CASE 7: What is Dr. Watson?

By Bryan Kibbe, MA, Loyola University Chicago, Department of Philosophy

The hospital hiring committee was suitably impressed. In preparation for the interview today, Dr. Watson had memorized all of the patient medical charts in the hospital as well as every medical journal article written in the past 20 years. As the interview came to a close, the IBM representative, speaking on behalf of Dr. Watson, made her final pitch,

"The 'Watson' supercomputer technology is the world's most advanced natural language processing machine, as we all saw on the Jeopardy quiz show in 2011. Having managed to beat some of the most successful human contestants in Jeopardy history, we are now applying 'Watson' to bigger and more important problems, such as the diagnosis and treatment of medical disease, and we want to partner with the Metropolis Memorial Cancer Center to begin that work. 'Dr. Watson' as we call this health care oriented version of our supercomputer technology (otherwise known as 'Watson') will quite simply revolutionize your diagnostic abilities here at Metropolis Memorial Cancer Center.[1] The amount of information that doctors need to process and remember today in order to effectively diagnose and develop suitable treatment plans is simply staggering. There are patient medical charts, patient preferences, family histories, diagnostic test results, and new medical journal articles with the latest research on diseases and treatments being published every month, in addition to all of the information about human anatomy, diseases, treatments, and drug interactions that doctors learned in medical school and clinical residency. Human doctors cannot keep all of the relevant information in view during diagnosis and development of a treatment plan. But 'Dr. Watson' can. Once implemented in the clinical setting, doctors will be able to ask the system to determine the most likely diagnosis for a set of symptoms that a particular patient displays. 'Dr. Watson' will then be able to search patient data, a patient's treatment preferences, diagnostic test results, treatment guidelines, doctors' and nurses' electronic notes, clinical study information, textbooks, and journal articles to develop hypotheses that it tests and assigns scores to that indicate confidence in the accuracy of the diagnoses along with an accompanying treatment plan based on the most up to date research. Even more, 'Dr. Watson' can process 200 million digital pages and provide an answer to a doctor's query in three seconds.[2] Fortunately, there is no need to install actual computer servers at the hospital, and instead all of Watson's health care diagnostic and treatment capabilities can be accessed remotely by authorized users via the Internet at any suitably equipped PC or mobile computer.

With this technology in place, doctors will be able to receive the support they need in order to successfully navigate the flood of medical information they are currently faced with, and patients will benefit from expert medical diagnosis and development of a treatment plan that is assembled using the most up to date, evidence based, medical and scientific research. There is real potential here to save even more lives than our present medical system already does.

Getting right down to it, as a valuable pilot project for this technology, IBM is willing to waive any costs for utilizing this technology over the next three years in exchange for access to the data about the performance of 'Dr. Watson' in the clinical setting. Additionally, we will supply technical support over that time period to implement and maintain the system in the hospital."

---

[1] "Dr. Watson" is a fictitious name assigned to this otherwise real medical application of the Watson supercomputer technology.

[2] "Memorial Sloan Kettering and IBM Watson Infographic." Accessed on Sept. 30, 2013. http://www.flickr.com/photos/ibm_media/7006882785/

After the IBM representative left, the committee was abuzz about the exciting prospects for this technology in the hospital. Debate quickly ensued, though, about the ethics of implementing this kind of technology in a medical setting and how it should be implemented if they decided to proceed forward with the partnership with IBM.

Questions:

1. If the "Dr. Watson" supercomputer technology is successfully implemented in the hospital and demonstrates a diagnostic/treatment plan success rate better than any other doctor in the hospital, should all doctors working at the hospital be required to submit diagnostic queries about each and all of their patients to the "Dr. Watson" system? Why or why not?

2. Suppose that the hospital required all its doctors to submit queries for each and all of their patients to the "Dr. Watson" system (which had demonstrated a diagnostic/treatment plan success rate greater than any other doctor in the hospital). Should a doctor then be allowed to refuse a diagnosis that the "Dr. Watson" system has determined to be highly likely if he thinks the diagnosis is wrong? Should a hospital-employed doctor be allowed to refuse a "Dr. Watson" recommended treatment plan or part of a treatment plan if she thinks it is wrong?

3. Given that the "Dr. Watson" system has been offered to the hospital as a free-to-use service for the next three years along with technical support, are there any compelling reason(s) nonetheless to refuse the technology? What are they? Can any of these concerns be overcome by addressing how the technology is set up in a health care setting or the rules and procedures that are designed to shape how the technology is utilized? How so?

Case from the National Undergraduate Bioethics Conference Bioethics Bowl. April 5, 2014. Loyola University, Chicago.

http://nubc2014.files.wordpress.com/2014/01/bb-case-packet-20141.pdf