To compare image quality, visibility of anatomic landmarks, tubes and lines, and other clinically significant findings on portable (bedside) chest radiographs acquired with wireless direct radiography (DRw) and computed radiography (CR)” Audin et al (2017).

Abstract:

OBJECTIVES: To compare image quality, visibility of anatomic landmarks, tubes and lines, and other clinically significant findings on portable (bedside) chest radiographs acquired with wireless direct radiography (DRw) and computed radiography (CR).

METHODS: In a prospective IRB-approved and HIPAA-compliant study, portable DRw (DRX-1C mobile retrofit portable wireless direct radiography, CareStream Inc., Rochester, NY) and portable CR (AGFA CR (DXG) version; NIM2103, AGFA Healthcare, Ridgefield Park, NJ) images of the chest were acquired within 24-hours in 80 patients in the intensive care unit (ICU). Image pairs of 75 patients (37% female) with a mean age of 60.7±16 years were independently compared side-by-side by 7 experienced thoracic radiologists using a five-point scale. When tubes and lines were present, the radiologist also compared an edge-enhanced copy of the DRw image to the CR image.
RESULTS: Most radiologists found significantly fewer artifacts on DRw images compared to CR images and all readers agreed that when present, these artifacts did not significantly preclude the ability to evaluate anatomic landmarks, tubes and lines, or clinically significant findings. None of the radiologists (0/7) reported superior visibility of anatomic structures on CR images compared to DRw images and some radiologists (3/7) found DRw images significantly better for visibility of anatomic landmarks such as the carina (p=0.01-0.001). Most radiologists (6/7) found DRw images to be better or clearly better than CR images for position of tubes and lines, and edge-enhanced DRw images to be especially helpful for evaluation of central venous catheters and esophageal tubes (p=0.027-0.001). None of the radiologists deemed CR images superior for visibility of clinically significant findings.

CONCLUSIONS: Critical care chest radiography with a portable DRw system can provide similar or superior information compared to a CR system regarding clinically significant findings and position of tubes and lines.

Reference:


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