Anna Winkowski
Med Inf 407 Criticism Paper
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For my criticism paper, I chose an article by Kenneth W. Goodman, titled Ethical and Social Challenges for Medical Informatics. Dr. Kenneth W. Goodman is a co-director of the Ethics Program at the University of Miami, which includes their Business Ethics Program. Dr. Goodman is also the founder and director of the Bioethics Program and the Pan American Bioethics Initiative. He delivered this article at the 1998 AMIA Fall Symposium Trial. While I totally agree with his introduction that doctors struggle to keep up-to-date with advances resulting from new physical and chemical techniques as well as elaborate machinery applied to the study of diseases, I totally disagree with his implication that doctors forego a thorough clinical examination to rely on data which they do not understand. Granting there are physicians who could use more training on conducting assessments, majority of the physicians are in it to deliver the best care to their patients. As I continued to read the article, I realized that some of the issues he mentioned back in 1998, still apply in today's ethical struggle with the advances in technology.

Responsibility

The author pointed out that it is simply human nature to find somebody else to take the blame when things go awry or when errors are committed. I believe that in this day and age of benchmarking and measurable outcomes, most people in the healthcare field would view an undesirable result as an opportunity to improve their system or their process. The author brought up the Borrowed Servant Rule, which according to an article titled Health Law Matters (2006, Hollowell et.al), means that a physician is liable

for any wrongdoing committed by his or her employees during the course of their employment. It is therefore important that employees receive the proper training required to perform their designated duties, so wrongdoing could be avoided or minimized at best.

Decisions, outcomes and uncertainty

The author wrote that the decision to use new tools should not rely heavily on certain studies conducted in a controlled environment because there still is the uncertainty in the accuracy, reliability and design of devices used to provide outcomes such as diagnosis, prognosis and hospital mortality. He added that although practitioners have the responsibility to advance medical information, they are also ethically obligated to make sure no harm befalls on the patients.

I admit that the author made a good point about making sure the accuracy, safety and efficacy of a new tool has to be verified before it should be adopted. I found his assumption about physicians just offering or recommending new tools to their patients without making sure of its safety, troubling. True, some doctors are more than willing to try a new drug or test especially if the drug sales representative offers them an expensive dinner (2007, Fugh-Berman), but there are other physicians out there who would prescribe the medication solely because they feel it could benefit their patients. I would also like to point out that newly released drugs or tests have to be FDA-approved before it is made available to the public, which means the doctors are recommending the new drug or test in good faith believing that the FDA reviewed and verified the efficacy and safety of the drug before approving its release to the public. Take the case of Vioxx, a non-steroidal anti-inflammatory drug, widely popular in the 1990's for the

treatment of osteoarthritic and acute pain conditions as well as dysmenorrhea. Physicians prescribed it to their patients because it was effective in reducing pain, stiffness and inflammation. What the physicians and the patients did not know was that long-term use of the drug increased the risks of heart attack and stroke. Although withdrawn from the U.S. market in 2004, the drug was initially approved by the FDA. Should the physicians be held liable for prescribing medications or tests that were FDA-approved and later found out to be unsafe? I think not.

Error avoidance and responsibility

The practitioner's primary responsibility is to make sure that no harm comes to their patient. Whether the use of new technologies improves or hinders patient care is a question that needs to be addressed before attempting to use the new technology. The author stated "we are sometimes unsure whether care will be improved by the use of new technologies." Most of the doctors I know would use new technologies with the thought that it would improve patient care. Unfortunately there are times when we do not know what the long-term consequences of this new technology are. Take the case of the Magnetic Resonance Imaging or MRI, which helps provide clear pictures of the inner structures of the body allowing diagnosis of various abnormalities such as brain tumors or torn ligaments (1995, The Patient Education Inc.). The MRI is considered safe but the long-term effects are not known. Should the physicians then err on the side of safety and stop ordering MRIs because the long-term effect is unknown? I think that would be unwise especially since the MRI has helped detect early stages of brain tumors and diagnose torn ligaments which led to some life-saving treatment or procedures.

System evaluation

System evaluation is ethically necessary to evaluate health computing systems. The need to store large quantities of data, networking and databases has made the modern computer systems complex. Computer systems are heavily relied upon to support daily activities. A system failure could result in a significant breakdown. It is therefore very important to have a regular system evaluation. It is also important to have a health information system that works, provides the desired result and is cost effective. Adequate training needs to be provided to the end-users. This is one section that both the author and I agree on. Having a reliable health computing system is of utmost importance in ensuring that adequate care is provided in storing patients' data.

Confidentiality and privacy

In this section, the author stated "Confidentiality protections are often meager and feckless because of the ease with which information is shared and the increasing number of people and institutions demanding some measures of access to that information." While his comment may be true at the time of this article, I think we have come a long way in protecting patient confidentiality. Although the system is not perfect, the introduction of the Health Insurance Portability and Accountability Act or HIPAA rule, has made health care providers more vigilant in protecting the privacy and confidentiality of the patient's medical records. The minimum necessary standard, a key component in the HIPAA rule, only allows disclosure of health information necessary to satisfy a particular purpose or carry out a function (2003, OCR). This limits the unnecessary and inappropriate disclosure of a patient's health information records.

Decision support-appropriate tools and users

Artificial Intelligence or A.I., a term coined by John McCarthy in 1956 is described as the science and engineering of making intelligent machines. The author mentioned how machines are able to assist humans in decision-making but he took issue on claims that machines could think better or more efficiently than humans could. However, in a 2007 revised article by Mr. McCarthy, he cited how one of the first expert systems called MYCIN in 1974, did better than medical students and physicians in diagnosing and suggesting treatments for bacterial infections but admitted that the knowledge engineers were familiar with the patients, physicians, death and recovery data and were therefore able to put all the information in a pre-determined framework. Mr. McCarthy added that "the usefulness of the current expert system depends on their users having common sense." This to me means that despite all these sophisticated machines available to us today, there is still the human factor that is needed to make sure these machines are working the way they should be (2007, McCarthy).

Appropriate use of tools and applications

To make a clinical decision, the author questioned when and under what circumstances should clinicians use illness severity scores, decision support and diagnostic expert systems and outcome averaging machines? I believe that clinicians should only use the above mentioned resources as a guide in their decision-making, taking into consideration the subjective and objective data obtained from the patient.

The author mentioned that it is over simple and unethical to commonly represent quality as constituted by lower costs and reduced liability. Quality health care could have

different meaning to several people (n.d., AHRQ). Some may define it as being seen by the physician right away, while others may see it as being treated nicely by the physician and the health care staff. Some even define it as the time spent by their physician with them. Regardless of the individual's definition of quality health care, what is important is that appropriate care is provided so the patient stays healthy and recovers faster when sick. When care is provided in a timely fashion and unnecessary tests are avoided the patients' length of stay is shorter thereby reducing costs. When medication or procedural errors are avoided, liability is reduced, or even eliminated.

Prognostic Scoring and Clinical Outcomes

The author pointed out that while computers dramatically improve our ability to calculate how things will turn out, it should be regarded as a point in an evidentiary constellation and should not alone be allowed to defeat other considerations in the care of critically ill patients. Once again, I felt that he is undermining the decision-making capacities of physicians by assuming that they would ignore the clinical presentation of the individual patient in favor of prognostic scores or computational metrics and practice guidelines. In a study comparing physicians' opinion with the predictive model, it was noted that physicians reached their conclusion by using information other than those found in the prognostic factor analysis (1996, Muers et.al).

Update

Because this article was written in 1998, I was curious to know if Dr. Goodman still feels the same way about Medical Informatics and its social and ethical challenges. I decided to visit the University of Miami website to find out if he still is associated with them.

Once I confirmed that he still is, I sent him short note via email, identifying myself. I also included a few questions regarding the article. The following day, I received a response from him suggesting that I give him a call so we could discuss my questions. Our first appointment never materialized as I was not able to get hold of him. We rescheduled and last Thursday, October 29th I was able to get him while he was waiting in line for two hours to vote. I offered to call him back but he nixed that idea stating that he is just standing in line anyway. We exchanged a few pleasantries before I started the interview. The following was our question and answer piece:

Anna: Do you still feel that there remains "crucial uncertainties about the actual accuracy, reliability and design of all devices in computational medicine?

Dr. Goodman: It has gotten better. Databases are now more accurate and reliable.

Anna: Do you think that today's Medical Informatics is immune to the error or carelessness of modern computing applications?

Dr. Goodman: I don't think they're immune but like I said, the system has gotten better. We need to be clear that there are inferences humans can make which could result in the error.

Anna: Are we doing enough to protect the confidentiality and privacy of the patient's EMR?

Dr. Goodman: I think having the HIPAA rule has done a lot. What clinicians should ask is 'What kind of steward should I be in my patient's privacy?' Protecting a patient's privacy is a moral obligation.

Anna: Do you feel that the clinicians of today are dependent on illness severity scores, decision support, diagnostic expert systems and outcome averaging machines in making their clinical decision?

Dr. Goodman: I don't think they're dependent on it. Despite the new technology available out there, there is still the human component that is required in making clinical decisions. I think I mentioned in my article how RA Miller said that "people, not machines understand patients' problems."

As much as I wanted to ask him some more questions, I had to stop because his line was moving. Before we ended the call, he suggested that I should start attending the American Medical Informatics Association or AMIA meetings to further learn about the latest in Medical Informatics.

Conclusion

When I selected this article for my criticism paper, I thought I would not have a difficult time tearing it apart because I felt so strongly about the author's position that physicians do not look at the clinical picture and instead rely heavily on data in making their clinical decisions. Unfortunately, that was not the case. I have worked with numerous physicians and I have yet to meet a physician who has not put their patient's clinical presentation over the illness severity scores and diagnostic expert system in making their decision. As a case manager for a managed care company, we are instructed to follow the Milliman Care Guidelines which outlines what treatment to expect and how many days a patient should stay in the hospital for certain conditions. An example would be when a patient comes in with chest pains; the expected length of stay is 1 day. All

necessary tests should be done on the day of admission with discharge the following day. Unfortunately, not all patients fit in that mold. Some patients are still having cardiac symptoms on day 2. Do we insist that the patient be discharged based on Milliman's Guidelines? No we don't. We encourage our physicians to look at the patient as a whole and base their decision on their assessment.

While having the illness severity scores and diagnostic expert systems help the physicians in making their clinical decisions, I do not believe that it was intended to replace the decision-making capacity of the clinicians. As RA Miller puts it "while computer-based medical diagnostic decision programs may be useful adjuncts to human decision-making, they cannot replace human diagnosticians. Miller added that diagnosis is a complex process more involved than producing a nosological label for a set of patient descriptors. The state of the art in computer-based medical diagnosis does not support the optimistic claim that people can now be replaced by more reliable diagnostic programs.

As for the privacy and confidentiality of the patient's medical record, I agree with Dr. Goodman that HIPAA has improved the way we handle the PHI. Patients depend on their health care providers to protect their privacy. Processes should be reviewed to make sure that there is no breach in handling PHIs.

In the end, new ethical and social challenges for Medical Informatics will continue to emerge as we forge ahead with the electronic medical records. Our responsibility as informaticists would be to make sure that the patient's safety and well-being is our top priority.

Epilogue:

After my interview with Dr. Goodman, I sent him an email thanking him for taking the time to talk to me. I also added that I hope he did not have to wait too long before he was able to vote. After a few days, Dr. Goodman responded, “I finally voted, but it took four hours…”

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