
Lung Ultrasound Safer Than Chest X-ray For Pneumonia in Children



Lung ultrasound is portable, less costly and safer than chest X-rays when diagnosing pneumonia in children, according to a study conducted at the Icahn School of Medicine at Mount Sinai, results of which were published in the medical journal [Chest](#).

Pneumonia is the leading cause of death in children worldwide, according to the World Health Organisation (WHO) and chest X-ray is considered the test of choice for its diagnosis. But the WHO estimates that three-quarters of the world's population does not have access to radiography.

Investigators conducted a randomised controlled [trial](#) in the paediatric Emergency Department at Mount Sinai Hospital comparing lung ultrasound to chest X-rays in 191 children from birth to 21 years of age. The patients were randomly assigned to two categories: an investigational arm (received a lung ultrasound and if the physician needed additional verification, a chest X-ray) and a control arm (received a chest X-ray followed by a lung ultrasound). Researchers found a 38.8 percent reduction in chest X-rays in the investigational arm compared to no reduction in the control arm, with no missed pneumonia cases and no increase in any other adverse events.

The research team was led by [James Tsung](#), MD, MPH, Associate Professor in the Department of Emergency Medicine and Department of Paediatrics at the Icahn School of Medicine at Mount Sinai, and former clinical fellow [Brittany Pardue Jones](#), MD, currently Assistant Professor in the Department of Paediatrics at Vanderbilt University School of Medicine.

"Ultrasound is portable, cost-saving and safer for children than an X-ray because it does not expose them to radiation," said Dr. Tsung. "Our study could have a profound impact in the developing world where access to radiography is limited."

Furthermore, the reduction in chest X-rays in the investigational arm resulted in an overall cost savings of \$9,200, and length of stay in the emergency department was decreased by 26 minutes.

Symptoms for pneumonia include fever, cough, and rapid breathing.

"In the era of precision medicine, lung ultrasound may also be an ideal imaging option in children who are at higher risk for radiation-induced cancers or have received multiple radiographic or CT (computed tomography) imaging studies," said Dr. Tsung.

As more and more handheld ultrasound machines come to market, these results suggest that lung ultrasound has the potential to become the preferred choice for the diagnosis of pneumonia in children. Further research is needed to investigate the impact of lung ultrasound on antibiotic use and stewardship, the researchers concluded.

Watch the video: <https://www.youtube.com/watch?v=Qd-26HdJP6I>

Journal Reference:

Brittany Pardue Jones, Ee Tein Tay, Inna Elikashvili, Jennifer E. Sanders, Audrey Z. Paul, Bret P. Nelson, Louis A. Spina, James W. Tsung. **Feasibility and Safety of Substituting Lung Ultrasound for Chest X-ray When Diagnosing Pneumonia in Children: A Randomized Controlled Trial.** *Chest*, 2016; DOI: [10.1016/j.chest.2016.02.643](https://doi.org/10.1016/j.chest.2016.02.643)

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