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PRACTICAL DERMATOLOGY

Digital Photograph Storage Systems in Clinical Dermatology

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Abstract

In recent years, digital photography has consolidated its role in clinical dermatology. In view of the quality and low cost of current equipment and the simplicity of digital storage, almost all dermatologists now use digital photography, which is also extremely versatile and readily applicable to teaching.

However, to maximize its full potential, image retrieval must be available at any time and with the patient present. This requires a suitable storage system that may vary according to the characteristics of each center. Dermatologists must also find time to maintain and organize the digital archives.

The present article describes current options in digital image storage and retrieval, ranging from multidepartmental picture archiving and communication systems at one end to image management freeware at the other, and also including dedicated dermatology software.

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Sistemas de almacenamiento en fotografía clínica dermatológica

Resumen

En los últimos años la fotografía digital se ha afianzado definitivamente en la consulta dermatológica. La calidad de los equipos actuales, sus bajos precios y la facilidad de almacenamiento en soporte digital hacen que hoy en día la práctica totalidad de los dermatólogos utilicen la fotografía digital debido a su gran versatilidad y a sus aplicaciones académicas. Sin embargo, para poder aprovechar todas sus posibilidades tenemos que asegurar la recuperación de las imágenes en cualquier momento y en presencia del paciente. Para ello es necesario un sistema de almacenamiento adecuado que variará en función de las características de cada centro, así como la inversión de parte de nuestro tiempo en mantener organizado el archivo de imágenes.

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En el presente artículo se describen las diferentes posibilidades existentes a día de hoy para almacenar y recuperar las imágenes digitales, desde la utilización de un *Picture Archiving and Communication Systems* multidepartamental o el empleo de *software* gratuito de gestión de imágenes, pasando por el uso de programas específicos para Dermatología. © 2009 Elsevier España, S.L. y AEDV. Todos los derechos reservados.

Introduction

The last decade has witnessed the steady changeover from archiving images in the form of slides to digital format, now that doubts concerning their quality for use in daily medical practice have been resolved.¹⁻³ Thus, in 2001, between 56% and 71% of dermatology departments in the UK had access to digital cameras (depending on whether they were university or general hospitals), whereas the percentage is now close to 100%.⁴

Digital format offers a host of advantages. Apart from considerable savings in physical space, the images are immediately available, they can be retrieved at any time and viewed with the patient present. This also facilitates their use for teaching purposes, and teledermatology and e-Health projects (Table 1).

However, to take full advantage of their potential, image retrieval must be guaranteed and this implies having an effective storage system and investing time in file maintenance and organization. What is the point of accumulating thousands of clinical photographs of our patients if we cannot find them when they are needed?

A Dermatologist Survey

Recently, members of the Spanish Academy of Dermatology and Venereology were surveyed to find out how dermatologists organized their image files (data presented at the Informatics and Teledermatology Seminar of the 37th National Congress of Dermatology and Venereology, Madrid, June 2009). In total, 93% of the 61 physicians

Table 1 Glossary of Terms

PACS	<i>Picture Archiving and Communication System</i> . Computerized system for archiving digital medical image files and transferring them to workstations through a computer network
DICOM	<i>Digital Imaging and Communications in Medicine</i> . Internationally recognized standard for transmitting medical images
MIO	<i>Medical Image Organizer</i> . DICOMization software for images and other medical parameters
CIT	<i>Communication and Information Technologies</i> . A set of techniques, developments, and advanced devices that integrate data storage, processing, and transmission functions
e-Health	The application of CIT to healthcare practice
Web 2.0	A second-generation Web technology based on user groups, and that offers a special range of services, such as social networks, <i>blogs</i> , or <i>wikis</i> that facilitate collaboration and the exchange of information between users. Also called the social Web
JPEG	<i>Joint Photographic Experts Group</i> . The most common digital image format that uses a lossy compression algorithm
BMP	Windows <i>bitmap</i> (a map of bits). A format used by the Microsoft Paint application offering lossless compression
TIFF	<i>Tagged Image File Format</i> . Image file format that uses tags, with or without compression
RAW	Image file format that contains image data as acquired by the digital camera sensor. Applies lossless compression
Exif	<i>Exchangeable image file format</i> . Specification for the image file format used by digital cameras and that adds metadata to the image file
Tag	A label. A nonhierarchical keyword assigned to a datum (such as a digital image), that describes it and enables retrieval, usually assigned informally and personally by the user
EPR	<i>Electronic Patient Record</i> . Electronic medical record in digital format
RIS	<i>Radiology Information System</i> . Database used in radiology departments to store radiologic data, integrated within the hospital's information system
HIS	<i>Hospital Information System</i>
HL7	<i>Health Level 7</i> . Set of standards for the electronic exchange of medical information
CIM 2.0	<i>Clinical Image Manager</i> (Sargonet). Application for medical image management specifically designed for dermatology
Freeware	Software that is freely available for immediate and permanent use
LOPD	Personal Data Protection Law 1999

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