

American Dental Association
Technical Report No. 1057

Guidelines for Digital Imaging Systems and Interoperability in Today's Dental Practice

A Technical Report prepared by the American Dental Association and registered with ANSI.

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AMERICAN DENTAL ASSOCIATION TECHNICAL REPORT NO. 1057 FOR GUIDELINES FOR DIGITAL IMAGING SYSTEMS AND INTEROPERABILITY IN TODAY'S DENTAL PRACTICE

The Council on Dental Practice of the American Dental Association has approved American Dental Association Technical Report No. 1057 for Guidelines for Digital Imaging Systems and Interoperability in Today's Dental Practice. Working Groups of the ADA Standards Committee on Dental Informatics (SCDI) formulate this and other specifications and technical reports for the application of information technology and other electronic technologies to dentistry's clinical and administrative operations. The ADA SCDI has representation from appropriate interests in the United States in the standardization of information technology and other electronic technologies used in dental practice. The ADA Standards Committee on Dental Informatics confirmed approval of ADA Technical Report No. 1057 on December 31, 2009.

Publication of this technical report that has been registered with ANSI has been approved by the American Dental Association, 211 E. Chicago Ave., Chicago, IL 60611. This document is registered as a technical report according to the *Procedures for the Registration of Technical Reports with ANSI*. This document is not an American National Standard and the material contained herein is not normative in nature. Comments on this document should be sent to the American Dental Association, 211 E. Chicago Ave., Chicago, IL 60611.

This technical report was prepared by SCDI Working Group 12.1 for Application of the DICOM Standard to Dentistry. The ADA Standards Committee on Dental Informatics thanks the members of Working Group 12.1 and the organizations with which they were affiliated at the time the specification was developed:

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FOREWORD

(This Foreword does not form a part of ADA Technical Report No. 1057 for Guidelines for Digital Imaging Systems and Interoperability in Today's Dental Practice).

In 1992, there was interest in the standardization of clinical information systems related to electronic technology in the dental environment. After evaluating current informatics activities, a Task Group of the ANSI Accredited Standards Committee MD156 (ASC MD156) was created by the ADA to initiate the development of technical reports, guidelines, and standards on electronic technologies used in dental practice. In 1999, the ADA established the ADA Standards Committee on Dental Informatics (SCDI). The ADA SCDI is currently the group that reviews and approves proposed American National Standards (ANSI approved) and technical reports developed by the standards committee's working groups. The ADA became an ANSI accredited standards organization in 2000.

The scope of the ADA SCDI is:

"To promote patient care and oral health through the application of information technology to dentistry's clinical and administrative operations; to develop standards, specifications, technical reports, and guidelines for: components of a computerized dental clinical workstation; electronic technologies used in dental practice; and interoperability standards for different software and hardware products which provide a seamless information exchange throughout all facets of healthcare."

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SCOPE

This report discusses the issues involving interoperability that arise when digital radiography and photography are integrated into a dental practice. The report describes the features of DICOM that facilitate resolution of these issues and allows a dental practice to achieve interoperability within their imaging and practice management systems and with outside healthcare data systems and networks. Descriptions of the components of a digital radiography system and guidelines on what to look for when choosing digital radiography components also are included.

INTRODUCTION

Digital radiography, which encompasses all the techniques that produce digital images, was recognized as the equal to analog film radiographs for most diagnostic tasks, especially for detecting such conditions as dental caries and periodontal bone loss, since the digital systems for intraoral radiography became available some 18 years ago. Digital radiography includes images captured using solid-state sensor arrays such as the charge-couple device [CCD] and complementary metal oxide semiconductor [CMOS], photostimulable phosphor imaging plates and the digitization of analog film radiographs by scanning or video capture.

Although the move to digital radiography requires extensive research and evaluation of numerous factors, digital imaging has many advantages over film radiography. The most important advantages for dental practices include:

- Interoperability and integration with health systems and networks, capability of electronic interchange.
- Security of images with on-site back-up and off-site archiving;
- Perfect duplicates to accompany referrals;
- Security mechanisms to identify and differentiate original from altered images;
- Ability to tag such information as patient identifier, date of exposure and other details;
- Integrated storage with access to images through practice management systems.

Key issues practitioners must evaluate before making a decision to purchase and install a new digital imaging system include:

- Acquisition costs;
- System testing;
- Strategy to integrate digital radiography with practice management system;
- Type of images required;
- Type, size and number of detectors;
- Connection/networking of radiography and computer systems;
- Operating system;