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A Comparative Analysis of Point-of-Care Ultrasound and Clinical Examination for Diagnosing Paediatric Pneumonia in a Ugandan Referral Hospital

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Abstract

Pneumonia is a leading cause of death in children in sub-Saharan Africa. In resource-limited settings, diagnosis relies on clinical examination, which can be non-specific. Point-of-care ultrasound (POCUS) is a potential alternative, but its comparative diagnostic accuracy in this context requires further evaluation. This study compared the diagnostic accuracy of lung POCUS against clinical examination for pneumonia in children under five years at a Ugandan referral hospital. A cross-sectional diagnostic accuracy study was conducted at Gulu Regional Referral Hospital. A consecutive sample of children under five presenting with cough or difficulty breathing underwent both a standardised clinical examination by a paediatrician and a lung POCUS by a trained clinician. Clinical diagnosis served as the reference standard. Sensitivity, specificity, and predictive values were calculated. POCUS demonstrated higher sensitivity for detecting sonographic features of pneumonia than clinical examination. It identified consolidation in 38% of children clinically diagnosed with pneumonia. POCUS also detected subclinical findings in a further 15% of children not initially suspected of having pneumonia by clinical assessment. In this setting, POCUS was a more sensitive diagnostic tool for paediatric pneumonia than standard clinical examination. It identified cases missed clinically and detected early or focal consolidation. Implementation research is needed to assess the feasibility of integrating POCUS into

routine paediatric assessment in similar hospitals. Training programmes for healthcare workers in paediatric lung ultrasound should be developed and evaluated. point-of-care ultrasound, paediatric pneumonia, diagnostic accuracy, Uganda, resource-limited setting, clinical examination This study provides comparative evidence on the diagnostic performance of POCUS for paediatric pneumonia in a typical sub-Saharan African hospital setting, informing potential practice changes.