Page 845 - 864 **DOI:** *https://doij.org/10.10000/IJLMH.117570*

INTERNATIONAL JOURNAL OF LAW MANAGEMENT & HUMANITIES

[ISSN 2581-5369]

Volume 7 | Issue 3

2024

When Healing Hurts: Navigating the Maze of Medical Negligence in the Tech Era

KANISHKA GARG[1] AND HADIYA KHAN[2]

ABSTRACT

With the tech and digital turns in medicine, medical negligence has become a complicated legal landscape, creating new opportunities, as well as challenges. This document analyses the problem of medical negligence into the tech era. It is contextualized in the Indian context, taking into account the legal framework of negligence, as well as the multitude of medical technologies that we have today, such as AI diagnostics, telemedicine, electronic health records, to analyses their implications on patient safety, healthcare quality and the legal or 'best practice' standards of care. The document finally offers some recommendations concerning legal reform, ethical frameworks, patient and provider education, and the regulation of medical technologies. It is highlighting the growing need for interdisciplinary collaboration and for Research and Development efforts to ensure that medical technologies afford the best possible and safest chance of success for human health and wellness, promoting safe and ethical technologies in our medical practices and improving patient care.

Keywords*: Medical Negligence, Healthcare Technology, Patient Safety, AI Diagnostics, Telemedicine, Electronic Health Records.*

I. INTRODUCTION

In the age of 'techno', medicine has not escaped transformation as technologies across the spectrum have revolutionized the science of diagnosis, management of treatment modalities, communication and the delivery of care. As these innovations bring better health and healthcare delivery, they also bring the promise of new potential for medical malpractice. Better understanding of medical malpractice in the age of technology is vital to healthcare providers and patients alike, as it illuminates the legal and ethical duty of care that technology-driven medicine incurs.

Negligence in the traditional understanding of the term includes an action by the health professional – or failure to act – that constitutes a breach of duty to the patient. The action must

[1] Author is a student at Law College Dehradun, Uttaranchal University, Dehradun, Uttarakhand, India.
[2] Author is an Assistant Professor at Law College Dehradun, Uttaranchal University, Dehradun, Uttarakhand, India.

 [ISSN 2581-5369]

be a cause of the harm or injury to the patient. This formulation is still in effect even as technology becomes more and more incorporated into the practice of medicine. However, it pushes us to reimagine the form of liability and its ethical obligations that have become part of the practice of medicine in this new era.

Our meaning here is to emphasise the importance of grappling with a crisis that extends well beyond the bounds of the modern medical realm. For physicians, it means learning how to make sense of medical negligence in the digital age. It means following the law in using new technologies, and complying with what the law calls the 'standard of care' when adopting new technologies. It means remaining responsive to patient demands, and standing by the radical (now standard) principle that a human has the right not to be harmed by another's negligence, however inadvertent. For patients, it would mean understanding the risks and benefits – either for better or worse – associated with a technologically enhanced medical life, and knowing their legal rights in the event they become the innocent sufferers of a medical mistake. It will take a dual view to balance a level of innovation that doesn't cut our digital vein.

Today, the use of technology in the delivery of medical care has created a brave new world in which our electronic health records (EHRs), robots to perform surgeries, and artificial intelligence (AI) that reads X-rays all combine to produce a healthcare delivery system that is safe, accurate, and efficient – or, in some cases, safe, accurate, and efficient, but risky. Technological tools create new avenues for errors and, at the same time, reconceptualize the meaning of causing harm.

Fifth, technology in health also extends liability frontiers, blurring the boundaries of responsibility. For example, if an AI system produces a diagnostic error, should liability be taken on by software developers, healthcare providers, or both? This adds uncertainties to the classic physician-patient relationship.

II. NAVIGATING LEGAL CHALLENGES IN THE TECH-DRIVEN HEALTHCARE LANDSCAPE

The legal framework for medical negligence must adapt to a technological environment, updating standards of care to reflect use of new technologies, and establishing clear standards for their use. Clinical regulators play a part in this context, by setting standards for the use of technology in the healthcare setting.

In many cases, the ethics of technology shapes debates about medical negligence, whether the issue is the informed consent for a particularly high-tech treatment, the sharing of information

with patients and families, the right to privacy and the control over one's own data, the protections for patients, or the privacy of those around them.

(A) Technological Competence among Healthcare Providers

It is important that healthcare professionals increase their technological literacy so as to reduce the potential risks involved in utilizing technological resources in healthcare practices. Continuous education and training programmes should be provided to healthcare professionals to provide them with the essential teachings and trainings to deal with the ever-increasing use of technology in healthcare practices.

(B) Patient Education and Engagement

Further empowerment of patients through education would have a valuable part to play in such risk-reduction efforts by improving their understanding of what these technologies add to medical treatment, and so would help to ensure that medical interventions are safer and more effective.

(C) Legal and Ethical Framework for Technology Use

Nothing can replace a world in which we build a comprehensive legal and ethical framework to guide the use of technology to reduce healthcare risk and liability, especially in light of the special risks technological advance introduces into medicine. Such a framework needs to be informed by the realities of a technologically-enhanced healthcare landscape while continuing to support and strengthen our commitment, not at the expense, but as the critical backstop to technological innovation in healthcare.

(D) Conceptual Framework

This advancement has led to both progress and hindrance; with technology providing advancement for healthcare sector in unimaginable ways, it also forces us to stay ever vigilant in order to maintain the quality of care and patient safety. This dichotomy can be observed in medical negligence, which has also suffered a similar fate; as technology advances, so has the legal and medical definition of medical negligence. In order to discuss the effect of technology on today's healthcare quality and patient safety, one need to examine the legal definition of medical negligence and the medical definition of medical negligence, discuss the advancement of technology in the healthcare sector and the subsequent effect technology has on healthcare quality and patient safety.

III. DEFINITION OF MEDICAL NEGLIGENCE IN LEGAL AND MEDICAL TERMS

Statutorily, medical negligence means 'the absence of such reasonable care which is required

 [ISSN 2581-5369]

to be exercised by a reasonably skillful and competent medical man in the circumstances of the case'. Medical negligence in legal terms constitutes of a breach of legal duty by a health-care provider on account of which his care falls below the recognized standard of care, thereby resulting in injury or harm to the patient. Legally, medical negligence in India is the breach of duty committed by a medical practitioner, which brings him within the ambit of the Consumer Protection Act (Amendment) 1986 and the Indian Penal Code, 1860, and the principles laid down by the Indian Medical Council in the Indian Medical Act. Medically, negligence arises from medical professional's failure to apply the accepted standard of skill and knowledge in the treatment of the patient, that would in the same circumstances have been exercised by a reasonably practiced medical man, acting ordinarily prudent.

The juxtaposition of both legal and medical definitions illustrates this point: the standard of care in medical practice is a moving target, with medical technology providing a major source of change. Hence, we must be willing to re-examine what is required to avoid negligence on an ongoing basis in light of new medical technologies and treatment approaches.

Technological innovations have rewired the healthcare system for patient care, expanding diagnostic, treatment and patient interrogation/management tools, including:

- AI Diagnostics: AI systems can identify correlations with diagnoses much better than human physicians can.AI systems at the bedside help us provide analysis of medical data and diagnoses with an extraordinary level of precision and speed.
- Telemedicine: Telemedicine technologies allow a doctor in one location to treat another patient, usually separated by distance (e.g., a doctor in San Francisco can treat a patient across town at their home or the local urgent care clinic). This tech can be used for consultation, diagnostics and treatment, essentially allowing the patient to reach specialist care more easily, and particularly into the many parts of our country with poor access to such care.
- Electronic Health Records (EHRs) will give health care providers digital access to the patient's full medical history, improving the accuracy and efficiency of the care provider's role, since they will now be able to access the patient's record more quickly.
- Robotic Surgeries: Robotic systems are used to control the surgical device and provide better precision, allowing less invasive operations with shorter recovery periods and lower risk of complications.

However, each of those innovations would come with the promise to drastically improve

 [ISSN 2581-5369]

healthcare – and with new and potentially more complex ways to address existing ethical concerns and newly arising ones.

(A) The Dual-Edged Impact of Technology on Healthcare Quality and Patient Safety

So, what has technology done to healthcare quality and patient safety? If we were only to consider the good that technology brought to it, the answer is obvious: it improved healthcare and patient safety. Advanced diagnostic methods make treatment more effective, and sophisticated AI diagnostics detect disease processes earlier, when they can still be cured. Other advances, like the use of robotics, could lead to a reduction in the number of surgical errors. All of this can be viewed as another example of a double-edged sword, where the use of technology in healthcare is both helpful and harmful.

- Better Healthcare Quality: AI and EHRs give healthcare providers tools that may help healthcare workers make decisions, reduce errors, and tailor treatment plans. Telemedicine makes quality medical care available in more remote or underserved areas.
- Patient safety issues: While all these benefits are important, the arrival of technology and its use in healthcare field is also fraught with issues of patient safety – software can crash, data loss can happen and medical errors can result from misinterpretation of automated results, and patients won't get really personalized care because humans won't be in the center of service.

Moreover, the law around medical negligence has had to adjust to keep up with these technical changes. The concept of fault can become murkier, for instance, when errors involve automation. It isn't always clear who is at fault – should we blame the healthcare operator, or the technology manufacturer? Or both? And the question is even more complicated when it comes to the standard of care. Technological developments are constantly altering what 'good medical practice' means.

IV. CONSTITUTIONAL AND LEGISLATIVE FRAMEWORK

Patient rights and access to affordable healthcare in India are guided by a constitutional framework that provides a legal backdrop for the practice of medical care in India, its requirements of medical duties of care and which, in turn, inform patients' rights including the right to redressal of medical negligence by way of compensation. If we wish to comprehend the nuances and contours of medical negligence in the age of high-tech biomedicine, it is necessary that we begin by ascertaining the legal framework in which these issues arise.

The right to healthcare may not be explicitly mentioned in the Constitution of India, but in a landmark decision of 1993, the Supreme Court interpreted the right to life under Article 21 to include the right to healthcare. This interpretation has been the starting point for right-based discourse regarding the obligations of the state and service providers towards the provision of quality healthcare to all citizens.

In more recent landmark judgments such as *Paschim Banga Khet Mazdoor Samity v. State of West Bengal*, the Supreme Court has ruled that the state has a constitutional duty to provide timely medical treatment in order to preserve human life, while successive judgments have underscored the cause of health rights and the possibility of expanding it through future legal and policy measures.

1. The Indian Medical Council Act, 1956

The Indian Medical Council Act, 1956, its standing orders and the All-India Medical Council Act, 1983, which outlines the standards of medical education, the qualifications needed to be recognized as a medical practitioner and the medical register (who is a doctor) and a structure to ensure compliance with the standard (e.g., ethical standards of practice), all constitute the 'statute'. The Medical Council of India (MCI) is also constituted under this Act to perform this task. All these together form the skeleton on which the Supreme Court could impose the underlying structure of a civil wrong. Doctors constitute one segment of the medical profession. The MCI is the regulatory body of that profession. They have to perform their profession ethically, and the duty to be ethical derives from the ethical standards of practice required of those who are to be entrusted with the care of the lay public.

2. The Consumer Protection Act, 1986

In this regard, the Consumer Protection Act, 1986 was most encompassing: by including medical services in its definition of 'services', the Act encouraged patients to take recourse to consumer courts for the redressal of their grievances arising from medical negligence. In the case *Indian Medical Association v. V P Shantha*, regarded as a seminal judgment on the issue, the Kerala High Court held that the Consumer Protection Act (1986) had made medical service a valid subject of consumer protection; consequently, beholden to notions of 'service' in that sense, patients filing complaints could seek redress in consumer courts for grievances arising out of medical negligence against 'person providing service' (that is, healthcare providers and hospitals).

3. International Standards and Conventions Influencing Local Laws and Practices

These multi-lateral treaties also condition India's approach to health politics, law and policy:

 [ISSN 2581-5369]

India has ratified the International Covenant on Economic, Social and Cultural Rights (ICESCR) that expressly guarantees a Right to Health; their ICESCR commitments mean India must realize, in its national policies and legislation, a right to 'the highest attainable standard of physical and mental health'.

Even more crucial than these are the World Health Organization's normative guidelines and the declarations, such as the Alma-Ata Declaration on Primary Health Care (1978), which have continued to influence India's policy via the emphasis on accessible, acceptable and quality healthcare.

These international standards, both on their own and as reflected in domestic laws, create a framework of rules that defines the practice of medicine as well as protecting patient rights. They establish a baseline that can provide the basis for legal action if a patient is harmed by a break in the standard care.

V. TECHNOLOGY'S ROLE IN SHAPING MEDICAL PRACTICE

The introduction of technology into healthcare has been hugely positive, enabling new levels of efficiency, precision and accessibility in medical care provision. However, as these technologies become more centralized in healthcare delivery, they introduce a number of complex legal and ethical issues, particularly in relation to medical negligence. This section is going to look at how certain technologies are being introduced into healthcare and how they might help to both prevent and cause medical negligence.

(A) Diagnostic Algorithms

Diagnostic algorithms – using artificial intelligence (AI) and machine learning to recognize 'novel' patterns of illness based on vast data sets of medical information (from image-findings to genomics) – are a much bigger leap forward in medical diagnosis than many people realize. It's a huge advance. These algorithms have the potential to be more accurate in diagnosis than human clinicians, and to do it more quickly and better than human clinicians. In some cases, they'll be turning up diagnoses that the best doctors in the world miss. Hopefully, over time, algorithms will reduce diagnostic error – which is actually the biggest cause of medical malpractice.

But the possibility of diagnostic error once again arises from algorithmic dependence. Problems can occur because of poor algorithm design, biased or incomplete data sets, or even because doctors fail to understand algorithmic recommendations. The legal issues associated with such problems are thorny. Who is liable – the doctor, the algorithm-creator, or the hospital that used

the algorithm? Solving these kinds of questions demands a sophisticated understanding of both technology and the legal doctrines that bear on medical negligence.

(B) Telehealth Services

For severely ailing patients in rural areas, a physician who could provide a service from thousands of miles away would be beneficial for a consultation; telehealth can help people monitor their health parameters from home and allows for real-time doctor consultations about urgent medical care. According to some studies, telehealth services enable people to receive medical attention when there is a physician-patient gap in remote locations, thereby improving accessibility for remote populations. Apart from accessibility, telehealth can save lives by providing continuous patient monitoring and direct access to real-time medical advice, thus improving patient safety. As telehealth enables real-time medical intervention, the risk of medical negligence also decreases.

Nevertheless, telehealth raises a host of new legal issues, chiefly concerning data integrity and patient privacy, and the nature of the doctor-patient relationship online. These new legal concerns are part and parcel of a legal environment that is still developing around telehealth and, as such, are crucial to any analysis of medical negligence. How can the confidentiality of patient information be maintained? What is the standard of care that must be followed in the telehealth setting?

(C) Wearables and Patient Monitoring Devices

Reliance on wearable technology and patient care monitoring devices to keep patients out of hospitals and operating rooms, by enabling round-the-clock health monitoring outside of the hospital, reveals how these devices capture vital signs, physical activity, physiological variations related to certain disease states, and other measurements, and how in turn, these devices use this data in real time to change treatment plans, predict emerging health issues, and stave off medical emergencies.

Although they do have tremendous advantages, in terms of patient safety as well as preventive health care, questions have been raised on the validity of the data provided by these devices. Not only that, but there is also fear related to the danger of a breach of privacy. In addition, it will be interesting to see how the ‘wearables’ data should be interpreted by a healthcare practitioner, and what would happen if there is an error in interpretation on the part of the doctor. Danger arises if there is misdiagnosis or inappropriate treatment given to the patient because of the ‘quantified self’ data which is used for a decision. This could potentially work as a defense for the negligence on the part of the doctor and, in the Indian context, there is no clarity at

 [ISSN 2581-5369]

present as regards legal liability in such an event.

(D) Surgical Robotics

Introducing robotic elements to surgery allowed for more precision during operations, less room for error and lower risk of complications, giving the patient a better outcome. Because robotic surgery could lead to fewer days in recovery, less pain and less risk of infection, it should therefore be considered better surgical care.

Nevertheless, complications or injury to patients arising from use of surgical robots are possible as a result of mechanical failures or software bugs, or because of operator error during robotic surgery. Establishing liability for surgical errors and injury relies on determining what went wrong, and who's responsible. The answer might depend on whether the culprit was the healthcare provider, the hospital or the maker of the robotic system. Identifying and assigning liability for negligence in robotic surgery thus raises complex regulatory and legal issues, based on a difficult combination of technology, medical practice and legal doctrines.

VI. THE POTENTIAL FOR TECHNOLOGY TO BOTH PREVENT AND CAUSE MEDICAL NEGLIGENCE

This quality has always been a feature of the techno politics of care: technology stands at once as a means for reducing medical wrongs and a source of new ones. Here, too, the role of technology is a Janus-headed one: it can make care more exact, efficient and available at the same time that it creates new vulnerabilities related to data breaches, privacy, the misdiagnosis of medical data, and the random failings of technology.

Finding a way through this thicket will involve without failing to embrace the opportunities of technology – but also being ever-vigilant to its risks. This will require a continued assessment of technologies, robust but flexible legal standards that pass in pace with technological development, and care in the ways that technology is introduced into healthcare.

(A) Rights and Responsibilities

There is no question that, in the tech age, the delicate equilibrium between the rights of patients and the responsibilities of doctors and healthcare providers has become extraordinarily unwieldy: it is not simply that introducing technology into the delivery of healthcare has been part of the transformation of the very medical practice itself, but that this so-called revolution has also required an ontological reassessment of what should be regarded as the traditional rights of patients and the corresponding responsibilities of doctors and healthcare providers..

a. Patient Rights

 [ISSN 2581-5369]

Right to Informed Consent

This is why the right to informed consent – to be informed about the risks and benefits of acceptable courses of medical treatment and to consent to them – is integral to patient rights. In the context of advanced technologies applied to healthcare, this right involves multiple layers of complexity. Modern-day patients must be informed about the use of technologies in their case, including, for instance, the use of AI diagnostics, telehealth or surgical robotics in addition to traditional forms of medical treatment, and made aware of the attendant risks, including algorithmic bias or data security vulnerabilities, among others.

The Indian Medical Council (Professional Conduct, Etiquette and Ethics) Regulations, 2002, also mandate that any procedure requiring an intervention that involves the body must have the informed consent of the patient. Thus, the police would be mandated to obtain the consent of the victim's father before interrogating his son with a lie-detector. Here, informed consent assumes greater significance because it is linked with treatments that are driven by technology. Being informed, and consenting to, a technological intervention, is an important legal and ethical responsibility that is expected of the healthcare provider.

Right to Privacy and Confidentiality, Especially Concerning Digital Data

Online health records and telehealth services have enhanced the potential risk of breach of patient privacy and invasion of their personal data as their health records and other details are stored online. The Information Technology (Amendment) Act, 2008 lays legal foundations for protection of data in electronic form, but the providers and users of e-health services are obliged to protect the confidentiality and security of electronic patient records. Patients are legally entitled to access their digital health information and reconfirm that their data is protected with the highest possible level of security to preclude an unauthorized person/s accessing their information or breaching of data.

Right to a Standard of Care and How It's Impacted by Technology

The right to a standard of care is a cornerstone of patient rights. This standard is necessarily fluid; it changes over time as medicine and technology become more advanced. While technological innovations promise to advance the quality of care, they also require an updating of the standards that define standard care. Patients have a right to expect that technology used in their care is not only best in class but also appropriately implemented to maintain or advance the standard of care.

 [ISSN 2581-5369]

b. Doctor/Healthcare Provider Rights and Responsibilities

Duty of Care in a Digital Age

The duty of care of healthcare providers to the care and treatment they provide to patients is well-established general principles of law. This duty of care covers the provision of healthcare in the manner of a competent healthcare professional in the prevailing circumstances. This extends to the use of emerging medical technologies. Healthcare providers must be able to keep up to date with technologies in order to be aware of the services they provide or may provide, and judiciously apply these technologies and services to patient care. This means that the provider must be able to assess the appropriateness of technologies for individual patients and their use in the context of these patients, and must be competent to manage the inherent risks of technologies in the context of patient care.

Ethical Considerations in Using Medical Technology

These ethical issues provide the bedrock of the responsible use of technology in health and care: the old virtues of beneficence, non-maleficence, autonomy and justice. When must balance these ethics in their actions – maximizing benefits to patients' health improvements, minimizing unintended consequences of technology-related harms, supporting patient autonomy, and imparting care in an equitable manner. The Indian Medical Council has set the ethics guidelines for best practices in health and human care. The impacts of new technologies, however, will require reiterative and iterative deliberation of ethical implications and rethinking.

Responsibility in Managing and Securing Patient Data

In the digital times, a major duty of any healthcare provider is the protection of data of a patient. The digitization of record and services has resulted in an explosion in telehealth and other digital care services with the risk of misuse of the patient care and medical records. It is an ethics and legal duty of the healthcare to maintain and protect the data of that person as per the standard regulated by the Information Technology (Amendment) Act, 2008. The health care provider has to act responsibly by adopting security standard regulated data, complying the legislation standard and applying accord among the workforce.

(B) Case Studies of Medical Negligence in the Tech Era

While the advances in technology in the field of health are undoubtedly commendable, they have also brought in new dimensions of complexity and challenges into the realm of medical negligence. This part of the paper deliberates upon some hallmark cases in India where technology played an active role in incidents of medical negligence, examining the legal

verdicts of each case and the takeaways from them. It would pave the way of understanding medical negligence in the contemporary technological era and also the way forward for the legal and medical professionals in the future tackling these issues.

VII. CHALLENGES AND CONTROVERSIES

The integration of technology into medicine, though undoubtedly positive, adds new dimensions of legal and ethical complexity, especially in the arena of medical malpractice liability. Technology's interface necessitates reconsiderations of staple elements of proof and fault, and compels more nuanced analyses of the ethics and obligations of health care providers.

(A) Legal Challenges in Proving Negligence in a Technology-Driven Environment

The most important question about law arising from the tech era is probably how to prove negligence in a tech-savvy world. As doctors are presumed to be exercising a high degree of care, the medical malpractice regime depends on proof of a certain threshold of culpability. In the medical context, proving negligence entails demonstrating, as the American Medical Association explains, that: There was a duty to the plaintiff to exercise ordinary care; the defendant breached this duty; an injury occurred; and, but for the negligence of the defendant, the injury would not have occurred. So, proving negligence in a tech context may amount to a much higher hurdle to clear.

- Duty of Care: Under what circumstances does the advent of technology help us decide who owes a duty of care to whom – for instance, a diagnostic algorithm or a telehealth visit? Duty of Care: Does this obligation rest with the software developers, the hardware manufacturers or only with the clinicians?
- Breach of Duty: Technology creates new standards of care that are not well-established in legal precedent. What constitutes a breach for cutting-edge technologies is not always clear, especially when standards are not well-established before settlement or trial.
- Causation: Proving causation – that the breach of duty actually caused damage – is hard to demonstrate. It's especially hard in cases dealing with technology because it's often hard to separate out whether the harm arose out of a technological failure, a human error, or a combination of the two.
- Causal Connection: The harm must have resulted from the agent's technological breach of the duty of care. Yet, with technology's ability to both obscure and reveal

medical conditions in ways never before possible, establishing this causal connection could be fraught with difficulty.

These threats require that legal frameworks are reassessed, and more dynamic laws that can remain responsive to the complications that technology brings to medicine are applied.

(B) Ethical Considerations in Deploying New Technologies Without Full Understanding of Risks

Ways of introducing new technologies in the clinical setting have often been driven by the trends and logic of rapid technical development, on timescales that complicate attempts at a full ethical understanding of those technologies. The practice of bringing new technologies into the clinical setting, sometimes prior to a full understanding of use and risk, raises many ethical questions, particularly around patient safety and informed consent.

Patients should be given information about the risks and benefits of their treatments in order to draw more informed decisions – but when there is a gap in our understanding of the full risks of new technologies, healthcare providers cannot claim truly informed consent from patients: an issue that gives cause to question the ideal of autonomy, beneficence and non-maleficence.

Similarly, the idea of 'first do no harm' gets put to the test when predictable side effects of the new technology become unacceptable. That critical trade-off between harnessing technology for its potential benefits and safeguarding patients from its unknown risks is one of the great ethical tensions of modern medical practice.

(C) The Dilemma of Over-Reliance on Technology in Clinical Decision-Making

Increasingly, clinical care decisions also rely on technology. Despite the fact that AI and machine learning can improve diagnostic accuracy and the effectiveness of interventions for some diseases – and despite enthusiasm for the potential they offer – technologies of this kind could distract providers from relying on their own clinical judgment and skills.

This over-reliance can result in alienation from organic care practices (attribute it to a machine instead of to a person), and also raises interesting questions about what happens when the technology fails us. The ability of healthcare providers to revert to the traditional diagnostic and treatment methods could therefore become critically important.

Furthermore, it leads to another legal quandary: when an outcome within healthcare is suboptimal, it is often hard to figure out whether the cause was the technology or the decision-making of the healthcare provider. What makes matters worse is the fact that many healthcare professionals do not understand how the technologies they are using actually work, so it is

 [ISSN 2581-5369]

probably hard for them to know whether a mistake is due to technological failure or to human misuse.

VIII. NAVIGATING THE LEGAL MAZE

As 21st-century technologies are deployed for ever more sophisticated medical treatment purposes, numerous challenges and considerations stand out in navigating the grey area of medical negligence litigation in India. Along with the technologies impacting medical care delivery, there are parallel changes in the procedures, standards of evidence, and the role of expert opinions invoked in proceedings of medical negligence. Medical negligence litigation standards may change. In essence, this calls for a clarion revision in legal definitions of negligence specific to medical care in changing times. It requires a flexible and sophisticated treatment of medical errors in the context of rapidly evolving and cutting-edge technologies in the healthcare sector.

(A) Legal Processes and Evidence in Medical Negligence Cases

Medico legal recourse for medical negligence (in India, often initiated via civil litigation or consumer protection forums) depends on the plaintiff demonstrating negligence on the part of the healthcare provider, which refers to four elements: duty of care, its breach, causation, and harm/injury. The four elements are subject to a techno medical scrutiny It includes three main requirements: Duty of care: whether the healthcare provider owed a specific duty of care to the patient; Breach of duty: whether there was a departure from the duty of care; and Legal and factual causation: whether the patient's injury can be attributed to a breach of the duty of care.

Things like medical records – including logs, diagnostic reports and communications records – hold the most weight, and the integrity, security and accessibility of electronic health records (EHRs) is crucial in the digital age. The Indian Evidence Act, with the concurrent Information Technology Act, 2000 (amended in 2008), has codified the admissibility of electronic records as evidence. Demonstrating negligence in a technology-driven world often necessitates going a step further beyond traditional medical records, to include software logs, device abnormalities, and digital audit trails.

(B) Role of Expert Testimony in Negligence Involving Complex Technologies

It is particularly important in medical negligence cases where complex technologies are at play: subtle knowledge about how those technologies are supposed to operate in clinical settings, the ways that they can fail, and the established norms for bringing them to bear and using them are almost invariably not part of the lay judges' or juries' purview.

 [ISSN 2581-5369]

The expert testimony in the relevant technology (along with medical experts) would help resolve whether the technology was used appropriately, whether it worked as intended, and whether the medical provider acted in conformity with accepted standards of care. Several judgments of the Supreme Court of India have underlined that, as far as a medical negligence suit is concerned, expert evidence would be crucial as their testimony is indispensable for the court to arrive at a just decision..

(C) The Impact of Technology on the Standard of Care and Legal Definitions of Negligence

The changed role of technology in the delivery of health care required courts to reassess what is known as 'the standard of care': the legal benchmark against which to measure whether a health care provider's actions have fallen below the 'duty of care' that her profession requires, and whether she is liable for any harm caused by the injury. Regardless of the profession, the standard of care is inherently dynamic. It ebbs and flows in line with advances in medical practices and technologies. Key factors in establishing the standard of care in the tech era will be what a reasonably competent health care provider would do in similar circumstances and with similar technologies at her disposal.

Otherwise, the incorporation of technology in healthcare would bring increasingly exacting standards of care, and new standards of negligence at the same time. A failure to use available diagnostic technology properly could constitute a breach of the standard of care, as could a reliance on faulty equipment without adequate vetting, or an overuse of telehealth outlets.

Furthermore, as technology generates new vectors of risk and opportunity for error, it influences judicial definitions of negligence. That is, as technologies change the nature of risks and the possibility of mistakes and harms in medicine, for example, these shifts are reflected in judicial arguments about medical negligence.

IX. RECOMMENDATIONS AND FUTURE DIRECTIONS

From artificial intelligence (AI) to telemedicine to electronic health records (EHRs) and robotic surgery, the convergence of rapidly evolving healthcare technologies promises great benefits for medical practice. In fact, current advances provoke thoughts about the interconnectedness of scientific developments. Nevertheless, along with the benefits come frequently overlooked and dangerous pitfalls in the application of medicine to individuals. This includes the risk of medical malpractice and questions surrounding how to establish appropriate standards for care. In the age of the technology-driven third generation or 'genome' medicine, a solution that incorporates legal reform, education and policy-making is imperative. Strong strategies are

 [ISSN 2581-5369]

needed to integrate the advancements of genome medicine into healthcare systems, while avoiding patient care at the expense of patient safety.

(A) Legal Reform

The law will have its work cut out in updating existing legislation and drafting new law or amendments specific to medical negligence in the age of technology. Take an area such as AI diagnostics or health: what are the liability issues when interpreting an AI output? Where is the line between contributing to medical negligence and not? These are important legal questions to answer. We need very clearly defined liability for AI diagnostics, telehealth and robotic surgery usage – who's liable to whom? The healthcare provider, the technology developer or the manufacturer while using them?

Second, the standard of care, which defines the obligations of physicians and other health professionals to their patients, must be updated to account for the medicalization of technology use in general. This will require a legal framework adaptive to technology, to keep the definitions of negligence up to date.

(B) Ethical Guidelines

In addition to legal reform, we also require rules of professional ethics that would guide us in the use of technology in health-related matters. Examples of topics that ought to be covered by such guidelines include patient consent, data protection, and equitable access to digital medicine. Due to the complexity of these topics, we should strive for a multidisciplinary approach to the elaboration of these rules of ethics, engaging ethicists, legal experts, health care professionals and technologists alike to ensure that, at the same time as they are easily applicable, they are also firmly grounded on a strong normative basis.

(C) Patient Education

But a key requirement for informed consent is that patients are taught not only the risks and benefits of the treatment that the doctor proposes, but also the availability of other medical technologies, the benefits of opting for one over another, and the appropriate use of these technologies. Patient information leaflets, websites and counselling should enhance patient education, ensuring that they can make their own decisions when it comes to receiving medical treatment.

(D) Provider Education

On the other side, healthcare providers have to be informed about these new technologies, including their potential advantages and drawbacks. Professional development courses,

 [ISSN 2581-5369]

workshops and seminars are significant for keeping the providers' knowledge up to date about new technologies and their ethical, legal and managerial aspects. In the end, any of such events could help healthcare providers improve care quality and responsibility, thus addressing this issue to avoid malpractice cases.

(E) Regulation of Medical Technologies

There must be strict controls over the way medical technologies are developed, tested and deployed so that regulatory bodies such as the Central Drugs Standard Control Organisation (CDSCO) in India ensure that medical devices and software are safe and effective before going to the market.

(F) Interdisciplinary Collaboration

Increasing interdisciplinary cooperation between technologists, clinicians, lawyers and policymakers can help to create a healthy environment for the interplay between technological innovation and patient safety, yielding best practice recommendations for technology's use in medical care, aimed at making the most of technological innovations in a way that preserves the trust we place in our caregivers.

(G)Research and Development

Similarly, investing in research and development particularly to evaluate the off-label use of technology in healthcare, such as the long-term effects of using technologies that are not currently approved for that indication, their potential to improve patient outcomes, and their associated risks, can help inform policy-making by providing a solid evidence base.

X. CONCLUSION

A nuanced legal and ethical assessment of some of the complexities arising from tech in healthcare through the lens of India. The rise of digital technology offers various digital tools to healthcare providers, ranging from AI diagnostics to telemedicine. As technology transforms medical practice and the nature of medicine, it also radically changes what we mean by negligence. It is simply not possible to think of negligence as we have previously done when diagnostic failure is linked with data explosion and algorithmic politics, or sympathetic denial with moral disorientation related to distance and epistemological imbalance as a result of telescopic care. Technology undoubtedly improves the quality of care, making healthcare efficient, precise and accessible to all. However, this ever-changing landscape also possesses the potential to introduce new kinds of errors, new kinds of moral dilemmas and new ethic-legal challenges.

 [ISSN 2581-5369]

This goes on to examine how technology has transformed the notion of patient safety, the responsibility of healthcare providers, and how the very nature of proving negligence must evolve in response to technology. It highlights how the law must also evolve to reflect technological advances so that legal definitions of negligence are meaningful, as well as the need for ongoing provider and patient education in dealing with technology-enabled care.

The key recommendations involve legal reform aimed at enhancing the ability of law to deal with the specific characteristics of technology-induced medical malpractice, the formulation of broad ethical guidelines, patient and provider education regarding the risks and benefits of technology, and the strict regulation of technologies. All of these strategies are needed to better enable the advancement of medical technology into the way that medicine is practiced.

They called for technologists, physicians, and legal and policy experts to collaborate in thinking about the implications of adopting new technology, to balance technological innovation with patient safety and to harness the power of medical technology to reduce the risk of medical malpractice and improve healthcare. In summary, advances in technology that were supposed to improve the delivery of healthcare could potentially have the opposite effect on some patients, leading to legal liability for harm. From the earliest days of medicine to the current digital era, the intersection of technology and the law presents challenges that are not easily or neatly resolved.

*****

 [ISSN 2581-5369]

XI. REFERENCES

1. Agrawal, A. (2016). Medical negligence: Indian legal perspective. *Annals of Indian Academy of Neurology*, 19(Suppl 1), S9–S14. https://doi.org/10.4103/0972-2327.192889
2. Datta, S. (2023). Decriminalising medical negligence: views from both sides of the bed. *The Hindu*. Retrieved from https://www.thehindu.com/sci-tech/health/decriminalising-medical-negligence-views-from-both-sides-of-the-bed/article67682569.ece
3. Doctors & rest of us: New criminal code gives medical practitioners lighter punishment for acts of negligence. *Times of India*. Retrieved from https://timesofindia.indiatimes.com/blogs/toi-editorials/doctors-rest-of-us-new-criminal-code-gives-medical-practitioners-lighter-punishment-for-acts-of-negligence/
4. Gupta, Y. (2024). *Healing the Rift: A Physician's Insight into Medical Negligence.* Ukiyoto Publishing.
5. Katiyar, S. (2023). Medical negligence in India - A comprehensive examination. Retrieved from https://www.linkedin.com/pulse/medical-negligence-india-comprehensive-examination-sujeet-katiyar-kgkff/
6. Khanna, G. (2023). To hold a medical practitioner liable for negligence, a higher threshold limit must be met: Supreme Court. Retrieved from https://www.livelaw.in/supreme-court/supreme-court-judgment-doctor-liability-medical-negligence-241051
7. Malhotra, S. (2023). Supreme Court solidifies the law on medical negligence: Is it the balanced position? *The Leaflet*. Retrieved from https://theleaflet.in/supreme-court-solidifies-the-law-on-medical-negligence-is-it-the-balanced-position/
8. Nair, M. R. H. (2005). Supreme Court judgement on criminal medical negligence: a challenge to the profession. *Indian Journal of Medical Ethics*, 2(4). https://doi.org/10.20529/IJME.2005.056
9. Pandit, M. S., & Pandit, S. (2009). Medical negligence: Coverage of the profession, duties, ethics, case law, and enlightened defense - A legal perspective. *Indian Journal of Urology: IJU: Journal of the Urological Society of India*, 25(3), 372–378. https://doi.org/10.4103/0970-1591.56206
10. Rajan, A. (2024). Medical negligence and the new criminal law codes. *Healthcare Executive.* Retrieved from https://www.healthcareexecutive.in/blog/medical-negligence

11. Rojan, N. (2023). Centre proposes to decriminalise medical negligence in amended criminal law bill. *Moneycontrol*. Retrieved from https://www.moneycontrol.com/news/trends/health/centre-proposes-to-decriminalise-medical-negligence-in-amended-criminal-law-bill-11934881.html

12. Sadhvani, G. (2023). Medical negligence 'decriminalised': What will be the impact? Experts decode. *The Quint.* Retrieved from https://www.thequint.com/fit/medical-negligence-decriminalised-in-bns-doctors-patient-families-decode

13. Singh, R. P., & Parmar, A. (2019). Civil and criminal liability for medical negligence in India. *Journal of Advances and Scholarly Researches in Allied Education*, 16(5), 1714-1721. http://ipublisher.in/I/a/262901

14. Singh, V. (2023). Under new law, doctors face two years of imprisonment for death due to negligence. *The Hindu.* Retrieved from https://www.thehindu.com/news/national/doctors-will-face-up-to-two-years-imprisonment-for-death-due-to-negligence-under-new-criminal-law/article67662958.ece

15. Supreme Court of India. (1996). Indian Medical Association vs V.P. Shantha & Ors. *AIR 1996 SC 550.*

16. Supreme Court of India. (1996). Paschim Banga Khet Mazdoorsamity & Ors vs State of West Bengal & Anr. *1996 SCC (4) 37.*

17. Supreme Court of India. (1999). Mr. 'X' vs Hospital 'Z'. *AIR 1999 SC 495.*

18. The ethics of artificial intelligence: Issues and initiatives Retrieved from https://www.europarl.europa.eu/RegData/etudes/STUD/2020/634452/EPRS_STU(2020)634452_EN.pdf

19. World Health Organization. (n.d.). WHO called to return to the Declaration of Alma-Ata. Retrieved from https://www.who.int/teams/social-determinants-of-health/declaration-of-alma-ata

*****