Get the Needle and Ultrasound Out of the Rectum in Prostate Interventions

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- **Licensed Patents / Royalties:** Philips (NIH and BW receive royalties for licensed Patents)

- **FDA:** Off-label use
Why Get Needle & Ultrasound Out of the Rectum?

- Infectious complications common after TRUS-guided trans-rectal prostate biopsy
- Need to reduce infection rates, post-biopsy sepsis, & antimicrobial resistance
- Transperineal biopsy has super low infection rates (0.3 %)
- Patients without rectums require alternate approaches & guidance methods outside of MRI
- Standard TP = transperineal biopsy still requires ultrasound in rectum
- Goal: Get needle & ultrasound out of rectum & maintain fusion guidance 45-90 degrees uncorrected offset
- Using standard tools & EM trackers with TP ultrasound results in hidden inaccuracies & errors
  - Error due to fact that 2D to 3D sweep process assumes a perfectly straight rectal wall
  - Error due to fact that software assumes rectal US, and TP US is rotated
- Thus new software & hardware are required (coming soon to a perineum near you)

- Less infection, better compliance, better tolerated, still fusion accuracy
- But more operator-dependent
Different 2D sweep geometries explain why custom software & hardware are required to avoid error.

Transperineal Ultrasound + Transperineal Needle

Same Old US/MRI fusion
But hand-held US probe on perineum with needle entry next to US angled towards probe

Trans perineal Ultrasound registered to prior triplanar MRI after a 2D EM-tracked sweep with curvilinear MC-7-2 transducer on a Philips Epiq ultrasound using custom “PercuNav” instead of “UroNav”

Freehand TP “end-fire” US with freehand TP needle. Accurate fusion was also obtained with EPIQ PercuNav system and EM tracked MC7-2 probe with integrated internal EM sensors