

Media Refresher: Legal Implications of Record Storage

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The phrase “media refresh” probably isn’t familiar to most HIM professionals. However, the techie term is just another term for traditional professional duties inherent in health information management.

HIM professionals are taught they “must ensure that the records are kept in a way that minimizes the chance of their being lost, destroyed, or altered.”¹ They meet this obligation by ensuring physical file rooms are fire- and waterproof. HIM directors must also ensure that file room floors can sustain heavy loads, corridors are unimpeded, and shelves are kept in an orderly manner—filled with folders designed to protect chart content—and doors are locked against improper access. However, once the folders empty and the file rooms close, do HIM professionals still retain the same responsibilities?

Indeed, “HIM professionals must design safeguards that not only protect the information from loss or destruction and prevent the corruption of electronically stored data from power losses or surges, but also protect the integrity of the information itself.”² Media refresh is an IS-generated technical phrase that invokes the best practices, policies, procedures, and audits developed to ensure that the media upon which electronically stored information is backed up and eventually archived is managed and renewed, or “refreshed,” as needed.

Storage Basics

The choice of storage media must guarantee secure, long-term preservation of records that meets archival and retention requirements. The choice of file format must ensure that the archived components of the record can be reliably retrieved over time.

A typical part of an organization’s storage strategy involves removable media; therefore, records management professionals must understand portable media’s limitations and demands for archiving, as well as the requirements involved in the care, handling, and storage of removable media.

Beyond these basics, HIM professionals must also be diligent about archiving and retaining records for use beyond the clinical domain. With the arrival of e-discovery, the preservation of discoverable information and the determination of the form in which record production must occur will influence storage media selection and storage file format election.

Server-based hard disk storage offers a secure storage environment for electronic records, provided it is well managed and includes an effective back-up strategy. Removable media will almost certainly play a role in the lifecycle of any electronic record, particularly records that must be maintained over long periods of time like electronic health records.

With these considerations in mind, HIM professionals should develop and review the requirements for any storage medium with their IS departments. A set of six attributes provides a useful framework for evaluating storage options:

- Longevity
- Capacity
- Viability
- Obsolescence
- Cost
- Susceptibility³

The life span, or longevity, of the media storage must be at least 10 years. Media that has a longer life than this may not be able to be read by future technology. For example, it would be difficult to locate drives today to read the old, large floppy disks common at the beginning of removable storage.

A format's capacity refers to its ability to carry the quantity of the data required and the physical storage space available to store information. For example, the data storage center must have adequate space for all storage media required by the organization to perform its business.

Viability is a more subtle concept. As custodians of the EHR, HIM directors need storage media that allows them to check the integrity of the media after information is written to it. They also must consider if the media can be subjected to data recovery techniques in the case of data loss. Media must be write-once or have write-protect technology in order for EHR data to be secure as evidence.

Choosing media technologies that are based on common, open standards can prevent the preservation of critical records on media that may quickly become obsolete.

Unfortunately a deciding factor in choosing storage is often cost. Media costs should be compared on a price per gigabyte basis.⁴ However, the common perception that disks are cheap must be balanced against the long-term cost of ownership, which includes the cost of maintaining the necessary hardware to read the storage medium. The cost of support must also take into account the allotted time before the likely failure of the type of storage media chosen. A more costly approach may be encountered if cheap storage fails early.

Last, but not least, the susceptibility of the media to physical damage should be measured. Media must be able to tolerate a wide range of environmental variation and must be resistant to physical damage. Magnetic media should have a high "coercivity value" (preferably in excess of 1000 Oersteds, a unit of measurement for magnetic fields) to guard against accidental erasure from exposure to magnetic fields.⁵

The new Federal Rules of Civil Procedure also affect the selection and maintenance of storage media. Electronic archival media must now preserve the context of the record, such as the reason for and circumstances surrounding the document.⁶ Archived records must now include administrative metadata for reconstruction or audit at a future point in time.⁷

What Type of Storage Media?

Understanding storage media types helps HIM professionals take part in selecting the storage that will appropriately protect patient information and other records required for compliance or business reasons. Options for moving from server-based hard disk storage to removable media include flexible magnetic disk, familiar to everyone as the 3.5" floppy disk, magnetic tape now housed inside cartridges, and optical disks including CDs or DVDs. Some solid state storage devices use flash memory, but the suitability for storage of critical records on such devices over long timeframes is unproven and should not be considered.

Flexible magnetic disks offer storage up to 250 MB but have a life span of less than five years and are highly susceptible to accidental erasure. Magnetic tape stores up to 400 GB (compressed) and is sometimes reputed to last up to 30 years. However, tape beyond a five-year lifespan stretches each time it is audited or rotated. Stretching can adversely affect the integrity of data and records stored on tape media, although it may prove adequate if frequently replaced or refreshed.

Nonrewritable CDs store up to 700 MB and have proven to last for lengthy periods of time, although CDs do occasionally lose data if they are not replaced as part of a responsible media refresh program. DVDs are not yet proven as a long-term storage medium.

File Formatting for Compliant Long-Term Storage

The new Federal Rules of Civil Procedure allow for the request of records in their "native format," so records managers must be able to produce files years later in their original form. The attributes most important to consider when determining record storage format include ubiquity, support, and stability.

The file format must be commonly recognized, supported by major software tools, and stable (i.e., not subject to major changes over time). Formats should also be part of the public domain and not proprietary in nature.

A format must also support the inclusion and retention of metadata. This inclusion supports legal and compliance requirements to find and retrieve records that have not reached legitimate expiration dates. Metadata can have "enormous value both during the active use of the data and for long-term preservation, where it can provide information on both the provenance and

technical characteristics of the data. For example, a TIFF file may include metadata fields to record details such as the make and model of scanner, the software and operating system used, the name of the creator, and a description of the image.”⁸

Media refresh may not be as interesting as other aspects of developing and supporting critical healthcare record systems, but the good faith efforts expended in developing consistent, reliable media refresh programs will pay off in the organization’s ability to locate records long after today’s staff have retired.

Notes

1. “Privacy and Health Law.” In *Health Information: Management of a Strategic Resource*, 3rd ed. Mervat Abdelhak, et al., eds. Saunders, 2007, p. 512.
2. Ibid.
3. Bennett, John C. “A Framework of Data Types and Formats, and Issues Affecting the Long-Term Preservation of Digital Material.” JISC/NPO Studies on the Preservation of Electronic Materials. British Library Research and Innovation Report. Available online at www.ukoln.ac.uk/services/elib/papers/supporting/pdf/rept011.pdf.
4. Ibid.
5. Ibid.
6. Zinner, Wolf, Thomas Langkabel, and Carsten Hentrich. “ArchiSafe: Legally Compliant Electronic Storage.” *IT Professional* 10, no. 4 (July 2008): 28.
7. Ibid.
8. Brown, Adrian, “Selecting File Formats for Long-Term Preservation.” Digital Preservation Guidance Note 1. National Archives. June 19, 2003. Available online at www.nationalarchives.gov.uk/documents/selecting_file_formats.pdf.

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Article citation:

Nunn, Sandra L.. "Media Refresher: Legal Implications of Record Storage" *Journal of AHIMA* 80, no.1 (January 2009): 50-51.

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