On the Line (May 2004)

by Michelle Dougherty, RHIA

Q: The October 2003 *Journal of AHIMA* published an article on cutting and pasting entries into the EHR. Our EHR does not allow entries to be cut and pasted. Is this functionality missing from our EHR?
A: No. The question you raise is not an issue of missing functionality but one of using and applying different data formats in the EHR. Likely, your EHR application is comprised of discrete, structured (or coded) data, the architecture of which discourages cut-and-paste functionality. Typically, the cut-and-paste functionality is used with unstructured text data, such as text entered in a word processing system. "Most clinical applications are designed based on discrete, structured data. Consequently, most clinical applications severely limit the 'free text' options, such as comment fields. This ensures that the structured data entered into the system can be searched and manipulated, unlike the unstructured data of word or text processing systems," states Deborah Kohn, RHIA, principal of Dak Systems Consulting.

The online resource Tech Encyclopedia defines structured and unstructured data in the following manner:

- Structured data: Data that reside in fixed fields within a record or file
- Unstructured data: Data that do not reside in fixed locations. (e.g., free-form text in a word-processed document)

Structured data is predefined and has a fixed field length that is coded and alphanumeric. This allows a search engine to search a database for one or more coded, discrete data elements (based on search parameters) and easily find and retrieve the elements. In turn, this allows a user to manipulate (e.g., sort) the elements.[1]

Unstructured data is not predefined and limited. Search engines cannot easily find and retrieve, and users cannot easily manipulate, one or more unstructured data elements embedded in text.[2]

Q: Are the data elements in transcribed documents considered structured or unstructured data?
A: Although transcribed documents often adhere to standardized formats, the data elements contained in transcribed documents are text data and, as such, are considered unstructured. The data elements making up the content of a transcribed document are not predefined and limited, and a search engine cannot easily find and retrieve the data elements.

Q: In addition to text data, are other data types found in the EHR?
A: In general, there are two different data formats—structured and unstructured. Under structured data, the data are discrete, the fields defined and limited. The data are coded and alphanumeric. Under unstructured data, there are several data types. The following list shows that in addition to structured data, many data types found in the EHR are unstructured.[3]

Structured Format

- Discrete structured data: laboratory orders, laboratory results, medication orders, medication administration records, online charting and documentation, MPI and registration data. The data in these examples are predefined and limited. The data are coded and alphanumeric.

Unstructured Format

- Diagnostic image data: CT, MR, digital X rays, nuclear medicine, pathology and histology images. Diagnostic image data are bitmapped, where hundreds and thousands of pixels simulate an image.
- Vector graphic data: EKG, EEG, and fetal signal tracings. Vector graphic data are created by saving lines plotted between a series of points.
- Audio data: Heart sounds, voice annotations. This type of data consists of sound bytes. As speech recognition technology (real-time voice in, text out) codifies the text data and places it in a template—what was unstructured data

becomes structured data.
- Video data: Ultrasound and cardiac catheterization examinations. Video data are digitized “films” with “fast forward” and “play back” characteristics.
- Text data: Some claim forms and itemized bills, transcribed reports, including some transcribed radiology and pathology reports. The data are not predefined, limited, coded, and alphanumeric. Often, text data are entered as free text.
- Document image data: Handwritten notes and drawings, signed patient consent forms. Analog paper documents and photographic films are digitally scanned (similar to faxing) to create bitmapped data.

The EHR consists of a multitude of components and technologies, data formats, and data types. As HIM professionals migrate to e-HIM™ roles, understanding data formats and data types is critical.

Notes

1. Kohn, Deborah. “Informatics in Healthcare.” In Kathleen M. LaTour and Shirley Eichenwald, eds., *Health Information Management Concepts, Principles, and Practice*. Chicago: AHIMA, 2002.
2. Ibid.
3. Ibid.

Reference

Tech Encyclopedia. Available online at www.techweb.com/encyclopedia.

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