

## Abstract

**Background:** Point of care lung ultrasound (LUS), ultrasound of lung that is performed at the bedside by a clinician, is an imaging modality that is equal to or more accurate than chest radiography for multiple common causes of dyspnea. In spite of its many advantages, few hospitalists use LUS. The purpose of this study was to understand the process of LUS adoption and the impact of LUS on real world hospitalist practice.

**Methods:** A retrospective chart review was conducted of patients who received a LUS while hospitalized at a quaternary care academic medical center in Aurora, CO between July 2020 through June 2022. Data was extracted from the electronic health record (EHR) into a standardized REDcap form. Cases were defined as patients who had received LUS that 1) had images archived and accessible to viewing through the electronic medical record (EHR) and 2) had an imaging report documented in the EHR. All ultrasounds were performed with handheld devices.

**Results:** Of the 831 LUSs reviewed, 302 were performed to evaluate for appropriateness of thoracentesis, 271 for diagnosing or monitoring pneumonia, 172 for volume status assessment, 137 for worsening respiratory status, 115 for monitoring pleural effusions, and 12 for monitoring of diuresis. Documentation was sufficient to determine clinical decision making for LUS. 87.9% were considered to be diagnostically useful and 39.2% changed management.

**Conclusions:** These data suggest that LUS was most often a diagnostically useful test and the results routinely changed management, but that the rates of LUS use remaining relatively low. This work also demonstrated high rates of documentation sufficient to evaluate clinical decision-making allowing for robust analysis of real-world clinical decision-making using LUS, which is an important gap in both the education and health services research literature. Using this research infrastructure, we plan for future work to focus on monitoring multiple implementation and health outcomes including equity of implementation as well as common cognitive errors seen within LUS to inform improvements in hospitalist training.