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Interdisciplinarity and multidisciplinarity of the medical profession. Opportunity or threat?

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Abstract

This article aims to describe the actual scope of requirements for physicians and analyse it as an opportunity for, or threat to, the development of the profession. The article will be subdivided into two parts. In the first, concerning the interdisciplinarity of the medical profession, we shall provide constructive criticism of the specialisation system within the medical profession. This part will be subdivided into two segments: the first will list the opportunities for physicians which result from often far-reaching specialisation, while the second will enumerate the threats. The second part, dealing with the multidisciplinarity of the medical profession will define the scope of actual competences required from physicians so as to judge whether such a large amount of additional knowledge is helpful for physicians in fulfilling their professional requirements, or if it overwhelms them.

Key words: interdisciplinarity; multidisciplinarity; specialization

INTRODUCTION

The twentieth and twenty-first centuries have brought a breathtaking development of the medical sciences. But they have also brought new challenges. With them, the nature of medicine and that of the medical profession have changed. On the one hand, today the profession is under pressure from interdisciplinarity (the necessity of far-reaching specialisation) resulting from the breadth of subject matter within modern medicine, losing in this way – at least according to some – its holistic approach to mankind. On the other, it is also pressured by multidisciplinarity, which may lead to superficial and incomplete knowledge. Reality requires the physician to possess knowledge which far exceeds the scope of medical studies. It requires specialist erudition in the domains of law, economics, administration, and management, not forgetting the basics of psychology and social science. This leads to physicians being subjected to systemic pressure on one side, requiring them to be familiar with the domains listed above, while on the other, that of constantly having to improve their professional qualifications, study specialised journals and develop their expertise.

This article aims to describe the actual scope of requirements for physicians and analyse it as an opportunity for, or threat to, the development of the profession. The article will be subdivided into two parts. In the first, concerning the interdisciplinarity of the medical profession, we shall provide constructive criticism of the specialisation system within the medical profession. This part will be subdivided into two segments: the first will list the opportunities for physicians which result from often far-reaching specialisation, while the second will enumerate the threats. The second part, dealing with the multidisciplinarity of the medical profession will define the scope of actual competences required from physicians so as to judge whether such a large amount of additional knowledge is helpful for physicians in fulfilling their professional requirements, or if it overwhelms them.

PART I
THE PHYSICIAN AND INTERDISCIPLINARITY

Factual analysis

The health needs of the population require not only an increase in the quantity of services, but also in their quality. A consequence of this is the need for educating a large pool of well-prepared health professionals with ever greater practical skills. Sadly, there is deficit on this front. For that reason, the European Commission – for more than ten years now – has been intensifying its efforts to reverse these negative trends and correct the shortage of health professionals in the European Union. These tendencies are common to all member states: a global ageing of populations, as well as that of health professionals; migration of health professionals, both within the EU and externally, and the implementation of new technologies which eliminate human labour[1].

Analysing this situation in Poland requires some statistical data. From a total of 192 000 physicians and dentists in Poland, 175 000 practise the profession. Among those who do so, there are 137 500 physicians and 37 000 dentists, including over 89 000 specialists[2]. This means that two-thirds (66.1%) of all physicians practising in Poland are specialists. It is worth

[1]European Commission Green Paper on the European Workforce for Health, Brussels, 10.12.2008, A. Domagała, *Zielona Księga w sprawie pracowników ochrony zdrowia w Europie – założenia, cele i główne postulaty dokumentu*, Zeszyty Naukowe Ochrony Zdrowia, Zdrowie Publiczne i Zarządzanie No. 1 2009, p. 76-84.

[2] Centralny Rejestr Lekarzy (Polish Central Register of Physicians). Numerical overview of physicians and dentists as of 31.12.2018.
https://www.nil.org.pl/rejestry/centralny-rejestr-lekarzy/informacje-statystyczne

noting that most of those practising the profession solely abroad also retain their status as physicians in Poland. It is estimated that several thousand Polish physicians work abroad[3].

The European Commission's Green Paper notes that apart from the general population, medical professionals are also ageing. In Poland, the average age of a specialist physician is 45, the two next largest groups are within the 45-55 range and above 65. Meanwhile, the average age of a dentist with a specialisation is 55 but there is also a professionally active group above 66.

For midwives, the average age also rises to 47 years; and almost half of nursing staff are over 45[4]. Demographic data irrefutably demonstrate the necessity of constantly and intensively developing the education of medical professionals.

Currently, 25 001 physicians and 1355 dentists are finishing a specialisation in Poland. The largest number have chosen to specialise in internal medicine (2676), followed by paediatrics (2221) and family medicine[5]. Among these specialisations are some that only a few physicians choose to pursue each year, such as metabolic paediatrics or clinical toxicology. The large number of narrow specialisations in Poland influences the therapeutic model. A patient with hypertension does not consult an internist or a cardiologist, they see a hypertensiologist. Due to this, institutions which settle medical benefits (i.e. NFZ, the National Health Fund) demand that such specialists be employed by a hospital. Patients themselves also expect to be treated by high-quality specialists. This leads to a subdivision of treatment and its fragmentation. In this era of narrow specialisations, there is a lack of comprehensive and holistic patient care.

The currently discussed changes to the Act on the Profession of Physician and Dentist plan to lower the number of specialisations from 77 to 50. The project foresees to introduce subdivision: into specialisations, detailed specialisations (sub-specialisations) and medical competences. Physicians will be able to obtain a medical competence certificate on the basis of the training and examinations organised by the Centrum Egzaminów Medycznych (CEM, Centre for Medical Examination) or external exams, such as those of renowned European scientific bodies recognised by CEM[6].

As part of competences, it would be advantageous to consider the rapidly expanding domain of aesthetic medicine for instance, which is not a medical specialisation, but emerged organically as the result of a natural combination of several other medical fields, including dermatology, aesthetic surgery, angiology, vascular surgery, dietetics, gynaecology, endocrinology and dentistry[7]. Aesthetic surgery is defined as the prevention, treatment and correction of aesthetic defects. The scope of this domain is imprecise and constantly subject to modifications[8]. Introducing competences could impede the emergence of many adverse

[3] P. Baliński, R. Krajewski *Lekarze i lekarze dentyści w Polsce – charakterystyka demograficzna. Stan w dniu 31.12.2017 roku*, Polish Chamber of Physicians, Warsaw, May 2018.
https://nil.org.pl/__data/assets/pdf_file/0014/132521/Demografia-2017.pdf

[4] Iwona Wrześniewska-Wal, Bartosz Kobuszewski *Specjalista zdrowia publicznego*, Polski Przegląd Nauk o Zdrowiu. 2017; 4(53): 544–555.

[5] Centrum Medyczne Kształcenia Podyplomowego, registry data as of: 15.02.2019.

[6] Work is currently ongoing on the *draft amendment to the Act on the Professions of Physician and Dentist and other laws and regulations, including a plan to reform postgraduate training and labour law* (including the Act on Medical Activity and the Act on the method of determining minimum basic remuneration of medical professionals, employed at healthcare entities, and regulations on postgraduate training and specialisation). The draft project was elaborated by a team created by decree of the Polish minister of health on 13 April 2018, as the result of an agreement between the minister and representatives of resident physicians.

[7] A. Ignaciuk *Medycyna estetyczna oczami lekarza praktyka z 25-letnim stażem*, Medycyna estetyczna. *Wyzwania prawne, etyczne i medyczne*, Konferencja Komisji Edukacji Prawnej NRA oraz Ośrodka Bioetyki Naczelnej Rady Lekarskiej i Komisji Etyki Naczelnej Rady Lekarskiej, Warsaw, 23 November 2018.

[8] A. Ignaciuk *Medycyna estetyczna w aspekcie bezpieczeństwa standaryzacji przepisów*, I Międzynarodowa Konferencja Naukowa: *Zatrzymać młodość*, Warsaw 11 September 2015.

phenomena and guarantee safety for both patients and physicians. It should be noted that these procedures are quite risky e.g. microdermabrasion, needle mesotherapy, botox or botulinum toxin, skin exfoliation or peeling, wrinke fillers, both temporary and permanent[9]. Medical studies today are mostly academical. However, greater emphasis should be placed on the practical aspects of the profession during the studies themselves.

Interdisciplinarity of medical services as an opportunity for the professional development of physicians

The reality of practising medicine, in other words the provision of highly specialised medical services, results in the fact that it is difficult today to obtain medical services from a single person. The times of physicians who could solve complex health problems effectively and efficiently are long gone, probably forever.

Nowadays, not only many people, but many medical professions are involved in medical treatment: e.g the general practitioner (directing the patient for a clinical consultation or hospitalisation), consulting physicians (at the clinic, admissions desk or ward), on-duty and attending physicians, diagnosticians performing tests, nurses, midwives, physiotherapists, psychologists or paramedics. To this list should be added the teams of professionals representing various medical professions and specialisations. For instance, a surgical team is composed of surgeons (often with a very narrow specialisation), anaesthesiologists, anaesthetist and surgical nurses, and sometimes also perfusionists, radiologists and radiographers. As we can see, specialisation does not apply only to physicians today. Nurses are also concerned (since they obtain not only qualifications as surgical nurses for instance, but also specialise in certain narrow surgical fields, such as ophthalmology, orthopaedics or urology, due to the variety of surgical instruments used).

The vastness of medical knowledge, the pace of its constant updating and technological progress force the creation of very narrow specialisations in almost all the medical professions, which may result in insufficient competence for treating many, often complex, health problems. This increases the number of possible mistakes, and therefore also both the cost of making and preventing them ("defensive medicine", the unnecessary duplication of tests and visits). It would seem that the opportunity for correcting these dysfunctions would be an interdisciplinary concept of healthcare provision.

The legal literature contains various attempts to systematise the phenomenon of multi-person medical care: from attempts to describe it as a team activity (either a sequence of events or the simultaneous performance of a procedure)[10], to differentiating it into separate models, a strictly team-based one (e.g. surgery) and interdisciplinary treatment (subdivided into concurrent and sequential provision of complimentary procedures)[11].

However, it seems most fitting to use the following classification and definition: the interdisciplinarity of health services – as a multi-person activity – consists in the involvement of various specialists in the medical procedure, who together achieve what is impossible to achieve individually. Interdisciplinarity can consist in performing individual elements of a given procedure, in the following way:

1. Sequentially, i.e. performance of complimentary procedures, subdivided into stages, with two scenarios:
    a. parallel (simultaneously),

[9] E. Skrzypek *Powikłania po zabiegach estetycznych – czy zdajemy sobie z nich sprawę,* Ogólnopolski Kongres Kosmetologii i Medycyny Estetycznej, Warsaw 13-14 February 2016.

[10] J. Sawicki *Błąd sztuki przy zabiegu leczniczym w prawie karnym*, Warsaw 1965, p. 175; similarly: E. Zielińska *Wzajemne relacje w zespołowym działaniu medycznym w aspekcie odpowiedzialności karnej i zawodowej*.

[11] L. Kubicki *Błąd w sztuce w toku interdyscyplinarnego postępowania leczniczego*, Prawo i Medycyna 2001/9, p. 34.

b. in order (successively) – a classical example of such activity would be patient care and ensuring their safety by changing shifts of physicians and nurses;

2. Teamwork, i.e. collective and simultaneous execution of particular tasks by team members (who may have different roles assigned to them) in order to implement a specific element of the medical treatment. Another example of teamwork, apart from the previously-mentioned surgery one, could be an ambulance team (paramedics, nurses, physicians) or an oncology team (with various specialist physicians, including oncologists, but also psychologists and nurses).

But this proposed subdivision is of a theoretical nature. In real life, we often deal with mixed models, consisting of both sequential and team-based execution of the various elements involved in treating the patient. Some medical procedures will therefore be performed by several specialists as a team only after other tasks have been carried out. Importantly, most of them can be performed in parallel as independent elements of the medical procedure (the radiologist analyses the images at the same time as a the pathologist assesses the samples taken, while the diagnostician performs blood analysis, etc.), while other elements may be part of the team procedure, e.g. one team removes the organ, while another team collects the organ for transplantation. It should also be noted that the team removing organs for transplants usually does so for the needs of several transplantations taking place in parallel.

The interdisciplinarity of medical treatment is therefore a result of the rapid development of the medical sciences and the resulting specialisation of physicians. It is also the result of a holistic approach to patients. Disease is not seen as a unitary, sudden incident but as a chronic medical problem, socially significant and often linked to the phenomenon of multi-disease. Which is why the interdisciplinarity of the provision of health services today allows to solve the complex health problems of patients. From a systemic perspective, it is inscribed within the concept of providing the population with coordinated care (complex, integrated, permanent)[12]. As part of this approach, modern management solutions can be applied, with roles such as medical care coordinator (case or incident manager, e.g. family physician, qualified nurse or an institution such as a clinic or hospital), patient pathway coordinator (providing continuity of care and a multidisciplinary patient plan including diet, nursing, rehabilitation, prevention and education, specialist collaboration (not solely through advisory teams and telemedicine), and improvement of patient communication or continuous training of staff.

Medical interdisciplinarity as a threat to the the professional development of physicians

Specialisation – perfecting knowledge in a specific, narrow field or performing specific activities – is a constant and universal process which can be observed both from the perspective of ecology[13] and economics[14]. This phenomenon also occurs within healthcare.

Today, the complexity and breadth of medical knowledge pushes an ever greater specialisation among all those practising the medical professions, particularly physicians. From an environmental (survival of the species) or economic (company growth) perspective, specialisation is seen as one of the key adaptive mechanisms (evolution) and as such is seen as a positive. But in relation to healthcare, it raises a series of doubts, since it can lead to the loss of a holistic perspective of humankind.

[12] More: I. Rudawska *Zintegrowana opieka zdrowotna. Podejście relacyjne do obsługi pacjenta jako klienta*, Warszawa 2014, p. 96 and following.

[13] Craig A. Layman, Seth D. Newsome, Tara Gancos Crawford *Individual-level niche specialization within populations: emerging areas of study*, Oecologia, 2014 DOI:10.1007/s00442-014-3209-y

[14] Von Schutz, U., Stierle, M. *Regional specialisation and sectoral concentration: an empirical analysis for the enlarged EU*", a document of the *European Regional Science Association*, 2003.

Already in the 4th century BC, Socrates warned that healing a specific part of man would not bring complete results. Hippocrates was of a similar mind, arguing for a comprehensive (holistic) approach to medicine[15.] This approach was reflected in Florence Nightingale's motto: "*put the patient in the best condition for nature to act upon him"*[16]. Although this motto describes the role and tasks of the nurse, it also applies perfectly to the entire healthcare system.

Far-reaching specialisation (interdisciplinarity) – which within medicine, takes the form of the creation of new, ever narrower specialisations and sub-specialisations – has its own risks however. One is the reduction of the therapeutic process to a series of highly-specialised, but loosely-connected activities. Furthermore, these activities, performed one after the other by highly-specialised professionals with strictly technical skills, concentrating on performing their assigned tasks properly, could lead to losing sight of their overall goal and meaning: the well-being of the patient. This would result in healthcare services being akin to commercial ones, and the patient to a customer.

Finally, this would result in the reification of health – imbuing it with the quality of a commercial product[17] – a watering down of the ethos of the medical professions. And by the same token, the loss of the specificity of the work of physicians and the exceptional nature of their relationship with patients[18]. It should however be noted that the atomisation of medical knowledge and medical practice is not the only possible cause of this state of affairs. An important role is also played by additional factors, such as changes to the financing of healthcare, an increase in the expectations the public has of it, as well as a more individualistic attitude from patients[19].

An attempt to counteract the negative results of specialisation (interdisciplinarity) is physicians striving to master knowledge and skills from a greater number of disciplines and specialities. However, this carries another risk: that this knowledge on the side is then unsure and superficial, compared to the physician's main specialisation.

In that situation, instead of expecting physicians to master additional knowledge, it would seem appropriate to include a broader, connected perspective for the chosen field. It would then be necessary to take into account the fact that collaborating with the patient – be it as part of diagnostics, therapy or convalescence – is conditioned by a range of characteristics and factors within the patient's environment[20.]

For that reason, the training of physicians and other health professionals should place more emphasis on acquiring and perfecting soft skills such as communicating with the patient. This ability is indispensable so that patients understand the physician's recommendations correctly and the physician can determine whether there are any additional factors affecting

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[15] Vantegodt S, Kandel I, Merrick J. *A short history of clinical holistic medicine. Scientific World Journal* 2007; 5(7): 1622-1630.

[16] Nightingale F, *Notes on Nursing: What it is and what it is Not*, Harrison, London 1859, https://archive.org/details/NotesOnNursingByFlorenceNightingale/page/n4

[17] Kołodziej-Durnaś A. *Idee New Public Management w instytucjach systemu ochrony zdrowia – obietnice, korzyści i zagrożenia*, Miscellanea Anthropologica et Sociologica 2013, 14 (2): 81-91.

[18] Haberko J. *Zasady postępowania lekarza w stosunku do pacjenta. Uwagi de lege lata i de lege ferenda na tle przepisów Kodeksu etyki lekarskiej*, NIL https://www.nil.org.pl/__data/assets/pdf_file/0009/112014/05-Haberko.pdf

[19] Rudawska I., *Ekonomizacja relacji pacjent-usługodawca w opiece zdrowotnej*, Szczecin: Wydawnictwo Naukowe Uniwersytetu Szczecińskiego 2006.

[20] Harris D. L., Starnaman S. M., Henry R. C., Bland C. J., *Multidisciplinary education outcomes of the W.K. Kellogg Community Partnerships and Health Professions Education initiative*, Academic Medicine: Journal of the Association of American Medical Colleges [01 Oct 1998, 73(10 Suppl):S13-5] DOI: 10.1097/00001888-199810000-00031.

the health of the patients, and their desire and ability to fulfil the recommendations (e.g. whether patients can afford to buy the prescribed medication).

Understanding the circumstances of the patient requires not only a high level of soft skills, but above all good knowledge of the processes and phenomena which condition the effectiveness of the provided healthcare services. It is currently thought that one of the most important aspects of improving people's health, or patient prophylaxis, could be improving their health literacy[21], i.e. the ability to understand health recommendations. A high level of health literacy allows someone to know how and where to find information on what constitutes health and the ability to evaluate the reliability of information sources. Knowledge of the ways to improve health literacy, the benefits it brings, as well as the consequences of its lack, seems indispensable for all healthcare professionals.

PART III
THE PHYSICIAN AND MULTIDISCIPLINARITY

The medical profession and the necessity of knowing the law

The ancient Romans already had principles in place which were relevant to the issue of knowledge of the law within the medical profession. Two of them seem particularly significant. The first, *ignorantia iuris nocet,* loosely translated means "ignorance of the law is harmful". The second, *ignorantia legis non excusat* (sometimes also given as *ignorantia legis non exculpat*) means "ignorance of the law excuses no one". It should be added that this applies to illegal acts in particular. According to these principles, claiming ignorance of the law as a defence against legal responsibility is ineffective. As we know, the condition for the entry into force of universally binding legislation, i.e. laws and regulations, is their proper announcement per the procedure described in them (*Dziennik Ustaw, or Journal of Laws,* in Poland). This also applies to departmental or local law. The official publication of legal acts allows the legislator to know that the duly published normative acts are widely known. This is the so-called fiction of ubiquitous knowledge of the law.

Can physicians therefore allow themselves to practise their profession without knowing the law? The answer to this question seems evident. A responsible physician cannot in any case allow that.

Already the first provision of Article I of the Act on the Professions of Physician and Dentist declares that this act defines the principles and conditions for practising the professions of physician and dentist. Therefore, without knowledge of the law, at the very least of this Act, physicians will not know the principles, conditions or scope within which they are allowed to practise their profession and use the medical knowledge they have obtained. This knowledge, without knowing the law, becomes a double-edged sword: saving lives and preserving health on one hand, on the other, exposing physicians to both professional (disciplinary) responsibility and civil, or even criminal, liability. In the modern world, the complementarity of medical knowledge and legal awareness seems to be absolutely indispensable in the practice of medicine.

Furthermore, the Act on the Professions of Physician and Dentist[22] is merely the entrance to an entire catalogue of normative acts which a physician must be aware of. In many cases, it is indispensable to have deeper knowledge of specific laws to practise the profession of physician without being exposed to the negative effects of the law. Among the relevant legal acts, we could note the Act of 6 November 2008 on Patients' Rights and the Commissioner

[21] Iwanowicz E. *Health Literacy jako jedno ze współczesnych wyzwań zdrowia publicznego*. Medycyna Pracy 2009;60(5):427–437.
[22] Dz. U. z 2017 r. poz. 125, z późn. zm.

for Patients' Rights[23], which regulates such fundamental questions as consent for the provision of healthcare, the right to the confidentiality of patient information, or the right to respect the intimacy and dignity of the patient. Additionally, we should add the regulations for medical records or the determination of compensation and reparation in the event of medical malpractice.

The fundamental aspects of the functioning of the healthcare system are regulated by the Act on the Public Funding of Health Care, and the Act on Medical Activity, which defines the principles for individual or group medical practice, as well as those for the activities of medical entities, e.g. non-public healthcare institutions, so ubiquitous on the medical service provider market.

Another indispensable element of the everyday work of the physician are prescriptions. Without knowledge of the Act of 6 September 2001 – Pharmaceutical Law[24], as well as the Ministry of Health's implementing regulation for prescriptions[25], and implementing regulation on general conditions for prescription fulfilment[26], no physician can properly carry out their duties without the risk of error, which may have financial or even criminal consequences.

Furthermore, the Ministry of Health updates and publishes the list of refundable medicines each quarter. This is another element of the law which requires physicians to systematically be up-to-date. We also cannot forget that based on the Act on Information Systems in Healthcare, prescriptions can only issued on paper until 31 December 2019. There are therefore copious additional regulations, which all physicians should be acquainted with, at least partially. We could list more, such as those which apply to physicians dealing professionally with opioids and who must be aware of the formal links between pharmaceutical law and the Act on the Prevention of Drug Abuse[27]. The list of laws which physicians should be aware of must surely also include the Act on the Emergency Medical Services[28], Act on the Prevention and Control of Infections and Infectious Diseases in Humans[29], Act on Primary Health Care[30], or the Act on Public Health[31]. Most of these are new or recently updated laws and knowledge of them is a precondition for physicians carrying out their duties professionally and safely.

The necessity of knowing the law as part of exercising the profession of physician is therefore indisputable. In the opinion of physicians themselves, the modern reality is that they are required to have legal knowledge which is nearly on a par with their medical knowledge.

The medical profession and the necessity of administrative and organisational knowledge

Organisational and administrative matters should also form part of the reflection on the challenges facing physicians, Within this context, an interesting issue would seem to be the problem of properly storing medical records, in the light of reports by inspection authorities and court rulings. This issue directly concerns both small, private medical practices and large medical facilities, which have had problems within this domain.

[23] i.e. Dz. U. z 2017 r. poz. 1318, 1524, z 2018 r. poz. 1115, 1515, 2219, 2429, z 2019 r. poz. 150.
[24] tj. Dz. U. z 2017 r. poz. 2211, z 2018 r. poz. 650, 697, 1039, 1375, 1515, 1544, 1629, 1637, 1669, 2227, 2429, z 2019 r. poz. 60.
[25] Dz. U. 2018 poz. 745.
[26] Dz. U. 2013 poz. 364
[27] i.e. Dz. U. z 2018 r. poz. 1030, 1490, 1669
[28] i.e. Dz. U. z 2017 r. poz. 2195, z 2018 r. poz. 650, 1115, 1544, 1629, 1669, z 2019 r. poz. 15
[29] i.e. Dz. U. z 2018 r. poz. 151, 1669
[30] Dz. U. z 2017 r. poz. 2217, z 2018 r. poz. 1000, 1544, 2429, z 2019 r. poz. 60
[31] t.j. Dz. U. z 2018 r. poz. 1492

This issue is regulated by various legal acts, including the Act on Patients' Rights and the Commissioner for Patients' Rights[32], the General Data Protection Regulation (GDPR)[33], the Regulation of the Minister of Health of 9 November 2015 on the types, scope and models of medical documentation and the manner of its processing[34].

This issue is particularly meaningful in the context of the verdict of the Supreme Administrative Court of Poland (NSA) on 10.04.2018 (sygn. akt II OSK 69/18)[35], in which the court ruled that medical facilities must take special care in securing medical records.

In the case at hand, the court ruled that the physician should have taken particular care to secure medical records in light of a conflict with a sub-tenant renting space in the medical practice of the physician. By doing so, the physician would not have faced a situation in which the sub-tenant obtained access to the medical records along with the keys to the building. Based on the number of factors which the medical practice could have foreseen, such a situation constitutes a failure to properly secure medical records and an infringement of the fundamental rights of the patient. However, one can not speak of a failure to act when a medical entity loses its medical records as the result of unforeseeable circumstances, such as e.g. a force majeure event or theft.

Already in 2016, the Supreme Audit Office (NIK) in its report on medical record-keeping practices, indicated that apart from errors in content, there were also deficiencies concerning their storage and security. These irregularities concerned as many as 11 out of 24 inspected entities (i.e. almost 49% of inspected entities improperly secured medical records). Some of the deficiencies noted in the protection of medical records against destruction or loss were: placing the records in rooms with unprotected windows (either bars but also curtains to limit sunlight), those with water leakage, and storing records in cardboard boxes or lying around (the hospital explained this by a temporary lack of archival space).

In relation to the protection of medical records from unauthorised access, the Supreme Audit Office saw the lack of a *key policy*, which defines the rules for issuing keys for rooms containing medical records, as a threat (in one case this only applied to spare keys). NIK also noted that in some of the audited facilities, records were kept either on open shelves (though in the nurses' duty room) or in open cubicles across from the archives, accessible even by patients.

As the medical facility explained, this was the result of a lack of storage space and the impossibility of creating a separate archival space. Interestingly, at the same time, no deficiencies were noted in the proper storage of electronic records.

The Voivodship Administrative Court in Warsaw also weighed in on the issue. In its verdict of 10.05.2017[36], it ruled that within the context of protecting medical records from unauthorised access, they cannot be stored in a room with access to the elevator engine room, ventilation service room or the alarm cabinet.

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32 **art. 29, Ustawa z dnia 6 listopada 2008 r. o prawach pacjenta i Rzeczniku Praw Pacjenta (Dz. U. 2017 poz. 1318.).**

33 Rozporządzenie Parlamentu Europejskiego i Rady (UE) 2016/679 z dnia 27 kwietnia 2016 r. w sprawie ochrony osób fizycznych w związku z przetwarzaniem danych osobowych i w sprawie swobodnego przepływu takich danych oraz uchylenia dyrektywy 95/46/WE (ogólne rozporządzenie o ochronie danych), Dz. U. UE L z 2016r. nr 119/1.

34 § 74 Rozporządzenia Ministra Zdrowia z dnia 9.11.2015r., w sprawie rodzajów, zakresu i wzorów dokumentacji medycznej oraz sposobu jej przetwarzania (Dz. U. 2015, poz. 2069.).

35 NSA verdict of 10.04.2018., sygn. akt sygn. akt II OSK 69/18.
Accessed 07.02.2018: http://orzeczenia.nsa.gov.pl/doc/71BA6D6F3D

36 Wyrok WSA w Warszawie z dnia z dnia 10.05.2017 r., sygn. akt. VII SA/Wa 361/17, LEX nr 2331309.

In the view of the court, in such a scenario it would be impossible to ensure the security and confidentiality of the records due to the number of persons who could have access to these rooms in the case of an emergency.

The protection of personal data processed as part of medical records should also be considered. In this regard, the previous state of the law should be used, since the Personal Data Protection Office, which has existed since 25.05.2018, has not yet issued any fines based on the GDPR. However, the functioning of medical facilities often found itself within the auditing remit of the former Inspector General for the Protection of Personal Data (GIODO).

As the former inspector explained, part of these offences was simply due to "messiness"[37]. The following, among others, have been judged to be improper ways of storing records: on open shelves in rooms accessible to patients or cleaning staff, left at the registration desk, in duty rooms or physicians' offices without adequate protection, or in rooms without proper fire detectors[38].

Also deemed improper was the storing of records on open shelves in an archive with unsecured access[39]. In this case, GIODO also noted that every hospital employee could obtain the key to the archive and no employee was responsible, as part of the scope of their duties, for providing access to the records it contained. Much of the decision concerns the security of electronic records – e.g. it notes the necessity of defining procedures for logging into the system, password creation[40], backup procedures and the time and place for storing digital media[41].

The above requirements, which GIODO noted based on the previous state of the law, are not indicated outright in the currently applicable General Data Protection Regulation (GDPR) The regulation only requires personal data administrators (ADOs) to take all proper measures for protecting personal data. However, it would seem that the above aspects could be elements that the ADO should consider when implementing the above-mentioned security measures.

In audit reports, GIODO also often noted the lack of a written data processing entrustment agreement (with outside entities, e.g. those handling the administration of systems for scheduling patient appointments[42]).

Under the current law, due to Art. 28 (9) of the GDPR, the entrustment agreement, or other legal instrument with the processor, must always be in writing, including in electronic form[43]. The duplication of formats (electronic and paper) for the entrustment agreement should also be considered inappropriate[44].

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37 **K. Sawczuk, *Bałagan na szpitalnych półkach – co wykazują kontrole GIODO w szpitalach?*, https://blog-daneosobowe.pl/balagan-szpitalnych-polkach-wykazuja-kontrole-giodo-szpitalach/ [Accessed 10.02.2019].**

38 GIODO decision, DIS/DEC-174/12/14274, Accessed 10.02.2019: https://www.giodo.gov.pl/p/decyzje

39 GIODO decision, DIS/DEC-175/12/14285, accessed 10.02.2019: https://www.giodo.gov.pl/p/decyzje

40 E.g. GIODO decision, DIS/DEC-454/14/36247, accessed 10.02.2019: https://www.giodo.gov.pl/p/decyzje

41 E.g. GIODO decision, DIS/DEC-1270/17/77313, accessed 10.02.2019: https://www.giodo.gov.pl/p/decyzje

42 Ibid.,

43 Within the jurisprudence, there are doubts as to the concept of an electronic form of the entrustment agreement, in particular if such an agreement can be signed in documentary from as per Art. 77(2) of the Polish Civil Code. This form of entrustment agreement is opposed by e.g. K. Mazur (K. Mazur [in;] M. Jackowski (ed.), *Ochrona danych medycznych. RODO w ochronie zdrowia*, Warsaw 2018, p.177-178. Those supporting such a form of entrustment agreement are e.g. A. P. Czarnowski, M. Gawroński, P. Naklicka (M. Gawroński (ed.).*Ochrona danych osobowych. Przewodnik po ustawie i RODO z wzorami*, Warsaw 2018, p. 381), on condition of "making the text of the agreement permanent" also K. Witkowska-Nowakowska, (K. Witkowska-Nowakowska, [in:] E. Bielak-Jomaa, D. Lubasz (eds.), *Rodo. Ogólne rozporządzenie o ochronie danych osobowych*, Warsaw 2018, p. 637.), also on condition of the "integrality and authenticity of the agreement" P. Litwiński, P. Barta and M, Kawecki (P. Litwiński (red.) P. Barta, M. Kawecki, *Rozporządzenie UE w sprawie ochrony osób fizycznych w związku z przetwarzaniem danych osobowych i swobodnym przepływie danych*, Warsaw 2018, p. 479).

It would also appear that as part of the process of keeping electronic medical records, some facilities will want to digitise their already existing medical records. It is worth noting that such a process would not legitimise the destruction of the paper originals. The Act on Patients' Rights and the Commissioner for Patients' Rights in fact defines the length of time a facility must preserve its medical records.

At the same time, the act does not allow for reducing the time for preserving records, stored in paper form, by duplicating them electronically[45].

The medical profession and the need for economic knowledge

The rising costs of healthcare are a problem in every developed country, while policymakers attempt to find ways to maintain healthcare systems[46]. The basis for this decision-making can be health economics – as the science of the allocation of resources within the healthcare system. Through the application of general economic principles to the healthcare sector, it seeks to find optimal solutions which can be used to organise the system as a whole and evaluate the efficiency of its functioning.[47]

When practising medicine, a physician does not have the time to adopt an economic perspective and understand its fundamental principles. It is evident that the primary objective is to focus on the patient's health needs and attempt to fulfil them, using existing knowledge. There is no place for economics in medical practice, the operating room or diagnostics lab. At the time of providing medical services, all of these are places where the production process is in place, using the limited resources of the healthcare system. The analysis of limited resources for the production of goods and services for specific groups of consumers, including patients, lies at the heart of economics. Economics asks: how are these resources processed, what is produced with them, who decides what and how much is produced, who pays for their use, how much does it all cost?[48] The answers to these questions create the work environment of the physician.

Economic analyses also have a direct effect on the work of the physician, e.g. in terms of the possibility of administering the chosen pharmacotherapy. The provisions of the Act of 12 May 2011 on the Reimbursement of Medicines, Foodstuffs Intended for Particular Nutritional Uses and Medical Devices[49] stipulate that any application for a refund and the determination of an official selling price for a medicine, a foodstuff for particular nutritional uses, or medical device (Article 24(1)(1)) which has no refundable equivalent in the indication shall be accompanied by (Article 25(14)(c)) among others:

1. An economic analysis (AE) from the perspective of the entity responsible for financing the services from public funds and the beneficiary;
2. An impact analysis (AWB) on the budget of the entity responsible for financing the services from public funds.

Furthermore, in line with Art. 12(13): "The minister in charge of health, with a view to achieving the maximum possible health effects within the available public funds, issues an

[44] P. Fajgielski, *Ogólne Rozporządzenie o Ochronie Danych Osobowych. Ustawa o ochronie danych osobowych. Komentarz*, Warsaw 2018, p. 348.

[45] This does not apply to the case in which a medical facility, storing medical records electronically, receives them in another format. In that case, it is possible to make a digital copy and return or destroy the original. Thus I. Kaczorowska-Kossowska, in answer to the question *Czy odwzorowanie cyfrowane własnej dokumentacji medycznej pozwala na wyzbycie się jej papierowych oryginałów?*, Lex QA 1015332.

[46] MacLeod L. *The importance of fundamental economic concepts for nurse leaders: No margin, no mission*, Clinical Nursing Studies, Vol. 2 No. 2 (2014).

[47] Folland, S., Goodman, A. C., Stano, M., Suchecka, J., Korona, M., & Siciarek, M. *Ekonomia zdrowia i opieki zdrowotnej*. Oficyna: Wolters Kluwer 2011..

[48] Musgrove, P. *What is the minimum a doctor should know about health economics?* Revista Brasileira de Saúde Materno Infantil 2001, 1(2), 103-109.

[49] Dz. U. 2017 poz. 1844.

administrative decision on covering reimbursement and determining the official sale price, taking into account (...) the cost threshold of an additional year of life adjusted for quality[50], set at three times the Gross Domestic Product per capita, (...) and if it is impossible to determine this cost – the cost of obtaining an additional year of life" – since 31.10.2018, the above threshold is set at PLN 139 953[51]. In other words, when the results of the economic analysis indicate that the cost of obtaining 1 QALY is higher than the determined threshold, there is a risk that if it is reimbursed, the limited resources available within the system will not be used in a way which maximises benefits.

It would therefore seem that understanding the basic economic principles governing the healthcare market can help to understand the the functioning of the healthcare system as a whole. Policymakers also seem to realise the necessity of physicians being acquainted with the main concepts within health economics. In accordance with the Regulation of the Minister of Health of 2 January 2013 on the specialisation of physicians and dentists[52] (§13), repealed on 1 January 2019, and the draft Regulation of 9 January 2019 on the specialisation of physicians and dentists (§13)[53], "the forms of specialised theoretical and practical training and the modalities for its provision as set out in the specialisation programme shall include in particular:

1. An introductory course for a given specialised training, covering in particular (...) the fundamentals of pharmacoeconomics, (…)
2. A unified course for all specialisations, except for specialised training in public health, a specialisation course in public health – completed examinations, covering in particular (...) the organisation and economics of health (...)".

Additionally, the individual specialisation programmes further clarify the scope of concepts with which physicians should be familiarised. These are: "basic concepts of health economics: demand and supply of health services; differences between the health services market from other goods and services, asymmetry of information and empowerment, concepts of health needs, social equality and justice and effectiveness as a criterion for optimal allocation of resources, direct and indirect costs of disease, costs of therapy and consequences of disease; (...) assessment of medical technology as a tool for decision-making on the allocation of public resources for healthcare;"[54].

Knowledge of economics is not necessary for physicians to perform their duties, but understanding the fundamental economic problem of limited resources on one hand, and unlimited needs on the other (including health-related ones), can help to understand the functioning of the system as a whole. Health economics is used to plan the use of the limited resources available within the system, so as to maximise the benefits they bring and as indicated above, can directly affect the manner in which physicians work.

The medical profession and moral qualifications

[50] QALY – Quality Adjusted Life Years

[51] Communication from the President of the Agency for Health Technology Assessment and Tarification on the cost threshold for an additional year of life adjusted for quality, effective from 31 October 2018, http://www.aotm.gov.pl/www/wp-content/uploads/Wysokosc-progu-kosztu-uzyskania-dodatkowego-roku-zycia_komunikat.pdf [accessed 23.02.2019]

[52] Dz. U. 2013 poz. 26

[53] Draft regulation of 9 January 2019 on the specialisation of physicians and dentists, issued for public consultation on 10.01.2019, [accessed 23.02.2019] https://legislacja.rcl.gov.pl/docs//516/12319855/12562133/12562134/dokument376092.pdf

[54] Using the example of the specialisation programme in allergology (basic and specialist modules) for physicians without a relevant I or II degree specialisation or a title of specialist in the relevant medical field or with the relevant basic module completed and passed https://www.cmkp.edu.pl/wp-content/uploads/akredytacja2018/0731-program-1.pdf [accessed 23.02.2019]

In line with Art. 1 of Polish Code of Medical Ethics (Kodeks Etyki Lekarskiej, KEL) the principles of medical ethics derive from general ethical norms[55] and oblige the physician to respect human rights and the dignity of the medical profession[56]. These provisions assume the need for physicians to have appropriate moral qualifications, i.e. criteria, which they will use when making a moral assessment of a given behaviour. It is postulated that they should be as developed as possible, since the medical profession is in many ways an unique one. Physicians deal not only with the highest of values, life, but also represent the entire profession. The scope of the ethical influence of physicians is therefore not limited to themselves, but extends to patients and other physicians.

The 1989 version of the KEL contains a provision stating that the physician bears professional liability for acts contrary to ethical principles[57]. According to Prof. Stanisław Z. Leszczyński, this provision could be interpreted as limiting the physician's ethos to the professional domain, which does not extend to private life[58]. This position was discussed by the members of the Council of the Supreme Screener for Professional Liability (NROZ) and universally regarded as incorrect[59.]

There is no doubt today that a physician must follow ethical norms in private life as well. This results from the acknowledgement that a physician should be a model for society, an authority, as well as someone who arouses sympathy and people are able to trust. This also participates in the effectiveness of therapy – it would be hard to expect that patients would always want to take part in a therapeutic process with someone they view as immoral.

As already noted, the specificity of the medical profession also means representing the entire profession. This signifies that the actions of a single physician can affect the reputation of the whole milieu – by violating ethical norms, public opinion can perceive it as indicative of not just that individual, but the whole *medical profession*. This is evident in situations where public opinion criticises physicians based on an incident implicating a single representative of the profession.

This is partially due to the media, which creates a one-sided image of the physician. The consequence of this is a crisis of trust in physicians as authority figures. Within the context of such a crisis, physicians must respect ethical norms even more.

Proper moral qualifications imply one further benefit – they encourage empathy – a fundamental value within the medical profession. If physicians were to treat ethical principles selectively, without feeling an internal motivation to observe them, they would not be able to empathise sufficiently with the situation of the patient, according to some ethical theories This is due to the fact that within a pro-social morality, the paramount value is seen to be the well-being of another human being. Here, the link between morality and empathy is based on sensitivity, the ability to recognise this well-being, and therefore on empathetic feeling[60]. [61]

As an aside, it is worth mentioning the the professional dignity of the physician. In one philosophical tradition, initiated by Aristotle, dignity is understood as the conscious choice of certain values and virtues, as well as the ability to defend them[62]. In the modern era, this concept was developed by Thomas Hobbes (1588-1679) who linked the concept of dignity

[55] Art. 1(1) Kodeks Etyki Lekarskiej.
[56] Art. 1(2) Kodeks Etyki Lekarskiej.
[57] Ustawa z dnia 17 maja 1989 r. o izbach lekarskich (Dz.U. Nr 30, poz. 158 ze. zm.), art 41.
[58] Stanisław Z. Leszczyński, *Osobowość lekarza a etyka (2) - Kształtowanie osobowości lekarza,* [w:] Gazeta Lekarska, nr 1, 2005. http://www.oil.org.pl/xml/nil/gazeta/numery/n2005/n200501/n20050122, [accessed: 16.02.2019].
[59] Ibid.,
[60] Ibid. p. 12.
[61] Krzysztof Kiciński, *Moralność i różne oblicza empatii,* in: *Empatia, moralność a życie społeczne,* ed. Wojciech Pawlik, Wydawnictwa Uniwersytetu Warszawskiego, Warszawa, 2016. p. 12.
[62] Joanna Dudek, *Etyka zawodu w myśli prakseologicznej,* in: "*Problemy Profesjologii*", No. 1, 2008. p. 38

with that of worthiness[63].According to Hobbes, a person worthy of a particular role or profession must have not only the competence to practise that profession, but also moral aptitude[64]. It is significant that despite five hundred years having passed, this concept still remains valid.

The medical profession and the necessity of understanding the principles of public health

In line with Art. 4 of the Act on the Professions of Physician and Dentist, physicians have the duty to practise their profession in accordance with the indications of current medical knowledge, available methods and means of preventing, recognising and treating disease. Physicians also have the duty of practising their profession in line with ethical principles and with the required diligence.

The necessity of understanding the principles of public health, and implicitly their implementation within everyday professional life, can be seen both as the physician acting in accordance with current medical knowledge, but should also be – due to the nature of the concept of public health itself – perceived perhaps more as due diligence and consideration in the exercise of the profession.

Let as examine this issue through the definition of public health.

One of the classical definitions from the early twentieth century concentrates on issues of collective social prevention of disease, extending life and the promotion of physical and mental health, including hygiene and the proper organisation of healthcare. [65]

More modern definitions of public health place added emphasis on the scientific aspect and complexity of actions which contribute to the process of preserving and strengthening the health of the population in macro-social and local contexts. They also focus on developing healthy lifestyle habits, implementing health-promoting programmes, preventing diseases of social significance, controlling environmental factors and creating healthy socio-economic conditions[66].

In our opinion, the basic functions of public health, as defined by the WHO in the 1990s, are particularly significant to the issue noted in the title. They were formulated as a set of tools, resources and methods which target the community and the environment. Although the WHO experts did not entirely exclude the role of individual services, provided by specific physicians to heal and protect individuals or groups at risk, they did emphasise that individual healthcare is not part of the fundamental functions of public health[67].

It would seem that it is precisely because the WHO formulated these functions of public health, in this specific manner, that the issue of the necessity of understanding the principles of public health has come to be formulated this way. Understanding these principles would seem to be part of the minimum of required knowledge, skills and competences of physicians and should accompany them throughout their careers. But knowledge simply of the principles or scope of public health is insufficient in itself, it should also include its functions and above all goals, which would seem to derive directly from the Hippocratic oath. This is all the more true since, while the scope of public health evolves alongside social and technological changes, its objectives remain the same and although formulated in different ways, in general terms boil down to reducing premature deaths and limiting the spread of disease and suffering due to ill-health.

For obvious reasons, the principles, characteristics and functions of public health should not only accompany physicians in the exercise of their profession, but within specific medical

[63] Ibid. p. 38.
[64] Ibid. p. 38.
[65] C-E. A. Winslow *The united fields of public health*. *Science*, 1920, vol. 51 (1306); 23-33.
[66] M. Miller and M. J. Wysocki, IZP PZH in Warsaw, 2003.
[67] Opolski J. *Zdrowie publiczne wybrane zagadnienia*. Vol. I, CMPK, Warsaw 2011, p. 22.

domains – e.g. paediatrics, internal medicine, cardiology or oncology – it should also determine, to a greater or lesser degree, the way physicians act professionally and how they build relationships with their patients. An even more far-reaching conclusion can be applied to family physicians who provide primary care for their patients.

This conclusion is based on an analysis of the provisions of the Act of 27 October 2017 on Basic Healthcare (Dz.U. z 2017 r. poz. 2217). In the sense of Art. 3 of the act, some of the goals of basic healthcare are: defining needs and priorities for health and implementing prophylactic measures, but also recognising, limiting or eliminating problems and risks for physical and psychological health or promoting health in a manner adapted to the needs of various social groups. Educating patients on their responsibility for their own health and measures to raise health awareness are also an important element.

The convergence of these objectives with established public health goals seems to be indisputable, even if on the basis of the cited act, it lacks the scientific nature of research tools. Due to the fact that, according to the provisions of the act, family physicians both provide and coordinate primary care, it would seem that it is this group which additionally bears not merely a professional obligation, but also a statutory one to know the principles, scope, functions and objectives of public health and the practical tools for their effective implementation in the daily performance of professional duties. This obviously concerns only the segment of the population treated by family physicians, and not regional or national levels.

Family physicians must therefore at least have the ability to identify important factors which can shape the health of their patients and to analyse them, which should assist them in reaching conclusions about the objectives, directions and priorities for improving the health of the populations they are treating. All practising physicians, and family ones in particular, should also be particularly aware of the fact that they work in specific social, economic and epidemiological environments, and so need to perform their professional duties with a thorough knowledge of the needs of their patients, their health problems and the environmental conditions in which they have to live.

Among the many domains of medicine, public health is undoubtedly the one most characterised by multidisciplinarity. Health, and public health in particular, touches upon aspects of biology, psychology, sociology, economics as well as social, demographic and political issues. The concept of “health conditions” – inextricably related to public health – and which in many European countries includes elements such as: food and nutrition, education, working conditions, the labour market, transport, communication, housing, leisure and civil liberties, but also ecology, the ecosystem and the use of natural resources, is also starting to be understood more widely[68].

A full understanding of the principles behind public health therefore requires physicians to also know the interdependencies and common aspects of modern medical knowledge, viewed very broadly.

CONCLUSION

The interdisciplinarity and multidisciplinarity of the medical profession are unavoidable processes. In fact, they are inscribed within the global tendency of civilisational development. Today’s scientific progress, in particular within the medical sciences, takes place so rapidly that interdisciplinary specialisation becomes something close to a necessity. Practically all the domains of medical knowledge are so vast that they surpass the the capacities of any one person. The times of Leibniz – the last man to master nearly all the knowledge of his time – have passed and shall never return. Interdisciplinarity has become a fact of life.

[68] Miller M., Zieliński A. *Zdrowie publiczne – misja i nauka*, Przegląd Epidemiologiczny, 2002; No. 4 p. 556.

For similar reasons relating to scientific progress, the multidisciplinarity of the modern physician becomes equally necessary. It is simply not possible to exercise any profession today without knowing its correlation with the external environment.

The debate on increasing interdisciplinarity and multidisciplinarity, and whether to view it as a threat or opportunity for physicians, draws attention to the deficiencies in the education of physicians in terms of the challenges resulting from both. Medical students learn nothing of the challenges relating to law, financing, management or administration.

Meanwhile, these future physicians will be confronted with these challenges from their first day of work. Furthermore, their career advancement will usually be result in the need to relinquish some medical duties, in a proportion equal to that of new oversight ones, mainly equating to office work. From this point of view, a huge threat to the medical profession is the mandatory standardised reporting of increasingly detailed activities.

Additionally, even within the context of specialised training, medical studies focus exclusively on a single meaning for the medical profession. They teach the functioning of the body and the chemical reactions underlying it, losing sight of the person. These studies should at least be supplemented with knowledge of the humanities.

The current way of training physicians therefore does not allow to fully utilise the advantages offered by interdisciplinarity and multidisciplinarity, nor does it provide the possibility of counteracting the resulting threats.

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