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**Introduction & Objectives:** This study aims to compare the sensitivity, specificity, NPV and PPV of mpMRI with the novel high-resolution micro-ultrasound imaging modality. This approach offers the benefits of simplicity, a single intervention for imaging and biopsy, leveraging the low cost of ultrasound. Micro-ultrasound may be used to image suspicious lesions and target biopsies in real-time with or without additional MRI-based targets.

**Materials & Methods:** Data from 8 sites was aggregated, totaling 784 subjects presenting for ExactVu micro-ultrasound guided biopsy with available mpMRI studies. Samples in all subjects were taken from mpMRI targets and micro-ultrasound targets, with up to 12 systematic samples filled in. Various strategies were used for mpMRI target sampling including cognitive fusion with micro-ultrasound, separate software-fusion systems, and software-fusion using the micro-ultrasound FusionVu system. Clinically significant cancer was considered any Gleason Sum > 6 and targeted samples were taken for PI-RADS > 2 or PRI-MUS<sup>1</sup> > 2 lesions.

**Results:** Overall, 40% of all biopsy cases were positive for clinically significant PCa. mpMRI demonstrated 89% sensitivity and NPV of 75%. Compared to mpMRI, micro-ultrasound sensitivity (94%) and NPV (83%) were higher. Micro-ultrasound was less specific (19% vs 23% for mpMRI) and PPV was 44% for both. The aggregate effect demonstrates higher sensitivity for csPCa with micro-ultrasound compared to mpMRI (p<0.01).

**Conclusions:** Micro-ultrasound is an attractive option for screening and targeted biopsy. Sensitivity and NPV appear superior to MRI, but specificity is mildly reduced. Further larger-scale studies are required for validation of these findings.

#### References:

- Ghai, S. et al., "Assessing Cancer Risk in Novel 29 MHz Micro-Ultrasound Images of the Prostate", Journal of Urology, 2016 Aug;196(2):562-9