**TRUS/MRI Fusion Targeted Biopsy**

*Which men may benefit?*

- Most men undergoing prostate biopsy
- Men at high risk of prostate cancer
  - Suspicious digital rectal exam
  - Predictor Tables or Biomarkers indicating high risk
  - Prior biopsy negative or showing pre-cancerous cells
- Men with persistent unexplained increases in PSA, PSA Density or biomarkers
- MRI identified nodules
  - Score 4 and 5
  - Clinical high risk Score 3
- Men on Active Surveillance

*What can it do?*

- Targets for biopsy the MRI identified cancer nodule(s)
- Diagnosis aggressive significant cancers at first fusion biopsy session
  - Avoids repeat biopsy sessions
  - Fewer biopsy sessions, fewer biopsy complications
- Earlier diagnosis of aggressive significant cancers
  - Earlier treatment, greater opportunity for cure
- Less diagnosis of not-aggressive insignificant cancers
  - Decreases unnecessary treatment

**References**

2. AUA/SAR Joint Consensus Statement, Prostate MRI and MRI-Targeted Biopsy in patients with prior negative biopsy, pub. online (2016)
Trans-Rectal Ultrasound (TRUS) Prostate Biopsy

The Old Way – TRUS Schematic biopsy

Trans Rectal Ultrasound (TRUS) schematic 10-12 core biopsy without detailed MRI imaging is inaccurate and may miss many aggressive significant prostate cancers that can cause serious illness.

![TRUS Schematic biopsy diagram](image)

The New Way – TRUS/MRI Fusion Targeted Biopsy

TRUS provides exterior anatomy - images for biopsy needle placement
MRI provides detailed exterior anatomy and interior anatomy

Identifies and targets cancer nodule(s)

Prostate MRI

> Identifies cancer nodule(s)
  - Location and size

> Characterizes cancers
  - The likelihood of cancer - the 3 parameter risk score (T2w, DWI/ADC, DCE) 1, 2, 3, 4, 5
  - (learn more, pamphlet #6 Magnetic Resonance Imaging)
  - Predicts cancer aggressiveness (Gleason grade)

> Local-Regional Staging
  - Cancer involving the capsule which surrounds the prostate or outside the prostate

MRI selects patients for biopsy and targets with TRUS where to biopsy

TRUS/MRI Fusion Targeted Biopsy

> Schematic cognitive biopsy
  - The surgeon visually and mentally combines TRUS and MR images to determine the prostate sectors to be biopsied.

> Software co-registration biopsy
  - TRUS/MRI computer 3D fusion images targets the prostate nodule(s) to be biopsied.

TRUS/MRI Fusion Schematic 12 core Cognitive Biopsy

TRUS/MRI Fusion Co-Registration Biopsy

Images from Koelis Urostation

Age 69, FHx +, PSA 16.3, p. vol. 58 cc,
PSA Density 0.28, DRE negative, MRI nodule sector 4A,
Score 5, Biopsy pathology – One core 10% Gleason 8

Age 56, FHx negative, PSA 4.85, p. vol. 28.1 cc,
PSA Density 0.17, DRE negative, MRI nodule sector 9P, 11A,
Score 4, Biopsy pathology – 3 cores 50% Gleason 7