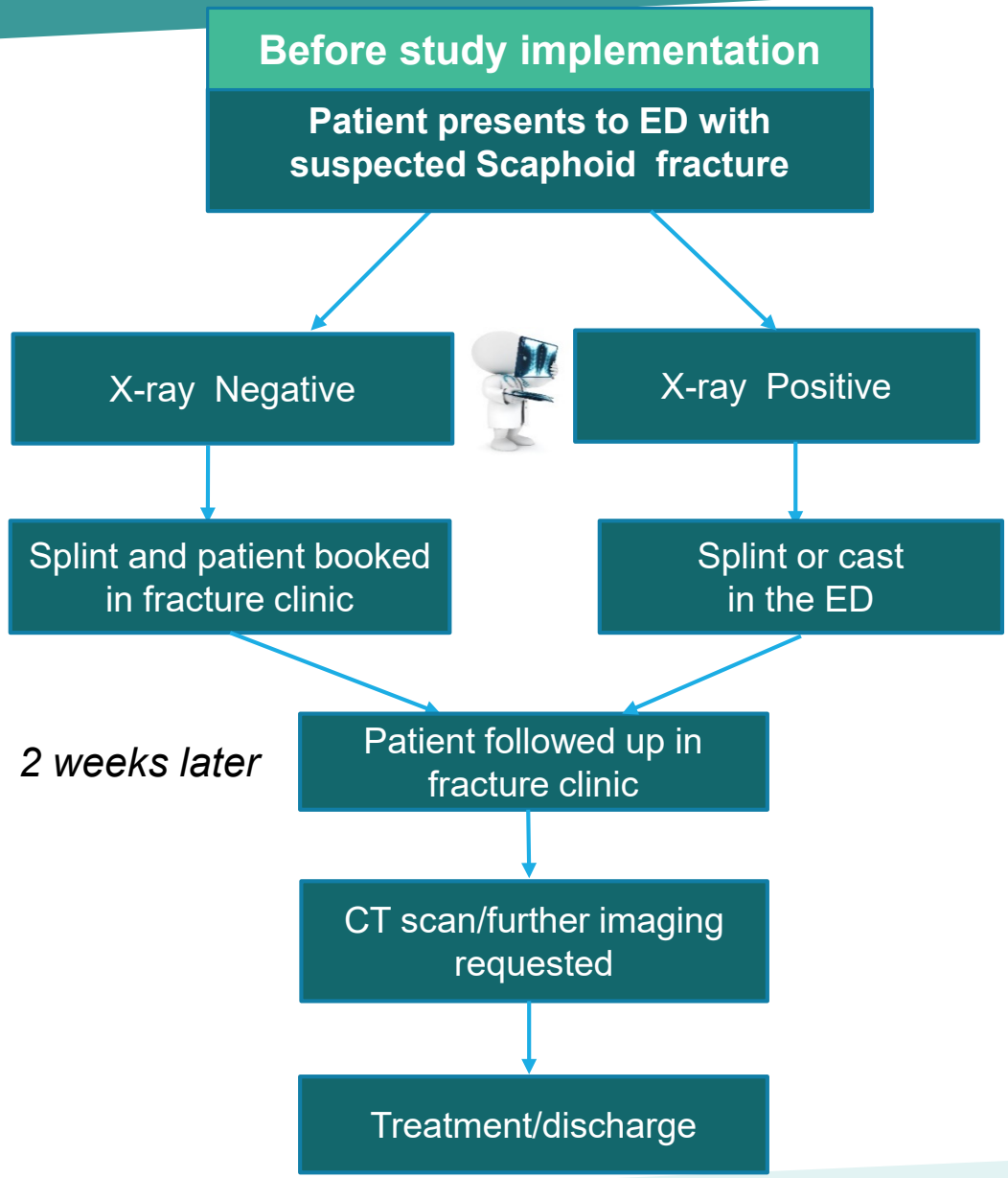

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Aim: To redesign the current pathway by introducing immediate MRI as add-on test for patients with negative findings in the initial radiographs.

Methods: Randomised 136 participants – 68 each for control and treatment group

Results : The intervention led to **cost-savings** at 6 months post-recruitment (mean cost difference of £266 per participant)

Suspected scaphoid fracture: **after**

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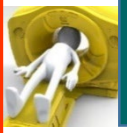
After study implementation

Patient presents to ED with suspected Scaphoid fracture

X-ray Negative



MRI requested, done and reported

Telephone follow up

Done within 24hrs!

Patient returns to fracture clinic only if needed

Treatment/discharge

X-ray Positive

Same as before implementation

Successful roll out of immediate acute MRI wrist as an add-on test in the acute management of suspected scaphoid fractures

Cutting-edge technology

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2. Better targeting of treatments

- High-intensity focused ultrasound (HIFU) uses focused ultrasound waves to destroy pathological tissue by heating it rapidly to 60 degrees.
- Progress with the MRgHIFU system was slow, driven by research requirements (novel interventions using a new equipment) but mostly facility requirement to house the equipment.
- Improving the patient selection criteria and access to patients might improve outcomes, but recruitment remains a particular challenge

3. Identify ineffective treatments

- The PET-MRI purchased as part of the TOHETI programme was the second to be installed in the UK
- Multiple research studies recruited over 230 patients from 11 tumour groups.
- New scanning protocols have been developed, tested, improved and validated for all cancer subtypes
- PET-MRI has been established as non-inferior compared to PET-CT in oesophageal cancer and superior to PET-CT in mesothelioma and prostate cancer.

4. Transforming the ways we work

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RIEs e.g. on:

- Vetting & Scheduling
- Nuclear Medicine
- Interventional Radiology
- Acute reporting
- Ultrasound
- Computer Tomography

→
- Accelerated scheduling
- Improved safety of care
- Faster results

→ Optimised diagnostic experience for patients

→
- Clearer, simpler processes
- More effective teamwork
- Improved working environment

→ Expanded job satisfaction and increased workforce productivity

→
- Standardised pathways
- Greater operational efficiency
- Higher visibility of performance

→ Improved quality and access to care at the trust

Clinical and operational impacts, e. g.

↑ +17% in routine booking turnaround time	↑ +48% in acute plain film reporting productivity
↓ -23% in 'did not attend' (DNA) rates in US	↓ -20% of plain film report turnaround time
↓ -21% DNA rates in CT	↓ -70% in paper usage in Nuclear Medicine
↓ -13% DNA rates in MRI	↑ +31% of referrals vetted on day of referral
↓ -16% DNA rates in Nuclear Medicine	↑ +X% increased activity in multiple other areas

Financial and efficiency benefits

£930k (full year effect)

5 drivers for success

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1. Complete system redesign

2. Moving to a clinically led autonomous management model

3. Research + Health Economics

4. Analytical framework for delivery

5. Building a culture of continuous improvement

Some of these successes so far…

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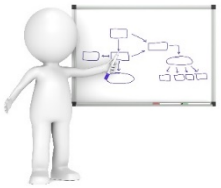

8 eight clinical pathways (over **5,000** patients /year)

500+ members of staff engaged

£2m+ annual cost-savings to the NHS

5 national / international awards

22 scientific papers

25 conferences attended.