Digital technologies and the practice of new medicine

Tecnologias digitais e a prática da nova medicina

Las tecnologías digitales y la práctica de la nueva medicina

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ABSTRACT
This article describes the process of digital transformation in healthcare that has been occurring in recent years. The incorporation of new technologies into the practice of Medicine has become a new reality, bringing new challenges. The use of computerized systems, video web calls, telemedicine, remote monitoring, access to electronic patient record systems online, medication prescription and digital prescription are some examples of this transformation. It can also cover the use of social networks, the internet of things, analytics, big data, artificial intelligence and high-speed 5G telecommunications networks, just to name a few different applications. In this article we present the current scenario, the challenges and the future of new possibilities in Medicine.

Keywords: digital health, digital transformation, artificial intelligence, health innovation.

RESUMO
Este artigo descreve o processo de transformação digital na área da saúde que vem ocorrendo nos últimos anos. A incorporação de novas tecnologias na prática da Medicina tornou-se uma nova realidade, trazendo novos desafios. O uso de sistemas informatizados, web calls de vídeo, telemedicina, monitoramento remoto, acesso a sistemas de prontuário eletrônico on-line, prescrição de medicamentos e prescrição digital são alguns exemplos dessa transformação. Ela também pode abranger o uso de redes sociais, internet das coisas, análises, big data, inteligência artificial e redes de telecomunicações 5G de alta velocidade, apenas para citar algumas aplicações diferentes. Neste artigo, apresentamos o cenário atual, os desafios e o futuro das novas possibilidades na medicina.


RESUMEN
Este artículo describe el proceso de transformación digital en la atención sanitaria. La incorporación de nuevas tecnologías a la práctica de la Medicina se ha convertido en una nueva realidad, trayendo consigo
nuevos desafíos. El uso de sistemas computarizados, videollamadas web, telemedicina, monitoreo remoto, acceso a sistemas de registros médicos electrónicos de pacientes en línea y recetas digitales son algunos ejemplos de esta transformación digital. También puede incluir redes sociales, internet de las cosas, análisis, big data, inteligencia artificial y redes de telecomunicaciones 5G de alta velocidad, solo por nombrar algunas aplicaciones diferentes. En este artículo presentamos el escenario actual, los retos y el futuro de nuevas posibilidades en Medicina.

**Palabras clave:** salud digital, transformación digital, inteligencia artificial, innovación en salud.

1 **INTRODUCTION**

In the last three years, we have witnessed an exponential advance in Digital Health tools in Brazil and the world, motivated by Covid-19. Following the approval of law 13,989, in April 2020, which authorized telemedicine practice in the country during the pandemic, teleconsultations, electronic records and digital prescriptions were issued in response to the need for social distancing for the major health crisis. More importantly, it is important to highlight that the Digital Health concept also applies to remote consultations. Once its central idea is to integrate technology, professionals and patients in order to increase the quality and access to services, it can also be used for training, accompaniment and treatment of tasks and conducting research, for example. You can open, ainda, social networks, internet of things, artificial intelligence and programming, just to mention some of its different applications.

Currently, we are witnessing a gradual return to most in-person activities – schools, churches and businesses reopening their doors, as vaccination progresses in all sections of the population. Health services will also resume most of their functions, with appropriate adaptations to ensure everyone's safety. The post-Covid-19 world will certainly never be the same again. More or more impact was the unprecedented digital transformation that affected various sectors of society, especially in Health. Or what can we expect from now on? The objective of this article is to present topics from the universe of telemedicine and share experiences from Brazil and the United Kingdom in the area, carried out during the pandemic, in order to contextualize health care and its main obstacles in the past few days. This encompasses initiatives both in the public and non-private sectors, also including members of industry and academia (Cerri GG, 2022).

This article also mentions some existing international initiatives in some countries with important projects and traditions on this topic: Australia, Canada and the United States. In relation to Brazil, we know that many points of Digital Health continue in the open, sending protection to the given people two patients um two major challenges. We emphasize that this work is not intended to be presented as a definitive document on this complex topic, but rather to serve as the beginning of an essential debate on the future of post-pandemic medicine, in our country and in the world. Recently, the Federal Council of Medicine (CFM)
published Resolution No. #2.314/2022, which defines and regulates the use of Telemedicine in Brazil, as a form of medical services mediated by communication technologies.

1.1 NEW TECHNOLOGIES AND PRACTICES OF DIGITAL HEALTH

The global impact generated by the pandemic over the last two years has reflected and repercussions on all sectors of society. Adaptation to new health and social and environmental conditions driven by the need for behavioral changes and the incorporation of new paradigms. Currently, in this post-pandemic period, digital technologies and applications of information and communication technology are revolutionizing medical practice. In the health area, after a long analysis and authorization by the Federal Council of Medicine and the Ministry of Health, it was evident that the use of Telemedicine was essential during this process. In a study carried out at the beginning of the pandemic, (Fagherazzi et al, 2020), it was found that the emergence of COVID-19 created an urgent need for coordinated mechanisms to respond to this health emergency in all health sectors.

Digital health solutions have been identified and seen as promising approaches to address this challenge. These authors will analyze the situation in relation to digital health solutions to combat COVID-19, as well as the ethical challenges and obstacles for the broad and long-term implementation of these solutions. Digital health becomes an essential and reconceived instrument, allowing patients and doctors to interact in this difficult historical period, giving continuity to treatments and therapeutic procedures. The pandemic generated a time for rapid incorporation, and since these technologies are mandatory. It happens that these digital technologies have not been available for quite some time (Mair & Whitten, 2000; Currel R, 2000).

After two decades of attempts to implement Telemedicine practices with the use of network and communication technologies, with certain initial resistance, there have been great evolutions in oil and in the adoption of computers on a day-to-day basis in Medicine. Initially, the Information Era revolution began with the basic use of computers in offices, clinics, laboratories and hospitals (Safran & Goldberg, 2000). In Brazil, Telemedicine was reconceived as a medical exercise using remote communication technologies. It is a technology used for the purposes of assistance, investigation, treatment, disease prevention and health promotion. The term 'Telesaúde' is a broader concept, because it represents a combination of all the health professions in remote assistance. Precisely because it involves different professions, each one with its own regulation, there are difficulties in establishing something broad, which is capable of making it possible to regulate, to quality, to determine practical values, or to control the training and, consequently, to assessment of the quality of care provided (Chao Wen, 2008).
The pioneering of the beginning and introduction of Telemedicine in Brazil was carried out by Prof. GYORGY M. BOHM, with the creation of the Discipline of Telemedicine, at the Faculty of Medicine of USP, in 1997-1998. Disseminated implementation of computer networks, electronic medical records systems, hospital information systems, radiology and imaging systems, etc. alavancaram the beginning of digital transformation and the development of digital health practice. (Kalinsky 2002; Knaup 2007; Stevenson 2010; Warrer 2012; Buck & Fleischer 2014; Shiells 2019).

The SBIS, Sociedade Brasileira de Informática em Saúde, plays a relevant role in the development and regulation of this area. The digital transformation requires that doctors and other health professionals develop additional skills, abilities, and competencies to deal with these technologies in practice (JIMENES 2020). According to (SMITS, 2022), digital health refers to the appropriate use of technology to improve health and well-being of people, improve medical practice, and allow patient care using better computing, systems and telecommunications networks. Among these methods and practices, Telemedicine and Telesaúde stand out. But Digital Health goes very far beyond these limits. Currently, throughout the world, this is a phenomenon and process in permanent evolution, generating enormous benefits for patients, for health professionals, and finally, for the entire system.

1.2 COLLABORATION BRAZIL-UK IN DIGITAL HEALTH

Recently, the Instituto Coalização Saúde, the British Consulate and the Inova HC, with the support of the National Academy of Medicine, will hold six important virtual events to debate topics in the Digital Health universe (CERRI et al, 2022). Together, Brazilian specialists and representatives from the United Kingdom will share experiences and offer participants their thoughts on the current moment and the future of post-pandemic medicine and health care. These events will address the following topics: • Use of Telehealth in the United Kingdom and Brazil: an analysis based on evidence; • History of the implementation of Telessaúde in the United Kingdom and Brazil; • The impact of Covid-19 – prospects for the future of Telessaúde; • Use of technologies and services for Telehealth provision; • A Saúde Digital no Brasil: challenges and opportunities; • Impact of Covid-19 and RNDS not using new data for Health.

The advent of the pandemic that began in 2020 triggered a series of global initiatives to control and treat, as well as the need for organizational and social adaptations. According to (HURCHINGS & MORRIS, 2022) researchers from the international and independent health agency Nuffield Trust, “the constant improvement in the use of digital technology, including online consultations, has been a goal of the NHS (British National Health Service) for a long time. This strategy, called ‘future of Healthcare’, was published in October 2018. In January 2019, an NHS action plan was established that, by 2023 and 2024, all patients will be directed to online consultations and digital primary care .”
And they continue: “to face the new moment, the NHS has adopted some alterations in the way of conducting primary and specialized care. Among them: a) a major change in face-to-face care to reduce the risk of infection in health environments; b) guidance given to primary care (March 2020): triage everyone before consultations to see who needs in-person care. c) guidance on available solutions, information governance and financing. The United Kingdom has long experience in the use of computerized systems in the practice of digital health to optimize organizational processes. According to (Chanon N, 2022), Clinical Director of the National Association of Primary Care, Executive Director of Kingston Hospital NHS Foundation Trust and Senior Partner of Cricket Green Medical Practice: “The design and structure of any health system must be based on the fundamental principles of primary care, which become even more essential for all those who seek to understand how Telessaúde can help this level of care. This means: a) equitable contact and access to all, it should not be a privilege of few; b) health, prevention, diagnosis and treatment, extending to palliative care; c) continuity throughout life, especially for patients who have chronic illnesses; d) coordination between the different levels of care (primary, secondary and tertiary.” He continues: “Not in the United Kingdom, as in Brazil, most of the health problems are associated with social issues, such as moradia and insurance. As questions relating to the environment, which individuals are involved in, represent 90% of what can be seen as problems related to health and life expectancy, that is, they are social determinants. “When we fail to provide health, we need to think about the health of the population, improve access, do what is equitable, focus on the value offered and not cost and not better for everyone we care for.”

The barriers to the adoption of changing technologies in a short space of time, when the British government declared that it was acceptable for doctors and nurses to adopt this form of remote consultation to protect patients and to force health work from covid-19. In three or four days, nearly 7,500 Family Clinics, serving a population of nearly 70 million people, have adopted remote access (phone, video and text messages) as a way to interact with patients and carry out Triage to make decisions about the need for face-to-face care, in a change that would normally take a few years to change common practice. This move was paramount. The Covid-19 pandemic has demanded a response from the United Kingdom with intense use of digital health tools.

This has provided a transformation in the health system, including mainly the learning and training of health professionals. Doctors and nurses are encouraged and, moreover, forced to follow new digital care protocols. According to (Bakhay N, 2022), Director of the National Clinic for Digital Primary Care (NHS England and NHS Improvement): “In response to the pandemic, all basic care units in the United Kingdom are encouraged to adopt a digital triage mechanism to also minimize the exposure of patients and professionals to covid-19. The NHS adopted or ‘Total Triage’, which represents a multimodal approach to care for patients who come into contact with the Basic Health Units, or which can be done by telephone or
internet website, whose objective is to make this happen more inclusive possível. Nesse contato, atenentes preenchem a form and, based on established criteria, respond along with the appropriate channel and obtain and the next step, defined.”

As important points of Total Triage, Dr. Bakhai highlighted the optimization of the time of health professionals and agile care, allowing a fairly rapid response and prioritizing the needs of patients. The care criteria was converted from check-in order to clinical priority. This also means that flexibility for professionals is very important in carrying out these services. Therefore, the order can be concluded by means of a text message, by a video or telephone consultation and, if truly necessary, by an in-person assistance to perform a physical examination. There is no established solution for all patients: a decision is made for each case.

The rapid changes made during the pandemic will show that professionals can work in a more collaborative way through the integration of different systems. As published in BMJ, (Sivarajasingam, 2021), Total Triage is the future of General Practice in Medicine. The pandemic is conducive to the adoption of a very clear national strategy, with defined expectations and objectives, which affects the traditional way of working of the teams. The perception of risk and shared knowledge was expanded. Another important point was the role of two suppliers, who would be responsive and work very closely with the Basic Health Units, managing to quickly provide solutions to the needs of each one under national coordination.

Concerning how to be professional, constant feedback at the management level of units and encouraging creativity and collaboration between units are important pillars in the change and adaptation of the process. The NHS basic care department is creating a tool called “transformation journey planner”. For this, it is focusing on the areas that add the most value. Clinicians are working on an overview of where the gaps are in existing systems and how they can plan future investments.

The idea is to create a national training program and have resources to support all employees: both the clinical part and the administrative part. An important point is that Basic Health Units require support that is practical and easy to use systems; Otherwise, or return to traditional and inevitable systems. There is a need to redeploy the days with a long-term view for effective action both in diagnosis and in care. The challenge of incorporating into the population the use of applications and support tools to truly have a more efficient implementation, which leads to even digital and attempts to achieve the best results.

The United Kingdom was one of the first countries in the world to recognize the benefits of digital technologies applied to Medicine. In recent years, emphasis has been placed on Telehealth practice with the possibility of caring for patients virtually online. According to (LOBO, 2022), president of the Telemedicine Council of The Royal Society of Medicine (RSM)” in the United Kingdom, there has been technology for remote care for many years. The NHS confirmed its ability to do teleconsultations safely in
2007, but the modality was rarely used. Only with the pandemic is it silent and quickly the virtual consultations are provided.”

The potential two benefits are directly linked to the development of the service. The implementation of digital health could have been carried out 10 years ago. In sectors such as entertainment, business and finance, there have been digital tools for a long time, but nothing has happened in the health sector. Administrative measures are only necessary to ensure that new technologies are implemented in the Health system. The information technology infrastructure, for example, needs to consider aspects such as the security of data, how they are shared and how the systems used, and protection, secrecy and privacy. According to Dr. Loy Lobo, so that the adoption of new technologies in Health lasts into future generations, it is necessary that this is applied at the national level. “We know that it is often difficult for many of us in our cities to access the appropriate specialty doctor without using digital consultation, which makes it very easy; Likewise, you still need a doctor for each patient to consult. By using technology, you can increase the number of patients that each professional can care for. “That is a big challenge.”

1.3 SOME INTERNACIONAL INITIATIVES

There are various initiatives on Digital Health described in international literature. Among these, for the purposes of this article, we select some specific projects that we consider important. Only cases described in Australia, Canada and the United States. Below we present a summary of some of these initiatives.

1.4 AUSTRALIA

Australia has a health system considered among the best in the world. In a study carried out in cooperation with health institutions throughout Australia, (Schofeld et al, 2019) used the Australian health system as a model, reviewed the current scenario of digital health in Australia and discussed how electronic medical records can be developed in a personalized and integrated health system. We conclude that the implementation of a personalized and integrated health system may result in a reduction in pressure on the current health system and may result in the provision of better practical health care, regardless of location.

It is important to highlight that a personalized and integrated health system can serve as an educational platform, reformulating not only doctors, but also, more importantly, patients and caregivers, providing accurate information about their condition, treatment options, medications and management strategies. By providing personalized and integrated healthcare, it is possible to offer an intelligent healthcare model that is ubiquitous, efficient and continually improved. In another study (Foley et al, 2021)
we will carry out research to answer the following questions: a) what are the experiences and points of view of Australians in the general population in relation to digital health services on demand, such as on-demand health information? line, and how are they used or avoided every day? b) Are there associations between eHealth Literacy, trust and social determinants in relation to access, use and benefit of digital health services aimed at the population? The study concluded that there is a need for stakeholders to implement policies and practices in the digital health arenas to increase confidence in telemedicine and telehealth services. The study suggests that professional health attitudes in relation to the use of digital services significantly impact trust and non-use.

And we conclude by suggesting that future research may aim to consolidate knowledge about the attitudes of health professionals in relation to digital health services and test specific strategies to encourage patient confidence and the use of digital health services, both as support and alternative to in-person health services. The advent of the pandemic was a facilitator for the adoption of new digital health practices.

1.5 CANADA

Among the countries that use computerized systems and digital technologies in the health area, Canada has a long history. In an article published in the Canadian Medical Association Journal, (OWENS, 2018) he noted that “with long waiting times and a shortage of family doctors, many patients seek an alternative way to access medical care. Private on-demand medical services are becoming more common in pre-primary care, even in countries with publicly funded medical care, such as Canada.” Telemedicine works best when providers maintain relationships with patients, so that those who provide initial consultations can accompany patients for the management of chronic diseases.

According to (Paré, 2018) in research carried out by launching initiatives throughout the Canadian territory, related to telemonitoring, the study analyzed the diffusion of the digital 'self-monitoring' movement in Canada. This is the monitoring of vital sinuses such as pulse, heart rate, blood pressure, blood sugar, among others. This is very important for the control of chronic diseases with high prevalence in society, such as Arterial Hypertension and Diabetes Mellitus. This study provides an open and detailed view of this phenomenon of use of wearable devices, for remote monitoring of biological parameters, including also oximetry and temperature.

The study showed opportunities to promote the health of Canadians through connected care technologies. This case can be used to define future research on the increase in self-monitoring as part of digital health and its impacts. Since the use of mobile applications, wearable devices (watches, equipment) and intelligent medical devices can potentially benefit a growing population of patients with chronic diseases, it remains to be known whether they will be widely disseminated to the patient population and
what demographic profile and economic of these users in the population. In the pandemic period, a study by (ZHAO et al, 2021) demonstrates that in addition to changing and expanding clinical responsibilities, information and directives in rapid evolution during the COVID-19 pandemic become difficult for health professionals to synthesize and translate as practical information. This study evaluated a specific telemedicine education program aimed at self-efficacy and satisfaction of health professionals in the management of patients with COVID-19. This study demonstrates that a telemedicine education program aimed at supporting health professionals in the management of patients with COVID-19 has a positive impact on the effectiveness and satisfaction of health professionals.

1.6 UNITED STATES OF AMERICA (USA)

In the United States, (Kichloo et al, 2020) carried out a survey of the use of digital health tools, particularly the use of Telemedicine. The study demonstrated that: the use of telemedicine has been rapidly increasing in the USA. From 2010 to 2017, the percentage of two US hospitals that connect with patients through the use of video and other technologies increased from 35% to 76%. This is mainly due to the increased effectiveness of telemedicine, as doctors are able to deliver more and more of their services virtually. Additionally, (Bhaskar, 2020) points out that during the COVID-19 pandemic, telemedicine was important in providing patient care, compensating or declining outpatient consultations, providing critical continuity to the patient and limiting exposure to health systems and health professionals. Another interesting North American study says respect for greater access to services through the use of Telemedicine (CURTIS, 2021) and other digital tools. The objective was to examine the characteristics associated with disparities in digital access, with access to high-speed Internet by computer or smartphone, in rural and urban American homes, once digital access has a direct impact on access to telemedicine-based services. The study concluded that there are significant disparities in digital access between families living in large urban centers and non-metropolitan regions, as well as between people and families of ethnic minorities and low-income families, where the lack of digital access has implications for the accessibility of services. of health via telemedicine. This aspect of access to health services through digital means will also be applied to Brazil, with certain economic and socio-demographic corrections and adaptations.

1.7 DIGITAL HEALTH IN BRAZIL

According to (Moura Jr, 2021), there is significant demand and need for the elaboration of a national strategy in Digital Health for Brazil. The focus of the Digital Health Strategy is on the user's health services and, in particular, on information, services and support for processes to better serve them. After a period of
discussions, analysis and proposals, the document “Digital Health Strategy for Brazil (ESD28) was prepared by the Ministry of Health. This proposal was a book of 130 pages. This document was approved in all instances of SUS, including the Comissão Intergestores Tripartite (CIT). The Digital Health Strategy for Brazil ESD28 aims to implement the guidelines defined in the PNIIS, the National Health Information and Informatics Policy, also recently approved by the National Health Council. A Normatização ESD28 can be easily found on the internet, on the website of the Ministry of Health, publications. This is an important reference framework for the development and registration of the area throughout the national territory, both in the public and private sectors, in all spheres, Municipal, State and Federal. EDS28 is a public and open document. It is organized into 3 main eixos: 1.Visão Estratégica da Health Digital; 2.Plan of Ação da Saúde Digital; 3.Digital Health Monitoring and Availability Plan. These actions are intense and tend to consume the physical, financial and human resources of the Federal Government and its own SUS and must be strengthened, deepened and disseminated as part of ESD28.

The first step of this year is to recognize the need to strengthen, consolidate, expand and extend beyond the horizon of 2023 as proposed actions in the 2019-2023 Plan, mainly those established in the Conecte SUS Program and its initiatives: the National Health Data Network (RNDS) and o Computerize APS. These initiatives seek to ensure that RNDS offers essential Digital Health services for the country. Furthermore, RNDS opens the door to interoperability between health information systems in all sectors. The focus of the Digital Health Strategy is on the user's health services and, in particular, on information, services and support for processes to better serve them. I recall here that the Digital Health Vision for 2028 is defined as: “By 2028, the National Health Data Network (RNDS) will be established and rebuilt as a digital platform for innovation, information and health services for all of Brazil, in benefit of users, cities, patients, communities, managers, professionals and health organizations.”

The use of RNDS was driven by the motivation to support and combat Covid-19. In this way, RNDS is widely used and provides, in the electronic vaccination card against Covid-19, a service of immense relevance for SUS users, as well as for federal, state and municipal governments, managers, health professionals, health and for the general population. As the basis of the Action Plan, the SUS governance spaces, notably the Comissão Inter Gestores Tripartite (CIT), provide leadership, attract partners and promote institutionalization. It is up to the Ministry of Health to execute the necessary actions for the implementation of the plan, attracting participants who must be recognized as partners of the initiatives, in addition to participation in decision-making, respecting the formulated norms and guidelines. The digital transformation process in health in the post-pandemic future will be able to accelerate the implementation of the ESD28 strategy.
1.8 HC DIGITAL HEALTH PROJECT - HOSPITAL DAS CLÍNICAS FACULDADE MEDICINA USP

The Hospital das Clínicas da Faculdade de Medicina da USP (HCFMUSP) is defined to become a protagonist in innovation in Digital Health at all levels of health care. With a focus on excellence in assistance, education and research, in order to improve the quality, access and equity of the system, using InovaHC as a key piece in the implementation of this transformation for a leading institution such as HCFMUSP. The HCFMUSP is the largest hospital complex in South America, serving as a teaching hospital for the best university in the country. Founded in 1944 and located in the city of São Paulo, the complex possess: 2,400 leitos; 450 UTI leitos; 8 Institutes; More than 19,000 professionals; 2 auxiliary hospitals; 62 medical research laboratories. The Complex operates on 4 fundamental pillars: Assistance, Education, Research and Innovation. Assistance: More than 1.5 million outpatient consultations per year (1.2% of all consultations in Brazil); More than 76,000 hospitalizations per year (0.6% of all hospitalizations in Brazil). Education: More than 2,000 resident doctors per year (6.2% of all of Brazil). Research: Produces 7.3% of total Brazilian publications and 3.3% of Latin American publications in health and life sciences.

HCFMUSP chooses Digital Health as one of the transformations of two processes caused by post-Covid. According to (CERRI GG, 2020), an important reason for this selection was the extensive use of telemedicine to treat patients who could not appear for medical consultations during the pandemic. Telemedicine faced corporate resistance to spread in our country. However, the pandemic was introduced quickly and effectively. Consolidated as an efficient and necessary assistance tool. Our Digital Health program has collaboration with the British government. The Brazilian health system unified through the Single Health System (SUS) was inspired by the English NHS model, which regularly supports initiatives in countries based on this project. We have the opportunity to discuss and share experiences that can guide us safely in such a time of great responsibility. This collaboration aims to create digital health solutions that scale nationally. Among the benefits of this initiative are the creation of efficient sources to replicate the goals of public health and the identification of opportunities for the implementation of digital health in primary care.

The project included teleconsultation in all specialties, including telerehabilitation and telepsychiatry, for example. The consultations will be accompanied by technology that allows the accompaniment of the patient from a distance, providing greater security to the doctor-patient interaction. The technological resources will be developed partly by InovaHC, through links of start-ups that can help solve the needs of the system. Another important component is teletraining, with two main objectives: firstly, to reduce the existing inequality between the regions of the country and secondly, to train doctors and health professionals without using resources. An example is the tele-ICU project of INCOR,
disseminating the expertise of our professionals to ICUs throughout the country (CARVALHO, C; MACEDO BR, 2021). Digital Health must contribute to its SUS through three main pillars: inequality reduction, improved access and reduced costs with increased efficiency.

HCFMUSP is building its digital health project. The objective is to make the patient's day easy, complete and accessible from the symptoms, using artificial intelligence to help guide the patient's path, which specialty should attend to him, carrying out consultation, electronic prescription, contact with the pharmacy and payment, among others. The HC innovation ecosystem involves academia, government, civil society, accelerators, incubators and companies. We consider digital health a priority for health development and that is why every ecosystem must turn to search for digital solutions to improve the patient's journey. Macro Objectives: 1) raise cases of success that promote broad adoption of digital health solutions at all levels of attention; 2) accelerate the implementation of digital health initiatives; 3) promote a coalition of partners or create other organizations and companies that are interested in helping the development of digital health, including an important focus on Primary Care, which is the gateway and where it is necessary to invest resources to improve health access, mainly in remote areas of the country.

The Digital Health Project is one of two main technological innovation projects in implementation and non-HC scaffolding. The project is carried out within the Better Healthcare Program (BHP) initiative, which is a cooperation program between the Government of the United Kingdom and the Ministry of Health, supported by the McKinsey consultancy. The Hospital das Clínicas of the Faculty of Medicine of USP began the massive and intensive use of new digital technologies in health. We note that a strategy is necessary to coordinate initiatives between several institutes. This proved to be fundamental. In addition to improving patient care outside the hospital itself, HC seeks to advance its vocation for public education, research and policy to assume a pioneering role in the promotion of digital health solutions in all levels of care on a national scale.

2 DISCUSSION

In this article we present some aspects related to digital transformation and the use of new technologies for the practice of Medicine and organizational improvement in the Health area. Initiatives in Brazil and in other countries have demonstrated that it is possible for health professionals to use tools such as Telemedicine, Teleconsultations, electronic medical record systems, and other methods for patient care. The pandemic, with the demands of social distancing, reduced personal contact between people, facilitated the adoption of these new technologies. The use of computers in medical practice is not a recent phenomenon. Meanwhile, the practice that was adopted in a restricted manner, and on a reduced scale, in
some areas of excellence, in the pandemic period was potentiated. There is an exponential and significant acceleration in the adoption of two processes of digital transformation in society, including the health area.

The role of regulations by government bodies, particularly the Ministry of Health, ANVISA, and the Federal Council of Medicine, among others, provides a legal basis for the practice of Telemedicine and the incorporation of digital technologies. Oil for the medical class, as well as for nurses, and other technicians in the health area was paramount in this period. This way, you won't have any backtracking. These technologies will prove useful. Evolution and progress occur permanently in society, and the incorporation of new emerging technologies always makes a difference in medicine.

In recent centuries, particularly in the 20th century and the beginning of this 21st century, we have seen the appearance of new medications, new surgical techniques, new devices and laboratory tests, radiology and imaging equipment, etc. In the information society, in the era of knowledge, the digital transformation process in the post-pandemic future was concretized in a way to allow organizational improvements in the practice of Medicine. It is about technological incorporation by people not in their work, as it happens in all sectors of society, but with a difference that Medicine is linked to the life of people. In any case, digital transformation in the post-pandemic future is a reality that will benefit everyone, especially patients. For this reason, we see this new reality with many eyes.

3 CONCLUSIONS

In this article we present the context of the digital transformation that has occurred in recent years, with the adoption of new technologies for practical health. A potential pandemic occurred or the use of these digital technologies. The practice of Telemedicine, with all its ramifications and subspecialties, is a reality. The benefits are evident, both for doctors and patients. Obviously, personal contact with patients is essential and fundamental to the practice of better medicine. These technologies must be used in very specific circumstances, and in common. Currently, the possibilities open to new technologies are available to you. It is up to each health professional to know how to select the best tools and practices to best meet the treatment needs of patients. The digital transformation of the post-pandemic future is an open road for new discoveries, challenges and achievements.

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REFERENCES


13. SIVARAJASINGAM V. Total triage is the future for general practice. BMJ 2021; 373 doi: https://doi.org/10.1136/bmj.n1532: BMJ 2021;373:n1532


