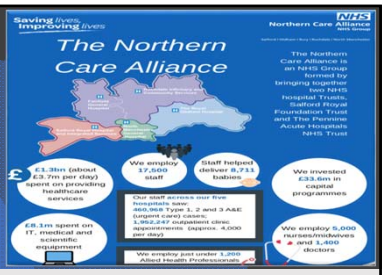
Who are we ?

We are one of the largest NHS organizations in the country catering to about 1 million people in the north west of England



Developing a Comprehensive Prostate Imaging Service: Getting It Right & How to Achieve Quality in Public Sector DGHS Hospitals

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To Deliver a High Quality Prostate Imaging Service by Improving:

01	02	03	04
Quality of Imaging	Decreasing Turnaround Time	Better Quality Reports	Manage the Increasing Demands on Imaging

Aims & objectives

Background & Prostate Imaging Volume in Greater Manchester:

Methodology:

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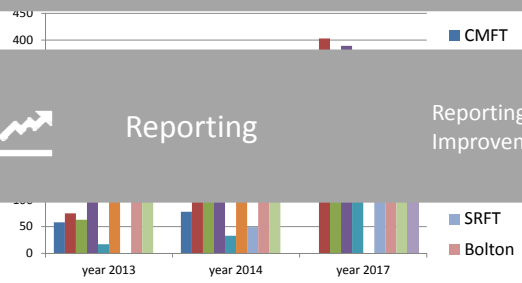
There has been global increase in awareness and demand for prostate MRI imaging.

Imaging — Imaging Improvements

Scheduling — Scheduling Improvements

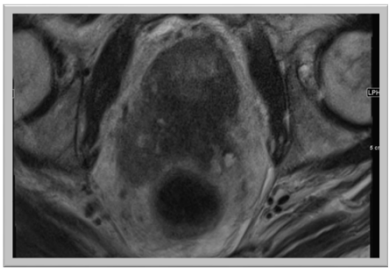
Reporting — Reporting Improvements



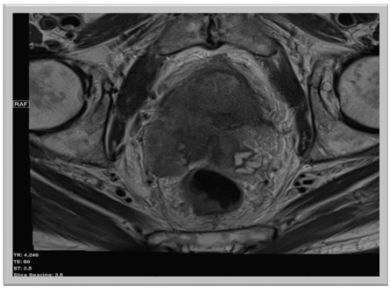
Imaging Improvements

- Our Trust has 4 hospitals with 4 scanners, from 2 vendors with varied sequences.
- A task group was set up with all stake holders with multiple meetings (MR radiographers, radiologists, urologists & department managers) .
- Working with various application specialists & vendors, creating longer appointment slots, it was possible to change DWI sequences from 800 to 1400.
- Accurate ADC sequences were computed using at least 3 b values.
- Where patients are unable to lie still, BLADE/ PROPELLAR sequences used instead of T2 high res images.

T2 w High Res. Image:



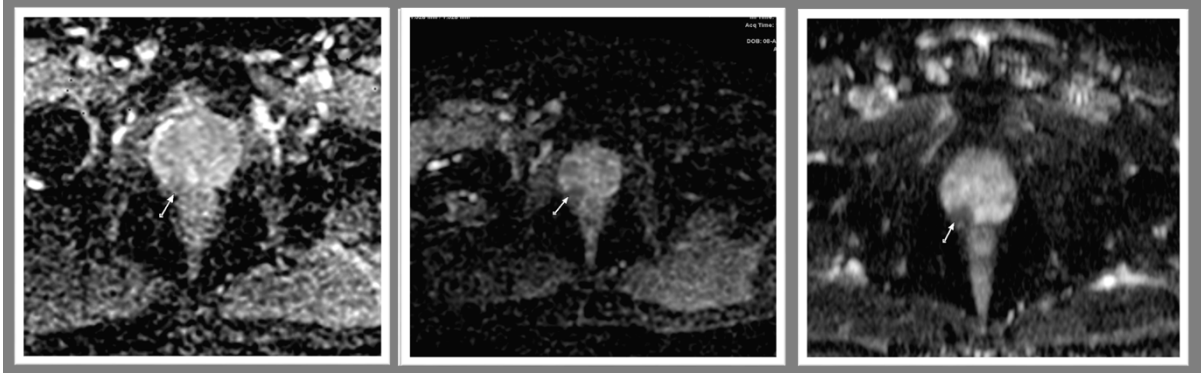
BLADE Sequence image:



Sequential improvement in image quality:

(click or click twice on the sequence label below to reveal the images)

- 2014 2017 2018



T2 w Axial T2 w Coronal DWI ADC

Scheduling Improvements:

Job Plan Optimization Impact:

- R1-R5 are radiologists who report prostate MRIs
- B1- B5 are radiologists are Neuro & MST radiologists
- A Prostate MRI slots
- B in-patient slots
- C other body slots
- D MSK slots.
- Neuro MRI slots

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This was the trickiest part of the project, with contradicting demands on radiology of reducing wasted slots and getting same/next day imaging slots.

After careful analyses of various data, e inpatient demands and p ostate imaging needs, 1 dedicated slots were created to mirror urology prostate clinics.

A special code for consultant-only-referral was created to accommodate these patients to designed slots

Eliminates wasted MR slots

Scan acquisition aligned to subspecialty imaging skills

Prostate not reporting possible (being implemented)

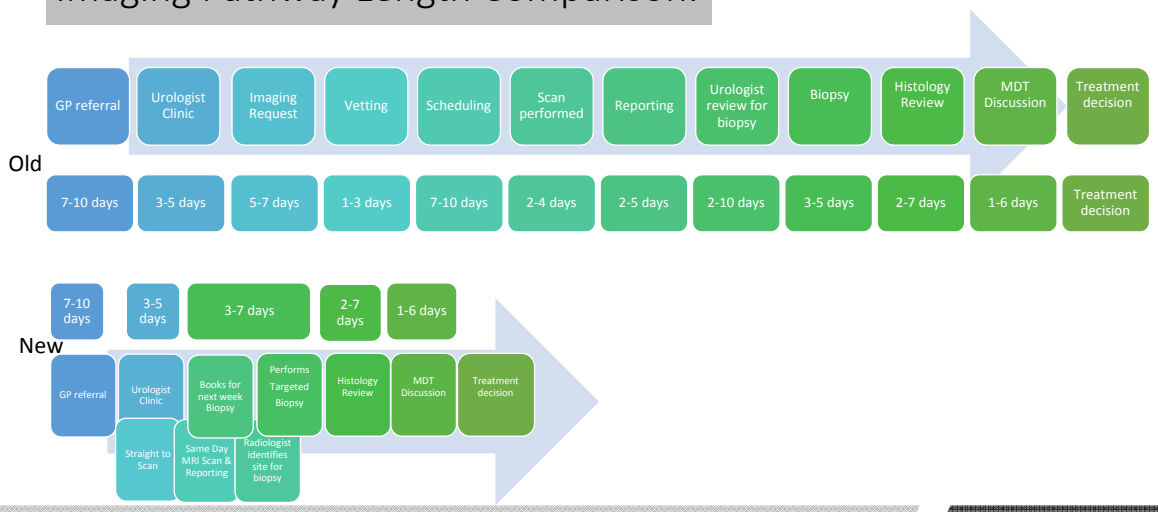
Reduces reporting time by about 2-3 days

Aligning reporting and Scheduling to improve productivity:

Weekly Rota		MRI	CT	US	intevention
Monday	am	R1	R3	B1	B3
	pm	B1	B3	R1	B4
Tuesday	am	R2	R4	B2	ERCP
	pm	B2	B4	R2	B5
Wednesday	am	R3	R5	B3	B3
	pm	B3	B5	R3	B1
Thursday	am	R4	R1	B4	R4
	pm	B4	B1	R4	ERCP
Friday	am	R5	R2	B5	B3
	pm	B5	B2	R5	B4
Saturday					
Sunday					

	MRI appointment Schedule		
	8am -12.0C	12- 4 pm	4pm- 8 pm
Monday	AAABB	BCCDD	CDEEE
Tuesday	AAABB	BCCDD	CDEEE
Wednesday	AAABB	BCCDD	CDEEE
Thursday	AAABB	BCCDD	CDEEE
Friday	AAABB	BCCDD	CDEEE
Saturday	AAABB	BCCDD	CDEEE
Sunday	ABCDE	ABCDE	XXX

Imaging Pathway Length Comparison:



Cutting down 6 steps in the pathway has helped us reduce our turnaround time by about 15-30 days.

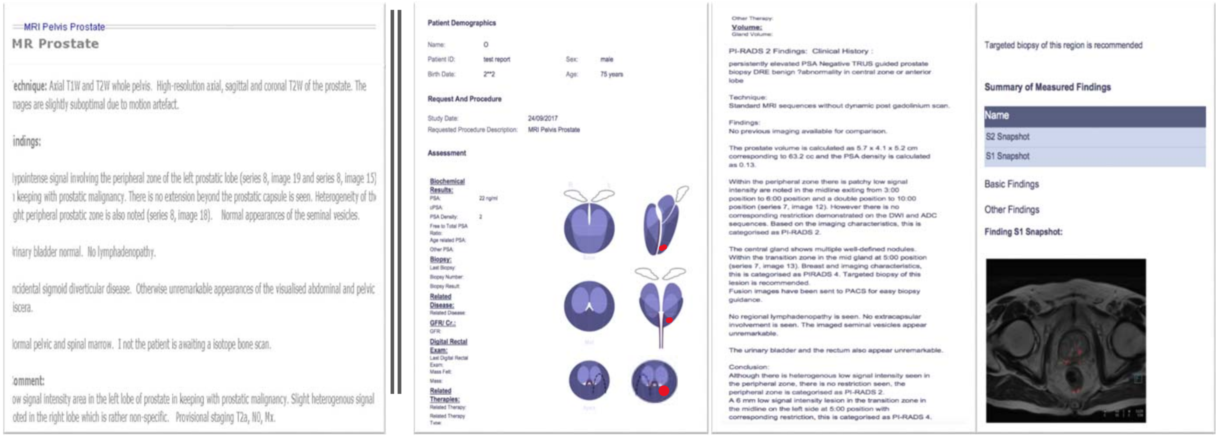
Reporting Improvements

- Structured reporting based on PIRADS 2 as opposed to descriptive reporting.
- Fusion imaging using T2 and DWI images, leading to easy targeting of lesions on biopsy.
- Dedicated reporting by subspecialty radiologists with Prostate interests.
- Pictographic / Multimedia reporting with image hyperlinking (to be achived with future pacs refresh.

Fusion (T2 w +DWI) images for biopsy guidance-

2013

Current:



Improved Reporting Format

Results & Conclusions:

Reporting turnaround time before implementation was 12 step process, with median time of 30- 42 days.

By approaching the pathway Performance as 6 steps, we have reduced the turnaround time by 15-20 days.

Improved Quality in imaging has helped us identify about 10-15 % more malignancies, in the transition zone and in the anterior gland.

Lean Methodology implementation has helped us improve our turnaround time and eliminate waste of resources.

Collaborative Team working is key to achieving success.

References :

1) **Jonathan Kruskal, et al; Quality Initiatives: Lean Approach to Improving Performance and Efficiency in a Radiology Department, https://pubs.rsna.org/doi/10.1148/rg.322115128**
2) **https://www.acr.org/-/media/ACR/Files/RADS/Pi-RADS/PIRADS-V2.pdf**
3) http://www.esur.org/esur-guidelines/prostate-mri
4) Hirokawa Y, Isoda H, Maetani YS, et al. MRI artifact reduction and quality improvement in the upper abdomen with PROPELLER and Prospective Acquisition Correction (PACE) technique. AJR Am J Roentgenol 2008;191:1154-1158

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