

Purpose: Recent and rapid development in digital radiography (DR) systems has led to greater flexibility in DR usage. With new DR uses, new processing algorithms, new acquisition tools and methods we see new artifacts, and some old artifacts with new presentations. In this poster we present a host of DR artifacts and their explanations, along with tips for identifying or avoiding them.

Methods: DR artifacts were collected over the course of several years from four different vendor equipment models used for routine chest, general and portable radiography. Both fixed and wireless indirect flat panel detector images are included. The acquisition conditions for each image are described or approximated from knowledge of standard acquisition techniques.

Results: Artifact examples in our poster include those due to: image lag, flawed gain calibration, image-lag + flawed dark-noise correction, backscatter through a portable detector and stitching issues. The underlying physics which contributed to each artifact is explained to the degree that is possible without knowledge of proprietary vendor algorithms and techniques. Several of the artifacts presented had the potential to impact diagnosis. Suggested techniques for preventing the artifacts or quality control steps to avoid such artifact formation are also provided.

Conclusions: Before purchasing a DR system, upgrading to DR, or using DR, it is important to be aware of its limitations, some of which result in image artifact formation. In this poster, we present several example artifacts which have not previously received attention, are unique to DR, or present differently than in computed radiography (CR). Knowledge of how these artifacts form, their frequency and severity are important considerations for DR use, selection, acceptance testing and quality control.