

Rethinking Liability and Licensing for Doctors in the Era of AI: Insights from Company Law

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Abstract

As the AI revolution in the healthcare sector begins, it is time for the law to identify regulatory issues that might require a rethink under the new era. Since technology in this sector has enormous potential to improve access to healthcare, States should ensure that regulations do not stymie the AI revolution in the healthcare sector. However, a number of legal and ethical issues need to be carefully considered in this regard. This paper will focus on two issues namely, (i) determination of liability; and (ii) licensing of medical professionals. With respect to determining liability, the paper argues that since we are still at a stage where AI systems have not completely replaced humans, the medical professional must be subject to the duty of care, even if he/she is assisted by the AI system. It draws from corporate law governing directors' reliance on external experts to put forth an optimal regime for medical professionals using AI. With respect to licensing, the paper argues that it might be time for States to agree upon international standards for medical professionals to be able to deliver healthcare services since the use of AI will allow medical professionals to treat patients in other States and even countries. In the interim, however, it is important for institutions that provide healthcare services to patients located in other countries, to ensure that they contractually agree upon these issues.

Keywords: AI, Medical Professionals, Liability, Licencing, Directors' Duties

I. Introduction

Isaac Asimov, the acclaimed science fiction author, proposed three laws of robotics many years ago. They read as follows: “A robot may not injure a human being or, through inaction, allow a human being to come to harm. A robot must obey the orders given it by

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human beings except where such orders would conflict with the First Law. A robot must protect its own existence as long as such protection does not conflict with the First or Second Laws.”¹ With advances in technology, it may be necessary, in many contexts, to bring these laws out of science fiction books and apply it to the everyday use of technology. In the medical services context, however, we are not yet at the point in time where robots or other forms of technology are entirely in charge of medical care. Instead, we are at the gateway to the introduction of artificial intelligence (AI) in the healthcare industry where doctors work alongside AI to provide effective medical care. Therefore, it is necessary to work out the liabilities and rules applicable to doctors or health care practitioners² at this juncture in order to ensure certainty of responsibilities of relevant parties, and also to incentivise the further development and use of AI in healthcare.

AI has been making inroads into many walks of life. Self-driving cars and virtual assistants like Apple’s Siri are some examples. Less complex examples are personalised recommendations of music and movies made by apps like Spotify and Netflix.³ In simple terms, AI can be understood as teaching a machine how to do a task that was thought to be human.⁴ More recently, AI is being used in professional services like law and medicine. These developments have given rise to both optimism and scepticism.⁵ While the sceptics’ concerns range from privacy and confidentiality to the reliability of AI in such crucial areas like healthcare, the evidence of success in AI in these fields that is slowly becoming available supports the optimism in this regard.

One of the promises of technology in general (and AI in particular) is that it can improve access to essential services like healthcare and legal services by reducing costs. Essentially,

¹ Isaac Asimov, “Runaround,” in *I, ROBOT* (Fawcett Publications, 1950), 11.

² The two terms are used interchangeably in this paper.

³ “10 Examples of Artificial Intelligence You’re Using in Daily Life,” *Beebom*, September 26, 2016, <https://beebom.com/examples-of-artificial-intelligence/>.

⁴ Andrew Arruda, “An Ethical Obligation to Use Artificial Intelligence? An Examination of the Use of Artificial Intelligence in Law and the Model Rules of Professional Responsibility,” *American Journal of Trial Advocacy* 40 (2017): 443, 444.

⁵ Owen A. Johnson, “Artificial Intelligence in Medicine is Promising, but Doubts Remain,” *Business Insider*, August 12, 2016, <http://www.businessinsider.com/artificial-intelligence-in-medicine-is-promising-but-doubts-remain-2016-8?IR=T>.

since part of the work is automated, the cost of the service is driven down.⁶ Another advantage is that AI makes superior information available to professionals like lawyers, judges and doctors, based on which the professionals can make better informed decisions. For instance, AI is being used by judges in areas like sentencing by providing statistical information like an offender's past record. Thus, judges can act more efficiently as a result of the required information becoming available to them more easily.⁷ This, in turn, ensures that more cases are disposed of faster, thus reducing judicial backlogs that exist in most countries and improving access to justice. Similarly, AI in healthcare can ensure better access to healthcare.

Currently, a clinical decision support platform for oncology developed by IBM Watson, which has been introduced in 55 countries, represents the cutting edge in AI in the healthcare sector.⁸ Learning from the hospitals that have started using this platform can help inform future AI platforms in the healthcare sector. The platform essentially provides support to healthcare practitioners working in oncology by identifying treatment options suitable to each patient's clinical history. Further, it provides relevant studies that support its recommendations.⁹ This way, the healthcare practitioners can supplement their own knowledge while treating patients with a vast amount of data that Watson provides, including the latest research.¹⁰

Oncologists from India's Manipal hospital have explained the process followed before a treatment can be recommended and also explained how Watson Oncology has made this process more effective. According to Dr. Somashekhar, an oncologist and the chairman of Manipal Hospitals, there is a team of oncologists where a group of doctors, based on their individual experiences, arrive at a decision about what treatment protocol is to be followed

⁶ Drew Simshaw et al., "Regulating Healthcare Robots: Maximizing Opportunities While Minimizing Risks," *Richmond Journal of Law and Technology* 22 (2016): 5.

⁷ Pamela S. Katz, "Expert Robot: Using Artificial Intelligence to Assist Judges in Admitting Scientific Expert Testimony," *Albany Law Journal of Science & Technology* 24, no. 1 (2014): 46.

⁸ Jessica Kim Cohen, "Can AI Improve Cancer Care in Remote Areas? 3 Questions with Dr. Andrew Norden of IBM Watson Health," Aug 29, 2017, <http://www.beckershospitalreview.com/artificial-intelligence/can-ai-improve-cancer-care-in-remote-areas-3-questions-with-dr-andrew-norden-of-ibm-watson-health.html>.

⁹ Mallory Locklear, "IBM's Watson is Really Good at Creating Cancer Treatment Plans," *Engadget*, June 1, 2017, <https://www.engadget.com/2017/06/01/ibm-watson-cancer-treatment-plans/>.

¹⁰ *Ibid.*

in each case.¹¹ Factors that are considered in choosing the optimal treatment protocol include fitness level, age, genetic profile, the state of body functions, the stage of cancer and the type of cancer for a patient. Thus, arriving at a decision is time-consuming and the team typically takes a day or more to choose the treatment protocol. In contrast, Watson only takes 2 minutes to process the patient's details and make recommendations. It gives various options which are colour-coded in order of priority, along with the basis of such recommendations, side effects and chances of survival. Discussing the results of one such case, Dr. Amit Rauthan explained that Watson's first recommendation was an oral drug whereas doctors usually think of chemotherapy as the first option.¹² Such efficiency will be very helpful in countries like India where the doctor to patient ratio is very low, and this is even more pronounced for cancer where there is one oncologist for every 1,600 patients.¹³ Even developed countries might not have specialists available in remote areas. In Australia, where there is a high incidence of cancer, Icon Group is set to launch Watson.¹⁴ As the co-founder of Icon Group noted, a scenario can be envisaged where healthcare practitioners in remote areas might enter patient information into Watson to generate treatment options and then interact with specialists located elsewhere to discuss the appropriate course of action, thus improving access to healthcare.¹⁵

Research done in India shows that Watson agreed with a multi-disciplinary tumour board at the Indian hospital 96% of the time for cases involving lung cancer; 81% of the time for cases involving colon cancer; and 93% of the time for cases involving rectal cancer.¹⁶ Similar concordance rates (83% on average for different types of cancer) have been found in a study

¹¹ Sujit John and Shilpa Phadnis, "How IBM Watson is Helping Doctors Diagnose & Treat Cancer in India," *Economic Times*, August 23, 2016, <http://tech.economictimes.indiatimes.com/news/technology/how-ibm-watson-is-helping-doctors-diagnose-treat-cancer-in-india/53821515>.

¹² Ibid.

¹³ Ibid.

¹⁴ Asha McLean, "Australia's Icon Group adopts IBM Watson for Oncology," June 1, 2017, <http://www.zdnet.com/article/australias-icon-group-adopts-ibm-watson-for-oncology/>.

¹⁵ Ibid.

¹⁶ S.P. Somashekhar et al., Early Experience with IBM Watson for Oncology (WFO) Cognitive Computing System for Lung and Colorectal Cancer Treatment, <http://meetinglibrary.asco.org/record/145389/abstract>.

conducted in Thailand.¹⁷ However, the concordance rates are not as encouraging in research from South Korea, where there was only 49% concordance for cases of gastric cancer.¹⁸ IBM's representative, Andrew Norden, attributed this to the differing guidelines for gastric cancer in South Korea and the United States (where Watson Oncology was trained).¹⁹

It is a matter of time before more countries adopt this platform and other similar platforms that are sure to be launched as the market for AI in healthcare becomes apparent. Thus, it is important for regulations regarding liability of healthcare practitioners to take into account the involvement of AI in the provision of healthcare services. Thus, it might be time for States to agree upon international standards for medical professionals to be able to deliver healthcare services.

This paper will address these two areas, i.e. the liability and licensing of healthcare practitioners, in the context of the current capabilities and use of AI in healthcare. In examining these two areas, the paper will draw from principles and concepts of company law. Both directors and doctors are regarded as fiduciaries of the company and patient respectively, and it is conceivable that rules of liability emerging from the breach of such duty would bear common threads. Regarding licensing, this paper draws from company law to determine the location in which medical service is deemed to be rendered based on the "nerve centre" test in company law.

This paper draws mostly from laws in common law jurisdictions. It incorporates examples of medical service contracts and practices used by hospitals using AI mainly from India because of availability of data. The paper is organized into four sections. This first section has introduced the use and benefits of AI, and the current state of play in healthcare. The second section will examine areas of liability that we are likely to expect as the use of AI in healthcare becomes more widespread. The third section will discuss issues of licensing that need to be addressed if the true benefits of AI in healthcare are to be harnessed. The final section will summarise the key recommendations for hospitals using AI and for States.

¹⁷ Andrew Norden, "A Trusted Treatment Option from Watson: Why Concordance Studies Matter," June 5, 2017, <https://www.ibm.com/blogs/think/2017/06/41530/>.

¹⁸ Lydia Ramsey, "Here's How Often IBM's Watson Agrees with Doctors on the Best Way to Treat Cancer," *Business Insider*, June 3, 2017, <https://www.businessinsider.com.au/ibm-watson-for-oncology-at-asco-concordance-2017-6?r=US&IR=T>.

¹⁹ *Ibid.* (Watson Oncology was trained by Oncologists at Memorial Sloan Kettering in the U.S.)

II. Rethinking Liability

This section will draw from company law to formulate how liability must be decided in situations where the decision regarding treatment of a patient was made with the help of AI. Since Watson essentially generates personalised treatment recommendations, special emphasis will be placed on how the rules regarding liability of doctors should evolve.

1. Determination of liability in medical negligence cases

Liability is currently determined as per the law of negligence, which can be understood in three steps. First is the determination of whether a duty of care exists; next is the determination of breach of that duty; and the final step is to determine whether there was any injury resulting from that breach.²⁰ However, in order to establish that a duty of care is owed to the patient, it is necessary to establish that there is a “doctor-patient” relationship.²¹ The requisite standard of care is that of reasonableness, and the question of what is considered “reasonable” in the situation is determined with the help of expert evidence.²² Thus, in a medical context, the standard to assess the conduct in question would be that of a reasonable doctor, of similar status, in similar circumstances.²³

At present, most medical negligence cases deal with the “performance” of treatment rather than choice of treatment.²⁴ The most common cases involve the doctor’s failure to remove foreign objects from the patient’s body, or otherwise causing injury during treatment.²⁵ Liability with respect to the choice of treatment is more unusual because there is usually a freedom of choice of suitable treatment accorded to every doctor.²⁶

²⁰ John Healy, *Medical Negligence: Common Law Perspectives* (1999), 44.

²¹ Lisa Rannefeld, “The Doctor Will E-mail You Now: Physicians’ Use of Telemedicine to Treat Patients over the Internet,” *Journal of Law & Health* 19 (2004): 80.

²² Murray Earle, *Medical Law* (2007), 69.

²³ R. Bryce-Smith, “Malpractice in the United Kingdom,” 10 *Cleveland State Law Review* 10 (1961): 11.

²⁴ Healy, *Medical Negligence*, 54.

²⁵ *Ibid.*

²⁶ Bryce-Smith, “Malpractice in the United Kingdom,” 12.

The few cases in this category are mainly of two kinds. The first is where the doctor failed to keep abreast of new research and hence did not recommend the latest treatment. The second category is where the doctor was not justified in recommending a new treatment for reasons including the high risk involved or if the treatment has not been scientifically validated.²⁷ Doctors using AI will therefore be able to avoid liability under the first category since the AI informs doctors of the latest research applicable to the patient. What we need to assess is how issues of liability will be decided on when the doctor relied on the AI to provide the latest research, but the AI erroneously failed to provide the relevant research. Doctors using AI should also be wary of the second category of liability, since the treatment recommended by the AI may be too risky or may be difficult to administer in the particular hospital or country. We might also expect a third category of cases where the AI's error was attributable to the doctor's faulty use of the AI system.

(1) Doctor did not recommend the latest treatment

This category of cases deals with a doctor who has not kept abreast of the latest developments in the law. The most cited cases in this regard is that of *Crawford v. Board of Governors of Charing Cross Hospital*.²⁸ In this case, a brachial plexus palsy resulted from abduction of the arm for the purpose of a blood transfusion during the course of anaesthesia. The patient sought damages and the trial court had held against the doctor since the *Lancet*, a leading medical journal, had published an article a few months earlier, describing the complication that the mode of anaesthesia might give rise to. This decision would have implied that there was a duty to keep abreast of the latest medical research published in medical journals. However, on appeal, Lord Denning reversed this decision and held that "It would be putting too high a burden on medical men to say that they must read every article in the medical press."²⁹ There have been many arguments made against Lord Denning's opinion since then, and scholars have opined that doctors should keep abreast of developments, especially those that are published in leading medical journals like the *Lancet*.³⁰

²⁷ *Ibid.*, 55 – 57.

²⁸ Healy, *Medical Negligence*, 57 – 58.

²⁹ Bryce-Smith, "Malpractice in the UK", 13.

³⁰ Healy, *Medical Negligence*, 57 – 58.

However, in certain areas of medicine, where there is a lot of new research published almost every day, it does qualify as an unreasonably high burden on doctors, especially those in highly populated areas, to update themselves of all new research. For instance, Dr. Somashekhar, from Manipal Hospitals in India, who has about 120 patient consultations each day, in addition to surgeries, said he cannot keep up with the “130 or so research papers published daily.”³¹ This is where Watson Oncology has begun to be helpful, and one can expect that AI systems in other areas of medicine will be developed in the near future.

When such a time comes, Lord Denning’s argument that a requirement to be updated with latest research would be “too high a burden” on doctors would not hold. In fact, in the legal context, it has been argued that lawyers might have an ethical obligation to use AI to be able to provide competent representation to a client as required by the applicable ethics rules in the United States.³² The American Bar Association Model Rules of Professional Conduct in this regard state in relevant part that, “to maintain the requisite knowledge and skill, a lawyer should keep abreast of changes in the law and its practice, including the benefits and risks associated with relevant technology, engage in continuing study and education and comply with all continuing legal education requirements to which the lawyer is subject.”³³ Similarly, the Australian Medical Association Code of Ethics requires doctors to keep themselves “up to date on relevant medical knowledge, codes of practice and legal responsibilities.”³⁴ This ethical obligation will not be a very high burden in the near future, as AI platforms will ensure that doctors do not miss the latest medical research in the area. Thus, as the use of AI in healthcare becomes more prevalent, we might expect that courts will include the requirement to keep abreast of latest medical research within the duty of care for doctors.

(2) Recommending high risk/scientifically untested treatment

This category of cases arises when doctors recommend new and innovative treatment

³¹ John and Padnis, “How IBM Watson.”

³² Arruda, “An Ethical Obligation,” 455.

³³ “Model Rules of Professional Conduct: 1.1,” American Bar Association (2015), https://www.law.cornell.edu/ethics/aba/current/CRule_1.1.htm.

³⁴ Australian Medical Association Code of Ethics, rule. 2.1 (g), http://www.amansw.com.au/wpcontent/uploads/2015/11/codeofethics_04_revised_06.pdf.

options that might not have been tested yet. However, doctors would only be held to be negligent when they could have recommended an approved treatment option that promised equal success with less risk.³⁵ If doctors do recommend innovative treatments, the key is to provide full disclosure including the possible consequences of a bad result. Further, if such a treatment option has failed in the past, that information must be disclosed to the patient.³⁶ Watson Oncology, as detailed by doctors from Manipal Hospital, seems to make research available regarding side-effects, i.e. possible consequences of each treatment option.³⁷ Thus, doctors will have the information required available to them when they communicate the treatment plan to the patient. It will be good practice for hospitals to ensure that doctors make such disclosures.

On the other end of the spectrum are cases where a treatment option that has not been scientifically validated is recommended to a patient. In such cases, the doctor will be held to be negligent.³⁸

(3) Erroneous recommendation by the AI system

This is a third category of liability that we can expect to encounter more as AI becomes more commonly used in the healthcare industry. Cases regarding robotic surgical systems are worth considering to determine how liability issues regarding AI systems might be dealt with by courts.

Robotic surgical systems help surgeons perform very precise surgeries by operating a control panel while the actual surgery is done by robotic arms capable of precise movements that might be difficult for the human wrist and arm.³⁹ To cite an example, in 2001, a doctor in New York performed a surgery in France to remove a patient's gall bladder by using the surgical system Zeus.⁴⁰ The system consisted of three robotic arms controlled by the doctor.

³⁵ Healy, *Medical Negligence*, 56 – 57.

³⁶ *Ibid.*

³⁷ John and Phadnis, "How IBM Watson."

³⁸ Healy, *Medical Negligence*, 57.

³⁹ Katherine J. Herrmann, "Cybersurgery: The Cutting Edge," *Rutgers Computer & Technology Law Journal* 32 (2006): 32.

⁴⁰ *Ibid.*, 298.

One arm was voice-controlled and it helped position the camera. The other two arms were controlled by the doctor's joystick and they held the tools and performed the surgery.⁴¹

While these surgeries represent scientific marvels and hold the potential to provide medical care to people in remote areas where specialist surgeons might not be available, they have not become as widely used. One of the reasons might be that not all such cyber surgeries were successful. In 2002, a patient in Florida who underwent a kidney operation using a surgical system (the da Vinci system) died due to an accidental cut to patient's aorta and another blood vessel supplying the kidney going unnoticed for about 90 minutes.⁴² However, since the case was settled, there was no determination of whether this failure was due to human error, mechanical malfunction of the system, interruption in communication between the two consoles, or lack of adequate training.⁴³

It is precisely these issues that are likely to bleed into AI in healthcare as well. For instance, one can envisage a situation where after AI systems are tested and trained enough to reach a 100% accuracy and doctors begin to rely on their recommendations, who is responsible if there is a malfunction with the algorithm in one particular case? Another scenario might be an erroneous recommendation made by the AI because the patient's information was entered wrong. While the answer in the latter scenario would be to hold the staff responsible for entering the data liable, the former scenario is not as easy to determine. In the former scenario, the AI might be liable for a faulty algorithm but should the doctor not have applied his or her mind to the recommendation before making it to the patient? Thus, it will be necessary for hospitals using AI to ensure that there are clear guidelines given to doctors about the extent of reliance on the AI's recommendation. It is equally important for doctors and other staff working with the AI to be trained adequately since the output recommendations are only as good as the data input into the system. The next section will develop a framework for the doctor's role and responsibility while using AI, based on relevant concepts of company law.

⁴¹ Ibid, 299, 300.

⁴² Graham Brink, "Patient Dies in Robot-Aided Surgery," *St. Petersburg Times*, October 30, 2002, http://www.sptimes.com/2002/10/30/TampaBay/Patient_dies_in_robot.shtml.

⁴³ Jessica S. Allain, "From Jeopardy to Jaundice: The Medical Liability Implications of Dr. Watson and Other Artificial Intelligence Systems," *Louisiana Law Review* 73 (2013): 1056.

2. Framework for doctors' role and responsibility while using AI – Lessons from company law

Directors of a company have fiduciary duties towards the company, like doctors towards their patients and lawyers towards their clients. Specifically, company directors tend to rely on the opinions of experts in a certain industry area, or professionals like accountants and lawyers, to make decisions regarding the company. This can be compared to doctors relying on the treatment recommendations made by AI systems. This section will first examine the aspects of directors' duties that might be comparable to that of doctors, and how such parallels might be used by hospitals to formulate a framework for doctors regarding their duty of care.

(1) Duty to retain discretion

We are at a point in time when even the most cutting-edge AI in medicine, i.e. Watson, cannot treat patients or recommend patients directly without a healthcare practitioner being involved. We still need the healthcare practitioner to evaluate the suggestions before giving his or her medical opinion, and it is important to stress this point and possibly even codify it into a duty for all doctors. In company law, there is a common law duty imposed on directors to retain their discretion, i.e. retain the freedom to make decisions on behalf of the company.⁴⁴ This is to ensure that directors do not contract or agree in advance to act in a certain manner, for example as directed by a shareholder. Thus, directors owe fiduciary duties to the company and every decision they make is to be made in accordance with those duties.⁴⁵

Doctors too act in a fiduciary capacity towards their patients and hence must ensure that they evaluate the recommendations of the AI before giving their medical opinion. While it might seem obvious that they must make decisions regarding medical care based on their own judgement, the advent of AI might need us to underscore this point through internal rules or policies of hospitals that have started using Watson.

⁴⁴ Hanrahan, Ramsay, and Stapledon, *Commercial Applications of Company Law* (2017), 265.

⁴⁵ *Ibid.*, 266.

(2) Reliance on experts

It is common for company directors to rely on information provided by professional advisors like lawyers, accountants, etc. while making certain decisions. Company law provides that such reliance by a director will not result in breach of the directors' duty of care so long as certain conditions are met.⁴⁶ The first condition is that the reliance should be made in good faith. The second condition is that the reliance should be made after "an independent assessment of the information or advice, having regard to the directors' knowledge of the company and the complexity of the structure and operations of the company."⁴⁷ Further, where the directors rely on an expert or professional advisor in relation to some matter, the directors must believe on reasonable grounds that the matter is within the person's professional or expert competence.⁴⁸

For doctors using AI, the second condition is especially relevant. AI systems like Watson Oncology can be understood as an "expert" and since it draws from vast amounts of data and latest research in the area, there are reasonable grounds for doctors to believe in its expert competence. Despite this, the doctor, like a director, must be required to make an "independent assessment" of the AI's recommended treatment. This is necessary because the AI systems have not reached 100% accuracy as of now. Another important reason to require this is that there might be information about the patient that is not taken into account by the algorithm, which the doctor might believe is relevant.

Thus, if doctors using AI ensure that they independently assess the recommendations made by the AI, it is arguable that a protection similar to that available for company directors would be available for doctors in a case where the AI system makes an erroneous recommendation.

3. Best practices for hospitals

Based on the above discussion, it is clear that the law regarding liability in cases where AI

⁴⁶ S. 189, The Corporations Act, 2001 (Australia), http://www8.austlii.edu.au/cgi-bin/viewdb/au/legis/cth/consol_act/ca2001172/.

⁴⁷ *Ibid.*, S.189(b)(ii).

⁴⁸ *Ibid.*, S. 189(a)(ii).

is a part of the provision of healthcare services, is yet to develop. In the meantime, hospitals using AI systems would do well to ensure that doctors and other staff are adequately trained to use the AI system.

Next, hospitals need to formulate guidelines for doctors to ensure that they are to assess the recommendations provided by the AI system before relying on such recommendations to patients. At present, a sample report by Manipal Hospitals includes language that exculpates IBM from liability. The clause reads as follows:

This report shall only be used by an oncologist authorized to access the Watson for Oncology solution (the "Solution"). The Solution and this report are intended to provide information to assist clinicians in making patient care decisions. IBM has no responsibility for the conduct of patient care. The treating oncologist is solely responsible for all patient care decisions and use of the Solution and this report does not diminish the oncologist's responsibility for patient care.⁴⁹

This disclaimer by IBM makes it all the more important for doctors to be aware that doctors must independently assess Watson's recommendations.

III. Rethinking Licensing

Doctors, like lawyers, cannot practice unless they hold and maintain their medical license to practice, not just in the relevant country but also in the relevant state. These issues become relevant as doctors and hospitals begin to offer medical services remotely to patients, who may or may not be located in the state or even country in which the doctor holds a license to practice. Since such services are offered via telecommunications, it is termed as telemedicine. The World Health Organization has defined telemedicine it as follows:

The delivery of healthcare services, where distance is a critical factor, by all healthcare professionals using information and communication technologies, for the exchange of valid

⁴⁹ "Watson Oncology Report," accessed September 4, 2017, <https://watsononcology.manipalhospitals.com/Manipal-Hospitals-Watson-Sample-Report.pdf> (The disclaimer is printed on every page of the report).

information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of healthcare providers, all in the interests of advancing the health of individuals and their communities.⁵⁰

In more simple terms, this substituting of the “face-to-face encounter” in the provision of medical care is referred to as telemedicine.⁵¹ A very recent example of such a non-face-to-face or remote offering of medical services is Manipal Hospital’s offering of an opinion including recommendations by Watson Oncology. The hospital’s website allows patients to enter details and upload required documents online, following which it offers a video consultation with an oncologist.⁵² Based on the information gathered, it will send out a report which includes, amongst other things, Watson’s recommendations and the rationale for such recommendations.⁵³ However, this service is only provided to Indian patients, possibly to ensure compliance with licensing requirements.⁵⁴

It has been argued in the context of U.S. state-based licensing requirements for doctors that such requirements might act as barriers to the flow of expertise not just from doctors to patients, but also between doctors across States, thus cutting off access to quality care.⁵⁵ For instance, doctors in a country with no access to Watson Oncology might want to consult with doctors in a hospital in India or Korea that have access to the Watson system. This type of product would currently be difficult to offer because of licensing requirements.

The concept and use of telemedicine predates that of AI in medical practice, and there has been discussion of loosening regulations across countries so as to improve access to quality healthcare. As early as 1998, an article published in the UK argued that it was time to initiate a multilateral agreement regarding these regulations at the World Trade Organization

⁵⁰ World Health Organization (WHO), “Telemedicine: Opportunities and Developments in Member States,” *Global Observatory for E-health Series 2* (2010): 11, http://www.who.int/goe/publications/goe_telemedicine_2010.pdf.

⁵¹ Diane Hoffman and Virginia Rowthorn, “Legal Impediments to the Diffusion of Telemedicine,” *Journal of Health Care Law & Policy* 14 (2011): 3.

⁵² “IBM Watson,” accessed September 4, 2017, <https://watsononcology.manipalhospitals.com/pricing>.

⁵³ “Watson Oncology Report.”

⁵⁴ “IBM Watson.”

⁵⁵ Daniel J. Gilman, “Physician Licensure and Telemedicine: Some Competitive Issues Raised by the Prospect of Practicing Globally While Regulating Locally,” *Journal of Health Care Law & Policy* 14 (2011): 89-90.

(WTO) level.⁵⁶ According to the article, two key elements of such an agreement would be for signatory States to agree to provide market access for telecommunications and for medical services.⁵⁷ Although an international framework did not materialise, individual countries or States (like in the United States) have enacted their own telemedicine rules and guidelines.

For example, Singapore adopted non-binding guidelines, the National Telemedicine Guidelines (NTG), in 2015 with the aim of providing guidance to doctors and hospitals.⁵⁸ One of the fundamental issues it deals with is clarifying the “doctor-patient” relationship, which is the basis for the establishment of a duty of care. Further, it states that all medical professionals involved will be subject to the duty of care.⁵⁹ Where there is more than one doctor and some of the doctors are involved remotely, there is a need to clarify to the patient about who bears responsibility. Further, the doctors involved in the patient’s care should also clarify amongst themselves about who delivers which aspect of care.⁶⁰ For instance, ordering tests and follow ups might be the responsibility of the specialist being consulted remotely, whereas record keeping might be the responsibility of the doctor “on the ground,” so to speak. The guidelines also set out that where reasonable, it is permitted to deliver medical care exclusively through telemedicine, as this is better than the patient having no access to medical care at all.⁶¹

More recently, the U.S. state of Oklahoma introduced a telemedicine law that also provides that a valid doctor-patient relationship may be established via telemedicine. Further, it sets out that the physician must “affirmatively undertake to diagnose and treat the patient, or participate in the diagnosis and treatment of the patient” to create the doctor-patient relationship.⁶²

Clearly, these guidelines and laws have not addressed the issue of providing or availing

⁵⁶ Kelly Cameron, “Facilitating International Telemedicine: The Way Forward,” *International Legal Practice* 23 (1998): 98.

⁵⁷ *Ibid.*, 94-5.

⁵⁸ “National Telemedicine Guidelines,” Government of Singapore, 2015, https://www.moh.gov.sg/content/dam/moh_web/c/Guidelines/MOH%20Cir%2006_2015_30Jan15_Telemedicine%20Guidelines%20rev.pdf.

⁵⁹ *Ibid.*, Rule 1.2(C).

⁶⁰ *Ibid.*, 1.1.

⁶¹ *Ibid.*,

⁶² Sections 478 and 478.1 of Title 59, http://webserver1.lsb.state.ok.us/cf_pdf/2017-18%20ENR/SB/SB726%20

oneself of medical services across borders, which is one of the significant benefits of both telemedicine and AI. Just as the availability of specialists are limited to a few areas, the availability of AI systems is also limited. Not every country has access to Watson Oncology. Further, one hospital might develop more expertise in delivering medical services along with AI systems in a particular area and patients located in other countries might want to avail themselves of such services. Ensuring access to such services across jurisdictions could also give rise to competitive pricing and bring down the cost of healthcare. At present, the licensing laws in different jurisdictions make it difficult for such a scenario to materialise.

Within the United States, around 10 States have adopted rules to relax the licensing requirements for telemedicine. The rules, in essence, allow doctors who hold a full license to practice in one state to obtain a limited license in another state to be able to provide medical services remotely in that state.⁶³ This model could be an option for individual countries that are willing to allow doctors from other jurisdictions to provide medical services remotely to patients who are located in the country. For instance, if countries outside India are willing to allow patients located in their jurisdiction to access the product offered by Manipal Hospital, they might want to create a limited licence that is more easily available to doctors from Manipal Hospital. While such arrangements would be an improvement to the status quo, it would still prove cumbersome, with a high level of expense in creating individual frameworks for such limited licences. Another option suggested by Professor Siegal is to view medical service as being provided in the location of the physician rather than the patient.⁶⁴ Professor Siegal's reasoning is that this should not be hard to accept, since the concept is similar to medical tourism, which has been over the rise for the past 20 years.⁶⁵ More compelling reasoning in favour of his suggestion is offered by company law. In determining the citizenship of a company with more than one place of business, it has recently been held by the U.S. Supreme Court that the place where the company's "high level officers direct, control and coordinate" the company's activities is to be considered

ENR.PDF.

⁶³ Gil Siegal, "Enabling Globalization of Health Care in the Information Technology Era: Telemedicine and the Medical World Wide Web," *Virginia Journal of Law and Technology* 17 (2012): 15.

⁶⁴ *Ibid.*, 17.

⁶⁵ *Ibid.*

its principal place of business.⁶⁶ This is termed the “nerve centre test” since the location is determined based on where the decisions are being made. Similarly, while determining the location in which medical services are being rendered, it is important to locate the place at which the directions regarding diagnosis and/or treatment are being given. Legislatures would need to clarify these issues so that both access to the latest medical care and the development of AI systems and other technologies in healthcare can be encouraged.

Indeed, it might be necessary for global norms in this regard as a starting point to drive individual States to introduce laws accordingly. At present, it might be beneficial for hospitals across countries that are using the Watson Oncology system to put together a joint statement regarding the need to ease up licencing requirements.

While we wait for such changes in the law, private actors, like those pioneering hospitals that have started using Watson Oncology, would do well to protect themselves by clearly establishing the responsibilities owed by the in-house doctor and/or consultant and the local doctor who has seen the patient face to face, and also ensuring that patients are aware of this framework. With respect to overseas patients, until the licencing requirements are eased, such patients would have to physically travel to the hospital of avail of its services.

IV. Conclusion

One of areas that has been in need of improvement even in traditional or face-to-face medical service is that of communication between the doctor and patient. Justice Allen Linden of Canada, calling for better communication between doctors and patients, remarked that one of the beneficial consequences of such an improvement in communication would be a reduction of malpractice suits against doctors.⁶⁷ If the current uncertainty of doctors regarding the apportionment of responsibility when AI is used results in hospitals clarifying such responsibilities to both doctors and patients, it will ensure that there is no expectation gap. Further, the fact that AI not only makes recommendations but also provides rationales, side-effects and consequences for each treatment plan makes it easier to communicate

⁶⁶ *Hertz Corp. v. Friend*, 2010 U.S. LEXIS 1897.

⁶⁷ Healy, *Medical Negligence*, 251.

these aspects to patients. As a practical matter, the sample report from Manipal Hospitals shows that this information is being made available to patients, along with the doctors' recommendations. This will also mean that the patient will be able to ask follow-up questions while consulting with the doctor who signs off on the report.

Another area that needed to be improved even before the advent of AI in healthcare was that of licensing. Telemedicine has not been as effective as it should have been because of the localised licensing requirements. The AI era will be an opportunity for lawmakers correct this. Hospitals currently offering AI and technology companies in the area should lead the way by proposing a set of guidelines or norms from which States might draw from in future regulations. It is important that industry voices play an active role in the formulation of the new framework.

This paper has sought to highlight areas of importance in the context of medical liability and licensing and suggested solutions based on legal principles in the area of company law. Other issues like data privacy and confidentiality are also concerns that States need to resolve in order for AI in healthcare to be completely effective. However, these issues are outside the scope of this paper.

Received: January 15, 2018

Revised: March 9, 2018

Accepted: March 15, 2018