

The Electronic Medical Record and the Loss of Narrative

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Abstract: The use of the electronic medical record (EMR) facilitates many aspects of patient care as well as clinical and outcomes research. However, our thought processes are directed differently when collecting data to be entered into a structured database compared with when collecting data to construct a narrative of the patient and his or her complaints. While recognizing that the EMR will improve overall patient care, it is worthwhile examining aspects of patient–doctor interaction that may be sacrificed.

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The electronic medical record (EMR) has many advantages over previous methods of recording, storing, and manipulating medical data. It provides a convenient “front-end” or user interface for accessing multiple searchable databases. Such a system of integrated databases greatly increases the accessibility of patient data both for clinicians and researchers, as well as for patients themselves. Without minimizing how much there is to gain from the transition to the EMR, this article will focus on something that is being sacrificed and probably must be sacrificed in this process, which I will simply refer to as “narrative.”

The EMR is replacing a type of record and a style of thinking structured around a patient narrative, which, ideally, included a description of a patient’s complaints and symptoms along with relevant medical history and the details of a physical examination. The handwritten chart was a style of recording from a time when there were fewer laboratory data and limited imaging studies, fewer medications, and when healthcare involved fewer individuals with specialized skills. It was a time when direct communication with and observation of the patient were the primary source for most of the data.

Ideally, the note about the patient in the medical chart was well written and had the quality of a story. The narrative nature of the medical record facilitated oral communication about the patient. The relationship between what was well written and easily spoken was important, because communication of information always involved oral communication among medical personnel, either in person or over the phone. When evaluating a clinic or hospital record of a patient with a complicated problem, a physician or a nurse would flip through the chart looking for a comprehensive note written by a clinician who had spent time talking with a patient, examining the patient, and reviewing the patient’s prior medical record. The data “checklists” were incorporated into the narrative.

Many healthcare providers love the art of narrative and have mastered it for the area of care they provide. It is part of their satisfaction with their work and their ability to engage the patient. The intention to construct a narrative at the end of a patient encounter subtly influences and directs aspects of the doctor–patient interaction. Physicians and other medical professionals are aware of whether they have acquired enough information to complete the narrative

or whether the answer to a not-yet-asked question is required. Although it would be a mistake to think that a good narrative necessarily involves an appreciation of the patient as a person, patients generally feel more comfortable when they think or sense that they are heard as individuals.

Narrative as a primary documenting style, however, is very different from the demands of the EMR, and it is clear that the EMR will become more interactive and more directive: it will be an interface not only with the patient's data but also with the growing online medical literature. The day is coming when we are going to interface with our electronic health record by voice, and our electronic chart is going to talk back to us with prompts and suggestions.

This *Cambridge Quarterly* section on Bioethics and Information Technology is a recognition that the EMR will not only replace the way in which information about the patient is recorded, but will alter and structure the way clinicians think about the patient and the medical encounter. There have been other instances in which a change in the way we recorded data facilitated our ability to think, to perform mental operations, and thus led to a change in the way we lived and managed our world.

For example, Arabic numerals were little known within the European world before 1200.¹ Roman numerals were useful for recording numbers but not for conducting the arithmetic operations of addition, subtraction, multiplication, and division. These operations were performed with an abacus or on a tabletop counting board, whereas Roman numerals were used for creating documents. We still use Roman numerals today when no calculation is required. For example, we still write: Pope John Paul II, Queen Elizabeth II, Chapter VII, and Appendix III, but when

a number does more than designate a quantity, and requires cognitive manipulation, we employ Arabic numerals. Consider for a moment how difficult it would be to discuss baseball without the conceptual benefits afforded us by Arabic numerals. Think about a batting average of .334, for which we do not even directly reference the decimal point. Using Roman numerals (and no decimal point) this would be represented as CCCXXXIV. Therefore, the introduction of Arabic numerals entailed more than just a change in symbols; it enhanced our ability to think with numbers and increased the everyday use of simple arithmetic. In the United States today, children not yet in high school argue about and compare their favorite ball players using numbers in a manner and with a speed that would have astounded the learned of 500–600 years ago.

There have been other rapid changes in information handling prior to the computer age and the electronic database. One of the great advances of the modern world is the vertical filing system. Until the end of the nineteenth century, filing in offices was a horizontal affair. Records were put in labeled envelopes, placed in rows or small pigeonholes or laid horizontally on alphabetically labeled shelves. Then, in 1898, the vertical filing cabinet was invented by Edward Seibels, a name almost no one recognizes today.² Seibels was born in South Carolina in 1866, raised on a cotton plantation, trained as an engineer, and ultimately became a successful insurance executive. He never succeeded in obtaining a patent for his filing device, presumably because, for the purposes of obtaining a patent, he did not think through how to adequately differentiate his system from a simple box with envelopes turned so that the open end faced upwards.

The way we record and catalogue data can have profound effects on the way we think. One of the earliest vertical filing systems was used in the mid-1700s by the great naturalist Carl Linnaeus, the primary developer of our current system for cataloging and naming individual members of the animal and plant kingdoms. His naming and cataloging system when first proposed had five nested categories: Kingdom, Class, Order, Genus, and Species. The actual physical filing system that Linnaeus used was a card file, but he also created a conceptual structure along with his file system in which the name automatically provided the categorization of an animal and indicated where in the card file to search. Probably most readers could rapidly work through a path leading from dogs or wolves as species, to the genus, which is *Canis*, then back to the order, which is *Carnivora*, the class, *Mammalia*, and then the kingdom, *Animalia*, and they would not find it hard to add in *Vertebrata* between *Mammalia* and the *Animal Kingdom*, although Linnaeus did not have the subphylum of *Vertebrata* or the phylum of *Chordata* in his original nomenclature.³

The introduction of the EMR, like the introduction of Arabic numerals, the filing cabinet, and Linnaeus's categories, will change the way in which clinicians think, write, and speak about patients. This change will result in the loss of the narrative style of recording information. The power of an electronic database is, to a significant extent, determined by the diligence devoted to filling in the many fields, the quality of the user interface, and ease with which the database can be queried. A database can be filled in by numerous individuals, as well as automatically from the laboratory. It is rarely a contemplative task. It is not so much an exploration of an individual as a compilation of data

that later permits a comparison of that individual with a population mean, and once the blank spaces appear on an electronic form there is pressure to fill in the requested data regardless of its immediate relevance.

In the setting of highly active care and for reasonably well-defined problems, it may be the perfect recording instrument. However, the database is a more limited instrument for exploring and sequencing a patient's less easily characterized complaints, particularly when many studies are negative and the physician's judgment is that the best diagnostic approach at the moment is to follow the patient over a period of time. This is the domain of narrative.

I will try to illustrate this point with a brief example, and focus for a moment on the Mini-Mental State Examination that now has almost canonical status within neurology and psychiatry and also in much general medicine. The examination provides a standardized format for a quick evaluation of whether the patient should be classified as intellectually impaired. Standardized formats work well in a database. The Mini-Mental State Examination requires the patient to identify the current date, the current location, and perform simple tasks, including copying figures, remembering three words after 5 minutes, performing simple arithmetic, spelling a short word (e.g., *CAT*, *HAND*, *WORLD*) backwards. If abnormal, the examination creates a presumption of a change from a higher functioning state unless some factor such as low intellect, limited schooling, or a language barrier is identified.

However, the examination may have little or no value for following an intellectually intact individual over time. To do that, the Mini-Mental State Examination can easily be expanded by having a patient reverse the spelling of longer words (e.g., *HOSPITAL*, *SUBSTANCE*,

UNDISTINGUISHED) or by requesting that the patient perform more difficult mental arithmetic. The guiding idea for such an expansion is not that of a standardized test for comparison with a population mean, but of establishing an individualized baseline to follow changes over time. This can be valuable in many contexts, for example the long-term use of medications that may have an effect on intellectual function, or trying to determine whether an intermittent complaint is an early symptom of an evolving process. There is no reason why the medical chart, viewed as a series of forms structured for entry into a database, cannot include multiple fields for additional comments. The rhythm of completing a form, however, is very different from the contemplative act of identifying where a standard question should be profitably modified.

There are many aspects of human life—its transitions and difficulties—that are best captured by narrative. I have no doubt that the EMR will improve the average level of care for individuals and will facilitate research in a major way; however, the skills of medical narrative will inevitably erode, and we will hardly remember what we have lost, as has been the case with the slide rule, the abacus, and the tabletop counting board.

Notes

1. Ore O. *Number Theory and its History*. New York: McGraw-Hill Book Company; 1948.
2. See Edward G. Seibels, *Legacy of Leadership Profile*. 2016; available at <http://www.knowitall.org/legacy/laureates/Edwin%20G.%20Seibels.html> (last accessed 13 Aug 2016)
3. Muller-Wille S, Scharf S. *Indexing Nature: Carl Linnaeus (1706–1778) and his Fact-Gathering Strategies*. London: London School of Economics; 2009.