**INTRODUCTION**

Dyspnea is a common symptom of patients presenting to emergency departments (EDs) and is associated with a spectrum of underlying pathologies. The utilization of point-of-care ultrasound (POCUS) has gained prominence in the evaluation of dyspneic patients, offering rapid diagnostic insights at the bedside. Several studies have shown that POCUS use in acute dyspnea can reduce time to diagnosis (1, 2) and improve diagnostic accuracy (3, 4), but it is uncertain if use of POCUS can decrease the use of other diagnostic modalities, leading to decreased overall cost of ED visits. We investigated the association of POCUS with ED charges and concurrent use of traditional diagnostic modalities (chest X-ray, CXR) in patients presenting with dyspnea.

**METHODS**

A Nationwide Emergency Department Sample (NEDS) database query from 2020 was conducted to identify patients presenting to the ED with acute dyspnea, based on ICD-10 codes R06.01-03, R06.09, R09.02, J44.1, J81.0, I50.9, I50.23, I50.33, and I50.43 entered as a primary diagnosis. Patients who died in the ED, left against medical advice, or entered as a primary diagnosis. Patients who were excluded. POCUS and CXR use in the ED were identified using CPT codes 76604 and 71045-6, respectively. The primary outcome was use of CXR. Covariates included sex (male or female), age (<18, 18-45, >46), presence of select cardiac or pulmonary comorbid conditions, based on Clinical Classifications Software Refined (CCSR) codes, that may trigger use of CXR (urban teaching, urban non-teaching, or rural).

**RESULTS**

We identified 328,794 cases meeting inclusion criteria (weighted 54% male/46% female; 3% age <18, 20% age 18-45; 77% age >45). Sixty-four percent of cases involved CXR use while only 0.1% involved documented POCUS use (unweighted n=294). Mean ED charges were $6,247. On bivariate analysis, charges were higher among cases involving POCUS use ($8310 vs. $6245, p<0.001), and CXR use was more likely among cases with documented POCUS use (74% vs. 64%, p<0.001). Multivariable analysis adjusting for all study covariates confirmed that documented POCUS use was associated with $2082 higher ED charges (95% confidence interval [CI]: 1339, 2826; p<0.001) and 71% higher odds of CXR use (odds ratio: 1.71; 95% CI: 1.30, 2.25; p<0.001).

**Figures**

![Graph showing Proportion of POCUS and CXR use](image)

- **Proportion of POCUS and CXR use**
  - POCUS: 0.0096621 (0.0005696, 0.0007852, 0.0010212)
  - No POCUS: 0.9903379 (0.9994014, 0.9999977)
  - CXR: 0.6393474 (0.6374929, 0.6407733)
  - No CXR: 0.3606526 (0.3592967, 0.3620071)

**REFERENCES**

6. Shows, J.T., Tost, J., Calle, T., etc. ECU Emergency Medicine Department Sample (NEDS) database query from 2020 was conducted to identify patients presenting to the ED with acute dyspnea, based on ICD-10 codes R06.01-03, R06.09, R09.02, J44.1, J81.0, I50.9, I50.23, I50.33, and I50.43 entered as a primary diagnosis. Patients who died in the ED, left against medical advice, or entered as a primary diagnosis. Patients who were excluded. POCUS and CXR use in the ED were identified using CPT codes 76604 and 71045-6, respectively. The primary outcome was use of CXR. Covariates included sex (male or female), age (<18, 18-45, >46), presence of select cardiac or pulmonary comorbid conditions, based on Clinical Classifications Software Refined (CCSR) codes, that may trigger use of CXR (urban teaching, urban non-teaching, or rural).