AbstractID: 6009 Title: Determination and Optimization of DR Receptor Dose

Unlike conventional radiographic receptors (screen-film), digital systems do not generally have a fixed speed, but respond over a wide range of receptor dose. Therefore, specifying and monitoring receptor dose is an important component of quality assurance for digital radiography. Digital radiographs are currently characterized in terms of a variety of incompatible, vendor specific speed or dose metrics, which make it difficult for users to monitor receptor dose or to inter-compare receptor dose from different systems. The lack of a universal vendor-independent measure of receptor dose has prompted the formation of AAPM Task Group 116, which is currently working to "Standardize an Image Receptor Dose Index for Digital Radiography".

This talk will review the currently available vendor-specific measures of receptor dose, describe and illustrate a set of desirable attributes that should characterize a universal receptor dose metric, and explore some of the pitfalls and opportunities that having a universal metric afford. Digital radiography offers a substantial opportunity to optimize and standardize radiographic practice well beyond what could be done with conventional imaging. These along with some of the pitfalls that must be avoided will be illustrated by comparing several specific proposals for measuring receptor dose applied to a large set of clinical images for which body part, projection, thickness, technique factors (kV, mAs and SID) were documented. These alternative approaches will be compared in terms of their conformance to the desirable attributes developed at the outset.

A well-designed universal measure of receptor dose enables a vision for digital radiography that encompasses improved patient care through optimized and consistent image quality and dose. The concepts reviewed in this presentation are expected to influence the development of international standards for receptor dose anticipated within the next few years.

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Learning Objectives:

1. Understand the translation of screen-film speed and dose concepts into a digital environment.
2. Understand the relationship among the many measures of dose, including the vendor specific measures of receptor dose.
3. Appreciate the need for and the desirable attributes of a universal vendor-independent measure of receptor dose.
4. Understanding the use and interpretation of receptor dose in clinical practice.