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Writing Narrative Medicine into the Electronic Health Record

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I intend to submit a copy of my Polymathic Scholars thesis to the Texas ScholarWorks (TSW) Repository. For more information on the TSW, please visit https://repositories.lib.utexas.edu/.

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Acknowledgements

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Abstract

Physicians' relationships with their patients can add meaning and a sense of perseverance to their work. However, the use of electronic health record systems (EHR) contributes to feelings of career burnout by inserting a technological barrier that stagnates the formation of physician-patient relationships. Cumbersome EHR designs can prevent efficient medical documentation and often structure clinical notes without the narrative quality that natural communication takes, which leads to an oversight in documenting potentially relevant social details. Narrative medicine, a model of medical communication that fosters empathetic and culturally competent relationships through critical self-reflection, can aid physicians in finding meaning in their daily clinical experiences. This project aims to perform a literature review over the use and implementation of narrative medicine in order to create a standardized definition that acknowledges the predominant differing views in the field. Clarifying the necessary components of narrative medicine will expedite its inclusion in standard medical practices. Furthermore, the standardized definition can be used to inform potential EHR design changes and future training to incorporate narrative medicine into daily medical practice. These changes will include updates to current free-text abilities and novel discussion questions designed to help physicians engage patients in discussion and reflect on their clinical experience. Any design suggestions will take into account the efficiency of documentation and subsequent financial implications. Continued study in healthcare communication and documentation will ensure that patients are receiving a high quality of care while maintaining physician well-being and lowering rates of career burnout.

Key terms: Electronic Health Records, Physician Burnout, Narrative Medicine, Physician-Patient Relationships, Design

Introduction

During the 20th century, improving the accuracy and efficiency of medicine was a top priority, especially since medicine had been primarily unstandardized in the 19th century (Stahnisch & Verhoef, 2012). In general, standardizing medicine has meant that biomedical information, such as test results, physical exam results, and medication data, is considered the most valuable and reliable information to catalogue. Today, one of the primary ways to record this information is through the use of electronic record systems. The terms electronic health record, EHR, and electronic medical record, EMR, are often used interchangeably. However, they have slightly different meanings; whereas the EMR was initially designed to be used within a single practice, EHRs are intended to capture holistic patient information and share information between practices (Zahabi, Kaber, & Swangnetr, 2015). EHRs have various designs and are produced by a multitude of companies, but their general goal is to electronically document clinical encounters in order to: improve documentation and billing accuracy; facilitate viewing and storing radiology and lab reports; facilitate sharing patient information between providers; and, improve the efficiency of clinical documentation.

In the past several decades, EHRs have made great strides towards improving information flow in clinical care. For example, in a study produced by Howley et al. (2014), 30 clinics of various specialties were analyzed for the financial implications of EHR use. Overall, during the course of the two-year study, the number of patients seen by the clinics decreased, but their total reimbursement amount increased (Howley, Chou, Hansen, & Dalrymple, 2014). Even though the clinics saw fewer patients, accurate billing accounted for an improvement in finances across all clinics, and this was shown to be independent of increasing reimbursement rates for

specific procedures. Furthermore, EHRs truly have proven to be effective towards improving data organization. In a statewide study in Massachusetts completed in 2007, over 96% of the physicians who had adopted EHRs felt that EHR use allowed them to access relevant, up-to-date information in a timelier manner than before (Simon et al., 2007, p. 509). Additionally, the EHR has been shown to decrease the amount of medication errors by alerting physicians to drug interactions or unusual dosing. (Vaidotas et al., 2019).

However, while the EHR has improved certain clinical aspects, it has also made others more difficult. The EHR has been proven to increase certain types of clinical note errors due to copy/paste functions that promote inappropriate repetition of information, such as pulling forward patient information that is no longer accurate (Zahabi et al., 2015). EHR usage errors also contribute to information input errors; Vaidotas et al. (2019) have shown that EHR usage sometimes leads to physicians inputting note information into the wrong patient's chart (Vaidotas et al., 2019). Furthermore, in a study over NextGen brand EHR usage at the Kresge Eye Institute by Torres et al. (2017), it was found that physicians experienced "mouse-click fatigue" from having to interact too much with the EHR (Torres et al., 2017). Simply put, mouse-click fatigue refers to a decrease in clinical documentation due to frustration or inefficiency from having to open many different areas of the EHR platform to record different types of information. Frequently, physicians are required to ask questions and input information in the EHR that is deemed to be a "best practice" standard, but the questions are often asked in a way that is unhelpful for addressing the patient's concern or building the physician's ability to think critically about patients (Lifflander, 2019). For example, Dr. Anne Lifflander recalls a moment where she brought her elderly mother to the emergency room. The doctor, driven by the necessity to fill out required EHR fields, asked the elderly woman if anyone she had been

intimate with had been violent towards her. The only potential source of violence could have been the woman's sole caretaker, Dr. Lifflander herself. However, by asking this question in front of Dr. Lifflander, the patient is not encouraged to divulge such information. In this way, the best practice question of searching for other causes of injury was rendered completely ineffective. Furthermore, these EHR sections may impede documentation efficiency by creating "hard stops" that will not allow physicians to progress through the EHR without filling out all of the blanks (Lifflander, 2019). All of these issues create unnecessary risks by missing or inaccurately recording crucial information or result in delays for the patients. Notably, they also contribute to increasing the amount of time that physicians spend on correcting documentation errors.

Another main complaint is that the EHR has stifled physicians' ability to form a relationship with their patients. Since the introduction of the EHR into mainstream medicine, there has been a gradual shift to address the information that is lost by simply capturing biomedical information. Emphasizing biomedical information tends to omit other important patient data, such as social and psychological information. Often, physician-patient relationships are built off of the personal connections that stem from capturing the entirety of the patient's story, their narrative. As Dr. Kommer notes, finding and valuing personal details about patients' lives can foster trusting physician-patient relationships (Kommer, 2018). However, this relationship can be hampered because many physicians, like Dr. Kommer, feel that the "EHR was never designed to facilitate a human narrative" (Kommer, 2018, p. 875). With the intent to mainly capture biomedical information in a very structured format, EHRs can lead to the exclusion of documenting or considering critical details about the patient's background that could possibly contribute to their illness. Furthermore, current use of EHR systems contributes to

physical barriers to the physician-patient relationship. A study in Israel showed that physicians spend up to 55% of their clinic time looking at the computer screen (Margalit, Roter, Dunevant, Larson, & Reis, 2006). Additionally, the study by Margalit et al. (2006) documented that as time spent looking at the computer increased, the number of critical patient-centered discussions decreased. This study should be considered when discussing EHR implementation in the United States because it is well documented that simple behavioral actions, such as eye contact, help to build relationships between people, and the same is true of the physician-patient relationship. By decreasing the amount of discussion that focuses on the patient, the chance to develop interpersonal relationships is hindered.

Altogether, there are several very serious flaws with the way that medical systems have implemented EHR services. EHR-caused weakening of the physician-patient relationship can contribute to a common phenomenon called physician burnout. Simply put, physicians are at risk of losing passion and focus in their career when aspects of their job increase undue stress and frustration and cause emotional and mental exhaustion (West, Dyrbye, & Shanafelt, 2018). Although it is outside the scope of this thesis, there are other causes of physician burnout which can stem from a variety of areas, such as negotiating insurance policies or dealing with the politics of healthcare. Awareness of several causes of physician burnout add increasing importance to the investigation of how EHRs contribute to this phenomenon; if even one cause of burnout can be mitigated through improved EHR design, then it is worth pursuing for the effectiveness, efficiency, and sustainability of healthcare.

This thesis intends to focus on how improving EHR usability can promote stronger physician-patient relationships that benefit both parties. In the past several decades, a literary theory of narrative medicine with a practical application has arisen in order to address the lack of

humanity, and subsequently physician-patient relationships, often associated with focusing on biomedical information. I propose that physician burnout from EHR frustration could be reduced by modifying EHR design structure to incorporate optional interactive narrative medicine prompts. These prompts would encourage documenting and reflecting on patients' stories instead of only capturing necessary but insufficient biomedical information. Restructuring the EHR and incorporating narrative medicine will also require that physicians receive on-going training in order to make their use of EHRs efficient and personally beneficial. Through careful implementation of narrative medicine techniques in EHR design and physician training, the EHR can help improve safety, efficiency, and foster trusting and understanding physician-patient relationships that will ultimately improve physician burnout outcomes in the medical field.

Anecdotal Evidence of the Need for Narrative Medicine

In February of 2020, I sat down to speak with Dr. Craig Hurwitz about his experience with building physician-patient relationships. Dr. Hurwitz graduated medical school in 1985 and began practicing pediatric oncology shortly after. Over the course of his 30+ years of medical practice, Dr. Hurwitz has interacted with thousands of patients, several of whom have left a lasting impact on him during his time practicing medicine. One of his patients, a little boy who had recently overcome leukemia, was dealing with severe graft vs. host disease after going into remission. The little boy had received a transplant, and his body was rejecting it as a foreign substance. Although Dr. Hurwitz had cured the little boy of cancer, the boy was doomed because his body could not withstand the transplant. For weeks, the little boy clung to life, bedridden. His mother, a young woman in her early twenties, stayed by her son's side as his body slowly shut down. Dr. Hurwitz noted how dedicated the mother was to supporting her child throughout his

last days. One day, after weeks of sitting by her son's side, the mother disappeared for a whole day. When she came back to the hospital, she revealed to her son, and subsequently Dr. Hurwitz, that she had gotten a tattoo on her shoulder. She told her son that the tattoo symbolized her love for him, and that she would see it every day when she woke up. Within 24 hours, the boy passed away. Dr. Hurwitz impressed on me that this series of events, as well as other patient encounters, taught him that medicine is about listening and understanding what patients need. He noted, medicine is sometimes more about healing a person than curing them of their afflictions. In this case, the little boy needed to know that his mother loved him in order to be at peace, and no amount of pain relief medication was going to accomplish that. Of course, there is always a component of circumstance with medicine. Dr. Hurwitz recognized that it is entirely possible that the boy would have passed away at the same time regardless of his mother's gesture. However, according to Dr. Hurwitz, these small, meaningful interactions between people is what makes medicine human. In the current practice of medicine, these significant moments are dismissed in documentation. The story of a patient, their doctor, and their community is sometimes minimized to a series of yes/no boxes in the EHR computer program that physicians use to document the clinical encounter. Dr. Hurwitz stated that, "[people] go into medicine to relieve human suffering, but medical school teaches [doctors] how to treat disease, not human pain" (C. Hurwitz, personal communication, February 9th, 2020). The same is true of current EHR system design. From Dr. Hurwtiz's perspective, modern clinical notes from EHRs focus primarily on billing and providing a legal safety net to protect against malpractice claims, instead of focusing on the patient's story as the patient tells it. This notion is corroborated by Dr. Groopman and Dr. Hartzband, who hold teaching positions at Harvard Medical School, when they discuss that modern clinical notes strive to "satisfy the demands of third party payers" and

"pass scrutiny for billing" (Hartzband & Groopman, 2008, p. 1657). When the humanity and personal narrative of people dealing with illness is stripped out of healthcare, the significance and sanctity of healing is minimized. This leads to an oversight in documenting potentially relevant social details, which can negatively impact patient outcomes in addition to stifling physician-patient relationships. After serving in pediatric oncology for many years, Dr. Hurwitz moved on to become the Director of Pediatric Pain and Palliative Medicine at Dell Children's Medical Center of Central Texas, a specialty that deals with end of life care. There, he began a theater program for pediatric patients to bring joy, meaning, and humanity to the lives of patients and their families during their time spent at the hospital. Ultimately, Dr. Hurwitz left medical practice in the latter half of the 2010s. Among many other reasons, Dr. Hurwitz cites the ineffectiveness and inefficiency of EHRs as a contributing factor in leaving his career.

Sentiments like these are repeated widely across physicians of varying backgrounds. Dr. Curtis Kommer, a family practice physician for over 20 years, notes in his piece titled "Good Documentation" that he "[is] convinced that the small amount of extra time I spent searching for those personal tidbits paid great dividends in terms of patient satisfaction and trust…" (Kommer, 2018, p. 875). In a reflection over the personal growth of medical residents throughout residency, three professors at the Emory University School of Medicine noted that, "The hope that may survive residency training often centers on the one-to-one relationships with patients" (Brady, Corbie-Smith, & Branch, 2002, p. 222). Clearly, physicians reap the benefits of developing and reflecting on deep connections to their patients. The value of implementing efficient and effective relationship building strategies into medical documentation practice cannot be understated. In order to address potential changes to medical documentation practices, it is important to understand the history that has led to the evolution of EHRs.

Models of Medicine

Beginning in 1910, Robert Flexner, a United States politician and science administrator, released the influential Flexner Report (Stahnisch & Verhoef, 2012). The Flexner Report of 1910 urged the United States to shift its focus from complementary and alternative medicine (CAM), such as chiropractic, homeopathic, or osteopathic practices, and focus on a biomedical model of medicine (Stahnisch & Verhoef, 2012). The biomedical model closely aligns with the typical idea of what western medicine is; it focuses on pharmacology, physiology, and it demonstrates validity through the use of testing, such as bloodwork. The Flexner Report greatly benefitted medicine in that it increased the safety, replicability, and accuracy of medicine. It urged the government to fund and establish more medical schools that taught the biomedical model of medicine, which in-turn laid the groundwork for expedited medical discoveries and novel, effective treatments (Stahnisch & Verhoef, 2012). Without the Flexner Report and subsequent government support for the biomedical model of medicine, it can be reasoned that medicine would have progressed at a much slower rate throughout the 20th century. While various aspects of the biomedical model, such as requiring replicable testing in order to prove diagnoses, are certainly helpful, this model rejects many of the social and psychological components of disease that can be met through CAM methods.

The biomedical model is not the only model of medicine to emerge in the past century. Dr. George Engel, an internist and psychiatrist from the mid-1900s, proposed that medicine should account for the psychological and social factors that play into health (Borrell-Carrió, Suchman, & Epstein, 2004). According to Engel, medical encounters should include the patient's subjective viewpoint about their health, conclude causation from a holistic analysis of patient medical data, and empower patients to be active participants in their health (Borrell-Carrió,

Suchman, & Epstein, 2004). By virtue, the biopsychosocial model of medicine invokes a study of medical ethical frameworks for physician-patient relationships. In contrast to the biopsychosocial model, the biomedical model often leans towards a paternalistic physician-patient relationship. Put simply, the patient is expected to follow the doctor's orders, and the doctor is supposed to act as a guardian of the patient's best interests. Dr. Engel's medical philosophy was a direct reaction to the narrow clinical scope of the biomedical model (Borrell-Carrió, Suchman, & Epstein, 2004). Clearly, the biopsychosocial model includes components that are designed to increase empathy in physician-patient relationships and place a higher value on interpreting the patient's story. Moving from a paternalistic ethical framework to an interpretive one, where the doctor functions more so as a counselor that provides medical information and helps to elucidate the patient's values about treatment, can help create meaningful, humanistic encounters between physicians and patients.

However, even with the rise of the biopsychosocial model of medicine in the 20th century, modern medicine has yet to fully incorporate Dr. Engel's philosophy. A good example of this is seen in the structure of modern medical notes, as pointed out by Dr. Hurwitz and many other physicians. Most clinical notes in EHRs are written in a standard format: the SOAP note, where SOAP stands for subjective, objective, assessment, and plan (Pearce et al., 2016). Out of all four sections, the only area of the modern clinical note that addresses the patient's story and social factors is the subjective section. Here, physicians are supposed to document the information that the patient tells them. Examples of this are as follows: how the patient acquired their illness, how long their illness has lasted, the kinds of descriptors that the patient uses to talk about their illness, as well as any social information the patient feels is relevant. However, the subjective section of the SOAP note is often overly simplified, which loses the nuance that every

patient case presents (Moros, 2017). As Pearce et al. (2016) discusses in their paper, the subjective section can cover topics like marital status or religious preference. However, these details are sometimes shortened to just a few words, which can undermine the specificity of each patient's background and illness experience. In present times, the subjective section is often simplified to exclude details about the patient's experience that could prove crucial to their treatment or recovery, such as what they were doing to cause or exacerbate an injury or why they were doing that particular action. For instance, if a woman with a shoulder injury from a work-related incident continues to exacerbate her injury by lifting objects heavier than 15 pounds, it would be relevant to note if the object she is lifting is her young child and cannot reasonably stop this action without outside support.

Furthermore, current emphasis on standardizing notes has led to the notion that even the subjective section can be standardized, with physicians standardizing key phrases and terms that minimize an individual patient's experience with their illness, often for the sake of saving time while completing documentation. With this in mind, it is important to continue addressing the removal of humanity in medical practice. Hippocrates, the famous Greek physician whose ethics comprise the Hippocratic Oath that all doctors swear to uphold, once stated, "Where the art of medicine is loved, there is also a love of humanity" (as cited in Bottalico et al., 2019). Current medical models should be bolstered by additional strategies to value the humanistic, narrative nature of healthcare. This can be achieved by effectively implementing narrative medicine into everyday medical practice.

What is Narrative Medicine?

Narrative medicine is generally understood to be "medicine practiced with the narrative competencies to recognize, absorb, interpret, and be moved by the stories of illness" (Charon, 2005, p. 262). According to a seminal work in the field, *The Principles and Practice of Narrative Medicine*, narrative medicine involves using a literary technique termed 'close reading' to have physicians engage with the meaning behind their patients' words and stories (Charon et al., 2017) This is similar to studying a literary work to elicit the author's message. From Charon's perspective, time, space, voice, and metaphor are some of the most important aspects in a literary work or illness narrative (Charon et al., 2017). In practice, narrative medicine uses close reading by listening carefully to the patient's illness story and responding not only through efforts to cure the patient's illness, but also to heal. Healing, as specified by Dr. Hurwitz and other physicians who engage with narrative medicine, does not have to solve the patient's medical problem. The difference between curing and healing is that healing should strive to understand what the patient feels about their condition and how they can best continue their life with it. This is especially important for people who deal with chronic or untreatable illnesses or conditions. Ultimately, healing is what narrative medicine seeks to do.

Several populations can benefit from increasing emotional understanding and acceptance of medical phenomena. The focus of narrative practices can center solely on the physician, solely on the patient, or on the communication and understanding that physicians and patient build while collaborating together during treatment. Patient suffering is so broadly defined and personally experienced that it is important for physicians to understand patient narratives in order to adequately deliver healthcare (Egnew, 2018). Narrative medicine can take several forms; it can be practiced through individualistic journaling or even group improvisation practices. In a 2018 study, forty Iranian women were evaluated for the efficacy of narrative medicine; twenty of

the women were trained in writing critical self-reflections about their struggle with husbands facing addiction, and a longitudinal study proved that they experienced an improvement in psychological well-being (Khodayarifard & Sohrabpour, 2018). In a paper published in 2002 by three physicians at Emory University, it was shown that facilitating narrative medicine group sessions with first through third year medical residents helped to uncover and maintain the residents' drive to practice medicine, especially given the psychologically difficult burdens of meeting patients in their illness stories (Brady, Corbie-Smith, & Branch, 2002). Without critical reflection on one-to-one encounters, physician experiences may lack the depth of insight and emotional value that can come from narrative medicine. This sentiment is echoed in *The Principles and Practice of Narrative Medicine* when the authors note that "medical students and young physicians are not encouraged to become familiar with their own emotional responses nor those of others" (Charon et al., 2017, p. 39). The same authors then argue that it is better to understand the affective responses surrounding illness than to disregard them because "there is really no hiding your emotions" (Charon et al., 2017, p. 41). It follows that practicing close reading techniques and reflecting on patients' stories may be able to inspire physicians of all backgrounds and specialties to continue in their careers instead of falling prey to physician burnout. Understanding stories of illness can help to improve patient outcomes while also removing some of the physician frustration and burnout that can occur from treating patients' superficial physical symptoms and illnesses without taking into account their emotional health and background. For the scope of this thesis, narrative medicine will be evaluated under a focus on physicians and the ways in which narrative medicine can improve physicians' lives.

In narrative medicine, probing questions are always asked in order to promote critical thinking and self-reflection. However, various authors have different opinions about the other

criteria required to practice narrative medicine. For instance, a notable pioneer and leader in narrative medicine research and implementation is Dr. Rita Charon. Charon holds a medical degree from Harvard University and a PhD in English from Columbia University. She is also the founder of the first graduate program in narrative medicine, and she is the executive director of the Master of Science in Narrative Medicine program at Columbia University. There are three main phases of narrative medicine in Charon's (2005) description. The first is labeled "attention", where physicians critically listen to their patient's story. The next phase is "representation", where physicians write down their interpretation of the patient's story in order to reflect upon it. The last phase is affiliation; in general, if enough attention and correct representation have occurred between physician and patient, then community and mutual understanding (affiliation) between physician and patient should be fostered (Charon, 2005).

A special note about Charon's perspective on narrative medicine is that her definition requires that "rigorous and disciplined training in reading and writing" be completed before physicians practice narrative medicine (Charon, 2005, p. 262). Other physicians echo Charon's requirement, such as Brady et al. (2002) in their study over practicing narrative medicine during residency. Brady et al. (2002) state that narrative medicine facilitators "need to have advanced facilitation skills as well as a keen sense of their own level of self-awareness" in order to guide residents through learning how to deal with the often traumatic and emotionally intense aspects of being a doctor (p. 222). For Charon and other proponents of narrative medicine, narrative medicine is best taught through group classes and seminars that allow people to analyze literature and practice close reading skills (Charon et al., 2017). Interestingly, the literature examined does not have to involve illness because close reading strategies can be practiced in any literary scenario.

Other scholars prioritize different components of narrative medicine in their definitions. For instance, John Launer, a general practitioner and honorary senior lecturer at the University College London Medical School, emphasizes the cultural component of narrative medicine (Launer & Launer, 2003). With contributions from fields such as feminism, anti-racism, and post-modernism, physicians can approach their patients on a "more appropriate [ground] for the 21st century" (Launer & Launer, 2003, p. 91). Examples of this kind of approach could involve recognizing a patient's gender identity or how their racial background contributes to their illness presentation. This involves being more aware of how a physician's dialogue is imbued with unconscious biases and the importance of validating and responding to patients' diction (Launer & Launer, 2003). Launer even suggests that physicians should serve as "collaborative story-makers" who help patients to incorporate health into their personal life story (Launer & Launer, 2003).

The ideas of Charon and Launer are radical when compared to the biomedical model of medicine. Patients' stories of illness, and how a physician may respond to it, are so personal that a standardized approach to documenting clinical encounters is not sufficient to capture physician-patient interactions. Clearly, there is great benefit to be reaped from incorporating this conversational model into daily clinician practices. In the context of this thesis, I personally define narrative medicine as medicine practiced with the intent to focus on a patient's diction, tone, and body language during a clinical encounter in order to better understand patient narratives and reflect on how these stories impact the physician. I propose that this skill does not require extensive specific training or a prolonged amount of time to perform, in contrast to Charon's (2005) ideas; instead, I believe that this skill can be honed during occasional EHR trainings, and that any implementation is better than lack thereof.

Evaluation of Current EHR Usage

With the positive and negatives of EHR use and design in mind, it is important to ensure that these features are considered when creating a new design interface. When comparing EHR usage in the past decade, it can be seen that national usage has more than doubled. In 2008, a paper written by Johnson et al. suggested that EHRs would not be widely accepted by the physician community until EHR design can support more efficient clinical narrative documentation (Johnson et al., 2008). It is important to note that Johnson and his colleagues' (2008) interpretation of narrative documentation is not meant to include narrative medicine, specifically. Instead, narrative documentation is meant to convey that clinicians often think and take notes in a narrative format, such as using natural language like a sentence in English. Furthermore, just because an EHR has the capability to accommodate free, unstructured text does not guarantee that that alone will be enough to facilitate narrative medicine practices in EHR documentation without additional support from training or EHR structure. Nevertheless, despite this prediction for EHR design requirements, EHR usage has increased rapidly in the past decade.

In evaluating why EHR implementation increased, it is important to understand the impact that influences outside of the medical sphere can have. In 2009, the HITECH Act was passed by the U.S. government; this legislative act rewarded physicians who adopted an EHR with adequate "meaningful use" with financial incentives (Hsiao & Hing, 2014). Much like the Flexner Report, this legislative act helped to propel the medical community in a certain direction, regardless of the negative consequences associated with EHR design and implementation. Meaningful use, as defined by The Center for Medicare and Medicaid Services, encompasses a list of twenty-five different uses or design features that are relevant to improving EHR systems.

In order for an EHR system to be classified as "meaningfully used," all fifteen defined functionality components and at least five design components must be included (Huang, Gibson, & Terry, 2018). Key functionality features involved in a meaningful use EHR are designed to make physicians' jobs more efficient and improve patient safety, for example: checking for drug interactions and patient allergies; recording demographic information, patient history, and vital signs; tracking medication usage; and, safely securing protected health information (Huang, Gibson, & Terry, 2018). Some of the key design features that EHRs are required to have in order to qualify for the financial incentive include: sending a reminder to patients for future visits, providing an easy way for patients to find and view additional information about their medical concern, interweaving clinical test data into the note, and sending public health information to relevant agencies and immunization information to appropriate databases (Huang, Gibson, & Terry, 2018). Although all of these features are necessary and important to maintain in future EHRs, none of them directly engage physicians with the story or experience of patients. As evidenced by Brady et al. (2002) and other authors, there is a real need to connect physicians with the people that they treat.

With the help of improved billing and incentives like HITECH, by 2013, the percentage of office-based physicians that had adopted an EHR system was 78.4%, according to the National Center for Health Statistics (Hsiao & Hinge, 2014, p. 1). Undeniably, EHR design is an important topic to consider since so many of the practicing physicians in the U.S. use EHRs on a regular basis. It is important to ensure that our healthcare model is as effective and harmless to implement as possible for all parties involved, including physicians.

Presentation of Alternative Designs

To reiterate, my personal guiding definition of narrative medicine is as follows: medicine practiced with the intent to focus on a patient's diction, tone, and body language during a clinical encounter in order to better understand patient narratives and reflect on how these stories impact the physician. In order to support this, the first requirement of compliant EHRs would be that the subjective portion of the clinical note needs to support free-text abilities. By this, I mean that the EHR should absolutely support an open format for all documentation sections so that a free response sentence constructed by the physician can be typed directly into the EHR. Simply selecting between preset values such as "patient fell" or "pain is a burning sensation" does not allow for the variety of patient experiences that could prove vital to patient outcomes, especially since clinical notes are often used to lobby for insurance companies to support the cost of patient treatment through billing. As a thought experiment, consider the following:

> *A patient who works as a manual laborer has recently torn his lateral meniscus on his left knee while taking care of his nephew. The patient's best chance of recovery is to have a surgical procedure to remove his meniscus; without this, he may not be able to return to work as a manual laborer and support his family. However, the insurance company is only willing to cover physical therapy as a treatment option.*

An adequate subjective history would incorporate the patient's specific words and background into the note in a direct manner to provide context for his situation and to honor the patient's story instead of diluting it. Many people go into the medical field to be advocates for patients who desperately need help; improving documentation and finding evidence for alternate patient treatments that improve outcomes can surely serve as a way for physicians to continue to find

meaning in their work. Additionally, documenting a patient's story while valuing their diction and tone helps the patient to be seen as a multi-faceted person instead of just a medical problem to solve. EHR design should strive to maintain the humanity in medical stories.

As supplemental information to the subjective section, additional prompts should be built into the EHR design to guide physicians through eliciting the patient's story. Often, during a clinical encounter, there are multiple reasons why a patient is suffering that have contributed to their illness presentation. Narrative medicine helps draw these reasons out of a patient's story, and can help physicians contact secondary health care providers to address additional patient needs. As a thought experiment, consider the following:

A middle-aged woman who lives alone has recently undergone a total knee joint replacement. She received the surgery well, but she has had difficulty in regaining full range of motion in her new knee due to lack of activity.

If careful attention is not made to understand the reasons why this patient has not sustained enough activity to facilitate recovery, then the physician could potentially miss that the patient has depression, can barely make herself leave her house, and could really benefit from seeing a therapist. It is also possible that the patient is the sole caregiver for her bedridden mother and could benefit from a connection to hospice/home health workers; a plethora of other scenarios is also possible. The discussion of probing questions is inherent in narrative medicine. Dr. Thomas Egnew, who focuses on research in medical education, has discussed a variety of starter questions to help physicians enter into a meaningful dialogue with patients. Some of his questions include: "What does this illness mean for you now and in the future? I know you have pain, but are there things that are even worse than just the pain? [Who or what] else will be impacted by what's happening to your health?" (Egnew, 2018, p. 162). The EHR, with a design

focused in narrative medicine, can help to prompt these types of discussions and support physicians in the process of building empathetic, trusting relationships with their patients.

Questions such as these are discussed by many authors; however, there has not been a productive effort to include this style of physician-patient discussion in EHR design. I propose that questions like these are incorporated directly into the EHR with free-text abilities that will allow physicians to record patient responses and what the physician themselves interpret this to mean for the patient. In an ideal clinical situation, the physician could share what they have documented with the patient to ensure mutual understanding and trust. This practice is already implemented by Dr. Charon (Charon et al., 2017). If sharing the clinical note detailing the patient's story is too time-consuming or the online infrastructure is not in place to support this, then physicians can tailor the language that they use to respond to their patients' stories. In my experience shadowing Dr. David Ring, an orthopedic surgeon and associate dean at Dell Medical School, physicians should first attentively and actively listen to their patients' stories. Then, before beginning probing questions, the physician should recount their interpretation of the story and ask, "Am I hearing you correctly?" This interviewing strategy empowers patients to ensure that the physician is addressing *their* concerns and not just what the physician thinks is wrong. Leveling the power dynamic between physician and patient through assured mutual understanding can foster the trusting physician-patient relationship that is necessary to prevent physician burnout.

Finally, the subjective section of the SOAP note should be updated to include more discussion over the body language of the patient. The way that people carry themselves during conversations can indicate if they are confident, unsure, or even afraid. In the case of Dr. Lifflander and her elderly mother who was screened for abuse, the best practice question could

have been improved and made functional by indicating the body language of the patient while she was giving her answer. Closed off body positioning, for instance, could indicate that while the elderly woman was not receiving abuse from an intimate partner, it was coming from another source. Of all of the aforementioned ways to introduce narrative medicine, including body language in documentation is the most novel. In considering close reading of the encounter, oral language is typically the only component analyzed. If oral language can be subject to close reading, then so can body language. While Charon (2000, 2005, 2017) does not yet appear to place much emphasis on body language, nor has it been included in definitions from any other source analyzed, every medical specialty is different, and it is possible that some physicians already discuss body language in their clinical documentation. For instance, psychiatrists, who deal with the mental state of patients, might have an easier time justifying documenting patient behavior during encounters than gastroenterologists, who deal with the gastrointestinal tract. However, just as narrative medicine can potentially be beneficial in multiple specialties, I believe that including body language in the scope of practicing narrative medicine may also provide invaluable information for a variety of specialties. Based on my personal experience as a medical scribe using Centricity, a well-known EHR, there is no designated place to document patient body language during the encounter. Adding a body language component to the subjective section may encourage physicians to make use of this contextual resource.

Discussion

EHRs are used by the majority of practicing physicians across the entire United States. Because of their widespread usage and their less than adequate account of, and engagement with, patients' stories, narrative medicine design components should be considered meaningful use

criteria in future government subsidy definitions. Including narrative medicine designs in the Center for Medicare and Medicaid Services' meaningful use criteria would mean that in order for physician EHR usage to qualify for government incentives like HITECH, the EHR would need to support narrative medicine in some format. Without governmental intervention after the Flexner Report of 1910, it is likely that the adoption of the biomedical model would have happened at a much slower rate. The same is certainly true of EHR adoption rates. If the government has enough influential power to shift the philosophical and technological path of healthcare, then it can potentially aid in implementing narrative medicine to improve outcomes for physicians and patients. Other sources of change could certainly stem from EHR companies themselves, or even physicians lobbying for more effective documentation platforms. However, redesigning EHR platforms will come at a price of time, labor, and money. Governmental incentives could expedite that transition.

Notably, any narrative structure incorporated into EHR documentation design should be optional for the physician to use, at least for the foreseeable future. It is unreasonable to assume that every physician across the country can quickly change their practice habits while documenting patient encounters, even with the standard EHR training that typically accompanies EHR usage updates. Similarly, EHR companies should be given an acceptable time frame to update their EHRs to meet meaningful use criteria that involves narrative medicine. As with any transition, whether it is government mandated or otherwise, a swift change will result in unhappy parties from all sides of the issue. If EHR companies are not given adequate time to adhere to meaningful use criteria, then the physicians who use their EHR service will not receive the same financial incentive simply because their current EHR system does not comply. In sum, while it is important for narrative medicine to be built into EHR designs in a reasonably fast time frame,

this inclusion and implementation should not unreasonably disturb the practice of medicine for physicians or EHR companies.

Furthermore, any EHR design changes involving narrative medicine should necessarily be accompanied by additional EHR training. In a study performed by Robinson et al. (2018), subsequent EHR training in efficiency over a series of three years at the Southern California Kaiser Permanente Medical Group improved clinical documentation. Results showed that "98% [of all physicians] across all trainings self-reported improved quality, readability, and clinical accuracy of documentation, and also fewer medical errors, and increased efficiency in chart review and data retrieval" (Robinson et al., 2018, p.3). Clearly, EHR efficiency can be improved by continued education over EHR usage. The same logic should apply to the inclusion of narrative medicine in EHR design to reduce the burden of any added documentation. Additionally, these same trainings can be an opportunity to help physicians build their narrative medicine close reading skills. Although the majority of physicians using EHRs equipped with narrative medicine prompts will not receive the "rigorous" education that Charon necessitates, they can still receive occasional group seminars built into the EHR training session, similar to the brief seminars outlined in *The Principles and Practice of Narrative Medicine*.

Changing the way that EHRs are designed is not the only way to address the lack of narrative analysis and emotionally meaningful encounters in daily medical practice. Altering the way that physicians physically interact with EHRs and document information during clinical encounters can help increase face to face time with patients and value their stories, as opposed to focusing on checking the right EHR boxes. For instance, Dr. Mehta, a physician at Louisiana State University Health Shreveport, suggests to physically push the computer EHR system away during prolonged clinical discussion to create a sense of focus on the patient (Mehta, 2015). I

also suggest that the computer screen should face away from both the physician and patient during discussions since eye to eye contact, without distraction, can help build trust and openness in interpersonal relationships. This type of EHR usage adaptation is supported by Dr. Hartzband and Dr. Groopman who assert that "Much key clinical information is lost when physicians fail to observe the patient in front of them" (Hartzband & Groopman, 2008, p. 1657). Additionally, what constitutes a prolonged clinical discussion can range across specialties, but for every specialty, there is certainly a moment of clinical review where the physician highlights important information for the patient. This can serve as a reflective moment for both the patient and the physician to ensure that both parties conveyed their thoughts and concerns for the treatment plan. Importantly, this is a moment to consider how the patient's story will affect how they perceive and act upon the treatment plan.

Concessions and Refutations

A main concern of implementing narrative medicine is that it will not be suited to all specialties of medicine. Furthermore, oppositional opinions state that not all patients will want their doctor to act as a counselor or help elucidate their values about medicine. It is likely that some patients only want their doctor to serve as a wealth of information from which they can draw their own conclusions. This point is valid, and this thesis emphasizes that physicians should care about the individuality of their patients. That ideology inherently encompasses the realization that different patients desire different models of care. This further strengthens my initial argument that narrative medicine practices should be an optional portion of EHR documentation; they should be included in EHR structure, but they should not be required for use with every single patient. There is no reason to put a "hard stop", as Lifflander puts it, in the progress of documentation to practice narrative medicine. If narrative techniques are to be

adopted any time soon, then barriers to efficient note production (and therefore payment) must be reduced as much as possible. Not every patient will require the same level of narrative analysis in their medical treatment; the same depth of documentation will not always be required. However, the tools and format should be available for physician use when the time comes.

Another one of the top concerns for physicians using EHRs is the time-consuming aspect of clinical documentation. EHRs, while being useful resources that can present many types of information all in one place, are often clumsy to use. Typing observations into every field or clicking every drop-down box take away time from either the clinical encounter or the physician's personal time. I agree that, at least in the beginning, implementing narrative medicine in EHRs will add more time to the average clinic note. There will be additional documentation to compensate the added personal and patient evaluations to the clinical record. However, I feel that taking more time to develop and analyze patients' stories will bolster the sense of meaning that physicians find in their work. As Charon addresses in the closing chapter of her book, research has recently begun to quantify the costs, like time and money, of implementing narrative medicine (Charon et al, 2017). The benefit of potentially improving clinical outcomes for patients and physicians alike is, in many cases, based on anecdotal data. However, just because this field of work may be difficult to concretely substantiate does not mean that it should not be pursued, especially when much of the anecdotal evidence is positive. Charon notes that a group of pediatric doctors at Columbia met regularly to practice close reading skills and creative writing (Charon et al., 2017). They anecdotally reported that engaging in this narrative medicine training increased their "curiosity about patients" and made them eager to continue their medical work (Charon et al., 2017, p. 296). As seen in the case of Dr. Hurwitz (2020) and Brady et al. (2002), this energy to continue practicing medicine can mean the

difference between continuing and quitting a career due to burnout. If narrative medicine can decrease physician burnout, then I believe that it is valuable to figure out how to optimize its implementation in the EHR, even if the initial application leads to an increase in documentation time. Further research needs to be done to develop quantitative and reproducible studies over the implementation of narrative medicine.

Another notable issue commonly brought up when discussing EHR efficiency is the use of medical scribes to document clinical encounters. I agree that medical scribes can expedite the clinical process by taking a large bulk of paperwork from physicians. This can also alleviate physician burnout because the sheer workload that physicians face is greatly reduced; after a scribe writes a clinical note, the physician must only read over it to sign off that the information is correct. For some physicians and specialties, this may be the optimal way to run their clinic. However, hiring medical scribes can be very costly, and this may prevent many practices from benefitting from a more distributed record-keeping workload. The lack of access to medical scribes is reason enough to consider design changes to EHRs. Additionally, some third-party services offer "remote" medical scribe services. This means that a video of the clinical encounter is recorded, and the medical scribe creates the note afterward. This model of scribing prevents the physician from ensuring that their note is accurate to the patient's testimony and reflects their understanding of the patient encounter until long after the encounter is over. Thus, any opportunity for note reflection, like with Dr. Charon, is lost. Speaking as someone with experience in the remote medical scribe field, third-party companies can also encourage medical scribes to standardize the construction of notes in order for scribes to write notes for a variety of doctors and practices, although this is not necessarily the case for every third-party medical scribe service. If notes are overly standardized between doctors and practices, there is an

additional chance for patient specific details in the subjective section to be overly simplified or lost.

Limitations

One of the main difficulties about studying EHR design is that there is very little precise public information or peer reviewed studies about specific EHR brands and their interface designs. GE Centricity, AthenaHealth, and NextGen are all examples of privately owned EHR manufacturers. As with most private business designs, it appears that most of the details about the logic behind EHR design are not publicly known. Free trials of most major EHR services are offered to physicians, but they are often difficult to access and require that physicians provide their personal information to receive. The unavailability of data over specific EHRs has made it difficult to directly compare their current ability to host narrative medicine. As such, many of the conclusions drawn in this thesis are merely suggestions that any EHR brand could implement to improve physicians' experience with their product. Furthermore, this lack of transparency is a hindrance to the medical community. After all, one of the main priorities for medical practices is that they provide the best level of care possible to their patient population, and this requires using an EHR service that best fits each practice. Physician reviews on EHR brand websites and subpar access to EHR demos are insufficient methods of tracking EHR development. Physicians and researchers need more up to date and reliable methods of understanding EHR designs.

Unfortunately, another major limitation of this thesis is that the outbreak of the 2020 COVID-19 pandemic prevented the final collection of data. Given the lack of online data over the design of EHRs and the short time frame to search for additional information, this inquiry into EHR design initially included a plan to survey different EHRs in order to compare and

contrast the current benefits and drawbacks for including narrative medicine across different platforms. The outbreak of COVID-19, however, has required the University of Texas at Austin, like all other college campuses in the nation, to enforce stringent social distancing and lockdown measures and to move classes entirely online.

Conclusion

The need to standardize medicine in the 20th century diminished the role of narratives in healthcare, and the creation of the electronic health record (EHR) further put a strain on recording and valuing patient illness narratives. Sharing in stories of illness through narrative medicine with patients facilitates the creation of trusting bonds that physicians, and humans in general, need to continue on with their work. Especially in an often emotionally difficult environment like the healthcare field, these bonds may slow or prevent the onset of physician burnout, where physicians are driven from their careers. Narrative medicine, with the intent to focus on tone, diction, and body language, can best be supported in the EHR by expanding free-text abilities to all documentation sections, building probing question prompts into the EHR layout, and including a designated area to record patient body language. These adaptations should be legally required in meaningful use criteria in order to hasten their inclusion, but they should remain optional for the physician to complete since every patient will require different levels of attention. Additionally, making behavioral changes, such as facing away from the EHR screen and supporting frequent EHR trainings over the implementation of narrative medicine, could help physicians to form stronger physician-patient bonds without physically changing the EHR structure.

The majority of the research analyzing the effectiveness of narrative medicine is anecdotal. Although the response to narrative medicine inclusion is generally positive, more research should be conducted to provide quantitative analysis of the costs and benefits of practicing narrative medicine in the American healthcare system. If narrative medicine is to be incorporated into the majority of EHR systems, then providing governmental incentives like the HITECH Act of 2009, will help to expedite this reform of the healthcare system. Narrative medicine research and its incorporation into EHRs may prove to be a significant deterrent to physician burnout, increase the joy that physicians find in working with patients, and improve patient outcomes.

In addition to research on narrative medicine, more information about the logic behind EHR design should be conducted and made available to the public. Hardly any information comparing the specific design layouts and usability of various EHRs could be found. This prevents communal improvement in EHR designs and restricts the information that physicians have when deciding which EHR can best support their practice. I hope that this thesis can serve as a justification for pressuring EHR companies to divulge their design decisions.

After all, the design choices made in electronic health records can have real implications for the people using them. The practice of medicine is an art form, and with art comes humanity and human experiences. The stories of illness that occur every day, like Dr. Hurwitz's young patient with graft vs. host disease, deserve to be heard and valued. The doctors who bear witness to their patients' illnesses deserve to have space to interpret, process, and join in community with these stories. The reality of people's lives underlies how their healing process will take place, and without an attempt to interpret their lives, their healing process may be delayed or prevented.

Without the space to properly bear witness to their patients' stories, physicians may be driven from a career that called them to serve others.

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Author Biography

Mia Ramirez grew up in Wylie, Texas with her brother, Aaron, and her parents, Pamela and Dan. She attended Wylie High School, where she was deeply involved in That Wylie Band. Upon attending the University of Texas at Austin, Mia was a part of The Longhorn Band, Habitat for Humanity, and served as an officer for Students Expanding Austin Literacy and Keep Austin Wizard. She was also involved in the Health Leadership Apprentice program at Dell Medical School. Academically, Mia pursued a Bachelor of Science and Arts in Neuroscience. After completing her bachelor's degree, Mia plans to take a gap year and apply for entrance to medical school.