

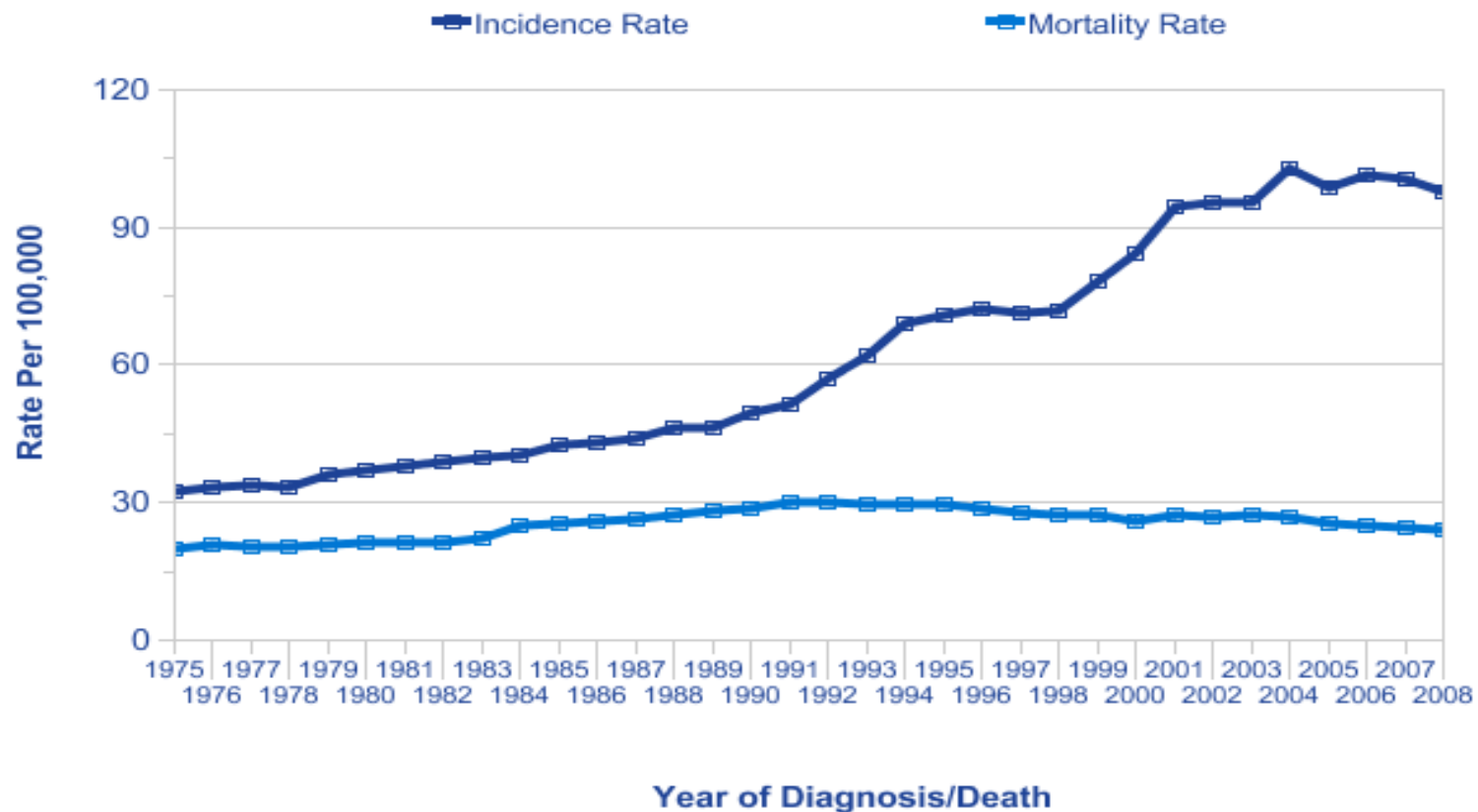
Multiparametric Prostate MRI

Imaging Network

Dr Andy Beale, Dr Charlotte Robinson

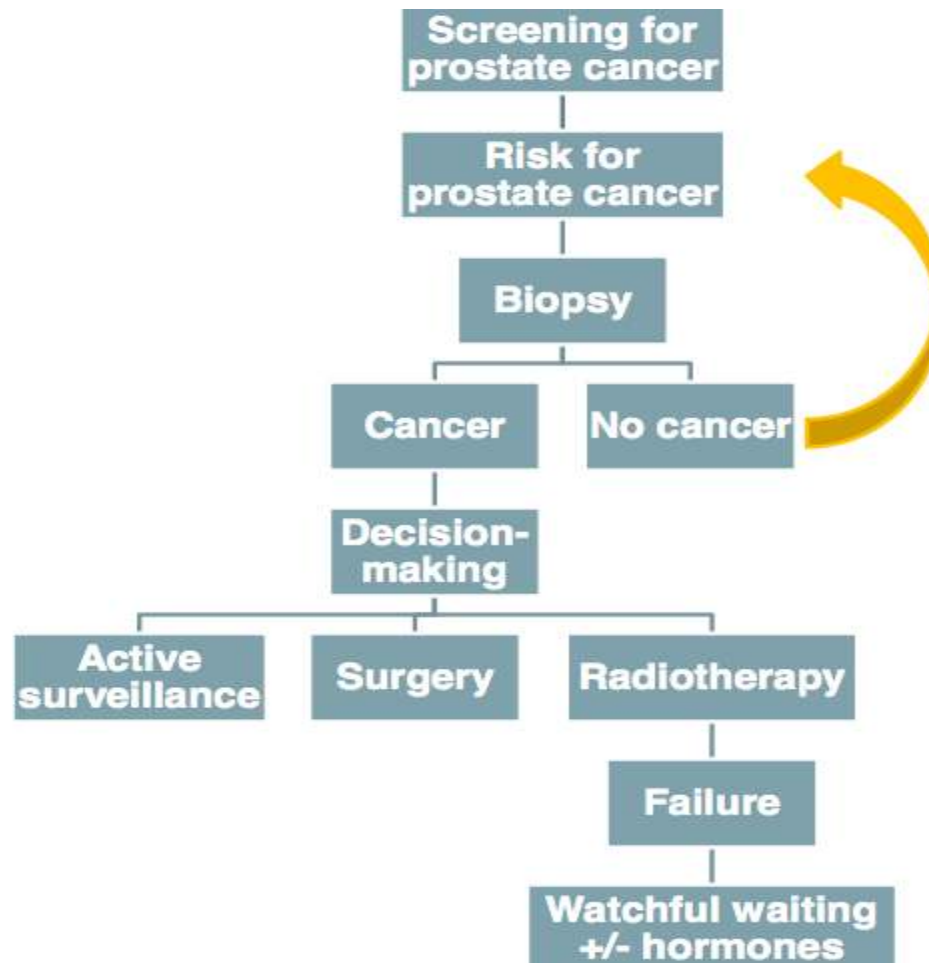


Prostate Cancer



Cancer Research UK. Increased diagnosis due to incr use of PSA test. Little change in survival / mortality rates.
 Localised (T1+T2) 90% 5 yr survival . Locally advanced (T3) with treatment (DXT and hormones) 70-80% 5 yr. Metastatic 30% 5 yr. Low grade (Gleason 6) 98% 5 yr, high grade 67% 5 yr.

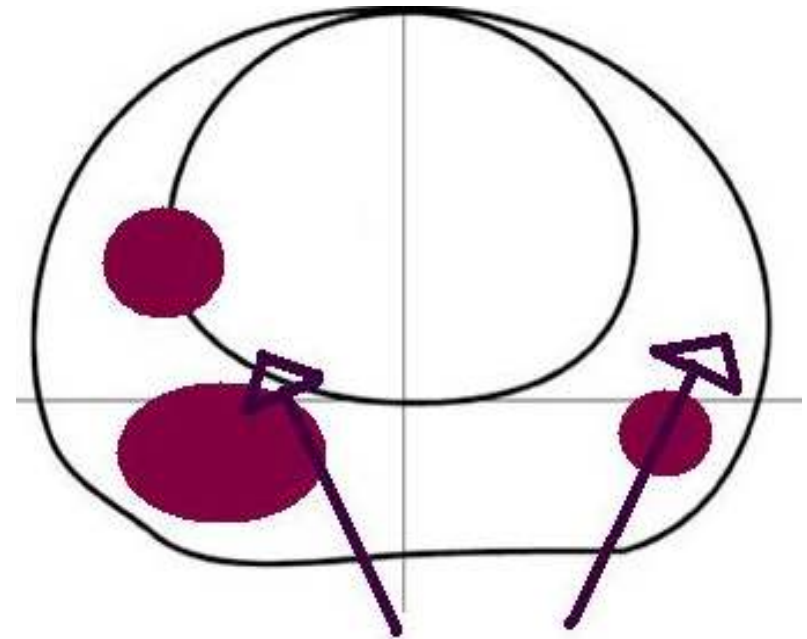
Current Prostate Cancer Pathway



Limitations to Current Practice

- Picks up clinically indolent cancers by chance
- Misses clinically significant lesions anteriorly as only biopsies posterior gland
- Classifies cancers incorrectly – underestimates grade in 1/3 and extent by ¼
- Whole gland Rx does harm

NEJM article July 2012 - 360 patients . Observation or RP . Men with low risk disease more likely to die (62 v 54) if allocated to RP group rather than conservative Mx (p=0.07).
AND surgical complications, incontinence, erectile dys.

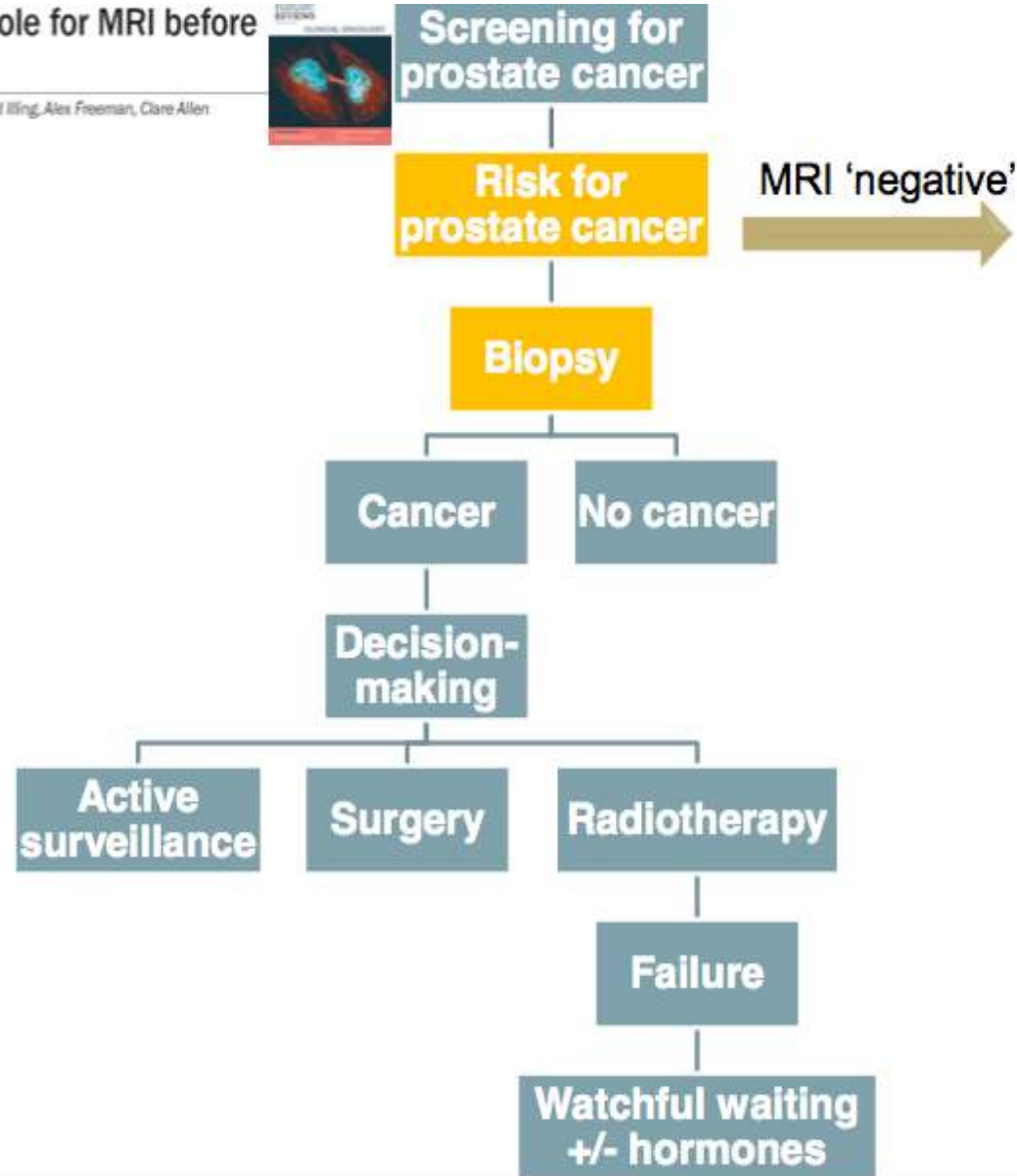
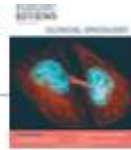


Challenges to Current Pathway

- Not all lesions detected are clinically significant
- Deciding what is clinically significant and what we need to treat
- Deciding what we don't need to find or treat

Is it time to consider a role for MRI before prostate biopsy?

Hashim U. Ahmed, Alex Kirkham, Mani Arya, Rowland Illing, Alex Freeman, Clare Allen and Mark Emberton



Multiparametric MRI

- Multiparametric = standard sequences + diffusion weighted sequences (DWI) and dynamic contrast (DCE)
- Current best practice and European consensus. **Pre biopsy.**
- NICE guidelines (2014) - post negative biopsy , staging, active surveillance
- Key performance characteristic – misses majority of small (<0.1cm³), low grade tumours

Multiparametric MRI

- Body of evidence
- T2+DCE+DWI best combination (pre biopsy)
 - High sensitivity (86%)
 - High specificity (94%)
 - High NPV (95%)

• [Peripheral zone prostate cancer localization by MRI at 3T: unbiased cancer identification by matching to histopathology.](#)


• [Selnæs KM, et al Invest Radiol. 2012 Nov;47\(11\):624-33.](#)

• [Multiparametric MRI for prostate cancer localization in correlation to whole-mount histopathology. Isebaert S, et al, J Magn Reson Imaging. 2012 Nov 21.](#)

Benefits of MRI pre prostate biopsy

- Baseline MRI
- Avoid biopsy related haemorrhage artefact
- Improved lesion characterisation
- Combine with panel of other markers
- Guides management
 - –Targets biopsies in high risk group
 - –Avoid unnecessary biopsies
 - –In low risk and negative mpMRI TRUS could be avoided in 47%

Advantages of mpMRI and targeted biopsy

- Whole gland assessment
 - Guides targeted biopsies
 - Improved detection of clinically significant cancers
 - Reduced detection of clinically insignificant cancers
 - Improved assessment of size and grade
 - Improved evaluation and prognostication
- 

mpMRI post prostate biopsy

- Still has a role
 - Re evaluates risk
 - Biopsies miss cancer
 - Rules out advanced disease

The evidence suggests

- We should not be performing any MRI post biopsy.
- We should not be performing any biopsy without a mpMRI.

Current situation across the network- variable


- Not all dept's in the network have the capacity to do pre-biopsy MRI's
- There is variation in timing of MRI in the patient pathway and MRI technique (eg post contrast)
- Detailed assessment of current practice across the network is being undertaken

Aims of Imaging Network

- Identify variance in prostate imaging across the participating hospitals of the network
 - Standardised approach
- Agree a protocol incorporating NICE guidelines

Aims of the Imaging Network

- Standardise Reports
- Reporting proforma
- Diagram - scoring system
- Agree quality assessment measures

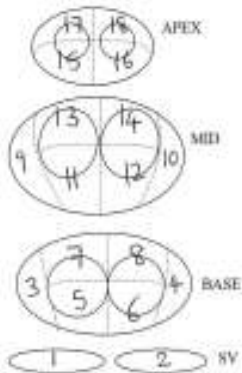
Royal Berkshire 
 NHS Foundation Trust

Multiparametric Prostate MRI Scoring Diagram

mpMRI PROSTATE SCORING SHEET

Patient Details: _____ Indication: _____
 Date of Birth: _____ Volume: _____
 Referring Consultant: _____

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	Lat PZ	Med PZ	R ANT	L ANT	Med PZ	Lat PZ
Sph			19	20		
Apex		15	17	18	16	
Mid	9	11	13	14	12	10
Base	3	5	7	8	6	4
SV		1			2	

1 Benign
 2 Low probability of significant tumour
 3 Equivocal
 4 High probability of significant tumour
 5 Almost certain tumour

Summary

- mpMRI powerful tool in the prostate cancer pathway
- Imaging Network aims to standardise the approach to imaging in the pathway

Oxford Academic
Health Science Network



Thank You

