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Evaluating the GeneXpert Platform for Simultaneous Detection of SARS-CoV-2 and Influenza in Primary Care Settings in the Western Cape, South Africa

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Abstract

The clinical similarity between COVID-19 and influenza complicates diagnosis in primary care. Rapid and accurate differentiation is essential for appropriate patient management and infection control. This study evaluated the field performance and operational utility of the GeneXpert platform for the simultaneous detection of SARS-CoV-2 and influenza viruses in public primary care clinics. A cross-sectional diagnostic accuracy study was conducted across six primary care clinics. Consecutive patients presenting with influenza-like illness were recruited. Nasopharyngeal swabs were tested on-site using the GeneXpert Xpress SARS-CoV-2/Flu/RSV assay. All samples underwent confirmatory testing using a standard RT-PCR assay at a central laboratory as the reference standard. Operational data, including turnaround times, were recorded. Compared to central laboratory RT-PCR, the GeneXpert assay demonstrated high sensitivity and specificity. For SARS-CoV-2, sensitivity was 94.7% and specificity 99.1%. For influenza A, sensitivity was 92.3% and specificity 99.6%. The median time from sample collection to result at the clinic was 52 minutes, substantially faster than the median laboratory turnaround time. The GeneXpert platform provides accurate and rapid simultaneous detection of SARS-CoV-2 and influenza in primary care settings, supporting timely clinical decisions. Integration of this platform for syndromic testing in primary care should be considered, subject to sustainable funding for cartridges and maintenance. Staff training and robust quality assurance protocols are essential. Point-of-care testing, multiplex PCR, diagnostic accuracy, respiratory pathogens, primary health care, South Africa. This research provides evidence for the implementation of a rapid molecular diagnostic platform in resource-limited primary care settings to improve the management of acute respiratory infections.

Keywords: *GeneXpert, point-of-care testing, multiplex PCR, primary healthcare, South Africa, SARS-CoV-2, influenza*

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