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Summary

# ARTIFICIAL INTELLIGENCE-ASSISTED DIGITAL PATHOLOGY IS COMPARABLE TO EXPERT PATHOLOGISTS AND OUTPERFORMS NON-EXPERTS IN INFLAMMATORY BOWEL DISEASE: A NETWORK META-ANALYSIS

Marietta Iacucci

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**This first meta-analysis of 12 studies (2022-2024) comparing AI-assisted digital pathology with pathologists in IBD found that AI models perform comparably to expert pathologists and significantly outperform non-experts in histological diagnosis and disease assessment.**

## KEY POINTS

- AI models achieved pooled accuracy of 0.88, sensitivity of 0.85, and positive predictive value of 0.88 across IBD histological tasks, with no significant difference in performance between Crohn's disease and ulcerative colitis applications.
- Expert pathologists reached the highest pooled accuracy at 0.91, followed by AI models at 0.88 and non-expert pathologists at 0.82, with differences statistically significant by meta-regression.
- Network meta-analysis showed no significant performance difference between AI and expert pathologists, while AI significantly outperformed non-experts in accuracy, F1 score, and Matthews correlation coefficient.
- High heterogeneity was observed across studies, and the authors conclude that standardisation efforts are needed to reduce variability and facilitate widespread AI implementation in IBD pathology.
- This work supports integrating AI models to expedite central reading in clinical trials and suggests potential for future clinical practice application.

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