

# **AI in Prostate Pathology – Is this Becoming Reality?**

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## **BACKGROUND**

There is high demand to develop clinically useful computer-assisted diagnostic tools to evaluate prostate pathology specimens. Multiple studies have looked at the performance of AI-based tools in the detection and grading of adenocarcinoma within prostate core needle biopsies. These studies have employed different training and testing approaches, divergent study designs, and yielded varying degrees of accuracy. Early adopters have begun providing feedback about such AI systems deployed in clinical practice. In order to become part of routine clinical practice, these deep learning algorithms need to be assessed in terms of their scope, accuracy, and clinical relevance. The aim of this presentation was to therefore assess and compare the characteristics, performance, and validation of multiple AI-based diagnostic tools in prostate pathology.

## **METHODS**

Different peer-reviewed studies were evaluated in terms of algorithm training sets, test sets, training methodology, validation approach, scope of tasks, study design, performance characteristics and clinical utility.

## **RESULTS**

There is large variation between AI-based approaches applied to prostate pathology algorithm development, particularly with respect to validation and experience in routine clinical practice. Prostate AI-based tools deployed to date have revealed discrepancies in current prostate biopsy diagnosis, that accordingly demonstrates their utility in augmenting pathologists in clinical practice settings.

## **CONCLUSIONS**

Although AI-based tools for evaluating prostate biopsies need to be closely appraised on an individual level for their design and performance, this analysis demonstrated clinical utility and strong evidence to support that implementation of these AI systems in routine prostate diagnosis is becoming a reality and has the potential to improve patient care.