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Legal Aspects of e-Health and the Reality of the Polish Society[1]**

1. PRELIMINARY REMARKS

Current technical, technological and civilization progress is starting to determine legal solutions and social behavior. In recent times, one can observe the dynamic development of new technologies in many areas of modern life. Therefore, it can be said that the current technological progress in a lasting way changes the majority of traditional solutions to modern alternatives, which are supposed to simplify people's lives. The above clearly shows, that there are no things, which can be attributed to the durability or innovation. When defining something as new or old, always, consciously or not, we refer to certain permanent foundations. In this case, the key point of reference is usually time. These remarks refer to majority of social relations occurring in contemporary countries and being an inseparable element of today's life. Medicine could be used as an example. In its traditional form it was a measure of civilizational progress, while, today we witness the implementation of its avant-garde telemedicine/e-health form. Another example are legal contracts. Their traditional forms and ways of concluding begin to cooperate with pioneer possibilities in the form of smart contracts, which, at the level of ideas, are legal relations that can independently function in the digital space without reference to the real world[2]. The last proof of this state of affairs is the general and increasingly common application of artificial intelligence in various areas of

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1 One of purposes of this paper is to substantive update of some data contained: B. Oręziak, *Telemedycyna a konstytucyjne prawo do opieki zdrowotnej w kontekście wykluczenia cyfrowego*, Zeszyty Prawnicze 1(20180, 117–141 (in particular: 6. The demand for e-health in Poland and 7. Digital exclusion in Poland).

2 P. Venegas, *Guide to smart contracts. Blockchain examples*, Cambridge, 2017, 5–7; N. Atzei, M. Bartoletti, T. Cimoli, *A Survey of Attacks on Ethereum Smart Contracts* [in:] J. Garcia-Alfaro, G. Navarro-Arribas, H. Hartenstein, J. Hierrera-Joancomarti (eds.), *Data Privacy Management, Cryptocurrensies and Blockchain Technology*, Oslo, 2017, 164–186; C. Schultz, M. Bhatt, *A Numerical Optimisation Based Characterisation of Spatial Reasoning* [in:] J. Alferes, L. Bertossi, G. Governatori, P. Fodor, D. Roman (eds.), *Rule Technologies. Research, Tools and Applications*, New York, 2016, 199–208; B. Kelly, *The bitcoin big bang. How alternative currencies are about to change the world*, New Jersey, 2015, 149–163; Ch. Dennen, *Introducing ethereum and solidity*, New York, 2017, 89–111; I. Bashir, *Mastering Blockchain. Distributed ledgers, decentralization and smart contracts explained*, Birmingham, 2017, 21–23 and 43–44.

human life, in particular under different legal systems. This last statement refers to the discussion on granting legal personality to it[3], and thus making artificial intelligence a legal entity[4].

2. CONCEPT OF E-HEALTH

It should be noted that concepts such as 'digital medicine'[5], 'e-Health'[6], 'm-Health'[7], 'telecare'[8] although they accentuate another aspect of the technologies used in health care systems, basically they have a similar meaning as concept of 'telemedicine'[9]. They are all synonymous with the implementation of modern technologies for practical use in medicine. Therefore, all the above concepts will be treated as synonyms in this paper. It's important to note that no act of Polish or international law provides for the legal definition of e-health. For this reason, we must look for the meaning of this concept elsewhere.

The literature indicates that e-health is 'Telemedicine is one way of practicing medicine which may provide opportunities and increase possibilities to effectively use available human and material resources'[10]. Another definition says, that telemedicine is 'the transfer of medical information from one remote place to another, that uses electronic communication to prevent disease, maintain health, ensure and monitor patient health care, educate patients and health care providers, and support healthcare workers from other disciplines. This is a remote medical diagnosis, consultation and treatment that can be used synchronously (in real time) or asynchronously'[11]. Other representatives of the doctrine believe that telemedicine is simply medicine at a distance[12] or medicine at a distance with the use of information and communication technologies data[13]. In this way, the literature understands and describes the concept under examination. It is worth noting that

[3] A. Silverman, *Mind, Machine, and Metaphor. An Essay on Artificial Intelligence and Legal Reasoning. Boulder*, Colorado, 1993, 1; K. Bowrey, *Ethical Boundaries and Internet Cultures* [in:] L. Bently, S. Maniatis (eds.), *Intellectual Property and Ethics*, London, 1998, 36; D. Partridge, *A New Guide to Artificial Intelligence*, New Jersey, 1991, 1.

[4] Zob. A. Wolter, J. Ignatowicz, K. Stefaniuk, *Prawo cywilne. Zarys części ogólnej*, Warszawa, 2000, 157; S. Grzybowski, *System prawa cywilnego*, Warszawa, 1985, 284; M. Pazdan, *Podmioty stosunków cywilnoprawnych – zagadnienia ogólne* [in:] M. Safjan (ed.), *Prawo cywilne – cześć ogólna. System Prawa Prywatnego*, Warszawa, 2007, 914–916.

[5] E. Elenko, L. Underwood, D. Zohar, *Defining digital medicine*, Nature biotechnology 5(2015), 456.

[6] F. Mair, C. May, C. O'Donnell, T. Finch, F. Sullivan, E. Murray, *Factors that promote or inhibit the implementation of e-health systems: an explanatory systematic review*, Bulletin of the World Health Organization 90(2012), 357–364.

[7] R. Istepanian, E. Jovanov, Y. Zhang, *Guest editorial introduction to the special section on m-health: Beyond seamless mobility and global wireless health-care connectivity*, IEEE Transactions on information technology in biomedicine 4(2004), 405–414.

[8] J. Barlow, D. Singh, S. Bayer, R. Curry, *A systematic review of the benefits of home telecare for frail elderly people and those with long-term conditions*, Journal of telemedicine and telecare 4(2007), 172–179.

[9] P. Hu, P. Chau, O. Sheng, K. Tam, *Examining the technology acceptance model using physician acceptance of telemedicine technology*, Journal of management information systems 2(1999), 91–112.

[10] M. Äärimaa, *Telemedicine Contribution of ICT to Health* [in:] I. Lakovidis, P. Wilson, J.C. Healy (eds.), *E-Health Current Situation and Examples of Implemented and Beneficial E-Health Aplications*, Amsterdam–Berlin–Oxford–Tokyo–Washington, DC 2004, 112.

[11] J. Martyniak, *Podstawy informatyki z elementami telemedycyny*, Kraków, 2009, 180.

[12] M. Sosa-Iudicissa, R. Wotton, O. Ferrer-Roca, *History of Telemedicine* [in:] O. Ferrer-Roca, M. Sosa-Iudicissa (eds.), *Handbook of Telemedicine*, Amsterdam–Berlin–Oxford–Tokyo–Washington, DC 1998, 1.

[13] M. Maheu, P. Whitten, A. Allen, *E-Health, Telehealth, and Telemedicine: A Guide to Startup and Success*, San Francisco, 2001, 2–4.

the attention of international and non-governmental organizations also focuses on this concept. Therefore, the American Telemedicine Association suggests that 'Telemedicine is the remote delivery of health care services and clinical information using telecommunications technology. This includes a wide array of clinical services using internet, wireless, satellite and telephone media'[14]. While, World Health Organization states that 'Telemedicine is the practice of medical care using interactive audiovisual and data communications. This includes the delivery of medical care, diagnosis, consultation, and treatment, as well as health education and transfer of medical data'[15]. These definitions do not differ far from those suggested by the literature of medical law.

The citation of the above definitions was necessary to show that due to the lack of legal definition of telemedicine, there are various definitions and differences in them taking place. However, the purpose was also to show what always remains in common. That common denominator is the transfer of medical data using information and communication technologies to improve the patient's health. This is the point of telemedicine as well. Thus, at least three basic construction elements of the concept of telemedicine are visible: the transfer of medical data, the use of Information and Communication Technology networks and the improvement of the patient's health. Without any of them one cannot talk about telemedicine in its proper meaning. However, it is not true that each of these elements is equally important. The above specification shows the necessary condition for participation in telemedicine services. The condition is access to Information and Communication Technology networks and this element has a primary character in relation to the others. In addition, the legislature should be required to create a clear, unconditional and precise definition of telemedicine, which would take into account the semantic proposals presented above. This can be both an international and a national legislature.

3. THE POTENTIAL OF E-HEALTH

It seems unavoidable to use new technologies as a part of the state health care system. This is confirmed by the European Commission document 'GREEN PAPER on mobile health', which states, 'that the healthcare systems in Europe are facing new challenges such as the ageing of the population and increased budgetary pressure. In this context, e-health could be one of the tools to tackle these challenges by contributing to a more patient-focused healthcare and supporting the shift towards prevention while at the same time improving the efficiency of the system'[16]. On one hand, this shows the enormous potential of an innovative approach to health protection, on the other, the need to consider it in the light of current demographic changes of contemporary societies. Additionally, in accordance with the referenced document: 'E-health solutions can help detect the development of chronic conditions at an early

[14] www.americantelemed.org/main/about/about-telemedicine/telemedicine-faqs (accessed on 4 February 2019).
[15] K. Lops, *Cross-border telemedicine. Opportunities and barriers from an economical and legal perspective*, Rotterdam, 2008, 7.
[16] GREEN PAPER on mobile Health ('mHealth'), https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A52014DC0219 (accessed on 4 February 2019).

stage through self-assessment tools and remote diagnosis while sharing data with care providers would facilitate timely intervention […] E-health could contribute to a more efficient way of delivering care through better planning, reducing unnecessary consultations and better prepared professionals receiving guidance on treatment and medication […] E-health solutions support the changing role of patients from a rather passive, to a more participative role while enhancing their responsibility over their own health through sensors that detect and report vital signs, and mobile apps that encourage them to adhere to diet and medication. It can also raise citizens' awareness of health issues through easy-to-understand information about their health condition and how to live with it, thus helping them take more informed decisions on their health'[17]. This clearly shows that e-health ideas affect not only the legal solutions, but also human behavior and feelings. Thus, e-health is a challenge for both lawyers and sociologists. In addition, The American Telemedicine Association indicates the main benefits of using modern technologies in medicine:

a. creates value for payers, patients and providers,
b. increased patient access,
c. enhanced reach of healthcare services,
d. reduced cost structure,
e. 24/7 coverage,
f. higher customer satisfaction,
g. reduced cost structure[18].

4. BARRIERS TO DEPLOYMENT OF E-HEALTH

Nevertheless, when implementing modern technologies, some problems may arise for practical applications, which seems to be a natural result of changing the existing solutions. The following problems to deployment of e-health are indicated[19]:

a. lack of awareness of and confidence in e-health solutions among patients, citizens and healthcare professionals,
b. lack of interoperability between e-health solutions,
c. limited large-scale evidence of the cost-effectiveness of e-health tools and services,
d. lack of legal clarity for health and wellbeing mobile applications and the lack of transparency regarding the utilization of data collected by such applications,
e. inadequate or fragmented legal frameworks including the lack of reimbursement schemes for e-health services,
f. high start-up costs involved in setting up the e-health systems,
g. regional differences in accessing information and communication technologies services, limited access in deprived areas.

[17] GREEN PAPER…
[18] http://www.americantelemed.org/about/about-telemedicine (accessed on 4 February 2019).
[19] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions eHealth Action Plan 2012–2020 – Innovative healthcare for the 21st century, https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52012DC0736&from=PL (accessed on 4 February 2019).

This paper will be about the last barrier and its occurrence in Polish society in the context of the right to health. It seems to be a key legal problem, arising at the beginning of the debate on the possibility of deployment of telemedicine into the national order.

5. RIGHT TO HEALTH IN POLAND

The basic social conviction regarding the state health care system is universal access to a doctor – a living person[20]. Therefore, it should be emphasized that telemedicine does not aim to dehumanize the health care system, but to support the work of doctors by improving its performance, quality and speed. After all, one of the purposes of telemedicine is to increase the accessibility of health care services. The right to health care protects one of the basic goods of every human being, which is why every person has a very subjective approach to health problems. This subjective approach consists of own ideas about the state called 'health', expectations about the possibility of using health services, own ideas about health protection. However, these numerous ideas and expectations collide with realities and functioning of health care systems. For this reason, discussions on the scope of future changes in this field are extremely important.

The right to health is widely recognized. It includes personal right, that is the right to health protection[21]. On the other hand, the right to healthcare services is a noticeable right, which is a social right. This difference is important because everybody is a beneficiary of a personal law, regardless of any concretization. Whereas the beneficiary of social law is already a person with individualized characteristics (e.g. a citizen of a given country). When it comes to personal right, it should be understood as right that protects the most important goods of every human being, which are immanently connected with human nature and which deserve protection only on the basis of the fact of being human (e.g. the right to life or the right to privacy)[22]. While, social rights are understood as those which indicate what actions should be taken by public authorities for the benefit of the individual, in order to provide material basis for existence in the light of the economic situation of a specific state[23].

The most important legal norm regarding the right to health care is Article 68 of the Constitution of the Republic of Poland. According to the latter provision: '1. Everyone shall have the right to have his health protected. 2. Equal access to health care services, financed from public funds, shall be ensured by public authorities to citizens, irrespective of their material situation. The conditions for, and scope of, the provision of services shall be established by statute'[24]. The first of

[20] W. Piątkowski, L. Nowakowska, *System medyczny w Polsce wobec wyzwań XXI w. Perspektywa krytycznej socjologii zdrowia i choroby*, Przegląd Socjologiczny 2(2012), 23.
[21] T. Jasudowicz, *Prawo do zdrowia* [in:] B. Gronowska, T. Jasudowicz, M. Balcerzak, M. Lubiszewski, R. Mizerski (eds.), *Prawa człowieka i ich ochrona*, Toruń, 2010, 491.
[22] P. Sarnecki, *Komentarz do wolności i praw osobistych* [in:] L. Garlicki (ed.), *Konstytucja Rzeczypospolitej Polskiej. Komentarz*, Warszawa, 2002, 1.
[23] B. Banaszak, *Ogólne wiadomości o prawach człowieka* [in:] B. Banaszak, A. Preisner (eds.), *Prawa i wolności obywatelskie w Konstytucji RP*, Warszawa, 2002, 27; B. Zawadzka, *Prawa ekonomiczne, socjalne i kulturalne*, Warszawa, 1996, 9.
[24] The Constitution of the Republic of Poland of 2 April 1997 (Polish journal of laws Dz.U. No. 78, item 483, as amended; Dz.U. 2001, No. 28, item 319; Dz.U. 2006, No. 200, item 1471; Dz.U. 2009, No. 114, item 946).

them includes the right of everyone to protect their health, and the second the right of citizens to health care services financed from public funds. Thus, the provision of Article 68(1) is a personal right[25] and the provision of Article 68(2) is a social right[26]. Paragraph 2 of Article 68 contains a reference to an ordinary legislation, which determines the scope and conditions of the right to health care. For this reason, the right to health care, as a social right, cannot constitute a direct basis for citizens' claims while the right to health protection guaranteed in paragraph 1 of Article 68, as a personal right, may constitute such a basis[27]. In addition, the right to health alone, without ensuring equality in access to health services, will prove to be an empty intention. Although it seems that difficulties in access to treatment by residents of smaller towns are natural, in particular when it comes to specialized medical care, this inequality should be gradually eliminated. In this case, the Polish Constitutional Court recognized, that 'this is not only formal accessibility, declared by the legal provisions of a program nature, but about the actual availability, constituting the implementation of the right to health protection defined in paragraph 1 art. 68 of the Constitution'[28]. Thus, equalizing opportunities in accessing health services is a particularly important responsibility of public authorities. The use of modern technologies in medicine will result in the equalization of such access. Telemedicine gives you the chance to overcome natural barriers (e.g. lack of staff in healthcare).

This is a purely domestic look, because on the other hand, Poland is obliged to respect the binding upon international law – according to Article 9 of the Constitution of the Republic of Poland. The most important international agreements in this field are: 1) International Covenant on Economic Social and Cultural Rights; 2) Universal Declaration of Human Rights; 3) Charter of Fundamental Rights of the European Union; 4) European Social Charter.

Interestingly, Article 38 of the Charter of Fundamental Rights provides everyone the right of access to preventive health care and to benefit from medical treatment under the conditions established by national laws and practices. Therefore, the European Union guarantees a high level of protection for human health. This provision not only states that the European Union recognizes and respects the right to health care and treatment, but directly guarantees the right to access such services[29]. However, its content introduces a significant limitation by referring to the conditions established in national legislations and practices. So, the European Union "as an addressee of the norm is only obliged to ensure the implementation of claims arising in accordance with the national orders of states, not to define their type and scope"[30]. It is for this reason that the constitutional right to health

[25] K. Ryś, *Konstytucyjne prawo do ochrony zdrowia i prawo do szczególnej opieki zdrowotnej*, https://repozytorium.amu.edu.pl/bitstream/10593/19342/1/Rys_artykul_ZNPK.pdf (accessed on 15 October 2018).
[26] M. Piechota, *Równość a konstytucyjne prawo do ochrony zdrowia. Uwagi dotyczące obywateli Unii Europejskiej* [in:] M. Zubik, A. Paprocka, R. Puchta (eds.), *Konstytucja w dobie europejskich wyzwań*, Warszawa, 2010, 137–142.
[27] M. Piechota, *Konstytucyjne prawo do ochrony zdrowia jako prawo socjalne i prawo podstawowe*, Roczniki Administracji i Prawa 12(2012), 93–104.
[28] Polish Constitutional Court's judgment of 7 January 2004, K 14/03, http://prawo.sejm.gov.pl/isap.nsf/download.xsp/WDU20040050037/T/D20040037TK.pdf (accessed on 5 February 2019).
[29] A. Nußberger, *Artikel 35 GRCh Gesundheitsschutz* [in:] P.J. Tettinger, K. Stern (eds.), *Kölner Gemeinschaftskommentar zur Europäischen Grundrechte-Charta*, München, 2006, 586–594.
[30] *Ibid*.

Table
The basic legal norms of health care in Poland

	Health care legal norm
The Constitution of the Republic of Poland	Article 68: 1. Everyone shall have the right to have his health protected. 2. Equal access to health care services, financed from public funds, shall be ensured by public authorities to citizens, irrespective of their material situation. The conditions for, and scope of, the provision of services shall be established by statute. 3. Public authorities shall ensure special health care to children, pregnant women, handicapped people and persons of advanced age. 4. Public authorities shall combat epidemic illnesses and prevent the negative health consequences of degradation of the environment. 5. Public authorities shall support the development of physical culture, particularly amongst children and young persons.
Universal Declaration of Human Rights[1]	Article 25: 1. Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control. 2. Motherhood and childhood are entitled to special care and assistance. All children, whether born in or out of wedlock, shall enjoy the same social protection.
International Covenant on Economic, Social and Cultural Rights[2]	Article 12: 1. The States Parties to the present Covenant recognize the right of everyone to the enjoyment of the highest attainable standard of physical and mental health, 2. The steps to be taken by the States Parties to the present Covenant to achieve the full realization of this right shall include those necessary for: a) The provision for the reduction of the stillbirth-rate and of infant mortality and for the healthy development of the child; b) The improvement of all aspects of environmental and industrial hygiene; c) The prevention, treatment and control of epidemic, endemic, occupational and other diseases; d) The creation of conditions which would assure to all medical service and medical attention in the event of sickness.
Charter of Fundamental Rights of the European Union[3]	Article 35: Everyone has the right of access to preventive health care and the right to benefit from medical treatment under the conditions established by national laws and practices. A high level of human health protection shall be ensured in the definition and implementation of all the Union's policies and activities.
European Social Charter[4]	Article 12: With a view to ensuring the effective exercise of the right to protection of health, the Parties undertake, either directly or in cooperation with public or private organisations, to take appropriate measures designed inter alia: 1. to remove as far as possible the causes of ill-health; 2. to provide advisory and educational facilities for the promotion of health and the encouragement of individual responsibility in matters of health; 3. to prevent as far as possible epidemic, endemic and other diseases, as well as accidents.

[1] Universal Declaration of Human Rights, http://www.un.org/en/udhrbook/pdf/udhr_booklet_en_web.pdf (accessed on 5 February 2019).
[2] International Covenant on Economic, Social and Cultural Rights (Dz.U. 1977, No. 38, item 169).
[3] Charter of Fundamental Rights of the European Union (OJ C 326, 26 October 2012, p. 391–407).
[4] European Social Charter (Dz.U. 1999, No. 8, item 67).

Source: Author's own study.

care provided for in Article 68 of the Constitution of the Republic of Poland is extremely important, because, generally, international law is not a direct condition for its realization – it is an indirect basis for citizens' claims, because it must be implemented into national law[31].

6. THE DEMAND FOR E-HEALTH IN POLAND

It should be remembered that, as a rule, the largest group of people who benefit from health services are citizens over the age of 65 and they must be regarded as the most interested in the technological novelties proposed in e-health. For this reason, presenting the demographic forecast of Polish society will allow to effectively determine the demand for health services or, in the future, telemedicine services. The most important will be to characterize the aging process of Polish society, which will definitively determine the planned demand for the services in question.

The aging of the population is a global and irreversible process, strongly diversified regionally[32]. Among European countries, at this moment, Poland is a demographically 'young' country, but the aging process of the Polish population has been observed for years. In 2013, the median age of Poles was 37.4 years for men and 40.9 for women, while in 1990 it was lower by 6.5 years for men and 7.2 years for women[33]. The situation is expected to change drastically in 2050[34]:

a) Population projection for Poland: around 34 million;
b) Projected changes in polish population size 2013–2050: -10%;
c) Median age of Polish population: 49,5;
d) Polish population aged 65 and more: 30,2%;
e) Polish population aged 80 and more: 9,6%.

This means that in Poland in 2050 there will be 2 people in the age lower than 65 years for one person in the age of 65 years or older. While today, proportion is 6:1[35]. Such dramatic forecasts clearly show that the traditional healthcare system is likely to become inefficient. In particular, if it is noticed that today there are 134 865 active doctors in Poland[36] – there are 2,29 doctors per 1000 people[37]. Therefore, an increasing burden for doctors should be expected – currently from 1,000 people only 140 are over the age of 65, while in 2050 from 1,000 people as many as 333 will be over the age of 65. However, the most dramatic data was created by the United Nations in the context of 2100[38]:

[31] M. Shaw, *Prawo międzynarodowe*, Warszawa, 2011, 107–143.
[32] A. Abramowska-Kmon, *O nowych miarach zaawansowania procesu starzenia się ludności*, Studia Demograficzne 1(2011), 3–22.
[33] GUS: Population Projection (http://stat.gov.pl/obszary-tematyczne/ludnosc/prognoza-ludnosci/prognoza-ludnosci-na-lata-2014–2050-opracowana-2014-r-,1,5.html – accessed on 12 February 2019).
[34] Eurostat EUROPOP 2013 demographic projections (http://epp.eurostat.ec.europa.eu/portal/page/portal/population/data/database – accessed on 12 February 2019).
[35] GUS: Population Projection (http://stat.gov.pl/obszary-tematyczne/ludnosc/prognoza-ludnosci/prognoza-ludnosci-na-lata-2014–2050-opracowana-2014-r-,1,5.html – accessed on 12 February 2019).
[36] NIL: Zestawienie liczbowe lekarzy i lekarzy dentystów wg przynależności do okręgowej izby lekarskiej i tytułu zawodowego z uwzględnieniem podziału na lekarzy wykonujących i nie wykonujących zawodu (https://www.nil.org.pl/__data/assets/pdf_file/0007/128527/Zestawieni e-nr-01.pdf – accessed on 12 February 2019).
[37] WHO: Density of physicians (total number per 1000 population, latest available year) (http://www.who.int/gho/health_workforce/physicians_density/en/– accessed on 12 February 2019).
[38] UN: World Population Prospects 2017. https://esa.un.org/unpd/wpp/Graphs/Demo graphic Profiles/– accessed on 12 February 2019).

a) Population projection for Poland: around 22 million;
b) Projected changes in polish population size 2017–2100: -42,1%;
c) Median age of Polish population: around 60;
d) Polish population aged 65 and more: 31,8%;
e) Polish population aged 70 and more: 27,3%.

While data created by the Statistical Office of the European Union[39] in the context of 2050 may leave some field of interpretation that can be used by proponents of traditional solutions, the data of the United Nations[40] clearly determine that the traditional health care system will not endure the test of the coming times. If modern countries – including Poland – do not introduce new solutions in the field of state health care system, then a disaster awaits us. One thing is for sure, deployment of telemedicine solutions, as a cheaper, faster, more common and safe method of providing medical services[41], will be necessary as traditional solutions will cease to function properly[42].

7. DIGITAL EXCLUSION IN POLAND

As has already been noticed, some barriers occur in e-health deployment – see: 4. Barriers to deployment of e-health. This study approximates a specific problem regarding the relationship between telemedicine and the right to health care in the context of the phenomenon of the so-called digital exclusion. For this reason, its further part will be devoted exclusively to the information barrier, i.e. the lack of public access to information and communication technologies networks.

Digital exclusion, sometimes also called a digital divide, consists in determining the difference between those people or societies that have access to information and communication technologies – ICT, and those that do not have such access[43]. Thus, digitally excluded people are all who can be said to be beyond the reach of ICT[44]. This phenomenon is relevant from the point of view of telemedicine solutions, which one of the main purposes is to equalize opportunities in access to health care services[45] (EFTA 2010). In 2017 Poland had Internet access in households (in% of total households) amounted to 81.9%, with 77.6% being broadband Internet

[39] Eurostat EUROPOP 2013 demographic projections (http://epp.eurostat.ec.europa.eu/portal/page/portal/population/data/database – accessed on 12 February 2019).
[40] UN: World Population Prospects 2017 (https://esa.un.org/unpd/wpp/Graphs/Demo graphic Profiles/– accessed on 12 February 2019).
[41] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on telemedicine for the benefit of patients, healthcare systems and society (https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52008DC0689&from=PL – accessed on 12 February 2019).
[42] E. Kwiatkowska, *Internet rzeczy. Czy będą nas leczyć komputery?*, internetowy Kwartalnik Antymonopolowy i Regulacyjny 5(2016), 19–32.
[43] K. Wilson, J. Wallin, Ch. Reiser, *Social Stratification and the Digital Divide*, Social Science Computer Review 21(2003), 133–143.
[44] L. Porębski, *Wykluczenie cyfrowe i co dalej? Nowe technologie jako katalizator podziałów społecznych i bodziec dla cywilizacyjnego rozwoju*, Acta Universitatis Lodziensis Folia Sociologica 50(2014), 89–106.
[45] EFTA: EFTA Surveillance Authority Decision No 34/10/COL of 3 February 2010 amending, for the 79th time, the procedural and substantive rules in the field of State aid by introducing a new Chapter on the application of State aid rules in relation to rapid deployment of broadband networks (https://publications.europa.eu/pl/publication-detail/-/publication/5e284cfd-e061–45c9-b695–174bb1d3a6fe/lang uage-en – accessed on 12 February 2019).

access[46]. This is promising, given the growth in Internet access by 5.1% compared to 2015 and by more than 10% compared to 2013[47]. However, the main reason for the lack of access to ICT in households in Poland in 2017 was the lack of the need to use the Internet – 67,6%, which in relation to 2016 decreased by 3%. Other reasons were: lack of skills – 54,2%, too high hardware costs – 26,9%, too high access costs – 18,7%, unwillingness to the Internet – 10,9%, or privacy and security considerations – 3,6%[48].

After analyzing the scale and reasons for the occurrence of the so-called digital exclusion, one should answer the question, what is the main criterion for the appearance of this phenomenon. In other words, what determines the lack of access to the Internet by a specific member of Polish society. The report 'Digital exclusion in Poland' directly shows that such a basic criterion is the age of the person[49] (KS 2015). This situation should not come as a surprise, because the problems of older people regarding assimilation with new technologies seem to be natural and difficult to overcome. It turns out that if we look at Polish society through the prism of age, it can be seen that as many as 97% of people aged 18 to 24 have access to the Internet, while between 55 and 64 years it is only 39%. However, dramatic data concerns people aged 65 and above, because only 15% of them have access to ICT networks, which means that it is this social group that is most affected by the phenomenon of the so-called digital exclusion. This fact is very worrying.

8. FINAL REMARKS

Summing up, it is worth recalling the four issues discussed in this study. Firstly, according to its sense and essence, telemedicine means the transfer of information and communication technologies data in order to improve the patient's health. This indicates that information and communication technologies are a necessary condition for the proper functioning of telemedicine. Secondly, it can be expected that public authorities will be able to ensure effective, universal and equal access to treatment regardless of the financial situation of public health care users. Thirdly, forecast for the demand for health services in Poland carried out on the basis of relevant documents. It clearly indicates that the increasing group of Poles that are 65 years old or older is the most interested in access to the medical services in question. With such a large scale of changes that await Polish society, it is possible, with all responsibility, to speak about the demand for telemedicine services in Poland. Fourthly, the fact that there are some problems with access to information and communication technology network in Poland, in other words, this refers to the phenomenon of so-called digital divide. The conducted analysis shows that the general access to the Internet in Poland

[46] GUS: Społeczeństwo informacyjne w Polsce w 2017 roku (https://stat.gov.pl/files/gfx/portalinformacyjny/pl/defaultaktualnosci/5497/2/7/1/spoleczenstwo_informacyjne_w_polsce_w_2017.pdf – accessed on 12 February 2019).

[47] GUS: Społeczeństwo informacyjne w Polsce w 2016 roku (https://stat.gov.pl/files/gfx/por talinformacyjny/pl/defaultaktualnosci/5497/2/6/1/si__sygnalna_2016.pdf – accessed on 12 February 2019).

[48] GUS: Społeczeństwo informacyjne w Polsce w 2017 roku (https://stat.gov.pl/files/gfx/portalinformacyjny/pl/defaultaktualnosci/5497/2/7/1/spoleczenstwo_informacyjne_w_polsce_w_2017.pdf – accessed on 12 February 2019).

[49] KS: Wykluczenie cyfrowe w Polsce (https://www.senat.gov.pl/gfx/senat/pl/senatoprac owania/133/plik/ot-637_internet.pdf – accessed on 12 February 2019).

is at a satisfactory level, which cannot be said about specific social groups. It turns out that access to information and communication technology networks decreases inversely in relation to age, which unfortunately seems to be a natural effect of the difficulties for older people in adaptation to modern solutions. In particular, it should be remembered that those most interested in accessing health services are at the same time most affected by the phenomenon of the so-called digital divide.

All these four issues should be considered when deployment telemedicine solutions in Poland happens. Nevertheless, during this process, a troublesome problem arises because: 1) Telemedicine, by definition, requires access to information and communication technology networks; 2) The right to health care requires equality in access to health services; 3) People over the age of 65 are the most interested in accessing medical care; 4) People over the age of 65 are most affected by the phenomenon of the so-called digital exclusion. For all these reasons, it seems legitimate to ask how to regulate telemedicine in Poland in the light of the existing phenomenon of the so-called digital exclusion without violating the right to health care and how to create an optimal legal model of telemedicine in Poland.

Taking all arguments into consideration, one can come to the right conclusion that telemedicine is no longer just an option, it has become a necessity. Because the words of Victor Hugo will always remain valid: 'All armies of the world gathered together cannot stop the progress that has just come'[50].

Summary

Bartłomiej Oręziak, *Legal Aspects of e-Health and the Reality of the Polish Society*

This paper discusses issues relating to the possibility of implementing telemedicine solutions within the framework of the Polish healthcare system financed from public funds. Firstly, as part of introductory remarks, an outline of technical, technological and civilizational progress, as well as its correlation with the law and social behaviours is made. Secondly, due to the lack of a legal definition of e-health, the definitions proposed in literature and created by selected international and non-governmental organizations are recalled. In this way the essence of this concept is revealed. Thirdly, based on relevant international documents, the overall potential of e-health is presented. This shows the various benefits that the use of avant-garde solutions within the healthcare system can bring. Fourthly, a catalogue of the possible barriers to the deployment of e-health solutions is presented. From the presentation, it becomes clear that such processes will not run seamlessly. Fifthly, an outline of the right to healthcare is provided on the basis of instruments of national and international law, indicating the most important elements of the right. Sixthly, a forecast of the demand for telemedicine services in Poland is presented. Seventhly, the sociological concept of the so-called digital exclusion is introduced and the occurrence of this phenomenon in the Polish society is discussed. The paper ends with a brief summary, in which the author considers all the arguments presented and offers his own position and de lege ferenda proposals for the Polish legislator.

Keywords: *e-health, m-health, telemedicine, law of new technologies, Polish society, digital exclusion*

[50] M. Rath, *Dlaczego zwierzęta nie dostają zawałów serca tylko my ludzie*, Almelo, 2005, 2.

Streszczenie

Bartłomiej Oręziak, *Prawne aspekty e-zdrowia a realia polskiego społeczeństwa*

Niniejszy artykuł omawia kwestie związane z możliwością wdrożenia rozwiązań telemedycznych w ramach polskiego systemu opieki zdrowotnej finansowanego ze środków publicznych. Po pierwsze, w ramach uwag wprowadzających dokonano zarysu postępu technicznego, technologicznego i cywilizacyjnego oraz jego korelacji z prawem oraz zachowaniami społecznymi. Po drugie, z uwagi na brak definicji legalnej e-zdrowia zostały przywołane definicje proponowane przez literaturę oraz stworzone przez wybrane organizacje międzynarodowe oraz pozarządowe. Zobrazowało to istotę tego pojęcia. Po trzecie, bazując na odpowiednich dokumentach międzynarodowych, został przedstawiony ogólny potencjał e-zdrowia. Pokazało to spektrum korzyści, jakie mogą płynąć z zastosowania awangardowych rozwiązań w ramach systemu ochrony zdrowia. Po czwarte, został przedstawiony katalog barier mogących wystąpić podczas wdrażania rozwiązań z zakresu e-zdrowia. Powyższe uzmysłowiło, że tego rodzaju procesy nie będą przebiegać bezproblemowo. Po piąte, dokonano zarysu prawa do opieki zdrowotnej za pomocą aktów prawa krajowego i międzynarodowego, wskazując na najważniejsze jego elementy. Po szóste, zaprezentowano prognozę zapotrzebowania na świadczenie telemedyczne w Polsce. Po siódme zaś, przybliżono socjologiczne pojęcie tzw. wykluczenia cyfrowego oraz występowanie tego zjawiska w polskim społeczeństwie. Artykuł kończy się zwięzłym podsumowaniem, w ramach którego autor bierze pod uwagę wszystkie zaprezentowane argumenty i wysuwa swoje stanowisko oraz postulaty de lege ferenda dla polskiego ustawodawcy.

Słowa kluczowe: *e-zdrowie, m-zdrowie, telemedycyna, prawo nowych technologii, polskie społeczeństwo, wykluczenie cyfrowe*

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