Pathway Visualisation Work with Public Health England

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Outline

• What routine data is available to describe patient journey
• Illustrate how pathway visualisation can help us understand and improve prostate pathway
Patient Journey

Lifestyle
- Socio-demographics
- Risk factors

Presentation
- Primary Care
- Emergency
- Screening
- Comorbidities

Diagnosis
- Symptoms
- Signs
- Radiology
- Biopsy
- Pathology

Treatment
- Surgery
- Chemotherapy
- Radiotherapy
- Active monitoring

Follow up
- Patient reported outcomes
- Patient reported experience
- Clinical audits
- Relapse / recurrence

End of Life
- Palliative care
- Death certificate

UCLH Cancer Collaborative
The Cancer Alliance for north and east London
Current data flows into English Cancer Registry

- Radiotherapy
- COSD / MDT
- Pathology
- PAS
- Radiology
- Audit
- CWT
- Chemo (SACT)

Regional Office

Death Cert

Encore

ONS

Open Exeter

Oxford

NHS Acute Trust

Regional Office
Weighting up the benefits & risks

Spectrum of identifiability

- Personally identifiable
- De-personalised
- Anonymised
- Anonymous

*anonymised in accordance with the ICO code of anonymisation
Prostate optimal diagnostic pathway

Clinical triage – ‘right place, first time’

Multi-parametric MRI before TRUS biopsy

Refer to treating trust by day 38

Diagnostic accuracy of multi-parametric MRI and TRUS biopsy in prostate cancer (PROMIS): a paired validating confirmatory study


Summary
Background Men with high serum prostate specific antigen usually undergo transrectal ultrasound-guided prostate biopsy (TRUS-biopsy). TRUS-biopsy can cause side-effects including bleeding, pain, and infection. Multi-parametric magnetic resonance imaging (MP-MRI) used as a triage test might allow men to avoid unnecessary TRUS-biopsy and improve diagnostic accuracy.

Methods We did this multicentre, paired-cohort, confirmatory study to test diagnostic accuracy of MP-MRI and TRUS-biopsy against a reference test (template prostate mapping biopsy [TPM-biopsy]). Men with prostate-specific antigen concentrations up to 15 ng/mL with no previous biopsy, underwent 1.5 Tesla MP-MRI followed by both TRUS-biopsy and TPM-biopsy. The conduct and reporting of each test was done blind to other test results. Clinically significant cancer was defined as Gleason score ≥3 + 3 or a maximum cancer core length 6 mm or longer. This study is registered on ClinicalTrials.gov, NCT01292291.

Findings Between May 17, 2012, and November 9, 2015, we enrolled 740 men; 57% of whom underwent 1.5 Tesla MP-MRI followed by both TRUS-biopsy and TPM-biopsy. On TPM-biopsy, 408 (71%) of 576 men had cancer with 230 (40%) of 576 patients clinically significant. For clinically significant cancer, MP-MRI was more sensitive (93%, 95% CI 88–98%) than TRUS-biopsy (48%, 42–55%; p=0.0001) and less specific (41%, 36–46% for MP-MRI vs 96%, 94–98% for TRUS-biopsy; p=0.0001). 44 (5.9%) of 740 patients reported serious adverse events, including 8 cases of sepsis.

Interpretation Using MP-MRI to triage men might allow 27% of patients avoid a primary biopsy and diagnosis of 5% fewer clinically insignificant cancers. If subsequent TRUS-biopsies were directed by MP-MRI findings, up to 18% more cases of clinically significant cancer might be detected compared with the standard pathway of TRUS-biopsy for all. MP-MRI, used as a triage test before first prostate biopsy, could reduce unnecessary biopsies by a quarter. MP-MRI can also reduce over-diagnosis of clinically insignificant prostate cancer and improve detection of clinically significant cancer.

Lancet 2017; 389: 815-22
Average length of time for single trust pathways between the start of the cancer pathway, Date first seen, Decision to treat date, and Treatment start date
337 pathways, treated at UCLH and first seen at a UCLH CC trust. Average length of time between Start of cancer pathway, Date first seen, Decision to treat date, and Treatment start date grouped by referring trust.
Prostate pathway improvement

**ITT support**
- Monthly ITT trend analysis from Jan 2016 to present
- Secured funding for additional ITT pathway support in Q4 2017/18
- Facilitation of bi-lateral meetings between Trusts and monitoring of actions agreed
- Administration workshop held May 2017

**Surgical pathway**
- Secured funding for additional lists
- Project management of surgical video to aid patient preparation and decision making
- Temporary operational management support

**Diagnostic improvement**
- MRI physicist support
- Two day MRI masterclass for Urologists in the diagnosis and management (Sept 2017)
- Standardise reporting
- One stop ‘how to’ guide and audits of UCLH and RFH models
- Support for national consensus meeting on Implementation of multi-parametric MRI for prostate cancer detection

**Whole pathway**
- Breach analysis of sector to help inform priorities
- Prostate pathway patient information leaflet
**Prostate Pathway Visualisation Tool**

All pathway events

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### Pathway Events

**PATHWAY TYPE:**
- Select **All Events**
- **Select All**
- **Deselect All**

**SUMMARY:**
- REFERRAL (SUM)
- FIRST SEEN (SUM)
- DIAGNOSIS (SUM)
- MDT (SUM)
- FIRST TREATMENT (SUM)

**DIAGNOSIS & MDT:**
- DIAGNOSIS (CAS)
- OTHER DIAGNOSIS
- MDT (COSD)
- MDT (CWT)
- MDT (COSD & CWT)
- DEATH

**ROUTE TO DIAGNOSIS:**
- START POINT (RTD)
- REFERRAL (RTD)

**CWT:**
- CWT REFERRAL
- CWT FIRST SEEN
- CWT TREATMENT PERIOD START
- CWT TREATMENT START
- CWT ACTIVE MONITORING

**IMAGING & BIOPSY:**
- RADIOLOGY (DIDS)
- PROSTATE RADIOLOGY
- BIOPSY (AVT)
- BIOPSY (APC HES)
- BIOPSY (HES & AVT)
- ENDOSCOPY (HES)
- ENDOSCOPY (COSD)
- ENDOSCOPY (COSD & HES)
- PATHOLOGY (COSD)
- PATHOLOGY TAKEN (COSD)
- PATHOLOGY RECEIPT (COSD)
- PATHOLOGY RESULT (COSD)

**TREATMENTS:**
- MAJOR SURGERY (HES)
- MAJOR SURGERY (AVT)
- SURGERY (AVT)
- MAJOR SURGERY (HES & AVT)
- SACT REGIMEN
- CT (AVT)
- SACT & CT AVT
- RTDS TREATMENT
- RT (AVT)
- RTDS & RT AVT
- HORMONE (AVT)
- BRACHY (AVT)

**HES:**
- OP (HES)
- ADMITTED (HES)
- A&E (HES)
C61: Prostate for 2014 at 10 Trusts
Displaying Pathways: 1372 of 1693

Pathways: 1372

Prostate Events:
- RED: REFERRAL (SUM)
- ORANGE: FIRST SEEN (SUM)
- AQUA: PROSTATE RADIOLOGY
- PINK: BIOPSY (HES & AVT)
- PINK: PATHOLOGY TAKEN (COSD)
- PINK: PATHOLOGY RECEIPT (COSD)
- PINK: PATHOLOGY RESULT (COSD)
- GREEN: DIAGNOSIS (CAS)
- BLUE: MDT (SUM)
- BLUE: FIRST TREATMENT (SUM)
- CYAN: CWT TREATMENT PERIOD START
- GREEN: CWT TREATMENT START

BREACH DAYS: -
Prostate Pathway Visualisation Tool

Filter origin events
- REFERRAL (SUM)
- FIRST SEEN (SUM)
- DIAGNOSIS (CAS)
- MDT (SUM)
- FIRST TREATMENT (SUM)

C61: Prostate for 2014 at 10 Trusts
Displaying Pathways: 1372 of 1693

Pathways: 1372

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Pathway Segment Times
- REFERRAL (SUM) - FIRST SEEN (SUM)
- FIRST SEEN (SUM) - DIAGNOSIS (CAS)
- DIAGNOSIS (CAS) - MDT (SUM)
- MDT (SUM) - FIRST TREATMENT (SUM)

Summary Pathway
- REFERRAL (SUM)
- FIRST SEEN (SUM)
- DIAGNOSIS (CAS)
- MDT (SUM)
- FIRST TREATMENT (SUM)
Referral to first seen, by stage – Barts Health

UCLH Cancer Collaborative
The Cancer Alliance for north and east London

C61: Prostate for 2013, 2014 at Barts Health
Displaying Pathways: 4 of 48

Pathway Segment Times
- REFERRAL (SUM) - FIRST SEEN (SUM)
- FIRST SEEN (SUM) - DIAGNOSIS (CAS)
- DIAGNOSIS (CAS) - MDT (SUM)
- MDT (SUM) - FIRST TREATMENT [SUM]

Summary Pathway:
- REFERRAL (SUM)
- FIRST SEEN (SUM)
- DIAGNOSIS (CAS)
- MDT (SUM)
- FIRST TREATMENT [SUM]
Detailed events, by age – Barts Health

C61: Prostate for 2013, 2014 at Barts Health
Displaying Pathways: 4 of 4

25-59: 66
60-69: 138
70-79: 162
80-90: 60
Prostate pathway visualisation tool utilisation

• Data from before referral – symptoms, chance finding of a possible diagnosis, related or unrelated factors
• Study individuals or cohorts of varying sizes.
• Study multiple pathologies
• Detailed trends in the pathway
• Detailed trends in the longer pathway (to death)
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