A 26-year-old female presented to the emergency department with three days of subjective fevers, dry cough and pleuritic chest discomfort. On exam, her vital signs were significant for a heart rate of 106/minute and oxygen saturation of 95% on room air. Her lung exam revealed decreased breath sounds at the right base. A bedside lung ultrasound and a chest radiograph were performed (Figure 1a, Figure 2, and Video).

**DIAGNOSIS: COMMUNITY ACQUIRED PNEUMONIA**

Community acquired pneumonia (CAP) is a common disease in the United States and represents the seventh leading cause of death.\(^1\)

While chest computed tomography (CT) is the gold standard diagnostic tool for CAP, its use is limited by both cost and radiation exposure.\(^2\) Unfortunately, chest radiography has poor sensitivity (43.5%) for the diagnosis of CAP when compared to CT (Figure 2).\(^3\) Lung ultrasound (LUS) has been shown to have superior sensitivity (80-95%), has no ionizing radiation, and is easy to perform at the bedside.\(^2,4\)

On LUS, pneumonia has similar echogenicity to the liver with hyper-echoic foci, representing air bronchograms (Figure 1a). Consolidation allows transmission of ultrasound waves through the lung enabling visualization of the thoracic spine; this is known as the “spine sign.” In contrast, in a normal lung, air molecules scatter sound waves limiting their transmission and thus the spine is not visualized above the diaphragm (Figure 1b).

While it is underutilized, point-of-care LUS is a rapid, accessible, safe, and low-cost imaging tool for the diagnosis of pneumonia.\(^2,4\) LUS may be particularly useful in patients with high likelihood of a pneumonia but with a negative radiograph and for children to minimize radiation exposure. Practicing LUS in patients with a known infiltrate on radiograph may help providers increase their confidence and skills in the use of this growing diagnostic tool.

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**Figure 1a.** Ultrasound of lung with pneumonia: Linear, bright (hyper-echoic) foci represent air bronchograms (arrows) above the diaphragm (asterisks).

**Figure 1b.** Ultrasound of normal lung: note the mirror image artifact: appearance of liver above and below the diaphragm (arrow) and the absence of a spine sign.
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Conflicts of Interest: By the WestJEM article submission agreement, all authors are required to disclose all affiliations, funding sources and financial or management relationships that could be perceived as potential sources of bias. The authors disclosed none.

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Video. Pneumonia on lung ultrasound.

REFERENCES

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