

Legal medicine and medical law in the 21st century: global perspectives and future directions

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Sumário

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Abstract

The paper to follow examines what constitutes legal medicine and medical/health law to consider and compare their role in the delivery of health care and justice. It explores an overview of the changes that have impacted legal medicine in the 21st Century with a particular focus on the contributions of both telemedicine, especially since the Covid Pandemic, and the emerging role of artificial intelligence. It has highlighted the positives and negatives of both of these concepts and how they have influenced the evolution of medical care within the community. It touches upon the move to patient-centred medicine and examines how technology has empowered patients to anticipate the care provided while concurrently empowering them to more proactive litigation. This has been further enhanced by the Australia approach to ‘no win/no pay’ litigation in which the Plaintiff does not face immense costs should litigation fail. It also examines the clarification of what constitutes proper professional care, within the Australian context. It explores the move from the Bolam Principle which dominated, until the end of the last century, to the establishment of greater certainty in which the Courts decide what must be imparted to the patient, to allow true informed consent/refusal, and what constitutes proper medical care which is the purvey of the medical profession.

1. Introduction

Before discussing “Legal Medicine and Medical Law in the 21st Century: global perspectives and future directions” it behoves the reader to define the terminology used. Legal medicine is a medical specialty applying medical knowledge to legal issues, including forensics, civil cases (negligence), and ethics. Medical law is the branch of law regulating the rights/

responsibilities of health professionals and patients ⁽¹⁾. Legal medicine is considered to be the field of study and accumulation of materials that deals with the application of medical knowledge to the administration of justice ⁽²⁾.

Legal medicine addresses the interface between medicine and law in health care. It includes: public health; disability assessment; competing priorities of privacy verses notification; and determination of fitness for a host of pursuits are aspects of legal medicine. It also includes: assessment of athletes' fitness and ensuring that prohibited substances are not inadvertently prescribed which represents a growing area of legal medicine ⁽³⁾. Ethical consideration of health care should respect legal medicine principles rather than provide armchair commentary ⁽³⁾. International conventions must be respected by legal medicine and help dictate physicians' obligations ⁽³⁾. It is argued that legal medicine deserves its place as a medical specialty in its own right ⁽³⁾. Legal medicine is both reflective of an overarching medical discipline that incorporates both legal training, as one arm, and forensic training as its partner, as adjunctive qualifications to medical training and experience, to assist in the delivery of justice and legal administration ⁽¹⁾.

Medical law is the branch of law concerning the rights and responsibilities of medical professionals, patients, and healthcare institutions. It encompasses legal issues in health service delivery, including consent to treatment, medical negligence, professional regulation, and ethical dilemmas, such as end-of-life decisions ⁽⁴⁾. The scope of medical laws and ethics is ever-expanding and attempting to list vital aspects could be an inconceivable effort. The horizons of the law and ethics vary by geographical boundaries and governing bodies ⁽⁵⁾. Research confirms that medical law is an interdisciplinary field. It includes law and other branches of science, such as bioethics, medicine, and psychology. here is a close relationship between medical law and medical ethics. It is also possible that a violation of medical ethics entails a violation of the law and corresponding liability. It appears that medical law includes parts of public (administrative) law, criminal law, contract law and tort law. The role of contract and tort law in effectively protecting the interests of the patient is special ⁽⁶⁾.

What follows in this report is an overview of legal medicine in the 21st century, examining its development and impact on both the delivery of health care, namely how legal issues affect medicine, and the role of medical/health law within the wider picture.

2. An overview of legal medicine in the 21st century:

Legal medicine in the 21st century has evolved beyond traditional autopsy pathology into a critical, technology-driven interdisciplinary field that intersects with human rights, digital technology, and healthcare policy ⁽⁸⁾. Key aspects that are particularly relevant to the current era include: the application of advanced genetics; the regulation of artificial intelligence in healthcare; clinical forensic investigations; and the handling of complex ethical-legal dilemmas ⁽⁷⁾. Legal medicine in Italy, amongst other places, has evolved to address a variety of clinical areas, including: informed consent; disability assessment; personal injuries; and sexual violence ⁽⁸⁾. Legal medicine may have different considerations relative to the medical specialty that is under consideration, such as Sleep Medicine, which must consider effects of excessive fatigue, Obstructive Sleep Apnoea, parasomnia associated violence and the role of

sleep telemedicine ⁽⁹⁾.

There are a number of specific areas within legal medicine that have assumed greater relevance within the 21st century. These include: telemedicine; artificial intelligence; greater access to a variety of search engines which encourage patient participation; and changing emphasis in the delivery of both health care and health law.

3. Telemedicine

Telemedicine has become an accepted tool in disseminating medical knowledge and access to clinical care ⁽¹⁰⁾. Adequate medical facilities are still lacking in many places of the world. In these kinds of situations, technology can be quite helpful in expanding healthcare access to rural locations and offering better care at a lower cost. The delivery of healthcare is changing dramatically because of telemedicine and telehealth, particularly in terms of improving access to care ⁽¹¹⁾.

Telehealth includes health care services provided using audio and video technology ⁽¹²⁾. Higher rates of use of telehealth are now standard in many practices since the coronavirus disease 2019 pandemic ⁽¹²⁾. Telehealth and telemedicine cover similar services, including: medical education; remote patient monitoring; patient consultation via videoconferencing; wireless health applications; and transmission of imaging and medical reports ⁽¹²⁾. Some disadvantages of telehealth include: limitations with performing comprehensive physical examinations; possibilities for technical difficulties; security breaches; and regulatory barriers ⁽¹²⁾.

There are both positive and negative unintended consequences, often affecting the same aspect of health care ⁽¹³⁾. Some studies (8/94, 9%) reported privacy and confidentiality concerns, particularly for groups considered vulnerable, such as children and those who have experienced domestic violence ⁽¹³⁾. Telehealth compromised the safety of domestic violence victims and patients who are at risk of suicide ⁽¹³⁾. Telehealth was often reported as inappropriate and unfit for the personal and cultural needs of certain groups, such as culturally and linguistically diverse communities ⁽¹³⁾.

Additional research is necessary to investigate the safety of health care provision via telehealth and to examine and compare the effectiveness of telehealth in terms of clinical outcomes across various settings, population groups, and specialties ⁽¹³⁾. Studies could explore how factors, such as image quality, ease of use, mobility and specific features (such as, screen-sharing and recording capabilities) influence the nature and prevalence of unintended consequences ⁽¹³⁾.

4. Artificial intelligence

The challenge the 21st century has brought medicine is based on disruptive technologies ⁽¹⁴⁾. Cheap genome sequencing, advanced biotechnology, health sensors patients use at home, and the collection of information about patients' journey in healthcare, with hand-held devices, have all been producing a vast amount of data ⁽¹⁴⁾. With the smartphone and health tracker revolutions under the name of digital health it has become impossible for a physician to analyze all those data or simply to be up-to-date ⁽¹⁴⁾.

Precision, individual patient medicine requires significant computing power (supercomputers); algorithms that can learn by themselves at an unprecedented rate (deep learning); and generally, an approach that uses the cognitive capabilities of physicians on a new scale (AI) ⁽¹⁴⁾. Deep learning algorithms have been shown to make diagnoses at least as well as physicians in cardiology, dermatology and oncology ⁽¹⁴⁾. The question that arises is, "What will be the role of legal medicine/health law in accommodating this discrepancy, especially for those not utilising new technology?" It can be seen that this is an evolving picture the answers to which are into the future but, in this age of litigation, it is not without potential to anticipate that this will result in actions into the future.

Artificial Intelligence (AI) is transforming 21st-century medicine into a predictive, preventative, personalized and participatory model. By leveraging machine learning, AI enhances diagnostic accuracy in imaging, accelerates drug discovery, and streamlines administrative tasks, with 75% of leading providers experimenting with AI solutions ⁽¹⁵⁾. Common applications of AI include diagnosing patients, end-to-end drug discovery and development, improving communication between physician and patient, transcribing medical documents, such as prescriptions, and remotely treating patients ⁽¹⁶⁾. Some speculate that it is only a matter of time before humans are completely replaced in certain roles within the medical sciences ⁽¹⁶⁾.

Only very specific settings, in clinical practice, benefit from the application of artificial intelligence, at the current time, such as the detection of atrial fibrillation, epilepsy seizures, and hypoglycemia, or the diagnosis of disease based on histopathological examination or medical imaging ⁽¹⁷⁾. There is need to validate application of AI with traditional clinical trials, debate the educational upgrade of the medical curriculum, in light of digital medicine, as well as ethical consideration of the ongoing connected monitoring ⁽¹⁷⁾. There is a need for ongoing educational programs re digital medicine and targeting graduated physicians, to retraining in this growing field ⁽¹⁷⁾. AI is enabling physicians deliver complete medical records but more solutions are needed regarding the increasing time needed for indirect patient care and increasing workload ⁽¹⁷⁾. One of the great barriers to adopting AI medical technologies in physicians is the fear of a dehumanization of medicine ⁽¹⁷⁾. A major revision of medical education is needed to provide future leaders with the competences to best utilize AI ⁽¹⁷⁾.

5. Impact of Technology on healthcare at the face-to-face level:

Patient centred medicine has determined that the patient expectations assume centre stage ⁽¹⁸⁾. Patients will often attend the doctor with predetermined/preconceived and possibly inappropriate expectations that can directly impact doctor/patient relationships and, as a result, undermine trust ⁽¹⁹⁾. With such tension in the doctor/patient relationship, the “no win/no pay philosophy has underwritten a growth in litigation ^(20,21). No win/no pay is a growing and established approach to health/medical litigation in Australia in which the Plaintiff does not pay his/her lawyer should the matter fail to be successfully litigated. The fact that no/no pay litigation has assumed centre stage implies patients (Plaintiffs) have nothing to lose when suing clinicians ⁽²⁰⁾. Medical malpractice litigation is pervasive resulting in many physicians practising defensively to avoid being named in a suit ^(20,21). This results in what amounts to unnecessary tests which inflate the health care budget and those extra expenditures provide little value to patients ^(20,21). A No Fault Medical system, supplemented by a variation of the traditional tort system, encouraging physicians to follow evidence-based guidelines may be an alternative. The proposed system would guarantee a substantial decrease in, but not elimination of, litigation. The system would lower professional liability premiums ⁽²²⁾.

6. Developments in medical misadventure claims in Australia:

There has been an evolution and clarification in the approach to competent medical standards in Australia ⁽²³⁾. Initially the accepted norm was in accordance with the Bolam Principle which dictated that the standard for medical care was determined by that which was practiced by the medical profession at the time ⁽²⁴⁾. Bolam related to a boy who was administered electroconvulsive therapy without iatrogenic paralysis nor restraints and, while experiencing a seizure suffered spinal damage but litigation failed because that was the practice at the time ⁽²⁴⁾. The next stage was determined by the court, as established in Rogers v Whitaker ⁽²⁵⁾. This matter related to the Plaintiff being blind in her right eye, following earlier damage, and undergoing elective surgery, aimed at cosmetic repair, but was not warned of the 1/14000 risk of potential sympathetic ophthalmia in her left eye which eventuated, causing binocular blindness ⁽²⁵⁾. The Court ignored Bolam and found the ophthalmologist liable for failure to warn, even though testimony from ophthalmologists indicated there was a practice not to warn of such rare risk. The Court decided that the Plaintiff had repeatedly asked questions and would not have proceeded had the warning been provided, thus constituting a failure to warn of a material risk that would have been pivotal in the Plaintiff’s decision to undergo the procedure ⁽²⁵⁾.

As a consequence of this decision, there was an exponential growth of successful litigation, regarding medical claims, resulting in what was termed the Indemnity Insurance Crisis ⁽²⁶⁾. This led to a significant number of Australian specialists leaving the profession because of the cost of indemnity insurance ⁽²⁶⁾. To compensate for this there was a political push to legislate and protect the medical profession from ruinous litigation ^(27,28). Each state within Australia enacted an equivalent of the Civil Liability Act ⁽²⁸⁾, acknowledging that Australia is a Commonwealth/Federation of states and territories and the various legislative protections were state based ⁽²⁸⁾. These acts served to restore much of the Bolam Principle with the profession determining acceptable medical practice, with the proviso that such practice was

rational ⁽²⁸⁾.

Over time, the Courts modified the approach to Bolam and retained the right to determine that which constituted appropriate warning for patients. This introduced a significant level of uncertainty ⁽²³⁾. The case of *Dean v Pope* ⁽²⁹⁾, within the New South Wales Court of Appeal, confirmed the position in that the Court would decide what needed to be imparted to the patient (material risk, the risk of that which the patient needed to understand, to decide whether to consent or refuse proposed treatment, namely the basis of informed consent) and the delivery of health care which was determined by a respected body of peer professionals (doctors within the medical sphere) ⁽²⁹⁾. This returned a level of predictability to medical malpractice litigation.

7. Conclusions

Legal medicine applies medical knowledge to legal issues, including forensics, civil cases (negligence), and ethics while Medical law regulates the rights/responsibilities of health professionals and patients. Both deal with the interface of medicine and law to enhance the delivery of justice within the society in which they operate. The advances in technology have had direct consequences upon legal medicine and medical law in the 21st Century. Telehealth, especially after Covid, has had a major impact on delivery of healthcare in the 21st Century and thus on legal medicine. There are both positives and negatives to telehealth. The scope of the impact of legal medicine in telehealth is driven by the specialty in which it is considered, such as sleep medicine. Artificial Intelligence (AI) has underwritten precision, personalised medicine.

There is a discrepancy between AI and experience and the combination of both may be ideal but legal medicine/medical law is still to consider how to challenge those who do not combine both. There is a great need to educate clinicians in the use of AI but also a need to validate AI as being what it is claimed to be.

Technology is impacting the doctor/patient relationship as is “no win/no pay” litigation. Australia has experienced an evolution of standards re “competent professional practice”. It is a time of change and a time to reappraise and implement changes that accommodate technology and improved patient care.

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