Diagnostic assessment of deep learning algorithms for detection of lymph node metastases in women with breast cancer.

Diagnostic error is a growing area of focus within patient safety. Artificial intelligence has the potential to improve the diagnostic process, both in terms of accuracy and efficiency. In this study, investigators compared the use of automated deep learning algorithms for detecting metastatic disease in stained tissue sections of lymph nodes of women with breast cancer to pathologists' diagnoses. The algorithms were developed by researchers as part of a competition and their performance was assessed on a test set of 129 slides, 49 with metastatic disease and 80 without. A panel of 11 pathologists evaluated the same slides with a 2-hour time limit and one pathologist evaluated the slides without any time constraints. The authors conclude that some of the algorithms demonstrated better diagnostic performance than the pathologists did, but they suggest that further testing in a clinical setting is warranted. An accompanying editorial discusses the potential of artificial intelligence in health care.