

What's New in the Patient Safety World

April 2021

Old Habits Are Hard to Break

Medical directors are responsible not only for patient safety, but also for quality and efficiency. One of our first projects in the early 1990's was to identify wasteful practices that added costs but did not improve patient outcomes. One of the first places we looked was our ICU's. It was mind-boggling the number of patients receiving daily chest x-rays without significant clinical changes, daily CBC's and electrolytes despite stable results, and receiving continuous oxygen despite adequate oxygen saturations on room air. So, we instituted policies to reduce any of these practices that could not be justified on clinical grounds and saw substantial reductions in these unnecessary practices.

Don't get us wrong. There are legitimate reasons to need repeat chest x-rays. There is seldom reason to need another prompt chest x-ray in a patient with pneumonia. Typically, a repeat x-ray will look worse because the pneumonia is consolidating regardless of how the patient is faring clinically. But sometimes you will need another x-ray if you suspect empyema, pneumothorax, significant atelectasis, or even pulmonary embolism. But, in all those situations there should be other clinical information that dictates you look for complications (eg. rising or recurrent fever, increasing white blood cell count, drop in oxygen saturation, etc.). And sometimes you need a repeat x-ray to check tube or line placement. But all those call for just a single repeat x-ray, not daily x-rays.

We've long thought that the "daily chest x-ray" was a thing of the past. Apparently, not so! Scott and colleagues just published a study documenting significant cost savings from a program to reduce such daily utilization of portable chest x-rays in ICU's in a major public teaching hospital ([Scott 2021](#)). They begin by noting several studies that had showed such reductions had resulted in no difference in mortality, length of stay, or ventilator-free days compared with routine, daily use. They also note that the ACR (American College of Radiology) recommends against the practice of obtaining routine daily chest x-rays. But, they note that daily portable chest x-rays often remain the standard practice at many hospitals.

They describe a multidisciplinary team (representatives from radiology, surgery, internal medicine, and nursing) that changed resident education, ordering protocols, and workflows to discontinue the use of routine daily chest radiography, emphasizing that it

should be ordered only in specific situations, such as on admission or after central line placement. They tracked not only radiology utilization but also complications such as unplanned extubations and ventilator days.

The practice of standing daily CXR orders on ICU admission was discontinued. Instead, the need for CXR was determined only after examining the patient or on the basis of clinical events such as placement of a line, oxygen desaturation, or fever.

Changing ordering practices in the adult ICUs to align with established evidence-based guidelines resulted in a 37% decrease in the utilization of portable chest radiography between June and December, without a concomitant increase in unplanned extubations or ventilator days. When the number of chest radiographic examinations is normalized to ventilator days, there was still a decrease, from an average of 1.5 before the intervention to 1.1 after the intervention, a change of 27%.

In addition, a proportionate cost savings was realized. They calculated that the total average monthly cost of portable CXR decreased from \$11,633 before the intervention to \$7,348 after the intervention, also representing a 37% decrease.

We do take some exception with their method of calculating costs savings. A big chunk of the costs of CXR included the costs of the radiology technician and supervision. Of course, any actual cost savings would only be incurred if there was a reduction in the number of RT's and their supervisors or if they were shifted to some other procedures that brought in net income for the hospital.

Nevertheless, the study shows that the inappropriate practice of ordering the daily "routine" CXR persists and can be fixed, with consequent cost savings. The authors also point out that unnecessary CXR's may have other unwanted effects aside from unnecessary costs. These include radiation exposure, disturbing the patient's sleep, equipment dislodgement, and skin shear injuries from positioning maneuvers.

The Scott publication nicely describes the staff education and workflow alterations implemented. One problem, frequently seen in teaching hospitals, is the need to hold multiple educational sessions because residents and interns may change monthly. They also attribute the success of the project to use of a multidisciplinary team with strong project champions.

References:

Scott J, Waite S, Napolitano A. Restricting Daily Chest Radiography in the Intensive Care Unit: Implementing Evidence-Based Medicine to Decrease Utilization. JACR 2021; 18(3): 354-360
[https://www.jacr.org/article/S1546-1440\(20\)30647-5/fulltext](https://www.jacr.org/article/S1546-1440(20)30647-5/fulltext)



The
Truax
Group
Healthcare Consulting
www.patientsafetysolutions.com

<http://www.patientsafetysolutions.com/>

[Home](#)

[Tip of the Week Archive](#)

[What's New in the Patient Safety World Archive](#)