Future Model for Nursing Documentation: *Extinction*

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Are electronic health records a documentation system or a database? Find out how and why nursing documentation will become extinct in the digital age.

The most frequent question I am asked by nurse leaders is "What is the future model for nursing documentation?" I readily understand the context of the question as it relates to the mega-million–dollar expenditures on electronic health records (EHRs) and the desire to make the most of this expensive resource and ideally appreciate a return on investment. The potential for both is there, but it has less to do with documentation—or any documentation model—because nursing documentation is going away.

At first blush, this may seem surprising. Probably because we have always done it. Nurses have documented patient care for as long as we can remember. More than a 100 years ago, Florence Nightingale meticulously documented the care and condition of soldiers during the Crimean War.[1] She used the data in her notes to identify the causes of infection in soldiers to prevent infections and reduce mortality.

Today is different. Despite the commonly held belief that we have transformed nursing documentation by implementing electronic health records, the reality is that we have largely retooled work, not eliminated it, and we have barely automated it.[2] We use the term *electronic documentation* while nurses are still manually documenting for the most part. We have replaced paper with an electronic platform, but we are nonetheless physically entering data. All this is required to change in the digital age.

The industry is rapidly becoming immersed in the digital age where precise and personalized health care will be the standard.[3] This very targeted approach will enable us to achieve significant improvements in health outcomes and costs by expending the right resources on the right individuals in the right way. The cost of mass screenings and treatments will be reduced to those that are necessary. All of this cannot be achieved without the right data at the right time in the right place enabling people to take the right actions. This requires the digitization of data.

BACKGROUND

As we look at the EHR today, it is essentially an electronic version of the paper medical record, albeit a very expensive version. Like the so-called "paper world," the EHR is designed in silos, largely requires manual data entry, and most importantly, is still more about receiving data from clinicians as opposed to transforming data into useful and timely information and disseminating it to them, creating a positive impact on their practice. It begs the question: What have we gained for all our money, time, and effort?

One may argue that we have gained alerts and the prevention of some errors. A retort to this argument would be that prior to the EHR, we had Kardexes, "paper brains," sticky notes, and other alerts or reminders plus better face-to-face or voice-to-voice communication because it was 2-way, allowing for questions, comments, and clarity. Furthermore, although we may be preventing errors experienced in the past, we now have new errors, some of which are due to alert fatigue, poorer communication, and workarounds that often occur because of the mismatch between EHR and clinician workflows.[4]

The most important gain through the implementation of EHRs is yet to be realized; the fact that EHRs are databases containing valuable health and health care data. The EHR was never intended to be a documentation system whereby highly educated and well-paid, health care professionals would continue to toil away with manual data entry throughout the digital age. No other digitized industry ahead of health care, such as retail and banking, has employed this strategy. In fact, digital businesses reduce labor and labor costs through automation.[5]

The EHR is an electronic database whereby data are captured that can be analyzed allowing the right information to be provided when, where, how, and to whom it is needed 24/7 to improve decision making that results in significantly better health and financial outcomes. As such, it is imperative to appreciate that the benefits derived from this are directly proportional to the speed at which data are captured and analyzed, and information is provided to those who can make a difference by improving health, preventing complications, and intervening quickly when needed. Obviously, the slow speed of manual data entry has a negative

impact, whereas automated data capture, like analytics, supports maximum benefits from data.

DRIVING EXTINCTION OF MANUAL DOCUMENTATION IN THE EHR

The extinction of nursing documentation won't occur by happenstance. It must be deliberate, purposeful, and well planned. Nurses must view the EHR as less of a documentation system and more of a database. More importantly, we must own our data, understand how best to capture it, and once captured, how to strategically use it to transform nursing practice.

One model that is useful in illustrating the planning and implementation of the extinction of nursing documentation is the ESIA model, which stands for eliminate, simplify, integrate, and automate (ESIA).[6] The model was initially designed for systematically re-engineering processes to improve quality. ESIA provides a proven method for analyzing and re-engineering the nursing documentation process from a manual to a digital platform.

Step 1: Eliminate nonvalue data. The first step is to eliminate waste and associated costs, meaning remove or turn off content in the EHR that provides no value. It includes data elements currently collected, but never used by patients, clinicians, quality improvement, risk management, safety, billing, legal, administration, and all others who use EHR data. It is important to eliminate this nonvalued data because it impedes the efficient and accurate collection of useful data because clinicians must continually navigate or wade through waste to find the data elements they need. Known as a minimalist issue, one EHR usability study reported an occurrence of this in 15.9% of the usability issues identified in progressive- and critical-care EHR documentation.[7] Eliminating nonvalue data also removes costs associated with entering and storing unused data.

Nonvalue data often arise from multiple directions. These include comfort with continuing to collect data that has always been collected, but never used, EHR users wanting to use familiar terms, and the employment of faulty logic used to identify content. One real-life example involves using an approach that limits documentation elements to 20 items in any area such as colors of mucus resulting in 20 colors of mucus that break down into minutia providing no value. Descriptors such as light green, moderate green, and dark green are not based on any known standard of what constitutes light green versus moderate green versus dark green sputum and are unnecessary. Although the approach might be intended to prevent excessive or unnecessary data, it can result in just the opposite, an abundance of nonvalue data.

Step 2: Simplify data. The second step involves the simplification or normalization of data. Once nonvalue data have been eliminated, EHR content is ready to be translated into standardized terminologies that will promote optimal data exchange, analysis, and communication within organizations and across the health care industry. Patients, clinicians, billing personnel, quality improvement professionals, information technology workers, and all others should use the same term when talking about the same thing.

It is important to appreciate that the exchange of EHR data requires standardized terminology.[8] One often hears the word *interoperability*, which typically refers to technical specifications for the electronic communication between different computer systems.[8] Semantic interoperability is also a requirement for sharing EHR data. It refers to the sharing of content between different computer systems and requires standardized terminologies to insure what is shared is accurate and reliable.[8]

In 2006, the World Health Organization (WHO) promoted standardization of health information as essential for use and sharing among consumers, providers, policy-makers, and others.[8]

> "Standardization refers to creation of accepted specifications (e.g., definitions, norms, units, rules) that establishes a common language as a basis for understanding and exchange of information between different parties. If used consistently, the standardization process enhances accuracy, efficiency, reliability and comparability of health information at local, regional, national and international levels."[8]

WHO goes on to state that progress in health information technologies calls for standardization to collect, store, archive, retrieve, process, and analyze vast amounts of health care data.[8] The benefits of standardized terminologies include better, safer, and more efficient care.[8] Standardized terminologies underpin statistical reporting, decision making, performance and outcomes measurement, and cost analyses.[8]

> "Content standards, independent of technical standards, must reflect the most advanced scientific understanding of the concepts and adhere to the best available knowledge-representation principles."[8]

Examples of commonly known standardized terminologies include the Logical Observation Identifies Names and Codes (LOINC) for laboratory data, RXNorm for clinical drugs, Systematized Nomenclature of Medicine – Clinical Terms (SNOMED CT) for clinical data.[9,10]

Step 3. Integrate data. The third step includes the integration of data so that the same data elements are not documented in silos throughout the EHR by different clinicians, which is inefficient, creates inaccuracies, and deters integrated patient care.[11] Same data include duplicates as well as synonyms or similar terms and different spellings (e.g., grey versus gray). This creates errors when electronically extracting data for analyses and use.

Ideally data integration, as well as simplification through standardized terminologies, is done during the design of EHRs so that the electronic record is patient-centered and does not replicate the silos of paper documentation by clinician type. When the EHR is not patient-centered, decisions must be made on who documents what, when, and where it is best located so that anyone needing the data readily knows where to locate it and, more importantly, if they should locate it. The importance of this was demonstrated with the first Ebola case in the United States, when the nurse collected travel data and documented it in the nursing assessment silo, which was not an easily visible part of the physician's standard workflow.[12]

Step 4. Automate data. Completion of the first 3 steps promotes ease in accomplishing the step 4, automation of data, and the ultimate extinction of nursing documentation. There are several ways to digitize data, and these are increasing in number and type as innovation continues. Approaches include medical device integration or connectivity, wearables and nearables, wireless sensors and devices, biosensors that analyze chemicals in body fluids, natural language processing, and imaging.[13]

Psychosocial or behavioral health data are also increasingly being automated. Two examples include voice recognition and facial recognition. Voice recognition allows computers to recognize words, speed, pitch, and tones of human speech. Digitization of voice data allows for earlier recognition of depressive and mania states in patients with bipolar disorders.[14]

Interfacing devices with EHRs allowing for automated data capture has already begun in many organizations. An example of automating data collection with infusion therapy highlights the complexity of doing so and the need for prioritizing automation projects.[15,16] Planning must include the number, brands, models, and lifespan of all infusion pumps. If there are numerous variations of infusion pumps, business cases must be examined to determine whether it is cheaper and quicker to purchase new pumps of 1 brand, model, and year, thus requiring 1 interface build, or build multiple interfaces for all brands and models currently being used, or a hybrid of the 2 strategies? Consideration for ongoing maintenance and associated costs and efforts must also be included as well as an evaluation of the availability of people who can build interfaces.

Why use the ESIA method or other strategy to improve data elements or EHR content when moving toward the extinction of documentation? The answer is simple. It is about automating the right thing. As you move to automate, you want to avoid the costs, time, and efforts associated with automating nonvalued, unnecessary, and duplicative data. Thus, eliminating, simplifying, and integrating data and data collection prior to automation is essential.

KEY TAKEAWAYS FOR NURSE LEADERS

Health care is now in the digital age. Having increasingly educated, well-paid, health care professionals manually entering data in the EHR is not sustainable. Whether or not nursing documentation will become extinct in the digital age is not a question. The question is how to best accomplish it.

New Mindset

A fundamental change in mindset that must occur to successfully navigate beyond nursing documentation is the realization that the EHR is a database and not a documentation system. Data are the gold of the digital age, but data must be accurate, relevant, and timely.[17] The enormous amount of data being captured in EHRs, as well as other sources, must be transformed into actionable information and delivered to the right person anytime and anywhere to support optimal decisions that effectively change clinical and financial outcomes. This cannot be accomplished using manual processes and that includes manual data entry into EHRs. Changing the mindset enables changing strategy that is best suited for the digital age.

Exponential Strategy

An important takeaway from this article has to do with employing exponential thinking in nursing strategy.[18] Change that is led by technology in the digital age should be viewed as exponential versus the incremental change of yesterday. Incremental change builds on what currently exists, whereas exponential change involves leapfrogging forward and doing things that have never been done before. Bonchek states, "The incremental mindset focuses on making something *better,* while the exponential mindset makes something *different*. Incremental is satisfied with 10%. Exponential is out for 10X."[18]

A missed opportunity for exponential change is the use of standardized terminologies in EHRs. Some of these terminologies have existed for more than a decade, and yet we chose an incremental change to placing what was documented on paper into the EHR. An exponential strategy would have saved time, money, and effort, and it can be argued should have been done by EHR vendors.

Innovation

From nurse informaticists to bedside nurses to nurse researchers, use the talents of nurses to innovate electronic data capture. Some chief nursing officers, such as Dr. David Marshall, Vice President and Chief Nursing and Patient Care Services Officer at UTMB Health System, have allocated a permanent space for nurse inventors.[19] Studying the different methods to automate data and learning from those who already doing it can prove beneficial to innovating data automation.

A great example of a nurse researcher automating data involves the SEM 20. This is a handheld, portable

electron scanner that can detect early-stage pressure ulcers at the point of care before skin discoloration or breakdown allowing for earlier intervention.[20] With device integration, images scanned by the SEM 20 can be transferred and saved in the EHR database. The device is currently used in Great Britain and Ireland, and pending approval by the US Food and Drug Administration.

Conclusion

The future model of nursing documentation is extinction as time consumed by manual data entry impedes progress. The digitization of data affords real-time data capture and advances information provided to nurses analogous to going from snapshots taken of data collected during intermittent office visits or hospitalizations to an ongoing video of the data of life. Advances in cloud storage, device mobility, sensors, natural language processing, and more are enabling this transformation. It eliminates the work of nurses as data entry clerks and moves them into the management of a continuous model of care. While some nurse leaders are pondering new and improved models for nursing documentation, forward thinkers are architecting and driving its extinction.

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