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# Critical Review of Tortious Liability for Artificial Intelligence

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## ABSTRACT

*The revolutionary wave of AI has brought this innovation to many industries; it has changed healthcare quite significantly with the evolution in machine learning. The concept of learning from data and taking decisions individually through AI systems increases diagnostic accuracy along with personalizing the drug plan. For example, Google's DeepMind and Project Hanover by Microsoft showed how AI detects cancer tissues and develops customized drugs combinations for diseases such as Acute Myeloid Leukemia. While AI has demonstrated potential to exceed human capabilities, the dependence of AI on reinforcement learning brings new challenges. Unlike traditional AI models, reinforcement learning enables AI to learn from past experiences and adjust autonomously. This feature brings liability issues in medical malpractice cases. If AI systems provide superior diagnostic accuracy, non-utilization by healthcare providers may lead to claims of negligence. At the same time, dependence on AI carries risks unpredictable errors or transparency in the decision-making processes that might undermine patient care and push traditional legal doctrine to their limits. In future, malpractice law may end up dictating AI in standard care and change everything in health care practice. All the same, over-reliance in obscure AI, which was never intended as such, should be discouraged through powerful legal and technical solutions.*

**Keywords:** Artificial Intelligence, Tortious liability, Malpractice, Healthcare, Machine learning.

## I. INTRODUCTION

Artificial Intelligence has been developing at a fast pace and research developments within the scope of artificial intelligence (hereinafter also referred to as “AI”) are responsible for the creation of ground-breaking technology.<sup>3</sup> At this point the scientific community knows and accepts that AI Technology has the potential to surpass human intellectual capacity, reaching potentialities that humans may not be able to control neither understand.<sup>4</sup> When we look at the

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<sup>3</sup> K. Govender, *Age of Agency: Rise with AI* (CRC Press 2023).

<sup>4</sup> Francesco Corea, *Artificial Intelligence and Exponential Technologies: Business Models Evolution and New Investment Opportunities* (Springer 2017).

development in the field of AI we can see that it has been overcoming its initial capabilities, with it the risk comprised in it have also increased.<sup>5</sup> The Artificial Intelligence technology relies on machine learning (hereinafter also referred to as “ML”) which provides the program’s algorithms with data and gives it the capability of making its own decisions which enables the program to provide innovative and unforeseen solutions, circumstances that will expand the potential hazards of relying on AI Technology. <sup>6</sup>This can be explained with the example of Google’s DeepMind which developed a highly advanced piece of AI, AlphaGo, to play Go.<sup>7</sup> The AI had been given the knowledge of recorded moves made by players in the game and in a game against one of the best Go players in the world, the AI was able to make a unique move which had never been made before. The AI was able to do with the help of machine learning through which it learnt on its own and was able to win with a move which was not ever made before.

The research in this field is furthering with the method of reinforcement learning, which is training method that allows AI models to learn from its past experiences. Unlike other methods of generating AI models, reinforcement learning creates a grading system for the AI model and it must determine the best course of action to get a good score. But in reinforcement learning, there’s no fault by humans and no foreseeability of such an injury, so traditional tort law would say that the developer is not liable. An AI in courtroom would become incompatible with the process unless the programmer intended for it to do harm.<sup>8</sup> Although AI and machine learning has been developing and spreading to new sectors such as financing, banking etc, the real concern is the applicability of this technology on healthcare, given that as acknowledged by Amazon CEO, Jeff Bezos, ‘*healthcare is going to be one of those industries that is elevated and made better by machine learning and artificial intelligence*’.<sup>9</sup>

Examples of eHealth technology include: medical records, health assistance, medication management, providing solutions to improve diagnosis and treatment plans and hence enable more informed medical decisions on grounds of electronic data availability. Better health care strongly relies on the ability to achieve accurate diagnosis and provide personal treatments that meet the patients profile, which is where the Artificial Intelligence technology comes in. Examples of AI Technology in the area of healthcare, especially clinical diagnosis, are Google’s

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<sup>5</sup> *Id.*

<sup>6</sup> Maurizio Tinnirello, ed., *The Global Politics of Artificial Intelligence* (CRC Press 2022).

<sup>7</sup> Mansour H. Alkmim, *An Overview of AlphaGo and Artificial Intelligence*, SAT, 2017.

<sup>8</sup> Sabine Gless, AI in the Courtroom: A Comparative Analysis of Machine Evidence in Criminal Trials, 51 *Geo. J. Int’l L.* 195 (2019).

<sup>9</sup> Adam Bohr & Kaveh Memarzadeh, *The Rise of Artificial Intelligence in Healthcare Applications*, in *Artificial Intelligence in Healthcare* 25, 25-60 (Academic Press 2020).

DeepMind Health, which is being developed on the basis of machine learning algorithms, in order to proficiently detect differences between cancerous and healthy tissues, or the Project Hanover by Microsoft and the Knight Cancer Institute, through machine learning, is developing AI technology for cancer precision treatment, with a current focus on developing an approach to personalized drug combinations for Acute Myeloid Leukaemia (AML).<sup>10</sup>

We can reasonably expect that machine-learning based diagnostic competence will only increase. It is thus appropriate to consider what the dominance of machine-based diagnostics might mean for medical malpractice law, the future of medical service provision, the demand for certain kinds of physicians, and—in the longer run—for the quality of medical diagnostics itself.<sup>11</sup>

With this development in the AI technology, we will see that existing medical malpractice law will eventually require superior ML-generated medical diagnosis as the standard of care in clinical settings. The issue with using such technology in diagnosing patients is that at some point it would become a duty to use ML technology which unless implemented carefully could undermine the safety which medical malpractice provisions want to achieve.<sup>12</sup> Once mechanical diagnosticians demonstrate better success rates than their human trainers, effective machine learning will create legal (and ethical) pressure to delegate much if not all the diagnostic process to the machine.<sup>13</sup> If we reach the point where the bulk of clinical outcomes collected in databases are ML-generated diagnoses, this may result in future decision scenarios that are difficult to validate and verify. Many ML systems currently are not easily audited or understood by human physicians and, if this remains true, it will be harder to detect sub-par performance, jeopardizing the system's efficacy, accuracy, and reliability.<sup>14</sup> We maintain that such unintended consequences of medical malpractice law must be avoided, and canvass various possible technical and legal solutions. There will come a counter situation where if AI is not used can result in problems of negligence too.

## II. FAILURE TO USE ARTIFICIAL INTELLIGENCE

There exists another conundrum regarding whether failure to use AI to diagnose a patient

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<sup>10</sup> Trishan Panch, Peter Szolovits & Rifat Atun, Artificial Intelligence, Machine Learning and Health Systems, 8 *J. Global Health* 2 (2018).

<sup>11</sup> Mohd Javaid, Abid Haleem, Ravi Pratap Singh, Rajiv Suman & Shanay Rab, Significance of Machine Learning in Healthcare: Features, Pillars and Applications, 3 *Int'l J. Intelligent Networks* 58 (2022).

<sup>12</sup> Kyle T. Jorstad, Intersection of Artificial Intelligence and Medicine: Tort Liability in the Technological Age, 3 *J. Med. Artificial Intelligence* (2020).

<sup>13</sup> *Id.*

<sup>14</sup> Bas de Boer & Olya Kudina, What Is Morally at Stake When Using Algorithms to Make Medical Diagnoses? Expanding the Discussion Beyond Risks and Harms, 42 *Theoretical Med. & Bioethics* 245 (2021).

constitute a medical malpractice given AI's benefits and importance of an accurate diagnosis. As mentioned in the introduction, the diagnostic capacity of AI has been more than that of doctors and it is still developing. In medical malpractice cases, liability occurs upon the failure of a physician or other health care professional to follow the accepted standard of care when treating a patient. The law defines this standard of care as the level and type of medical care that a reasonably competent and skilled healthcare professional of a similar background would have provided under same or similar circumstances.<sup>15</sup> The standard of care is to be reviewed by considering the existing circumstances and the amount of knowledge and tools that is available at that time. For instance, if there is an allegation against a doctor that he did not exercise due care and was negligent as he failed to use a particular equipment, what should be investigated is whether that equipment was generally available at that point of time.

When usage of AI becomes common practice in the future, signs of which can already be seen, the question will be whether failing to use AI for diagnosis or any other purpose even if done for the benefit of the patient shall make the health officer liable. In one case, a court found sufficient evidence of a defect in a conventional ventilator used to supply oxygen to patients, because of testimony that the device used outdated technology and could have included a redundant backup system and robotic monitoring system.<sup>16</sup> The fact that such sophisticated systems was not used made the machine very dangerous to use. In *Mracek v. Bryn Mawr Hospital* a patient sued a hospital following manual surgery that resulted in alleged damages, which the human doctors performed after the hospital's '*da vinci robot*' malfunctioned and could not perform the surgery. The plaintiff also sued the manufacturer of the robot for making a malfunctioning machine that could not be used for the surgery.

From the above cases, we can clearly see that in the future when usage of AI becomes very much a part of the medicine and health care field, failing to use AI for such purposes can result in tort of negligence for which the health care official can be held liable as well as, as seen in case above, the manufacturer too.

### **(A) Determining Liability**

Medicine is an important yet an imprecise science and similarly the errors in the medical field, whether through negligence or honest mistake are very common. Some experts believe it to be the third biggest killer in the USA. In the UK, one in six patients have received an incorrect

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<sup>15</sup> I. Glenn Cohen, Informed Consent and Medical Artificial Intelligence: What to Tell the Patient?, 108 *Geo. L.J.* 1425 (2019).

<sup>16</sup> A.M. Froomkin, I. Kerr & J. Pineau, When AIs Outperform Doctors: Confronting the Challenges of a Tort-Induced Over-Reliance on Machine Learning, 61 *Ariz. L. Rev.* 33 (2019).

diagnosis from the National Health Service. With statistics like these, it is unsurprising that researchers at the John Hopkins University believe diagnostic error to be “the next frontier of safety.”<sup>17</sup>

With Artificial Intelligence Technology, it is expected that the number of mistakes made in the world of healthcare would reduce drastically. In cases of some conditions, the technology is already becoming equal to—and in some cases matching and even exceeding—the success rates of the best specialists in medicine.<sup>18</sup> At Oxford’s Radcliffe Hospital, researchers claim to have developed an AI system capable of outperforming cardiologists in identifying heart-attack risk by examining chest scans. The results are yet to be published, but if the AI indeed is successful, the technology will be offered, for free, to all NHS Hospitals all over the UK.

The development of technology also means that there exist downsides as AI raises the question regarding medical responsibility and where should the burden of liability lie. Usually when something goes wrong, it is straightforward matter to ascertain liability. A wrong diagnosis, or a misdiagnosis would in all probability become the responsibility of the physician presiding the concerned diagnosis. A machine or medical device, that harms a patient due to being faulty would likely see the manufacturer or operator held to account. But the answer is not so easily determined in cases of AI. Now that it is evident that AI is indispensable, it is vital for lawmakers to keep up with the rapid pace in which technology is evolving. There have been lot of instances where legal provisions have been framed to govern the use of such technology which can cause harm to the public. Self-driving cars, machines that teach themselves how to operate are out in the American market and the lawmakers have already started to ponder about tortious liabilities.<sup>19</sup>

However, the task of determining who is to be blamed for wrongs committed by AI while diagnosing patients is very complex. One of the fundamental principles of tort law is that humans are accountable for decisions that cause injuries to others, but who’s accountable for decisions made by machines? Broadly, liability can be attributed to the hospital who took the decision of using the AI, the doctor who was actually making use of the AI to simplify his job at the time of commission of the tort or to the creator of the AI who is also the patent holder.

### **(B) Hospital**

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<sup>17</sup> Andrew D. Selbst, Negligence and AI's Human Users, 100 *B.U. L. Rev.* 1315 (2020).

<sup>18</sup> Daniel Schönberger, Artificial Intelligence in Healthcare: A Critical Analysis of the Legal and Ethical Implications, 27 *Int'l J. L. & Info. Tech.* 171 (2019).

<sup>19</sup> *Id.*

In the case of *Cassidy v. Ministry of Health*<sup>20</sup>, the patient had gone to the hospital for routine operation. The doctor was negligent in operating due to which the fingers of the patient became stiff. The question that came up here was whether the hospital can be sued for the negligence of the doctor. The hospital was held liable and the reason provided for the same was that liability was not because they control the way in which the work is done but because the hospital had chosen the staff for the particular task.

Elekta, a Swedish medical company, introduced Watson for Oncology, a medical AI system developed by IBM in the United States, to provide customised treatment plans for cancer patients in China and the AI has been used at 68 hospitals in China to help with cancer treatment.<sup>21</sup> If we look at Watson as one among the staff, then can we hold the hospital, who is the master here to be vicariously liable if Watson is negligent in performing his task? Is it possible for the injured patient to claim damages from the hospital for the tort committed by Watson? Though this seems like a viable option, there is a major problem in applying the existing tort principles in this case. This is because, as discussed in the previous section, not using the best available technology to treat patients will also amount to intentional fault on the part of the hospital. So it would be better for the hospital to use AI for assistance but with close and cautious monitoring so that no patient is injured.

### **(C) Doctor**

If blood drawing robots are created by 2030, and let's suppose that the doctor is using this robot to aid him in his task of getting the patient's blood. Can the doctor be held tortiously liable if the robot ends up taking more blood than what should have been taken and the patient goes into shock because of the AI? For such tortious claim to be maintainable, it is necessary to establish that the negligence on the part of the doctor was the proximate cause of the plaintiff's damages. Sometimes, the intervening act of a third party breaks the causal chain between the defendant's act or omission on one hand, and the plaintiff's damages on the other. However, if we apply the 'BUT-FOR' test in this case, it is evident that had the doctor not used AI to assist him in diagnosing the patient, then the tort would not have occurred at all and the patient would not have suffered the damage at all.<sup>22</sup> After establishing causation, the next task is to see the remoteness. Here again, it can be argued from both the sides and no general, logical or universally fair rules can be stated which will cover all the cases in a manner consistent with

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<sup>20</sup> (1951) 2 K.B. 343

<sup>21</sup> Faheem, Hadiya & Sanjib Dutta, Artificial Intelligence Failure at IBM 'Watson for Oncology', 21 *IUP J. Knowledge Mgmt.* 47 (2023).

<sup>22</sup> Chloe Haden, The Consequences of the Proposed AI Act and AI Liability Directive on Medical Negligence: Will Physicians Fall Victim to 'Red Tape' Rules?, SSRN 4709032 (2024), available at SSRN.

justice. Today doctors who use AI are expected to use it as a clinical decision-making aid and not as a replacement for established standard procedures. In this sense, the doctor is still responsible for errors which may occur. However, it still becomes unclear whether the doctors would actually be able to analyse and assess the reliability or the usefulness of information given by the AI and whether they can have an understanding of the consequences of those actions by using the data provided by the AI. In *Miller v. Rubbermaid Inc.*<sup>23</sup>, the court affirmed the trial court's entry of summary judgment in favor of the employer where the record showed that the decedent employee placed himself in danger of being crushed by a robot used in plastic injection molding, the employer did not know of any dangerous condition of the machine, there was no evidence of safety violations, and the employer had not inadequately trained the decedent. In this case, there is no issue of fact regarding intentional conduct by the employer. But if the doctor is inadequately trained or if enough safety measure have not been provided to him, then the hospital authorities are to blame for and they will be liable under intentional tort. The problem arises solely due to the opacity of AI systems, as it is impossible to understand why an AI has made a particular decision. All that is known is it makes its decision solely on the basis of the information that is given to it. Moreover, lot of times it is very difficult to peruse the whole code as it is treated as protected proprietary information. This will likely be complicated in the future as doctor come to rely on AI more and more and it becomes less common to challenge the algorithm's result. As discussed in the above section, the algorithm is going to be more accurate on average than a physician. Thus, once AI in health care becomes commonplace, it would be difficult to find the doctor negligent, especially when the doctor is not the one writing the code. So the question that still remains to be answered is who is to be held liable if the doctor cannot be held fully responsible for a decision made using AI in healthcare.

### **III. THE DEVELOPER AND THE MANUFACTURER**

If the AI used for diagnosis is created by a human, then he becomes the patent holder for that AI and holds the intellectual property rights for it. The problem of determining liability for injuries to patients when artificially intelligent medical algorithms make mistakes exists primarily in the realm of speculation for the moment.<sup>24</sup> Machine learning essentially trains a program to predict unknown and/or future values of variables in a similar way to how humans learn. If we apply the principle of strict liability, there arises an issue regarding whether the

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<sup>23</sup> 1996 U.S. App. LEXIS 10933 (6th Cir. 1996).

<sup>24</sup> A. Michael Froomkin, Ian Kerr & Joelle Pineau, When AIs Outperform Doctors: Confronting the Challenges of a Tort-Induced Over-Reliance on Machine Learning, 61 *Ariz. L. Rev.* 33 (2019).



blame is to be on the developer of the product. In this case the liability becomes that of product liability under which a seller, distributor or manufacturer of a defective product is liable to a person injured by that product regardless of whether the defendant did everything possible to make sure the defect never happened.<sup>25</sup> This is similar to how car manufacturers are held liable for faulty seatbelts or airbags, and how pacemaker producers are held liable for a malfunction (with the assumption that it was implanted in the patient properly). Consider an AI that is responsible with reading blood pressure levels and it is found to read blood pressure wrong any time the algorithm is run on a weekend day.

With the above case there also arises situations when the person responsible with using the product did not use it with due care. In *Jones v. W + M Automation, Inc.* 28, a piece of equipment struck the plaintiff when he entered a fenced area and the major issue that arose was whether the equipment was faulty at the time when it was sold or was there some other reason for the malfunctioning. Experts from the side of the plaintiff claimed that the system failed to meet robotics standards that have been prescribed by American National Standards Institute (ANSI).<sup>26</sup> However, the court found that the system in fact did meet the industry standards and that the ANSI standards were not to be applied in this case. It was found that the occurrence of the tort was because of some modification which was done by General Motors and so in cases such as this the creator cannot be held responsible.

Drawing parallel to the above case of liability related to robots is the example of IBM's AI Watson which is today being used in clinical decision-making. Though now used as a medical tool, Watson was initially designed to compete in the quiz show *Jeopardy*.<sup>27</sup> It would be unreasonable to hold the researchers - who designed Watson with the features enabling it to answer trivia questions - responsible for its potential failing as a medical aid. It was not the original intention of the researchers that modification to the AI will turn Watson into a medical aid and thus they should not be held liable for the modifications. Also though it sounds feasible and logical to blame the patent holder, there are some serious issues that accompany this. If the creator is to be blamed for all the tortious acts committed by the AI in diagnosing the patient, then this will deter the creator from coming out with such novel innovations. If the innovative minds are instilled with fear, it will inhibit the growth of technology and the world at large. So, attributing strict liability to the programmer through laws created will only work against the

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<sup>25</sup> Eric Topol, *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again* (Hachette UK 2019).

<sup>26</sup> Chloe Haden, The Consequences of the AI Act and Proposed AI Liability Directive on Medical Negligence: Will Physicians Fall Victim to 'Red Tape' Rules?, 11 *Oslo L. Rev.* 1 (2024).

<sup>27</sup> Vinyas Harish, Felipe Morgado, Ariel D. Stern & Sunit Das, Artificial Intelligence and Clinical Decision Making: The New Nature of Medical Uncertainty, 96 *Acad. Med.* 31 (2021).

society at large.

#### **IV. VIABLE SOLUTIONS**

It is important to develop laws which can govern AI in general immediately as the current tort laws have become obsolete. For the solutions, tort committed by the AI in diagnosis which can neither be attributed to the negligence of the hospital in following the instruction nor to any mistake on part of the developer in giving adequate warning. Some of the lines on which the law can be formulated include:

1. One option could be to hold the organization running the system accountable. In this case IBM would be held liable for any mistakes or failures occurring while using Watson for medical diagnosis. While this may have the benefit of providing a clear target for retribution for the failure, it is unclear whether this path would work. If there are no design failures or other kind of misconduct, it would become unlikely that one could hold an organization responsible for how others have used its product; this would become similar to holding all car manufacturers liable for each and every accident involving their cars. Even if we were to take it as reasonable to do this, this would act like a deterrence and would likely lead many to abandon the field, as it would offer considerable risks with very few opportunities.

2. Another option could be to hold the developer and the hospital jointly liable. Joint tortfeasors are jointly and severally liable for the whole damage resulting from the tort. They may be sued jointly. This will reduce the individual burden on each of the party and so this will not hinder young and innovative minds from coming out with such technology. Also this kind of liability will ensure that hospitals make use of the latest AI without much fear of tortious liability for the benefit of the patients.

3. A final option would be to hold no one liable. Since the question of ascertaining liability in the cases of AI becomes a puzzle, we can instead try to levy taxes on the companies who manufacturing these AI. We can levy taxes on those companies considering the dangers of the technology they are producing and when a situation arises where a tort is committed by an AI of the company, the person so affected by the tort can be compensated by the fund collected through taxation. This is similar to what has been done regarding vaccination in the USA under the National Vaccine Injury Compensation Program. There exists a tax levy on vaccination and in cases where a mishap occurs due to an allergic reaction to vaccines, which are by nature imperfect yet necessary, the person affected is compensated by the compensation program. But the problem here is that for compensation for injury due to vaccines, there exists a vaccine injury table which decides the compensation so received by the person affected. It would take a lot of

time and effort to create such table which is able to cover all possible outcomes which could result in injury. The creation of such a compensation program would make it easier for the affected to get paid for injury instead of going about and figuring where does the liability lie.

## **V. CONCLUSION**

We can therefore see that the development of artificial intelligence in medical science would carry with it both benefits and harm to the patients. We can see the benefits today but the harm might not be so easily identifiable initially as unlike the manually operated machines, AI work according to themselves with the help of reinforcement learning while adapting and improving according to the data provided to them. Thus, there would be clearly a need to adapt the medical malpractice laws keeping in mind the possible future impacts it could have.

In order to keep a check on any possible dangerous situation from arising it is important that while doing so we do not create laws which deter further developments in this field which would become a difficult balancing act. Therefore we need regulations and also need to establish a safety standard to keep a check on all activities relating to AI in the field of medicine.

While establishing regulations we need to create a council on a global level who are experts from the AI R&D Community and also Medical Practitioners who will properly be able to form rules and safety standards which they agree would be helpful in regulating the AI machines while also not causing harm to any future developments in this field at the cost of causing harm to any patient.

Since determination of liability in case of harm done by an AI becomes a tricky subject as we cannot hold the Doctor operating the AI liable nor can we hold a machine liable for the occurrence, we can aim to create a database with the help of the said council with regards to the possible harms which could arise and its corresponding compensation which could be provided to the patient. The compensation could be created by way of funds created by the State in order to not cause any further harm to the patient. The council will therefore be the best option in order to deal with the grey-area surrounding liability in cases of an AI operated machine, which being an artificial intelligence, takes decision on its own with respect to the data given to it. The council will therefore help in creating the list and the compensation to be awarded by creating a very comprehensive list which would need to be adapted to keep pace with the rapid development. While acknowledging that there are AI does provide huge benefits, we have to also look at the degree of danger which accompanies it which would lead to there being a balancing act to create, update and enforce standards and processes that maximize public welfare and safety without stifling innovation or creating unnecessary compliance burdens. So

as the AI development continues, we need to create provisions for its regulation, perhaps before it is too late.

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