



A Comparative Analysis of Point-of-Care Ultrasound and Clinical Examination for Diagnosing Pneumonia in Under-Fives at a Ugandan Regional Referral Hospital

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Abstract

Pneumonia is a leading cause of death in children under five in sub-Saharan Africa. Clinical examination, the standard diagnostic method in resource-limited settings, has recognised limitations in accuracy. Point-of-care ultrasound (POCUS) is a potential alternative, but its comparative diagnostic performance in this context is not well established. This study aimed to compare the diagnostic accuracy of POCUS against clinical examination for pneumonia in children under five, using chest radiograph as a reference standard, at a regional referral hospital in Uganda. A cross-sectional diagnostic accuracy study was conducted. A consecutive sample of children under five with clinical suspicion of pneumonia underwent a standardised clinical examination, followed by POCUS performed by a trained clinician blinded to clinical findings. Findings were compared against a reference chest radiograph interpreted by a paediatric radiologist. POCUS demonstrated superior diagnostic accuracy to clinical examination. The sensitivity of POCUS was 88% (95% CI: 81–93) versus 72% (95% CI: 64–79) for clinical examination. Specificity was also higher for POCUS at 85% (95% CI: 78–90) compared to 70% (95% CI: 62–77) for clinical examination. POCUS showed significantly higher sensitivity and specificity than clinical examination for diagnosing paediatric pneumonia in this setting. POCUS should be considered for integration into paediatric assessment protocols in similar resource-limited hospitals, contingent on targeted training and sustainable equipment provision. Further research should explore implementation strategies and cost-effectiveness. point-of-care ultrasound, pneumonia, paediatrics, diagnostic accuracy, Uganda, low-resource setting This study provides original evidence on the comparative diagnostic accuracy of point-of-care ultrasound for childhood pneumonia in a typical sub-Saharan African hospital setting.

Keywords: *point-of-care ultrasound, clinical examination, pneumonia, under-fives, sub-Saharan Africa, diagnostic accuracy*

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