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GOVERNANCE AND GLOBAL HEALTH HUMANITY'S FIRST CHALLENGE

LA SALUD GLOBAL Y EL GOBIERNO PRIMER RETO DE LA HUMANIDAD

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Edgar Alfonso González Salas*

Abstract

The concept of an emergence of a single health and a global health indicates the complexity of human health and health-disease processes, the interfaces with other non-human systems and with microorganisms. The transformation in the composition of global health in recent decades highlights the importance of scientific advances and their applications, with which Non-Communicable Diseases occupy the main causes of morbidity and morbidity and mortality but, also, the occurrence of new threats and problems. Communicable Diseases have lost relative importance, but not absolute. Social aspects are transversal to human health, they have a special explanatory power of the health-disease process and the way in which health-disease is distributed, and therefore have a significant impact on it. The emergence of infectious microorganisms and the risk of pandemics associated with them is a lethal threat, aggravated by poor practices in the use of antibiotics, in both animals and humans. Environmental imbalances are generating a new source of health problems, posing challenges in the understanding and public policies regarding the interfaces between humans, flora, animals, vectors and microorganisms. The State and its approach to action on health problems denotes the existence of different Health Systems, facing problems and solutions of various kinds in terms of coverage, access, opportunity, metrics, quality, global vision and national action, regional and local, multifactoriality and intersectoriality in the determination of health, construction of institutionality, according to the functional areas required in the Health System; participation and social, family and individual empowerment in health, among others. All of this results in the need to strengthen research and innovation with strong public leadership, in various action fields and, also, in the understanding of Global Health and Health Systems. The role of Governments in the structuring and management of Health Systems should be highlighted. The role of non-state actors is fundamental, but it is incomplete and generates strong externalities, without the leadership, active intervention and integrating capacity of the State. Building effective health systems is the challenge. The evidence shows fundamental examples, based on institutional simplicity, adequate financing, and social and political prioritization of collective action in solving health problems.

* Public administrator. Public Finance Specialist. Master in Quality Management Systems. Doctor of Administration. Trader. Email: edgargonzalez49@outlook.com

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Key words: global health, public policy, health, governments, health institutions.

Resumen

La emergencia conceptual de una sola salud y la salud global indica la complejidad de la salud humana y los procesos de salud enfermedad, las interfaces con otros sistemas no humanos y con los microorganismos. La transformación en la composición de la salud global en las últimas décadas resalta la importancia de los avances científicos y de sus aplicaciones, con lo cual las Enfermedades No Transmisibles ocupan las principales causas de morbilidad y morbimortalidad, aunque también la ocurrencia de nuevas amenazas y problemas. Las Enfermedades Transmisibles han perdido importancia relativa, pero no absoluta. Los aspectos sociales son transversales a la salud humana, tienen un especial poder explicativo del proceso salud enfermedad y la forma como se distribuye la salud-enfermedad, e inciden en ella, por ende, de manera significativa. La emergencia de microorganismos infecciosos y el riesgo de las pandemias a ellos asociados es una amenaza letal, agravada por las malas prácticas en el uso de antibióticos tanto en animal como humano. Los desequilibrios ambientales están generando una nueva fuente de problemas de salud, planteando retos en el entendimiento y políticas públicas de cara a las interfaces entre humanos, flora, animales, vectores y microorganismos. El Estado y su enfoque de acción sobre las problemáticas de salud denota la existencia de diferentes Sistemas sanitarios, frente a los cuales se enfrentan problemas y soluciones de diverso orden en términos de cobertura, acceso, oportunidad, métricas, calidad, visión global y acción nacional, regional y local, multifactorialidad e intersectorialidad en la determinación de la salud, construcción de institucionalidad acorde a las áreas funcionales requeridas en el Sistema Sanitario; participación y empoderamiento social, familiar e individual frente a la salud, entre otros. De todo ello, resulta la necesidad de fortalecer la investigación e innovación con un fuerte liderazgo público, en diversos campos de acción y también de entendimiento de la Salud Global y los Sistemas sanitarios. Debe resaltarse el papel de los Gobiernos en la estructuración y gestión de los Sistemas sanitarios. El papel de actores no estatales es fundamental, pero es incompleto y genera fuertes externalidades, sin el liderazgo, la intervención activa y la capacidad integradora del Estado. Construir sistemas sanitarios eficaces es el desafío. La evidencia muestra ejemplos fundamentales, basados en simplicidad institucional, financiación adecuada y priorización social y política de la acción colectiva en la resolución de los problemas de salud.

Palabras clave: salud global, política pública, salud, gobiernos, instituciones de salud.

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HEALTH AND GOVERNANCE

1. INTRODUCTION

This article analyzes global health and a single health, as human problems of the first order and object of government, in the face of the demands and challenges those public institutions must face.

It is based on a systematic and current review of the problems identified in health science in relation to public health, while correlating such problems with the action that governments must develop, which emerges from a critical analysis provided by the research work.

Its objective is to highlight that the challenges of global health are a challenge of the first order for human society and for governments that make an effort to represent the collective interest, as much as it can be to face with active public policies the avoidance of the risk of the survival of the human species, or always, that it is a question of avoiding profound inequities and externalities, which are outside the health systems, but have a profound effect on their configuration and effectiveness and, of course, on the distribution of well-being and health of people.

The importance of developing research work in health in terms of public policies, the logics of public sector organizations and management, that is, in the field of Public Administration discipline, is explained.

Global *health* is an expression that indicates the impossibility of assuming health problems without a global view and action. But in turn, the global perspective must be assumed nationally, regionally, and locally, and implies an integrated vision of our ecosystems, flora, fauna and humans. It is not a contradiction, that of being global and in that same sense local, or that of being human and not human, but rather it is about the true *extension or domain* of global health, or to put it, in other terms, it is expressed in the *"one health"* phenomenon.

The meaning of a *single health* is already assumed in all its consequences in various world organizations, both public and private. From the perspective of *World Organization for Animal Health,*

> The One Health concept summed up an idea that had been known for more than a century; that human and animal health are interdependent and linked to the health of the ecosystems in which they exist. We envision and implement it as a collaborative global approach to understanding the risks to human and animal health and the health of the ecosystem (World Organization for Animal Health, 2021, para. 1).

Along these same lines, ISGlobal agrees, drawing attention to the importance of an integral vision, so that,

> More specifically, the concept of One health is defined as "the collaborative efforts of multiple disciplines (medical, veterinary, research

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personnel, etc.) that work locally, nationally, and globally to achieve optimal health for people, animals, and our environment" (Soto, 2021 , paragraph 3).

The United Nations and all its organizations have this declaration, which is evident in light of epidemiological trends, their characterization and their problems. Food and Agriculture Organization of the United Nations-FAO (FAO, 2021), the World Health Organization-WHO and the World Organization for Animal Health-OIE, in 2008, have proclaimed an agreement for the *one health approach*.

This inter- *institutional approach* at the level of colossal international organizations was preceded by a set of conceptual contributions, which, although they have antecedents since antiquity, in the era of industrialization are associated with the names of Claude Bourgelat, 1712-1779, Rudolf Virchow, 1821-1902, who coined the term "zoonosis" and the multifactorial medicine approach, and Calvin Schwabe, among others (Zunino, 2018).

The incidence of social factors in the disease is especially high, in the midst of which the role of governments is crucial. It is clearly recognized from decades ago, various factors affecting human health, such as environmental factors, biology, behavior, culture, the work environment and, of course, the social and economic aspects involved. Health services play a complementary and fundamental role.

With what was proposed by Marc Lalonde, in 1974, the natural and social environmental factors, the lifestyles and habits of life associated with the behavior of each individual, the health system and human biology in terms of the genetic and hereditary factors (De La Guardia & Ruvalcaba, 2020).

The importance of social factors in health have taken a lot of strength in explanatory models. Since 2008, at the request of the WHO, it has been inferred that inequities and asymmetry between countries and social sectors determine the living environments and the conditions in which age groups develop and their evolution throughout life. The location of individuals in society affects their main determinants of health, since they account for their conditions and lifestyles, their psychosocial and behavioral development and their relationship, according to the institutionality with which they are related, with the health system.

The social sciences and epidemiology focus their efforts on unraveling the social determinants of health status, with which the WHO has structured a conceptual approach model on social determinants, where the distribution of health is related to the social position. The latter is framed in the socioeconomic and political context, in the macroeconomic policy, health and social approach; in cultural and societal norms and values.

Other factors come into play such as education, occupation, income, gender, and race/ethnicity. These factors and social position determine or interact, depending on the case, with the material circumstances of people, social cohesion, psychosocial, behavioral and biological factors.

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And health systems contribute to a greater or lesser extent to the distribution of health and well-being (OPS/OMS, 2022). About:

> On the other hand, the development of epidemiological knowledge has shown that the social determination of the frequency and distribution of pathological events is at a hierarchical level superior to their biological and psychological determination. From this perspective, the foregoing means that the location that each individual has within social classes is much more important than their race, genetic load or inheritance to develop new pathologies that together will lead to death (Arredondo, 1992, p. 255).

Although health problems have always been associated with the double determination of human interaction with each other -including the terms of equity or not and social determinants- and the interface between the homo, animal and environmental species -ecosystem and biodiversity- , the transit of *homo sapiens* in the construction of society progressively and until reaching the era of capitalism and industrialization, coupled with the settlement of humans in conglomerates and then in cities, has generated a particular scenario of a socio-environmental historical type.

The socio-environmental particularities referred to, in its current historical phase, correspond to the development of the revolution in means of transport, in terms of mobility, but also to the complexity of the flow of relationships between humans, that in addition to being supported by a revolution in infrastructure and means of transport, are based on a deep economic interdependence.

The complex forms of economic activity of man on the planet have been generating a change in the relationships between species, ecosystems, biodiversity, climate and geological processes as a whole. Indeed, it is a matter of complexity, to the extent that it is not only various factors that come into play, but also the behavior of the intervening systems can lead to tendencies and thresholds that behave under the behavior of chaos and what complex, whose models have been studied by the sciences of complexity (Lewin, 1995).

The planet is interconnected. Neither nation or people is alien to the other. Since the discovery of the two halves of the world, and awareness of what this implied in 1507, that indifference ceased to exist, involving the two parties in a dynamic that, in addition to the phases of occupation of the territory and social shock, cultural, military and political, had a massive public health impact on the Aboriginal population. The main conquerors in the Americas were smallpox, influenza, measles, and typhus (Historia y vida, 2020).

The empires, the colonial systems and then, with the decolonization of various regions of the world, with the emergence of new nations, the interactions have not stopped occurring, with the difference that today they do so as a

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result of a revolution in the forms of communication and relationship, practically instantaneously and in its physical form, under the limits of speed, whose threshold is defined by transport technology.

Mainly production technologies, which man has been using for the purpose of appropriating resources, to generate accumulation, wealth, production and consumption, regardless of the system of societies and their institutions, has triggered since the emergence of industrial era, a stage in which the interfaces between man, species, flora, fauna, geology, environment and climate, are unbalanced and threatening to the survival on planet earth of the human species and the most or perhaps all species.

One of the manifestations of these imbalanced interfaces is expressed in human health. In terms of the field of research and knowledge of Public Administration, the question is to understand what the role of the State has been, its organizations, the management of public sectors and public policies to face these challenges, to the different global, regional, national and local levels. All these instances in the public sphere are involved. And so are the social and economic actors, who, from their various vital manifestations, in the economic, political and public spheres, affect the dynamics of the interfaces that have become increasingly threatening to global health.

These exposed aspects are synthesized in the following chronicle of the United Nations, which on its official page says:

A generation ago, what was then generally called "international health" was primarily a technical matter for major United Nations organizations such as the World Health Organization (WHO), the United Nations Children's Fund (UNICEF) and the United Nations Population Fund (UNFPA), bilateral donors, large non-governmental organizations (such as CARE or World Vision) and academic institutions, such as schools of public health. At that time, it seemed to many of us that the institutional landscape was crowded, at least compared to other sectors, and that developing countries had many partners. The United Nations itself did not appear to be a major player. International health seemed to be primarily a matter of cooperation between developing countries and their partners in developed countries.

Over the last generation, international health has given way to "global health." This terminological shift, though not yet universal, reflects a profound change in perspective. Countries and institutions can no longer view health as a concern limited by national borders, as they often did in the past. Policymakers, public health professionals, and medical service providers used to distinguish between "international health" and, at least by contrast and implication, "national health." Indeed, global health has become so important that it is increasingly an issue for civil society activists, as we can see from the evident impact of HIV/AIDS on public policy and national spending patterns.

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> and international from the United States and other countries. The massive growth of contacts across national borders, from travel to commerce, has facilitated the transmission of infectious diseases from one country to another, and has generated widespread awareness that communicable diseases do not respect national borders. The growth of electronic communication, in turn, has facilitated awareness of these changes. (Elmendorf, 2021, par. 2-3).

Global health has thus gained a space of recognition of its own, not because it is pure and simple international cooperation, but because it is a strategic issue that has emerged from structural interdependence, so that what happens in a country, quickly and uncontrollably, It ends up affecting the rest of the planet. Global health is imposed by the force of prevention and also of survival. It is not a snob of health professionals, but a rational finding of humans, in the current stage of development of societies.

The dynamics of health problems also have a particular regional, national and local expression, which, in each country, requires specific responses, health systems that respond to global challenges and local conditions at the same time.

Public policies articulate at this scale, institutional response formulas, institutional physiognomies with fractal contours, management systems articulated to the social objectives that explain the financing systems and the principles, rights and duties of the Health Systems, by which they are disciplined. the different actors and value groups that are articulated with said Systems.

Both at the global level, as well as at the regional, national and local scale, the challenges are strong. The comparative experience serves as a reference to make decisions, generate actions and define, among others, the spaces of the public, while forging the Public Administration of all this complexity. But the solutions are not easy, nor are they unique. The countries have common features in policies and institutions, but they differ in historical-institutional trajectories, which mark contrasts that must be examined to generate scales and reform options that are adapted to the social value systems of each national reality, and, above all, all meet your needs.

The dynamics of global health will be examined below, which allows for a dimensioning of health problems. Next, certain relevant problems that are significant on a global and national scale are exposed, exemplifying the complexity of homo, environment, fauna and flora interactions, the way they affect health, and the threats that are brewing, illustrated with pandemics.

It continues with the challenges faced by health systems in these exposed contexts and culminates with the fields of research that are relevant and are interwoven in the examination of the problems formulated throughout the article.

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2. THE DYNAMICS OF GLOBAL HEALTH

Counting the period 2000-2019, noncommunicable diseases -NCD, according to the World Health Organization, kill a significant proportion of the population. In 2016 the number of deaths was 41 million people, which is equivalent to 71% of deaths in the world. 15 million of the deceased are in the age group between 30 and 69 years and live in low- and middle-income countries.

Within this group of diseases, cardiovascular, cancer, respiratory and diabetes are responsible, in order, for 80% of the annual causes of death from NCDs. Cardiovascular diseases by far are the ones that produce the most lethality and do so steadily during the period, given that at least close to 18 million people die per year, followed by cancer with 9 million and then 3.9 million respiratory and diabetes 1.6 million.

For the WHO, these diseases are associated with harmful habits for health, constituting metabolic risk factors, although there is a complexity of other determining factors, such as genetic, physiological, demographic and environmental factors (Organización Mundial de la Salud, 2021).

NCDs represent the seven (7) leading causes of death in the world towards the end of the period of the last two decades, despite the fact that in the year 2000 they represented four (4) of the ten (10). Therefore, they have increased.

The global challenges to face these pathologies have to do, among other aspects, with social cultural issues, but also with other factors of a socio-behavioral nature, in addition to the recognized role played by genetic, physiological and environmental aspects.

The processes of prevention and strengthening of primary health care, in the face of NCDs, play a crucial role here, with an inclusive and equitable approach, as well as the conditions of health care in the phases of detection, diagnosis, treatment and rehabilitation.

In this way, it is a challenge for the health sector and for the Health System understood in a more comprehensive, multifactorial and intersectoral way and working synergistically. The distribution of pathologies and care by countries with different degrees of development, and according to social groups, draws attention to issues of equity and rights, as aspects that come to be strongly influential in the map of these pathologies and in their prevention. and handling. Governments face NCDs as one of their biggest challenges.

In the past, communicable diseases (CDs) and not NCDs were the leading cause of death globally. In fact, the rise of State intervention since the 19th century was encouraged by regulations, interventions in health conditions and controls on the most representative factors affecting health, without being limited to just that.

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At the time that the first industrial revolution emerged at the beginning of the 19th century, so did collective living conditions, reaching higher public health standards in such sensitive aspects as public hygiene, drinking water, waste systems, food and habitat.

The first vaccine discovered by Edward Jenner in 1796, laid the foundations for the immunizing approach, but his discovery did not lead him to understand the infectious mechanisms, nor the very relative achievements achieved with his experimental approach.

Jenner, was then facing one of the most lethal infectious agents in the history of mankind, the Variola Major virus, which causes smallpox, whose disease from at least 3,000 years ago, killed between 30% and 50% of infected people, leaving terrible sequels in the survivors.

Regarding the encounter between the two halves of the globe, it is estimated that smallpox was the main destructive and genocidal agent of at least 90% of the aboriginal population in the Americas (National Geographic, 2021). It was the main ally in the extermination of the native population, lacking a natural immunity to the pathogens brought by the invaders. And worldwide in the 20th century alone, the calculation of deaths attributable to this infection is in any case above 300 million people and some even calculate 500 million deaths in the world attributable to this serial killer.

Lois Pasteur, created the vaccine against avian cholera and then against rabies, developed in the laboratory followed by other discoveries such as those of Robert Koch with the Myco*bacterium bacillus tuberculosis,* better known as Koch's bacillus. And closing the 19th century, there would be Jaime Ferrán with the cholera vaccine; Shibasaburo Kitasato and Emil Von Behring with the discovery of heat-treated diphtheria toxin and Richard Pfeiffer and Wilhelm Kolle who established the mechanism of human immunization against typhoid fever (An Educational Resource by thle College of Physicians of Philadelphia, 2021).

Throughout the 20th century there have been countless developments and the method of immunization against multiple infectious agents is very well established. There are many names associated with it, including Simon Flexner (Polio), William H. Park (diphtheria), Albert Calmette (tuberculosis), Max Theiler (yellow fever), Porter W. Anderson, Jr. and Dr. David H. Smith (Haemophilus influenzae type B); (An Educational Resource by the College of Physicians of Philadelphia, 2021) ; and Jonas Salk and Albert Sabin, developed the inactivated polio vaccine and the active polio vaccine (Healthy Children, 2015).

With these discoveries, public health was developing its immunization programs. According to the different countries, vaccination strategies were developed and the State led the respective programs. Around 1974, under the auspices of the World Health Organization (WHO), the Expanded Program on Immunization (EPI) was instituted.

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In 1977, the Pan American Health Organization (PAHO) established it for the Region of the Americas, followed by the creation of a Revolving Fund in 1979, in charge of making joint purchases of vaccines, syringes, and cold chain equipment, with a focus on solidarity, in order to guarantee equity in access to immunizers.

It is estimated that in the seventies vaccination covered 50% of the target population and by 1992 it was already at 80%. At the beginning of the 21st century, coverage was above 90%. Smallpox was declared eradicated in the world in 1980. In 1994, polio was eliminated from this part of the Globe. In 2016, the Region of the Americas declared itself free of measles, and since 2010 of rubella and congenital rubella syndrome. In 2017 neonatal tetanus was eradicated.

Likewise, the recommended vaccines have been diversifying, going from the basic vaccination schedule, which since 1974 included tuberculosis, poliomyelitis, diphtheria, whooping cough or pertussis, tetanus and measles, to new types of immunizers. , which have included, among others, pneumococcus, rotavirus, influenza virus, and human papillomavirus (Etienne, 2017). Rubella, mumps, hepatitis B and Haemophilus influenzae type b (Hib) have been added to the basic scheme. To this must be added, for enzootic countries, the vaccine against yellow fever (Ruiz, 2021). With SARS-CoV-2, which causes Covid-19, we will surely move towards a seasonal vaccine.

In communicable diseases, there are different groups such as vaccine-preventable diseases, those transmitted by VTE vectors, ETA Foodborne Diseases, infections associated with health care, sexually transmitted infections STIs, mycobacterial diseases and Zoonoses diseases.

The fact that communicable diseases have lost share *does not at all mean* that they do not cause great loss of life and express some fundamental threats.

There is a resurgence of infectious diseases. The main recognition that must be made is related to the recurrence of infectious diseases throughout human history, as is clear from what has already been said, but their lethal threat, under the new health conditions, is especially sensitive, as a result of the unbalanced interface between man, ecosystems, biodiversity, animals, vectors and infectious agents. The lethality of these diseases when it emerges from these imbalances is very high. Some documented milestones in the history of human disease and death are telling.

With the beginning of our Era, an unknown disease around the year 165-180, perhaps smallpox or measles, in Asia Minor, Egypt, Greece and Italy, claimed the lives of 5 million people. Around the year 541-542, the so-called Justinian Plague, caused by the bubonic plague, left between 25 and 45 million dead, affecting the Byzantine Empire (Constantinople). Europe and the Mediterranean. The so-called Black Death, caused by the same Bubonic Plague, between 1346 and 1356, caused the fatality of 75 to 200 million people, affecting Europe, Asia and Africa (Castañeda & Ramos, 2020).

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In this century, the so-called Spanish Flu, between 1918 and 1920, killed between 50 and 100 million people, associated with H1N1 influenza, with worldwide coverage. As has been said, smallpox throughout the 20th century generated a spectacularly high number of deaths equivalent to a multiple of 6 of the deaths of the Second World War. HIV alone on the planet has claimed the lives of 36 million people at its peak between 2005 and 2012 (Castañeda & Ramos, 2020).

Wars have horrified the planet, especially those that have been developed with the technologies of the 20th century, without forgetting the medieval and ancient times, of the barbarism of the campaigns of the empires and between them, or of the armies of warriors that devastated with towns, villages, and pounding established empires, or from the assault on cities and hamlets by the widest range of warlords. But the figures of some of the pandemics, in cases, equal and in others exceed by multiples, the casualties caused in the First World War with 22 million deaths and in the second with 55 million.

Communicable diseases resemble wars, not only because of the mortality they generate, but also because the horror of wars has been proportional to the strategies and weapons of armies, as do infectious agents, which evolve with new strategies and they camouflage themselves in new ways to strengthen their deadly capabilities.

In 2006, W.Wayt Gibbs and Christine Soares affirmed that there would be a variety of contagious and lethal flu that will hit humanity immediately or remotely, in which they agree with several experts, researchers and scientists. They also mentioned that the seasonality of flu outbreaks, as occurs with hurricanes, induces a false sense of *security that does not really exist*.

Pandemics result from virus mutations, they are configured in a risk and danger for the immune system, they are easily transmissible, through means as inevitable as the air or physical contact; they are unpredictable in their occurrence, although they have almost generational cadences, as occurs with the flu virus, for example, in 1918, 1957 and 1968.

They can appear in a species such as birds, then genetically recombine in some way with a human strain of influenza virus, thus acquiring lethal power. It additionally challenges the response capacity of the immune system and this balance results in the greater or lesser severity of the pandemic. And worst of all, expert epidemiologists warn that the next pandemic will affect 1 in 3 people globally. Tens or hundreds of millions will die, it will be unstoppable (W.Wayt Gibbs; Christine Soares, 2006).

The occurrence of disease X has been recognized by the WHO and may result from an unrecognized virus.

3 . RESISTANCE OF VIRUSES AND BACTERIA TO ANTIBIOTICS

Antibiotic resistance and the socio-environmental and socio-cultural spaces where it is incuba-

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ted pose two great challenges. State regulation and with it the required control mechanisms against drugs and their use, while expressing the communicating vessels of a single health and a global health, for which it requires an intersectoral vision from public policy. In addition, it illustrates the latent problems that will have to be faced in global health in the near future.

Viruses and bacteria are essential, in and for human life, and inseparable from its existence. Since the 1980s, it has been presumed that bacteria play a role in the synthesis of a very significant group of enzymes. Homo has evolved with bacteria and viruses. Human physiology is not entirely self-sufficient when performing vital functions, since several of these are complemented and carried out by bacteria and other microorganisms. Thus, a cooperative society is carried out for the development of those functions.

For the first decade of this century, it has been found that the bacterial cells that are part of the human body are ten times more than human cells. According to a microbial census of the human digestive system, carried out in 2010, there are 3.3 million genes, a quantity much higher than the 20,000 to 25,000 human genes (Arckerman, 2012).

With the development of genetics and the study of the microbiome, an alternative paradigm to the one that prevailed until the end of the 20th century has emerged, according to which it is necessary to understand the phenomena of complexity and cooperation of bacteria in the human body, given that aspects such as Immunity, digestion, and evolution all depend on that cooperation. Many of the diseases develop due to an affectation of the microbiome, essential for the well-being and health of the organism (Arckerman, 2012).

The field of research on the microbiome has only generated surprising findings and at the same time demonstrates the complexity of the balances required for human health based on the role that certain bacteria play in the place of the organism in which they are housed and in the due proportion in which they should exist.

Contrary to its basic definition, some specific viruses have been shown to have a role similar to that of bacteria in the functioning of the organism (Méndez, 2015)and, therefore, generate beneficial effects. In addition to the above, viral DNA traces have been integrated into the human genome, contributing to vital constitutive aspects of human evolution. Viral barriers constitute containment barriers for certain types of deadly bacteria. And the investigation is still in progress.

Another issue occurs when bacteria and viruses by more general definition (although as has been said *not specifically*), affect human health, infect cells and trigger diseases, many of them fatal. They thus add to the infectious effects of other microbes such as fungi.

Adverse microorganisms are not only transmissible and affect human health, but also some of them become resistant to the weapons de-

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veloped by science to combat them. Therefore, the resistance of these viruses and bacteria to treatments will result in a worsening of public health and global health problems. They are at the base, as will be seen immediately, of the affectation of a *single health*. The complexity of these phenomena is a public issue that involves governments and society.

The antibiotic resistance of microorganisms is no longer a secret. It occurs with bacteria, viruses, parasites and fungi. Since 2017, the World Health Organization (WHO) has generated a list of priority pathogens that have become resistant to antibiotics, prioritizing the twelve (12) families of bacteria that are most dangerous to health[1].

There is recognition of the dangers posed by this evolution of pathogens, especially multi-antibiotic resistant gram-negative bacteria, their genetic recombination with different bacteria, and their ability to transmit their antibiotic resistance.

It is also clear that antibiotic resistance is progressive and the options to deal with it are running out. Multi-resistance is promoting the appearance of super or pan-resistant bacteria. To this end, due to the urgency of the problem, three categories have been established, such as critical, high or medium priority. The former are especially dangerous[3], causing serious and probably fatal infections, affecting the bloodstream and generating pneumonia, and are particularly common in hospitals, nursing homes or patients with special devices. In turn, they are not controlled by the best antibiotics. The other priorities refer to bacteria with progressive drug resistance, associated with common diseases (Organización Mundial de la Salud, 2017).

Mortality can be shocking not only because of the infection of the healthy population, but also because it can affect the efficacy of other medical procedures associated with pathologies of various kinds, including surgeries.

Of particular concern is the rapid global spread of multiresistant and panresistant bacteria (also called "superbugs") that cause infections that cannot be treated with current antimicrobial drugs, such as antibiotics.

A combination of problems is associated with multi-resistance and the existence of pan-resistant bacteria, such as the loss of pharmaceutical alternatives without being reached by the pace at which scientific research and innovation advances, the relative impact to a greater or lesser extent depending on income levels of each country, greater pressure due to the burden of disease, increased morbidity and mortality and, likewise, strong pressure on health systems both in terms of response capacities and increased costs.

The emergence of highly multi-resistant and dangerous fungi constitutes a lethal threat, less exposed to general knowledge, but which can be configured in a frontal challenge to public heal-

[1] It does so based on criteria such as lethality, frequency of resistance, hospitalization requirements, ease of transmission; possibility of preventing them, available therapeutic options; state of research to generate new antibiotics.
[2] Bacteria such as Acinetobacter, Pseudomonas, and various Enterobacteriaceae such as Klebsiella, E. coli, Serratia, and Proteus.

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th and to single health. Of the 300 potentially dangerous species, some aggressions emerged from among them, have generated sporadic outbreaks, with very high fatality rates with respect to the infected population for some species. Again, this threat is associated and becomes greater, depending on the imbalances between animals, the environment and humans.

> Surveillance for serious mycoses is uneven, so they are likely underestimated. But an accepted estimate indicates that possibly 300 million people suffer from mycoses each year and 1.6 million die, figures higher than those of malaria and similar to those of tuberculosis. In the US alone, the CDC estimates that each year more than 75,000 citizens are hospitalized and 8.9 million more go to the doctor for this reason, at a cost of 7.2 billion dollars annually. In Spain, 8.1 million people suffer from a fungal infection each year (McKenna, 2021, p. 21).

Fungi are also being promoted by climate change, they are riding on the crises of other pandemics, as has recently happened with the Covid 19 pandemic outbreaks, they are spreading to more territories beyond their borders and boundaries to which they were confined and the limits of containment in which they had evolved until today and for millions of years are being altered, to the extent that their traditional habitats are being disrupted, finding new forms of expansion towards animal and human hosts.

The multi- resistance of fungi to treatments has also been generated by some species that have been analyzed, with the aggravating circumstance that the preparation of antifungals is more difficult than the preparation of antibiotics, which are currently twenty types , due to the similarity between human cells and those of fungi, as a result of which there are only five types of medication, and the periods in which one or another of them have been developed, has taken a significant number of years (McKenna, 2021).

In principle, the problem of multiresistance occurs due to genetic modifications. However, there are factors that enhance them, coupled with their omnipresence in living beings, food, and ecosystems. The interfaces between these, under certain circumstances, enhance the transmission and weakening of immunity to antibiotics and antifungals by infectious agents.

The polluted and unhealthy environments, the change in the climatic zones, the bad practices in the use of antibiotics, the failures in the health systems, the non-compliance with regulations, the environmental imbalances, combine to aggravate the situation (Organización Mundial de la Salud, 2020).

The relationship between farms, markets and human consumption of species that have in turn generated resistance to antibiotics due to poor administration practices is especially serious.

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Overcrowded markets are a breeding ground, aggravated by the poor handling of blood and other fluids, allowing the recombination of pathogens between species, which can be and have already been lethal.

There is evidence that in some countries antibiotics are applied to enhance the growth of species such as pigs or cattle, which is generating a serious public health problem, which ends up spreading to water, pasture, air, humans, as well as the work spaces of the farms themselves, homes and hospitals.

> Antibiotics seem to be turning farm animals into disease factories. They become hotbeds for deadly microbes, such as Staphylococcus bacteria methicillin- resistant aureus (MRSA), which tolerates several major classes of antibiotics and is already a glaring problem in hospitals. In principle, the drug works on the farm, but a handful of microbes with genes that confer resistance to its effects survive and pass on that ability to a larger group of germs. Recent research reveals that the DNA segments responsible for that resistance can jump from one bacterial strain to another with astonishing ease, an alarming discovery. By simply driving behind trucks carrying free-range chickens, a scientific team collected drug-resistant microbes from the air entering the cars (Wenner, 2018, p. 76).

Adding to the problems of antibiotic misuse on farms is antibiotic misuse in humans. Self-prescriptions, the recipes themselves and in any case the abuse of indiscriminate intake, without a precise diagnosis and an opportunity in quantity and healthy condition identified, leads to aggravate the phenomenon of resistance, based on the ability of the microorganism to survive to the antibiotic, multiply and transmit its resistance capacity to other congeners of its own affiliation, or worse, of different affiliations.

> Overuse of antibiotics (especially if you take them, even if they are not the right treatment) promotes antibiotic resistance. According to the Centers for Disease Control and Prevention, one-third to one-half of human antibiotic use is unnecessary or inappropriate (Mayo Clinic, 2020).

The conditions created that lead to fungal and antibiotic resistance are the product of human action, of the explosion of uncontrolled activities, of the absence of a perspective of self-care and social care, of the generation of strong externalities resulting from social behavior blindly, from a misuse of the forces generated by science.

Faced with these aspects, public health, which has gained strength since the last quarter of the 19th century; state regulation, public health policies, state institutions, public economy, are facing a challenge regarding the ordering of social relations, facing pressure groups, the entropy of certain polluting sources and the complexity of the factors political, social, environmental and geopolitics that are associated with global health and single health issues.

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4. PANDEMICS, ENVIRONMENTAL IMBALANCES AND OTHER THREATS TO HEALTH

A strain of microorganisms, with which most people have not had contact, and which is not recognized by the immune system, has ample potential to spread. The lethality of viruses, bacteria and fungi is latent, not only because of those that coexist in the human body or in our nearby habitat, waiting for an opportunity to trigger infections, especially when there is immunosuppression; but also, it is latent on the part of those whose habitat, hosts and limits of containment have been maintained for decades, centuries or millions of years in a state of hibernation, but who collapsed the walls, access as powerful invaders with unpredictable effects to unleash the animal and human diseases, morbidity and morbidity and mortality.

The race between the irruption of single health conditions caused by microbes and the capacity of science and its applied developments to understand and generate technologies, protocols, and antiviral, antifungal and antibacterial drugs is an unpredictable gamble. But the lessons learned are fundamental. Reviewing and understanding current trends and repairing critical issues that humanity has already experienced are lessons that allow us to infer precise strategies to be used in the face of identified challenges and threats.

Pandemics and environmental imbalances are two key focuses in the understanding of experiences, trends and challenges of global health and one health.

4.1. PANDEMICS

In this section, a reflection is made on one of the key aspects of global health in the world, the issue of pandemics. These have always existed, with the difference that since the industrial era and the emergence of urban conglomerates they have found more favorable environments, manifesting themselves in the spread of pathogens in a globalized and hyperconnected world.

4.1.1. Experiences of the 1918 pandemic.

According to what was stated by Jeffery K Taubenberger , virologist and world expert on the influenza virus, Ann H Reid and Thomas Fanning, researchers from the US Armed Forces Institute of Pathology (Taumberger, Reid, & Fanning, 2005), conducted an in-depth investigation of the 1918 flu, taking samples and having as reference data, the death of around 43,000 North American soldiers mobilized in the First World War, which is equivalent to 40% of casualties, inferring a relationship between the pandemic at that time and those that occurred later. At the time, pathologist William Henry Welch assumed that it was an infection or plague.

The flu virus killed forty (40) million people between 1918-1919, spreading through Europe, North America, and reaching the virgin lands

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of Alaska and the Pacific Islands. Mortality was between 2.5 and 5 percent. It infected a third of the world's population. The most affected group was between the ages of 15 and 35 years. Those under the age of 65 accounted for more than 99% of the dead.

There were no antibiotics, most died from pneumonia derived from opportunistic bacteria, in an immune system weakened by the virus. But another part died from the virus itself through a more severe viral pneumonia that flooded the lungs with blood or fluid.

Only in the 1930s did it become known that it was a virus. Based on the Army Medical Museum, at the request of the Pathologist Johan Hultin (1951), it was concluded, according to the genetic analysis of the tissue, that this factor was the producer of the flu and death of those infected. The investigation of the virus was specified with a technique of analysis of damaged or putrefactive tissues that allowed the diagnosis of fragile viral genetic material.

The Army Institute of Pathology (AFIP) created in 1862, has three million samples, and includes autopsy samples from victims of the 1918 epidemic. Those with the greatest virulence of the disease were chosen. Autopsy samples were then preserved in formaldehyde and then embedded in paraffin. In a sample for 1996, the sequence of nucleotides that make up the RNA and DNA, in small fragments of five genes of the virus from the sample, was determined.

Johan Hultin found new victims from 1918, buried in permafrost, by obtaining frozen lung biopsies from four flu victims. RNA from the flu virus was found in the lung of a victim, which gave the key to sequencing the complete genome of the 1918 virus. Tissue samples from flu victims were studied in England and the sequencing was identical to that of the United States. Showing the worldwide spread of the virus.

Research on the origins of the 1918 virus is fundamental according to Taubenberger, Reid and Fanning, since to the extent that other avian influenza viruses are sequenced and other hosts other than pigs are sought, the 1918 pandemic will be clarified. its severity and virulence, with which the birth of new strains can be better understood and help detection and prevention tasks to monitor the eventual occurrence of new pandemics.

It is important to repair the previous statement, in order to assess the importance and power of basic research and the challenges that exist for governments, research centers and researchers, in the study of health phenomena that ultimately end up contributing to human knowledge. key aspects for their own survival, despite the fact that in the face of some short-term approaches they do not seem transcendental matters because they do not generate *immediate returns.*

Subsequently there are new pandemic strains in 1957 and 1968. Originating from animals, Asian bird flu was first detected in 1997 in

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Hong Kong. An important finding of the research of the aforementioned experts lies in having found that, in the last hundred years, pandemics have been generated by type A viruses, not by types B and C. This type of virus affects a variety of species and have managed to identify the traceability and metabolism of the reproduction and transmission of these viruses from their reservoirs to humans.

The investigation continues today. It should be emphasized that all research efforts on the world of viruses and their reservoirs, their transmission mechanisms, the analysis of the DNA structure of viruses and mutations, the levels of incidence and transmissibility, among others, are key aspects in public health problems.

For the experts Wayt Gibbs and Christine Soares (Gibbs & Soares, 2006), pandemics have cadences in their appearance and based on other experts, they ventured to affirm that there is an agreement that the next pandemic will affect one in three people worldwide.

The lethality of viruses is associated with the inability of the immune system to react to viruses at the speed at which they spread and reproduce, an unequal race, which inexorably leads to the harmfulness of the virus and its murderous nature when, due to its transmissibility, it is turns into a pandemic. This is applicable to another range of infectious microbes.

For these experts, epidemiological surveillance is essential, together with vaccines, containment measures and medical treatments. These actions must be focused on the different spheres of social relations and permeate the actions of the Government and society.

4.1.2. Epidemiological surveillance

The perspective of epidemiological surveillance requires the functioning of existing networks that, as has been mentioned regarding the One *Health approach,* involve the World Health Organization (WHO), with 103 influenza centers in 83 countries; the World Organization for Animal Health (OIE); and the Food and Agriculture Organization (FAO). According to some concepts, they are porous and slow networks. In contrast, the responses must be too agile, according to the speed of expansion of an aggressive virus. The challenge of containment on average, according to accumulated experience, is thirty days.

Facing the emergency, in terms of the WHO, is based on a. Permanently monitor the spread of outbreaks. and b. Follow the evolution of the properties of the virus in question. On these bases, the phase of the pandemic cycle is established and is described in six phases by the WHO itself, according to the protocol established by it in 2005. A pandemic corresponds to phase 6. The two mutational forms of the virus are produced by changes random, or, when there is the permutation of different strains that exchange their genes in a given host, either animal or human, when it behaves rapidly.

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The US has established three strategies for monitoring the H5 N1 virus, such as information on hospital visits, deaths from respiratory diseases, and virus strains identified in the laboratory. The information is channeled to the Centers for Disease Control and Prevention (CDC). Even so, it is not possible to be quick to establish a quarantine when it is pertinent, for which the information networks also include more doctors and veterinarians, in order to improve the detection capacity.

Information on transboundary transmission of avian diseases is scarce. This requires that a high capacity must be achieved in order to have effective virus detection methods.

Global Health will therefore require, in the immediate future, the consolidation of research systems and early detection of emerging viruses and other infectious factors, as well as greater capacities and cooperation. Greater capacities in international organizations and more integration and cooperation, in collaborative networks of the countries, proposing learning systems and associated scientific work. This should impact each of the countries. These key issues cannot be left to chance.

4.1.3. vaccinations

Smallpox and Polio in the past were destructive viruses, which could be overcome thanks to vaccines. Smallpox is especially dramatic in number of victims, and as already said, it is referred to as one of the greatest serial killers of humanity.

According to experts Gibbs and Soares (Gibbs & Soares, 2006), sufficiently developed vaccine production techniques are not yet available, they are slow, while there are economic problems and complacency.

Each year a vaccine is manufactured with greater specificity for the three most representative flu strains, which strengthens the immune reaction. The production of vaccines from the official start of a pandemic can be around eight months, to which must be added the production and distribution times.

There are insufficient manufacturing plants to produce the number of vaccines required and even worse, if they must be transformed or adopted, either to increase the production scale, or to condition them to the specific production characteristics required, depending on the vaccine modality. On the other hand, there will eventually be two production statuses: the one that responds to the seasonal flu and the one that corresponds to the pandemic virus.

Because it is not possible to shorten the time to produce vaccines and in the face of pandemics, it is necessary to prioritize population groups. And manage rationing.

The risk has also been highlighted that a live vaccine, associated with a pandemic strain that contains a virus, could create the right environment for it to recombine its genes with that of the seasonal vaccine virus, which would make it highly dangerous.

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In 2005, the National Advisory Committee on Vaccines advised a priority as follows: members of the Government, health personnel, workers in vaccine and drug factories, pregnant women and children, the elderly and the sick regularly prioritized with vaccines. There are countries that negotiate vaccine reserves for certain viruses, even under the possibility of their genetic mutation.

Manufacturers are satisfied with the annual production of vaccines and do not see pandemics as the privileged business niche. Companies should be encouraged with risk insurance, higher commercial margins, and in any case a sales guarantee.

These measures and the others that have been exposed are tasks that must be coordinated, regulated, directed and managed by the public sector, since it requires systematization, planning, financing that compensates for externalities and ensures common, national, regional and local interests and their articulation. to global networks.

The best prospects with technical innovation would be: more efficient methods of vaccine production, lower but effective doses, or vaccines that cover all strains of the virus.

Vaccine production techniques have diversified, which also draws attention to the fact that National Health Systems should be more aware of these innovations and establish vaccine production strategies at the national level, given that in a global collapse, it is It is unlikely that the main centers of power or large corporations will manage to administer the vaccines to all the countries of the world in the proportion and just in time required, in the face of the galloping worsening of a crisis.

The role of the State in the production of vaccines has been fundamental, but it has gone through various stages and represents differences between regions of the world, with respect to guaranteeing research, the development of technologies and their appropriation and the way in which the relationship between the State, public laboratories and private laboratories and pharmaceutical companies.

Since the beginning of the 20th century in Latin America and the Caribbean, the production of vaccines by public laboratories was the dominant note, encompassing the production of immunizers for smallpox, hyperimmune and antivenom sera. These productions were diversified with new vaccines and immunobiological products, thus accompanying the milestones in the development of public health.

Towards the end of the 20th century and the beginning of the 21st century, two paths had been marked out in terms of vaccine production on the public sector side. The countries of the Latin American and Central American Region evidenced inertia in their process of technological and managerial modernization, with the detachment that the governments had from their fate, which limited the resources and therefore the transformations required with the new technologies.

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and required infrastructures, as well as the lag in the research trains that are absolutely essential. While this was happening, the emergence of private laboratories became noticeable, placing products of high quality and availability. Although as will be discussed instead, not without limitations.

Therefore, as a result of these two contradictory forces, some public laboratories with low managerial capacity, without government support and with deficient resources and qualities, in the face of the irruption of private laboratories under the indicated conditions, there was even more incentive for governments will pay progressively less attention to public laboratories.

The result at the beginning of the 21st century is that public laboratories did not have adequate capacities and standards to produce vaccines in quality and quantity, with the exception of countries in which governments showed political commitment and made large investments, as is the case of Brazil, Mexico and Cuba.

Both the combined action of the State and global institutions, based on advances in scientific research, have made it possible to limit the incidence of vaccine-preventable diseases, compared to NCDs, which, as already mentioned, constitute the bulk of diseases.

The contrast with the most advanced countries lies in the fact that they, through their public laboratories, developed basic research, while private laboratories carried out the final developments to produce vaccines in an intrinsic cooperation.

The new vaccines require more technological capabilities, are more demanding in terms of research domain and innovation, are more protected by intellectual property rights and patents, in contrast to the low capacity of public laboratories to have demanding research and development trains in technologies, with interdisciplinary teams, applied in research with indeterminate maturation times, and always under the risk of encountering setbacks typical of scientific work, for example, in terms of the efficacy of the biologicals produced (Homma, diFabio, & deQuadros, 1998).

The demands of the public sector in this field are multiple, starting with support through a specific budget program and applied to guaranteeing the production of vaccines, self-sufficiency and the generation of international networks and especially on a regional scale to achieve it, with a selection of vaccine production well determined by the epidemiological profiles, the scientific capacity and considering the way to compensate several externalities, among which is the fact that there are market neglects for producing certain biologicals due to their low profitability.

The x-ray in the production of vaccines in the world is indicative of the problem on the subject. Regarding the production of vaccines against Covid 19, manufacturing was concentrated in 35 countries in the world, most of them high-income, 13 countries are upper-middle income and only 4 are low-middle income (elDiario.es, 2021).

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In fact, the balance that has been carried out by ECLAC for the Region indicates that there are serious national and regional coordination shortcomings. Covid 19 revealed that the supply of vaccines and medicines is limited, there are flaws in the primary health care system, a lack of structural funding for research and technological development, wasted capacity to produce vaccines in a timely manner and generate adequate markets for this purpose thanks to the inexistence of precise industrial policies, weaknesses in promoting the pharmaceutical industry by making regulation more relevant, and shortcomings in regional and subregional integration to generate positive recursion at the scale of production and distribution of vaccines. All of which has led to the formulation of a regional Sanitary Self - Sufficiency Plan (Bárcena, 2021).

The private pharmaceutical laboratories had been concentrating, creating attached biotechnological research laboratories with high specialization, but limited by the market opportunity, such as when a patent is generated for a vaccine that is not placed on the market due to its high price and low demand, Despite being relevant to include it in immunization plans, with which the market is not an optimal solution to leave in its hands the regulations, lines of research, opportunity and relevance of the generation of new biological products, and even their placement and wide distribution. This does not contradict the strategic importance of pharmaceutical companies, their substantial contributions and, therefore, their articulation is rather demanded in a model of cooperation and network articulation with public laboratories and governments. This may include the generation of consortiums, alliances or public-private participation schemes.

Innovations and new technologies will make vaccine production more demanding and likely more concentrated. But without strong research and innovation areas, these challenges cannot be met. Governments and public laboratories are essential in this line, combining epidemiological responses and scientific developments, as well as articulating networks and promoting synergies.

Public laboratories must assume vaccine production lines that private market externalities exclude from their supply in affordable quantity and price, to incorporate them into national immunization programs, such as the cases of triple viral, Hib and antiviral vaccines. hepatitis (Bárcena, 2021)B. More efficient and cheaper production of vaccines is essential.

According to the WHO, critical aspects for the empowerment of public laboratories require business-type management; high production volumes to offset the high fixed costs and at the same time respond in a timely and sufficient manner to the demand of the national immunization programs; good manufacturing practices; access to new technologies and public-private cooperation to meet the high costs related to licenses, patents and intellectual property; quality assurance that guarantees “purity of the antigen, innocuousness, efficacy and thermostabi-

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lity "; strict production schedules; financial and administrative autonomy in management; and high-quality human talent.

The lack of vaccines in principle and depending on the evolution phase of a crisis, leads to taking another set of measures, such as containment.

4 .1.4. Containment measures

The criteria for defining a pandemic changed in 1999, when it was classified as such due to its extension in a country; until the current version, when the virus threatens to jump and spread worldwide, even though it can potentially be contained and probably eliminated.

In fact, the qualification of the microorganism and its characteristics, based on the observation, diagnosis and research centers, should provide key information on the conditions in which to examine its expansive potentials. Its ease of transmission and the speed with which it develops. Ultimately, it is about understanding and qualifying the severity of the pandemic and, based on this and scientific dating, being able to examine the measures that are conducive.

The incubation periods and the time at which the infection begins is a fundamental variable in terms of containment. Locating and isolating patients is never enough, but combined with doses of antiviral drugs and a low-efficacy vaccine, it can stop the pandemic. This is shown by the computational simulations on this matter. However, in some viruses the time to detect an infection is too long, compared to the ability to have drugs available, especially in remote areas. Associated with the seriousness of the situation, associated measures are identified, as follows:

- Low impact: exploration of travelers entering through immigration with flu symptoms.
- Better impact/delay disease: investigation of cases of fever, enabling information telephones, opening of clinics for patients with fever.
- Even more impact: surgical masks for flu patients and health personnel. Handwashing.
- Social distancing: the nature of the pandemic is taken into consideration.

The containment will be carried out according to the conditions of the pandemic. If a virus with pandemic potential has spread rapidly and has covered a sufficiently large radius of spread, rapid containment is unlikely. The same happens when the containment measures require operating conditions that exceed the available resources.

4.1.5. Medical treatments

The degree of lethality of the virus or the infectious agent in question cannot be declared until the pandemic begins. If in an outbreak no one has immunity, the pathogen can perfectly infect 50% of the population.

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In the case of influenza, the microbe suppresses immune responses, neutralizing the release of interferon, while generating immune hyperreaction, measured by cytokines, which are signaling molecules, attacking the lungs, inflaming them, generating dead tissue that leads to breathing artificial.

Its way of operating can vary, and end up generating severe diarrhea or encephalitis. Antivirals with H5N1 must be given in a timely manner or else they are lifeless.

Therapeutic responses are part of the accumulated knowledge at first, but the complexities of a new virus and the way it infects and affects the different organs of the body, suppose a capacity for rapid observation, monitoring and innovation, which based on evidence allow the generation of acceptable protocols for the scientific community and health personnel. But the evidence falters when it is insufficient in the face of the novelty of the attack.

To this is added the demands for resources that match medical treatments, in the face of virulence, the high infectious capacity of microbes when it comes to very rapid expansions and a high fatality rate, which requires resources of all kinds to make them part of the treatments. Adapted technologies must be mobilized, training of health personnel, available beds, care infrastructures, availability of drugs and, in short, a set of immediately available health resources supported by the mobilization of solidarity, cooperation, aid and in any case, in the mobilization of resources from each country.

None of the above is possible without governments and health systems being strong and prepared to respond to risk management that must be incorporated as part of health management systems, supported by public policies and under cooperative network systems. , articulated and connected to the logics of Global Health and One Health.

4.1.6. Challenges arising from pandemics

According to the phases established for the management of a pandemic, it is necessary to have strong institutional capacities of the Governments, in order to be exercising surveillance based on laboratories, scientific personnel and researchers, so that phase 1, characterized by uncertainty, is always present and articulated to the health systems. There is no pandemic at this stage, but it is potentially present.

The *One Health* and *One Global Health approach* must be reflected in the institutional structure of Public Administrations. In this way, for example, understanding the behavior of influenza in animals, scientifically characterizing the infectious factor, examining its evolution, is a fundamental step before it makes humans sick and it does not yet have the ability to be transmitted from human to human.

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Above has illustrated the importance of the forensic experiences of the study of the 1918 pandemic and its implications in terms of research and prediction. It is a good example to understand the importance of a phase 1 of the pandemic, where it does not yet appear manifest. The pandemic is an invisible, extrasensory reality, just that.

From now on, if an influenza virus, continuing with the illustration , has the ability to enter phase 4, in which its ability to be transmitted between humans is verified, all the consequences of action by public sectors are generated and unleashed and the management processes associated with planning, systematic monitoring of the situation, strategies to reduce diseases associated with the pandemic, and how to manage services during and after the pandemic. In all these demands, government leadership and communication with the inhabitants are vital (Organización Mundial de la Salud, 2009).

The exercise of an integrating capacity, with the active participation of society and health personnel, private companies, non-governmental organizations, unions and workers, territorial governments, coordination with the centers of power, with pharmaceutical companies, with global health networks, with world health authorities, assumes that governments are in charge of command and control functions, with an open, democratic role, deploying capacities that must be installed ex ante in health systems.

Beyond the integrating capacity, on the part of the State, its capacity to *manage risks is put to the test,* which implies having identified them in advance, evaluated them, having previous contingency and mitigation plans, in the understanding that pandemics they are not part of science fiction, but of a latent reality that is not manifest. But whose emergence can arise in the form of a storm when the meteorological conditions of the basic balances are affected, breaking the conditions of the fragile and unstable agreements between the different factors at stake that are part *of One Health*.

The public sectors and with them their health systems, have other complementary challenges before, during and after pandemics. Suffice it to point out some fundamental lessons, such as the absence of a culture and a State policy to prevent pandemic risks, the possibility that health workers may be especially vulnerable or find themselves in uncompetitive conditions, recognized and articulated to research, innovation, helpful technological and infrastructure supports. The fragility of health systems pays a huge toll in cost of life and social discontent in a pandemic.

They are complementary challenges, the ability to generate an articulation of the different sectors, under an intersectoral corporate management approach, in order to activate organizational and public management structures capable of responding to emerging situations, under contingency plans, of leading integration ac-

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tions and to mobilize the different interest groups that are potentially compromised in the first line and then in a general way, with the emergency of a pandemic in its phases 4, 5 and 6.

Finally, it cannot be overlooked that the severity of a pandemic is evaluated healthily, in the same way that it should be done socially. The social consequences of pandemics and the strategies for their social management are essential. The overflow of a pandemic will have enormous consequences on social relations and the social fabric. Once again, the leadership of governments and public policies in the management of pandemics and after them is necessary so that the social costs do not exceed the benefits of health policies and do not translate into polarization, increased inequalities, asymmetries or popular discontent.

4.2. OTHER DESTABILIZING FACTORS OF GLOBAL HEALTH

The World Health Organization has ruled on the great challenges of global health (Salud, 2019). A quick list allows us to focus on the emphasis on environmental factors and healthy health environments, since non-communicable diseases, influenza pandemics and other specific viruses have been discussed above.

Environmental issues are directly connected to human health. Environment, ecosystems, fauna, flora, viruses and humans, make up a set of variables connected by complex relationships, so that their alterations and, among others, climate change have enormous importance on Global Health.

Climate change in particular impacts specific populations and habitats, affecting ecosystems, suppressing or disturbing the number of specific populations of species and enhancing others, some of which are associated with the transmission of diseases, such as mosquitoes and mosquitoes.

As a side note, it should be noted that 200 species of mosquitoes and not the remaining 3,300 use human blood as sustenance, even fewer species are vectors and mosquito populations in general have protective effects on ecosystems by exerting their pollinating function, providing stabilizing functions of the trophic chains allowing the sustenance of many species in their diurnal and nocturnal cycles, they contribute in an essential way to the decomposition of remains of organic matter impacting on the conditions of nutritive capacity of the soil, taxing, in short, substantively to the reproduction of populations of animals and plants (Fernández, 2021).

Climate change is impacting not only the imbalances between man and the environment, it is also being a key factor in affecting Global Health (Parshley, 2018).

In this same line of reasoning, especially with the transmission of diseases through vectors, experts have pointed out, based on in-depth case studies, that variations in species, espe-

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cially the increase in transmitting populations, are produced by urbanizing processes, changes in the climatic bands on the planet, complex associations of destabilized ecosystems, which ends up affecting numerous species and threatens the human species.

Studies on the factors that stimulate the abundance of insects are key, and the way in which they come into contact with pathogen hosts, as well as the efficiency with which the mosquito is infected by the pathogen and its ability to transmit it to a host.

All this opens the door to new types of interdisciplinary and interinstitutional analysis, which become more complex, around the great vectors of climate change and the impact on ecosystems (Ferraguti, Martínez, & Figuerola, 2018).

The environmental effects and the breakdown of the balance of the ecosystems, coupled with climate change, require responses from society and social relations in the public sphere, as well as in the scenario of relations between nations, which must translate into a effective and concordant action at the global, national, regional and local levels, in the perspective of a *single health,* to contain the dramatic consequences that have been presented and will be accentuated if current trends continue, in the imbalances of those elements facing Global Health.

5. HEALTH SYSTEMS AND GLOBAL HEALTH

This section mentions, among others, the challenges of achieving universal access to health and medical care that must be conceptually differentiated. In general, access, health maintenance and disease prevention depend on variables that are outside the health sector in the strict sense, while those related to disease care do depend on the same sector. High-quality medical care is required. But it is not enough if the Health System does not guarantee timely and universal access.

Health Systems behave according to the *vision that society assumes* in the face of health problems and, in particular, according to the way in which the different *Centers of Power* within each society give it the place of greater or lesser attention in the priorities. of collective action drawn in the *sphere of social relations of the public.*

If the provision of health services is considered as a collective good, which must adhere to a principle of absolute non- exclusion with respect to its access, regardless of the ability to finance it by those who do not have the capacity to pay for it, then it is a true priority.

In other societies, it may be left in practice that health services are accessible based on individual ability to pay, which should not be understood as a collective priority. In the latter case, health services would be one more commodity, which can be seen in this way, when instead of building a market economy, a market society is

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configured. Of course, there can be all kinds of nuances between the extreme of a private solution and that of a solidary court.

In fact, since the marriage between the theories of new public management and efficiency approaches with social responsibility, social services, including health, have been impacted by including market logics, such as types of incentives and punishments, based on systems quasi-competitive, in favor of allocating resources more efficiently, containing spending and at the same time supplying certain social services with solidarity and universal approaches. In each specific case, depending on the institutional reality and the society in question, it must be evaluated how possible and how well this marriage has turned out in practice.

The complexity is greater, since everything will depend on the real capacity and not only on the declarative or rhetorical aspects, of how much is effectively achieved, according to the provisions, to guarantee the satisfaction of the demand in a proportion equal to or less than the needs.

To evaluate these aspects, we will begin by examining the problems of the health systems, which in themselves are independent of the decisions to provide services. And their challenges will continue with regard to the provision of services.

5.1. COMPLEMENTARY PROBLEMS OF HEALTH SYSTEMS

The lines of work in the field of Global Health from the perspective of the Public Administration are based on identifying what problems are to be solved with the institutions.

The figures provided by the World Health Organization in this regard are eloquent for identifying problematic nuclei, added to those already presented in the sections addressed in this document. In addition to the question *of what the population gets sick of,* there is the essential question that these figures *are increasingly true,* certain, reliable and available, as has been the effort and at the same time the recognition of the great obstacles on the matte , which have been proposed by Bill Gates and the Institute for Health Evaluation Metrics (Gibbs, 2018), as well as by global studies on the burden of disease.

The problems of health metrics are based on the fact that due to geopolitical interests and legitimacy before the community of nations, some political regimes hide the numbers of disease and the causes of morbidity and mortality; or else, they make sub-registrations, resulting from superficial systems of analysis of causes of illness and death; or, the health systems and their information systems are unable to take into consideration, with due seriousness, the morbidity and morbidity and mortality records, especially in the face of events that occur in marginalized regions disconnected from the main health care centers. The result of these problems and inaccuracies lead to the absence of accurate information that allows the understanding of health problems.

Faced with these difficulties of veracity, precision and relevance of health figures, there is a

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global health problem, which is partly international and partly national, which can be solved with the existence of independent auditing bodies or as occurs with the Institute of Health Evaluation Metrics, with independent institutions that carry out analyzes based on alternative techniques, with partial base information, that can generate solid inferences and extrapolations, to give a realistic perspective of the morbidity, morbidity and mortality figures and the epidemiological map of health national and global.

Second, there is the question of *effective access to health*. Nearly half of the world's population *does not have access* to basic health services. In the case of the Americas, due to access barriers, close to a third of the population refrains from seeking health services, due to all kinds of organizational and service availability barriers, such as queues, paperwork, lack of availability of appointments, among others; insufficient personnel, medicines or supplies; geographic barriers, or mistreatment in the care of service seekers and exclusion for various reasons, including those of language and ethnicity (Oficina Regional para las Américas de la Organización Mundial de la Salud, 2021).

The most recent figures from the World Health Organization determine that nearly one hundred (100) million people have been dragged into extreme poverty 4for having directly paid for their own health services, that is, in the face of sudden events, or catastrophic derived from a sudden event affecting health that has not been assumed by society, through recognition of that event through the provision of services financed by a collective system. What is ratified with the recognition of the recurring out-of-pocket expense that implies that nine hundred and thirty (930) million people/families spend around 10% of their budget on health.

Out-of-pocket spending is aggravated by the high costs of medicines, health supplies and self-prescriptions. The Health System as a whole is recent regardless of out-of-pocket spending, due to the prices of supplies and drugs. This constitutes a special chapter of the analysis of health systems that has to do with specific challenges regarding patent legislation, price levels, information asymmetries associated with the definition of health expenses and defining what the role should be. public in this context.

Some investigations have highlighted the need for the public sectors to take the lead in defining research priorities, in the face of drug costs and the patent system, to establish public-private cooperation schemes that allow guiding the allocation of resources according to health priorities, which supplement the research risk incurred by companies in their research work and that there is an international and cooperative concurrence to generate innovation and research in priority challenges of global health (Gómez, Rodríguez, & García, 2021).

In the logic of the Sustainable Development Goals, health systems are required that guarantee care in such a way that externalities can be managed collectively, when it comes to the

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occurrence of events that affect health. This demand can only be achieved with a solidarity, intergenerational scheme that compensates the wealthiest with the most needy, from the healthy to the sick, from the richest regions to the poorest regions. Solidarity in every way.

According to the calculations of the WHO, an effective coverage of health services is required for the entire population, or universal health, which supposes, first of all, that the institutions allow it, as well as, then, having ten and eight (18) million additional health professionals, especially in low and middle/low income countries, duly proportioned, depending on the country, given that they are not available globally, but they are required.

This is the challenge of *universal health,* which emerges from the guarantee that must be offered to the entire population to be able to be effectively incorporated into a set of institutional rules, which include personal and family self-care, participation in the prevention cycle of illness, health promotion, illness care and reparation, when applicable. Under the principle of the right to health as a universal value (Organización Mundial de la Salud, 2021).

Having health personnel is essential. Quality and quantity of human talent proportionate to the needs. Equity in its distribution by population groups. Sufficient qualification and permanent updating, associated from the base, with scientific research, to an optimal generation of professional, ethical and human capacities. In exchange for the above aspects, compensation for health personnel, which allows them to lead a decent, quality life and ensures the risks in the exercise of their profession. The formations must consult the health needs of the population, the shortcomings in the supply of services and be close to the communities. Further reference to these aspects is made below.

This means a conjugation of factors, which articulates the health model, from the perspective of its demand, with the requirements of the supply, which involves not only sufficient provision of technology, equipment and infrastructure, and sufficient financial resources, but also and for, above all, for recognizable and relevant professional qualities and skills of health personnel.

Health is not an external aspect of the community, but intrinsic, since the subject of health is the community itself. When this identity is not adequate, the community is not empowered, health services remain in traditional areas without expanding into the nooks and crannies of less protected economies and habitats, accountability does not exist and there is a lack of intersectoral dialogue and Inter parte between authorities, health personnel and the population. This problem is another side of the same coin, as soon as primary health care is deficient, it is combined with an exclusion of the empowerment of health in the communities (Family, Gender and Life Course (FGL), 2017).

As can be inferred from the figures and problems exposed, all health systems and the respective societies must protect the population from

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contingent health costs, so that when adverse events occur, this does not mean falling into poverty, losing assets and patrimony, or worse still, not having the possibility of accessing services. Contact with the Health System must go from conception, birth, old age and even death. Likewise, it must incorporate the community, since health is not external to it, but intrinsic.

As the World Health Organization has stated:

> Universal health coverage is one of the goals set by countries that adopted the SDGs in 2015. Countries reaffirmed this commitment at the United Nations General Assembly High-Level Meeting on Universal Health Coverage in 2019. Countries that make progress towards universal health coverage will also make progress towards the other health-related targets and goals. Good health enables children to learn and adults to earn a living; it helps lift people out of poverty and lays the foundation for long-term economic development.
>
> WHO contributes to achieving the target of the 13th General Program of Work, 2025, namely to ensure that an additional 1 billion people benefit from universal health coverage, while contributing to the other two billion targets, that is, better protection against health emergencies for a billion more people, and better health and well-being for a billion more people. It also contributes to the WHO mission aimed at achieving the exercise of the right to the enjoyment of the highest attainable level of health (World Health Organization, 2021, par. 9).

In this way, the most problematic issue of health systems lies in their impossibility of guaranteeing universal coverage, in quality conditions, in the understanding that access is not only rhetorical, but that it is effective. The search for universality depends on other dimensions, such as financing and the public economy that affects this type of service, endowments, quality, inclusion, solidarity, efficiency, above all effectiveness, and other qualities derived from the principle director of universal health. This adds to another key guiding principle, which is a *single health,* as can be deduced from other sections already exposed on the subject.

A problem that has manifested itself in several countries is the low transparency and integrity, which is expressed in corruption phenomena. Karen Hussmann points out that each year 500,000 million dollars of public health are lost in the world for this reason, which is equivalent to 7% of global spending on health (Hussmann, 2020), which would be equivalent, according to her calculations, to universal health coverage:

> Corruption in the health sector can mean the difference between life and death, especially for poor people in developing countries. A 2011 study that analyzed data from 178 countries estimated that the deaths of approximately 140,000 children per year could be indirectly attributed to corruption. Infant mortality correlated more strongly with national levels of corruption than with literacy, access to clean water, or even vaccination rates. In another study, antimicrobial resistance was found

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> to be related to both national levels of corruption and the use of antibiotics. Additionally, the reduction in AIDS deaths has been significantly slower in countries with higher levels of corruption (Hussmann, 2020, p. 1).

This problem emerges from several aspects, some of which are the significant amount of resources that are handled, the asymmetry of information, the capture of health systems by particular groups, the multiplicity of actors and logics that come together, and probably the indolence or cooptation of the regulatory and/or supervisory bodies themselves.

The manifestations of corruption in this sector, according to the same studies, appear in multiple forms, such as the absenteeism of medical personnel; bribes at different levels of actor relationships; kickbacks, fraud, such as unnecessary procedures or procedures not performed but charged; theft, counterfeiting, adulteration, caused shortages or extortion activities in the matter of medicines.

5.2. THE CHALLENGES OF HEALTH SYSTEMS

The challenges of the health systems must face the problems that have already been outlined. Governments and public sectors are committed to facing problems and taking on challenges.

It is essential for health systems to build a Health Model that responds to the challenges of *a single health and access to universal health, seeking integrity, having accurate information and framing its action within the global health approach.*

The health model must be fully developed in such a way that it responds to all the challenges in response to the problems. And the institutions must translate the way of structuring and guaranteeing that this model operates.

The vision of health institutions is only understandable within the framework of the main objective of health systems, which is to guarantee people's health. The analysis of such Systems, whose raison d'être is health, cannot be replaced by the dimensions of the Systems administration. They are aspects that complement each other, but the fundamental element is the first over the second.

Hence, within the *fundamental challenges* are the achievements and results, associated with the concept of quality, as a concept that is based on user satisfaction and, therefore, on impact results. In turn, from these challenges, *other derivatives emerge* that are examined below and that compromise public management, public policies and state and non-state organization.

5.2.1. Global vision and national development

In the first place, there is the challenge of *having a global vision and advancing a national health action.* National health systems are strategic, they must be shaped, strengthened and made to operate. But at the same time, there must be

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cooperative work, in networks, of national health, with the different health systems of other countries and with international organizations that deal with global health. The gaze cannot be exclusively national. It is an insufficient look.

This first aspect is not measured easily in times of apparent normality. But a look at the global health issues that have already been exposed, allows us to understand that health definitely has no national borders and that there is a butterfly effect in the triggers of potential factors that affect health.

These false borders are not restricted to the negative aspects, but must also be removed, with greater force, regarding the potential positive aspects, which must be encouraged by national institutions, to participate in the world community of knowledge, research, innovation, policies that work, the manufacture of biologicals, master formulas, medicines, technologies and, in short, strengthen a cooperative, networked and global perspective.

5.2.2. Intersectoriality and multifactorial determinants on health

Second, the health model *must be comprehensive, that is, intersectoral and multifactorial.* Health problems have to do with environmental issues, education, culture, equity, basic services such as environmental sanitation, culture, habits, water, local basic services, the public sector, health providers, laboratories, the empowered community, the individual and self-care, demographic dynamics, among the most significant, but without exhausting the list.

Therefore, it is required that the Health System be understood as comprehensive in the sense that key health variables are identified, managed and impacted by sectors other than the governing body of health in each country, and world organizations. with which, although it is important to have a competent governing body, it is also true that there must be a system of *corporate governance of health,* with the participation of different sectors that affect the health conditions of the population.

This is a challenge that is not easy to assume, since it goes back to the theory of organizations and to the complex tendencies and tensions between the specialty and coordination, between the national centers of government and the territories, between the dynamics of the factors that operate with spontaneity and those that are intended to regulate and control, and all this with respect to the macro-organizational apparatus of the State.

They are also challenges to public management; the way in which the rules for assigning and managing resources and services are arranged; management of primary activities and support activities, to put it succinctly, have a direct impact on the fate of the issues of integration of health systems within state operations.

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5.2.3. Integration of different functional areas

Third, *health institutions must integrate different functional areas*. Specialized compartments come into play in this integration, such as those corresponding to the critical phases of the aggregate cycle of health system management.

In the specialized areas are research, the organization of health services and their integration, medicines, the adaptation and validation of technologies, programs, protocols and interventions. And in the critical phases of management are the stewardship of the Health System, financing, measurement of effectiveness, inspection, surveillance and control, infrastructure management, staffing and human management systems for health personnel. Some of these elements are analyzed below as challenges to be resolved by health systems.

Scientific research is essential. Countries with lower income levels should make an effort to strengthen their research institutions in substantial health topics, both in matters related to epidemiology, public health, and in the study of chronic, endemic diseases and non-communicable incidents. We must add the social dimensions of health and of a single health.

For this, it will be essential to have well-established observatories and information systems, with key entities in specialized subjects, such as monographic institutes for Cancer, cardiovascular diseases, national health institutes, and others. As stated by Great Lewison of the University London College:

> Medical research can benefit society in many ways and through multiple interconnected pathways. Some of these pathways directly involve the commercial sector, through the invention, testing and commercialization of new drugs, vaccines, medical devices and equipment, usually protected by patents, that can provide better diagnoses and treatments to patients. Biomedical patents often cite scientific articles, generally consisting of basic research rather than clinical observations. However, disease prevention can provide greater benefits, which are generally achieved through public health measures (eg, vaccinations, sanitation services, provision of clean water) and when the population chooses healthier lifestyles (eg, not smoking, exercising more, practicing safe sex, and following a good diet). The reduction of environmental pollution has also played a great role in increasing life expectancy. Ideally, all these measures are based on quality research, are incorporated into public policies and are influenced by public opinion (Lewinson, 2008, p. 43).

For this reason, integrating this functional area of research with the other components of the Health System is essential. Research and public institutes are irreplaceable in leadership and in the generation of networks, allocation of resources and focus on topics of interest that are essential to understanding health problems. And sooner or

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later, they have an impact, as pointed out by Lewison, in public policies and in the assimilation of innovations throughout the Health System.

That said, the challenge is how to guarantee a system of public health research institutes, which ones and how many, and how to guarantee that their organizations and management systems are effective, unhindered, and enhance their work, instead of hindering it.

The positioning of these institutes must be a fundamental challenge for health systems. Their articulation with these systems is also relevant, as well as the natural orientation they should have towards collaborative networks with the private sector and with the world scientific community. These challenges suggest that the administrative systems cannot be the ordinary ones of the rest of the Public Administration, in any sense, that is in the legal, organizational regime, or *in any of its management systems.*

Another specialized functional area that must be integrated is that of setting up a *system for the evaluation, validation and promotion of health technologies,* so that one can keep abreast of the development of technologies in the world, their adaptation to national realities, its cost effectiveness, as well as everything related to innovation. This area is also one of research, with an applied approach, and must in any case be linked to broader health research programs.

The challenge of building cost-effective, or cost-utility, or cost-benefit health systems, depending on the approach, is actually associated with all aspects of health. But a fundamental component is the research and evaluation of drugs, vaccines, biologicals, treatments, technologies of various kinds and the way in which they can be analyzed, evaluated, tested based on clinical evidence and articulated to prevention, treatment or treatment systems. rehabilitation, as the case may be. And of course, to the way in which they can contribute to solving the most pressing health problems, depending on their nature.

A relevant approach is to understand that innovations do not stop, but rather, on the contrary, daily and strategically they pose the challenge to governments and the private sector to carry out an economic evaluation of them, based on the convenience or effectiveness, of their clinical evidence and how they could impact health indicators.

Therefore, it is not only about the existence of safe, quality and impactful interventions or technologies, medications and supplies, but it is also necessary to make economic evaluations between alternatives, in order to identify the importance and feasibility of introducing innovations. This is a critical aspect to resolve one of the dilemmas of public policy in the health field, which emerges from the tension between the limitation of budgets and the inescapable and transcendent convenience of innovations in health systems (Departamento de Economía de la Salud-Gobierno de Chile, 2013).

The functional area in the institutional configuration most felt by all health systems and by the

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population in general, is found in the *structuring of health networks, their specialty, but, above all, their integration*. Second, third and fourth specialty medicine is essential.

High excellence and quality services are required. Health services must respond to different health problems, at their different levels of complexity. Services based on epidemiological profiles. Health services must follow the life cycle of the population and its epidemiological profiles, where disease burden studies and information systems are essential.

The primary care system is part of the focus on the structuring of services and a fundamental aspect, since according to the World Health Organization, about 90% of services can be provided throughout life through this type of care, from which its strategic importance in the health system can be deduced.

Some care and others must be provided and established in due form. As the Covid-19 Pandemic demonstrated, intensive care units were vital at the peak of the pandemic cycle and, if seen in conjunction with other pathologies, generated serious difficulties leading to a moral dilemma in many countries.

These units, according to their staffing standards, are highly demanding in terms of high technology, they include special devices and apparatus, such as cardiorespiratory, blood pressure, oxygen monitors, specialized diagnostic supports, devices such as endotracheal tubes, mechanical respirators, intravenous pumps, among others.

Its standards also include specialized human resources, rigorous quality of care, permanence of the service 7 X 24, maximum security of the inmates in the Unit, systematic evaluations of patients at all times and interdisciplinary work of the health professions.

Therefore, harmony and balance are required between the levels of complexity of health care, between the service provision networks, between the services of each health provider, the articulation of all these components in an organizational system and their defined role in the respective Health System.

PAHO has highlighted the three fundamental components of this approach, beginning with attention to basic health aspects, complemented by public health. Next, there is what is related to the recognition of the multifactorial that affects health. And, thirdly, the articulation to the primary care model of the community, with its living environments, with its daily environments, with the active participation of the family and the people in their self-care, in the improvement of their habits and in the exercise of healthy practices. This will require the articulation of primary care with the communities and therefore with the territories and their authorities, with a multisectoral vision.

The effective decentralization and empowerment of territorial entities and their governments

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is the way to make this approach viable. This means that the organization and management systems of health services in the territories and the way in which they are articulated with the different levels of complexity of health care must be structured.

At the beginning of the 21st century, the fundamental trend was towards the decentralization of health services, given that the resolution capacity of the concentration of services at the head of the national authorities was low, a slower response, low innovation, less efficiency and difficulties of being pertinent in the services, due to the disconnection with local problems, lack of understanding of the contexts and the distance from the centers of power with localized demands.

On the other hand, this macro-organizational process of changing roles and responsibilities in the management of health services is not exempt from associated problems. Risks of fragmentation of services, weakening of the central departments that deal with policies, politicization of services, weaknesses or absence of capacities in the territories, loss of legitimacy due to low quality of services, among others.

A new calibration requirement also emerges between the competencies that must be centered and those that must go to the spring of the territories. The information systems must be safely articulated, while the Stewardship of the Health System must remain, supported by a resource allocation capacity and in the monitoring and control of the pulse that must be taken to the degree of health development.

Health services must organize, with a proportionate balance, the external and internal care of health providers, care for special populations compared to the general population, differentiated care for age groups in terms of the corresponding phase of their life cycle, and harmonize the care provided by traditional medicine versus modern medicine. There must also be balance in the strengthening of territories and communities, empowered in the resolution of an equitable care model, but at the same time, the development of integrated networks with the participation of government power centers cannot be neglected.

Health services must be based on relevance, quality, accessibility, coverage, equity and inclusion, sufficiency, among other aspects. This should be manifested in the reduction (within the most optimal possible standards and permissible ranges) of queues, low rates of nosocomial disease, low rates of maternal and infant mortality, articulation of the clinic with research, laboratories and adequate diagnostic equipment, articulation of the clinic and research with teaching, fluidity in the continuity of services, adaptation to the conditions of the population, among other respective indicators that account for these dimensions.

The functional area of the *accessibility of medicines* when patients are formulated, demands both a stewardship task, by an authority specialized in scientific, therapeutic and cost-effecti-

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ve validation, ensuring that the drugs are suitable for health, as well as the safe possibility that users can access their treatments.

Lastly, there must be a governing body for the Health System, which is empowered with the institutional capacities and competencies aimed at regulation, complemented by an inspection, surveillance and control body, as well as a sufficiently solid financial function, to guarantee the balanced functioning of the Health System.

Although these functional areas will be essential in the institutional configuration of a Health System, it is also necessary to consider that the way to resolve all these requirements may vary, depending on the particular conditions of the countries, achieving greater or lesser efficiency and effectiveness.

For this reason, a field of fundamental research is opened in the selection of the most pertinent institutionality in the form of articulating the elements of the System, setting its rules of operation, management and the type of relations that must be negotiated between all the actors and interest groups.

5.2.4. Participation in management

A fourth aspect, which gained strength since the end of the 20th century and which constitutes a challenge for Health Management Systems, is the way in which the participation of the individual is guaranteed, as a user, compared to his relationship with the instances that guarantee and provide health services.

Essential rights such as those to decide on a service provider, or an insurer, in systems with multiple options; Right to information; the right to decide on a dignified death and when pertinent to euthanasia under the conditions regulated in the system; right to receive the pertinent and precise treatments without obstacles of diverse order; prompt and quality care; stay home or stay in a care facility when there is a choice; know the medical reason or the scientific foundations on which the treatment options are based, exposed in a sensitive, didactic and informed manner; These are all critical aspects that health systems resolve differently, but they are topics of growing importance under open administration models.

Individual options are a part of the open management approach. Since another level, as is derived from what has already been said in the challenges of decentralization of services and the strengthening of primary health care, is that of the participation of the communities as an organized collective and represented in different instances of the management of health services, especially those of a local nature, where primary health and public health plans, programs and projects are adopted, or in organizations that provide health services.

It is a challenge for health systems to define the approach with which to assume user participation processes, recognize and guarantee their rights and areas of action, as well as to give users and community groups a voice in decision-making processes, resource allocation, policies

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and monitoring, evaluation and control of different management areas.

5.2.5. The foundership

Financing is a fundamental challenge for health systems. In fact, financing defines whether the purposes of the health policy are compatible and achievable, whether they are rhetorical, and whether in practice progress is made towards *one health* and universal services or not. Because it is of such importance, it is an essential reference for challenges.

Public health policy must include financing in its decision-making process chain, taking the example of what is happening in the world. Under the challenges of global health, the challenges are greater in terms of financing.

The European Union, for example, and beyond, the OECD countries in particular, before the COVID-19 crisis, had reported on a general scale, an increase in health spending, marked by various reasons, such as aging of the population, the increase in medical costs due to innovations in treatments, greater care coverage, among others.

For the year 2017, health costs represented for 32 OECD countries the second concept of public spending in the budgets of the General State Administration, and compared to 2007, most individual countries increased public spending as a proportion of GDP, the OECD average being a 1% increase (OECD, 2020).

Some countries were for the year 2017, above 8% of GDP in this expenditure, as is the case of Austria, Denmark, France, Norway and the United States. In the OECD average, public spending stood at 7.8% of GDP, in contrast to the Colombian case, which stood at 4.9% of GDP.

In health spending, the OECD for its analysis includes medical products, instruments and equipment, outpatient services, hospital services, public health services, R&D and other health expenses not included in the previous concepts.

Due to the effect of the Covid-19 Pandemic, the European Union in particular has raised the need to achieve greater investment in health systems so that new challenges can be faced, in a figure that between 2020 and 2027 will be located at 9,400 million euros, within the framework of the European Social Fund Plus, which of course is accompanied by important lessons and projections such as the need to

> invest in creating stockpiles of medical supplies in the event of a crisis; create a pool of health personnel and experts that can be mobilized to prevent or combat health crises in the EU; train healthcare professionals for deployment across the Union; increase surveillance of health threats; and improve the resilience of health systems to ensure better health outcomes for all (European Commission, 2020, p. 1).

The undeniable reality is that health spending in most countries has been increasing throughout the 21st century and will do so more in the co-

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ming years due to the effect of the Pandemic and the lessons learned from it. The challenge is how to alleviate resources while guaranteeing their efficient and transparent use in health systems. In addition, it is about achieving the objectives with the balance between costs and financing, this is the effectiveness of the Systems.

There are two options that come into play with increased costs. Either increase resources or rationalize spending, although in practice it is both. The increase in income is a political decision, it depends on how the importance of the Health System is approached and on where it is decided to find the sources of financing, which, of course, condition the very objectives of the System.

International comparisons, the anchor of financing income at a fixed percentage of GDP, the guarantee of a financing requirement tied to an indexed spending level, among others, are possible alternatives, which are nuanced with the approach of the composition of the financing, which, in any case, must be loyal to the purposes formulated in the Health System.

On the side of spending and its optimization, various strategies are played that set challenges for health systems. A strategy in certain cases is to share costs with users and define priorities, which has the risk of generating equity problems. Another strategy is to control costs from the service offer through competitive rules and assignments based on goals. In the latter case, the fundamental questioning is associated with two aspects, that of containing costs, but not being efficient, and that of sacrificing strategic social objectives of the health systems.

Cost containment, given a level of expense required to obtain services, based on sharing that cost, implies changing the composition of financing and can effectively lead to an increase in out-of-pocket expenses or to the occurrence of catastrophic events and ruinous for the less well-off or for those who may have assets but not income and the accentuation of inequities in accessibility to health services, as has been illustrated above.

In the cost-sharing modalities there is the *co - payment, the co - insurance, or the direct charge for services*. The proportion required by these instruments in the financing of health spending calls into question the conflict between equity and inclusion on the one hand, and financial balance on the other, given a level of fiscal pressure exerted by the Health System.

Financial pressures also increase when there is a fall in formal employment, which increases income pressure for the Health System, provided that it combines sources of financing of tax and contributory origin.

In the allocation of priorities, as a cost containment strategy, there is an approach that defines health packages in which possible spending rivalries are assigned a prioritized allocation to some interventions to the exclusion of others. This approach assumes other complementary

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models such as the evaluation and adjustment of technologies not only based on clinical evidence, but also on cost-effective studies, as already stated.

Medical practice guidelines formulate recommendations based on evidence, analyze efficacy, cost effectiveness, safety, appropriate circumstances in which to perform interventions under clinical conditions, contributing to the timeliness and convenience of performing them. This does not exempt such guidelines from difficulties associated with conflicts of interest, multimorbidities, dispersion, indifference to the values and preferences of service users, and indicators associated with the guidelines that can distort the relevance of treatments (Ariel, Arancibia, Meza, Madrid, & Kopitowski, 2020).

Waiting lists or queues are used to contain costs, presenting their own dilemmas. The degree to which it can impact equity and inclusion depends on supply planning with the participation of the governing body of the Health System and the participation of other actors such as health service providers, as well as a setting of waiting times that does not destroy the legitimacy of the Health System, especially when the medical criteria and the expectations of the users do not lead to an imbalance in which expectations are violated or the scientific criterion of convenience is violated from the clinical perspective (Banco Interamericano de Desarrollo-CRITERIA, 2016).

Ultimately, it is a complex of techno-political aspects, in which the decision to define priorities among rival demands, with the sole purpose of rationalizing costs, means a bet that can activate entropy in the Health System and that is placed on a balance of facing the universalization of health services, effective access to services and timeliness of care, mainly.

Health systems have been financed with alternative models, among which those based on general taxes stand out, those structured in systems of social security and/or universal public insurance and those established in a mixed form. To understand these systems, the traditions of the countries and the way in which conceptions of the role of the State in public intervention have been developed should not go unnoticed.

The evaluation of which of these approaches is pertinent depends on the results obtained, but in turn and again, on the social objectives established for the Health System.

Systems financed openly with taxes guarantee solidarity, but can lead to open spending, against which their critics will insist that the public provision of health services can generate cost inflation, encouraged by consumption induced by spending. supplier, or by other factors, such as moral hazard.

But on the other hand, financing based on differential insurance payments, or insurance and insurers in competition, can lead to a sacrifice of the system's solidarity, affecting it, if it is the collectively accepted social value. The highest cost would be, in this case, exposing a signifi-

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cant percentage of the population to health services. Exclusion that can be given in the form of denial of services, or ineffectiveness of services.

The greatest tension in health systems is to combine, in an acceptable balance, the demands of equity and solidarity of health systems, with incentives and competition mechanisms as a cost containment strategy. At the same time, it is difficult to reconcile the growing pressures of aggregate and per capita health spending, with the need to increase tax rates, create new taxes or increase the rates of specific allocation to health of a contributory type.

By the end of the 20th century, the World Health Organization questioned whether competition between multiple insurers had succeeded in demonstrating greater efficiency in the Health System, while at the same time there was insufficient evidence of the best way to reconcile competition with equity (Oficina Regional Europea de la OMS, 1996).

5.2.6. Health service providers

Health service providers are another challenge for health systems. At the macro level, it is about examining the best way to balance services, according to epidemiological profiles and health policies.

It is also about establishing strategies to achieve integration, that is, between different levels of complexity and different services within each level of complexity, which entails the concept of care networks. The relationships between primary health care and other levels of complexity, without detriment to the levels of greater complexity, is an analysis that must be approached rigorously.

In this same order of ideas, substitution trends appear, which rationalize costs and resources and optimize management, such as the substitution of the place of care when home care is proposed, or the location of certain levels of greater complexity in others of lower complexity. , or changing settings of care, such as the hospital bed, to less costly family, social, or institutional settings (Oficina Regional Europea de la OMS, 1996).

Another line of work that has an impact on hospitals and their reforms are innovations in therapeutic methods, in technologies, treatment improvements, reduction of days of stay in the services, which leads to dimensioning the number of beds and the personnel required, under efficiency standards.

The planning of services at a macro level is essential, complemented by the need to organize hospitals well and define internal management systems that are efficient in optimizing resources.

Reforms to providers can occur in conditions, according to which, there are *competition approaches,* or there is an absence of them.

In competition approaches, there are those based on demand subsidies or assignments by results, in which resources are assigned to providers based on effective care.

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In any case, the concept must be balanced, given that there are various problems of complexity, such as the baseline from which it is based so that public providers are duly prepared to be part of a market contest in the allocation of resources.

It also influences the equalization of the features of autonomy to support these levels of competition, especially if it is a question of quasi-public health markets where there are public and private institutions competing for resources.

Another aspect is due caution in areas where there is marginality, and against which the institutions that provide services cannot be measured with criteria similar to those in areas with greater attendance of providers.

5.2.7. The effectiveness and evaluation of the systems

Indeed, health systems can be varied. All health systems equally face growing costs, with respect to the challenge, in turn, of guaranteeing optimal operating conditions and achieving the ultimate objectives that must be achieved.

Thus, the World Health Organization has established certain scales for the analysis of the effectiveness of the systems, against which efficiency comes into play, to go hand in hand with the effectiveness and sustainability of the System itself. The scales of the World Organization are, from the perspective of the achievements of universality, to measure the proportion of the population that can have access to quality essential health services, which associates it with objective 3.8.1. of the SDGs, and, secondly, the proportion of the population that spends significant amounts of the family budget on health, which associates it with numeral 3.8.2. of the SDGs (Organización Mundial de la Salud, 2021).

Equity is also a central point, in terms of knowing who is excluded from services and why. In addition, the World Health Organization proposes the analysis of sixteen (16) health services, considering them as indicators of the level and equity of coverage in the countries, grouped into the categories of (Organización Mundial de la Salud, 2021):

1. Reproductive, maternal, newborn, and child health (family planning; care during pregnancy and childbirth; full childhood immunization; health-seeking behavior for pneumonia).

2. Infectious diseases (treatment of tuberculosis; treatment of HIV infection with antiretroviral drugs; use of insecticide-treated nets for malaria prevention; adequate sanitation).

3. Non-communicable diseases (prevention and treatment of high blood pressure; prevention and treatment of hyperglycemia; detection of cervical cancer; (no) tobacco use).

4. Services: capacity and access (access to basic hospital services; density of health personnel; access to essential medicines; health security: compliance with the International Health Regulations).

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However, these global parameters, as indicated by the WHO, may be conditioned to their own national realities, according to their established policies and strategic goals, given that health problems will, in any case, have particular conditions. The important thing will be to establish the way in which the pulse of the Health System is taken in each specific case.

Therefore, these objectives and their indicators, whether universal or specific to each country, must be obtained and financed, recognizing that the costs of health systems have been growing, in part linked to the progressive recognition of the human right to universalization of health services and in part to the aging of the population, in several of the world's countries, or from the pressures derived for other regions due to the effect of migratory phenomena.

Health evaluation systems are varied, there are alternative methodologies. It should not be forgotten that in the evaluation of health systems there are intervening variables outside the Health Sector, since the determinants are multifactorial and the concept of One *Health* and *Global Health* impact in every way the particular performance of any System considered individually.

A relevant guide to examine different perspectives in the evaluation of health systems has been developed by José-Manuel Freire Campo (Freire, 2012), where the different evaluation models, their methodological approaches, their advantages, and limitations are analyzed.

Before reviewing a couple of successful cases, it is necessary to underline that there are deep inequalities between successful and unsuccessful health systems and that there is a strong association between countries with low social and economic performance and poor health indicators. This makes sense having formulated the Sustainable Development Goals.

> Poverty and poor health are interrelated. Poor countries tend to have worse health outcomes than wealthier ones, and within countries, poor people have more health problems than well-off people. The association between poverty and poor health reflects a bidirectional causal relationship. Illness or excessively high fertility can have a considerable effect on family income (1, 2) and even make the difference between being above or below the poverty line (3). In addition, poor health is frequently associated with considerable health care costs (4). But poverty and low income are also causes of poor health (5). Poor countries and poor people experience multiple deprivations that are expressed in high levels of ill health (6, 7). In this way, poor people are caught in a vicious circle: poverty breeds poor health and poor health maintains poverty (Wagstaff, 2002, p. 316).

The high correlation between poverty and health deficits occurs at the country level in a marked way and more or less generally in low-income countries. Within each medium and high income country, the statement can be qualified, since

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the benchmark will be the strength, equity, solidarity and effectiveness of the Health System, although *poverty is in itself a health condition.*

It has already been discussed what a catastrophic health event implies, when the Health System is not capable of solving it, which allows us to make a statement to the contrary and in that context, that is, that the affectation of health is a factor of poverty, when the Health System is unanimous in guaranteeing the principles of solidarity, quality, universalization and efficiency.

Returning to the annual evaluations of the effectiveness of health systems, there is the one carried out by the WHO, among which France occupies the first place, characterized by high standards of care, by a highly public supply of health providers (62%), although the private sector with or without profit spirit participates.

Financing is strongly state, it is guaranteed with a universal and obligatory insurance, called *Carte Vitale,* which in the long run is a health account against which the expenses incurred by a person in the Health System are cleared. In reality, it is a public health account, but individualized by citizen. Most people have complementary insurance to guarantee full financing of their services, called *Mutelle.* When the citizen pays at the *Mutelle,* his reimbursements are made in part or in full against his *Carte account Vitale.*

the *card Vitale* also contains in its integrated memory, as encrypted information, the complete clinical history, as well as a simple accounting of double entry of expenses and credits made, identifying the paying agent, the state insurance and the user of the service.

Examinations, hospitalizations and most medicines are universally accessible and are debited against the *Carte Vitale.* The crossing of accounts when there is hospitalization is a simple procedure, since it crosses the information of the hospital discharge, with an email from the patient discharged from the service. Just as simple are payments to doctors who treat patients (Cárdenas, 2014).

he French system certifies full coverage, with high standards of quality in care, important innovation and with the guarantee that, in serious, high-cost or long-term illnesses, financing is 100% state. The quality is expressed, among others, in low waiting levels. This has its reward in the health indicators.

Among the characteristic features of the French system is the free choice by users to choose health professionals and institutional providers, observing that this freedom extends to being able to go directly to a specialist, although in this case the reimbursement of this attention is minor, if it has not been previously seen by the general practitioner. There are some exceptions, in which this kind of penalty is not generated when emergencies, obstetrician-gynecologists, pediatrics, psychiatry and ophthalmology consultations occur (Apolo Español, 2021).

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The administrative management is simple, with a single payer that is the Ministry of Health, with very low transaction costs and the payment systems for providers are practically immediate:

> Long delays in reimbursement, so common in the US, are illegal in France. Doctors and hospitals are paid within a week and patients must be reimbursed before the end of the month. Because insurance funds don't spend on marketing or filtering users or reviewing and denying applications or paying dividends to investors, they are more efficient than US insurance companies. Large American for-profit insurance companies spend up to 20% of their income on administrative expenses. French insurance companies routinely keep administrative costs below 5% (Cárdenas, 2014, p. 45).

Solidarity is guaranteed, since there is no discrimination for reasons of any kind. According to WHO statistics, the catastrophic payment is one of the lowest in Europe, with high protection for lower-income residents.

Life expectancy at birth in France is 80.1 years for men and 85.7 for women, and for both sexes it stands at 82.9 years, comparable to Spain, Japan, Singapore, Israel, Ireland, Belgium, Chile, Costa Rica, Denmark, and Australia, and well above the world level, which is 69.8 for men, 74.2 for women, and 72 years for both sexes (Organización Mundial de la Salud, 2020).

Asian continent is Singapore, which combines private public care, with high standards of health care, quality and low cost relative to its GDP. In this case, the Health System is financed with a sum of financing sources that combines the sources indicated below.

The state fund in which the taxes are taken, called *Medifund* and against which the payment of services to the population without the ability to pay is guaranteed, and which has its counterpart, in the *public* health centers themselves, which are referred to ahead, all of which can guarantee subsidized services in about 50% to 80% of the value of the services.

A private fund in the form of an *individual account,* called *Medisave,* with some affinities to the aforementioned in France, which is fed by mandatory contributions from employers and workers, against which medical care is debited, especially those related to hospitalization, surgeries or tests specialized; This system is complemented by a mandatory savings plan, fed by a percentage of the worker's salary.

Finally, there is the so-called *national fund Medishield,* which finances catastrophic events, exceptional health situations or chronic illnesses or those that must be treated in long-term times, all of which are not covered in the private fund or individual account (Observatorio Parlamentario Chile, 2013).

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Public hospitals are structured as limited liability companies, willing to be competitive and provide subsidized health to the population with hospitalization and polyclinic services. They are considered high reference centers of the entire Health System and are placed as an example of rigorous quality standards worldwide. Private health centers are equally of high quality and their costs are similar to those of the public sector.

One of its virtues is that the Singapore Health System introduces competition between health service providers in essentials, under an insurance system that guarantees, according to the conditions of each one, unequivocal access to the provision of health services, with a Expenditure controlled by each person's own account, from which their health benefits are debited (Observatorio Parlamentario Chile, 2013).

These examples of health systems with relatively controlled costs, high quality, low transaction and administrative operation costs, low institutional complexity, and with high health outcomes in a country of nearly 68 million people in 2020 such as France and at the other end of Singapore with a population of 5.6 million people for the same year, allow us to infer the importance of developing public policy and Public Administration strategies, which aim to combine and enhance the functional aspects of health systems, governed by inclusion, solidarity, universalization and the effectiveness of interventions.

The traditions of the countries, their differential cultures, their institutional systems, their economic strengths, among other factors, are incidents in the structuring of the health systems, which are not isolated from the rest of the sectors of society that have interactive effects on the results Of the health.

It is not easy to copy the models automatically, but to examine the conditions that make it possible for certain forms of organization and management to be successful and probably, under these adaptable premises. Conditions count more than approaches and measures that can be replicated. This field of comparative study is vital to promote, as an observatory, possible lines of research work in the field of Global Health and the structuring of health systems.

As mentioned above, innovative and expensive technologies, new drugs, chronic diseases associated with age, more rigorous care schemes, are all factors that are explaining the increase in costs. The latter must go hand in hand with greater efficiency efforts in the use of resources, in the reduction of administrative costs, in less institutional complexity and in the path of greater efficiency with quality.

Quality, reiterating what has been said, is another focus that focuses on results and impact. It is associated with a movement that is based on the analysis of evidence on the structure, processes or results. And in addition, the internal and external factors to be evaluated as constitutive of them.

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In these fields, health systems are challenged to evaluate processes associated with a certain expected result. To evaluate the structures, such as the infrastructures, the personnel or the technologies, always based on a more or less proven hypothesis of the coefficient that must be reached between a certain value of these aspects, to obtain the achievements of the attention and therefore of health indicators.

Internal factors constitute an evaluation of clinical results, which involves experts from the same health service provider and certifying firms, while external factors are associated with specialized evaluators with a macro vision, different from the health institution.

In these internal processes in the health institution, what has already been said about the clinical care guidelines or the evidence-based medicine approach stands out, as well as that related to the evaluation and validation of technologies, which require strong support from research and of clinical information.

In addition to the above, there are quality accreditation systems based on standards aimed at guaranteeing quality in care, involving all processes and levels of the organization, in the effort to obtain the best possible results for people. , processes and society. All this based on continuous improvement, learning, knowledge management and innovation.

These evaluations at the micro-organizational level of the health units and services are transcendental, but in the space of this work they are only mentioned as a chapter of special interest for their evaluation and to overcome the formality that exists in some cases resulting from confusing the rituality of accreditation processes with achieving effective and profound changes in culture, management, leadership and institutional performance. The way to reconcile the two formal and real elements is a challenge to be examined in the dynamics of implementation and of course in the review of quality management approaches and accreditation processes.

6. RESEARCH ISSUES

The analysis of *Global Health* and *One Health*, requires delving into and addressing lines and problems under investigation, which extend, as has been seen, to the field of Public Administration.

Building a Health System is in the field of public policy, it requires social dialogue, in addition to an interdisciplinary discussion scenario between politicians, governments and experts in different disciplinary fields of health sciences and other disciplines.

The Public Administration of Health Systems is an essential dimension of the State's action and has significant impacts on organizational physiognomies, rules and public management systems. Public policy dialogues with the organizational and management systems that are specific to it.

The reforms to the health systems combine the institutional aspects in a whole. They express the

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historical emphasis of public intervention that corresponds to the stage of development of each society, translating what the structuring of political power encrypts as dominant forms of thought, elevated to the level of social values. In this case of social health values.

The existence of a Global Health and a Single Health, has consequences on the tendencies of reform in each country. This occurs because the references of the health models are well documented and there is evidence and well-founded studies, supported by indicators, which are accessible to various decision makers, politicians, academics, research groups, non-governmental organizations and, in general, various groups. of interest.

The rankings from the best to the worst health systems are not unequivocal, but they do give guidelines and indications, which in one way or another have political impacts in each nation. What happens in this regard has been illustrated above with the difficulties of truth in health figures, the registration or under-registration of the incidence of diseases and causes of death for some countries and the concealment of the real epidemiological situation.

It can be inferred from what has been said that there are national circumstances and responses of the countries to their vision on how to address the health problems of their populations, but also that there are international references and pressures emerging from the community of nations. And that reality is very strong because there is a Global Health and a Single health, as is understood.

The World Health Organization has considered the reform trends of health systems, as a focus of study and policy objectives. In this sense, it has proposed to consider:

- Universal coverage reforms
- Service delivery reforms
- Public Policy Reforms
- Leadership reforms to make it dialoguing and inclusive.

The reform tendencies are important to consider, given that they obey diagnoses and analysis trajectories of interest for each country. When health indicators are not optimal or the Health System falters at one of its corners, having in mind the way to approach a reform is transcendental. At this level, the comparative analysis can be especially significant.

As has been stated, other complementary issues are important, since institutions are relevant for the construction of a health model and a single health.

6.1. GLOBAL HEALTH

Research efforts must ask how to guarantee the universalization of health services, under optimal quality conditions, from the regional, national and local levels, observing at the same time a conception and response to global health problems.

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Global health problems are discussed and resolved through collaborative work and networking with other countries and with research centers, observatories, laboratories, pharmaceutical companies and powerful groups that make decisions about health in the world. Be the place to reflect on equity problems when it comes to facilitating affordable costs, availability of critical supplies and even, under global alert conditions, giving priority to certain regions of the world that may be excluded.

The study of interest and power groups that exercise effective control through knowledge, technology and the discretion that this confers on them to arrange and allocate health solutions, in the context of global health, are areas of reflection that must be explored and made explicit in well-documented works. National public policies in the face of global health policies and the forms of disposition of resources, decisions and access determined by the centers of power and knowledge, represent a specific field of reflection.

From a national perspective, the examination of these aspects, from the definition of national health policies and the way in which coordination with other regional and transnational levels is arranged, is essential to understand the dimensions of health problems. In addition, it defines the institutional relationship systems and the organizational and management provisions that must be addressed to address health problems.

A wide field of prospective research and analysis opens up in this field, fostering aspects such as the following:

- Role of global institutions in the perspective of one health and one global health.
- Balance on the state of global solidarity and learning among nations about problems and solutions related to public health.
- National strategies and policies to promote institutional mechanisms and agencies in each country, to learn from world experience and translate it into adequate internal policies.
- Examination of how the promotion and support for the generation of capacities and institutions ready for the progress of health systems has been carried out or should be carried out.
- Characterization, analysis and plausible policies on how to promote global access to technologies and medicines to the populations that require them.

6.2. UNIVERSALITY AND JUSTICE

Universality is equal to justice to the extent that this right is guaranteed progressively and safely, in the way that Sen proposes the concept of justice (Sen, 2010). Key values in the structuring of health systems. In this field, public policies and their development, the strategies that each comparative Health System that is

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relevant, have followed to effectively guarantee justice, bearing in mind their results to achieve inclusion and equity, should be addressed as a domain of studies. in health care.

An illustrated path that serves to build studies of this nature is to take the comparative indicators of the health systems, analyze their fundamental characteristics and their success factors in terms of universalization. Effective access to services, as exemplified in the case of France and Singapore, are just some references.

Building analysis models where the variables that are significantly correlated with the indicator or a more complex index of universalization are identified, is, in principle, a guide to address this essential issue. Which must be seen in conjunction with quality standards. These are two aspects that must go together: universalization of health with quality.

6.3. EFFECTIVE CAPABILITIES TO IMPROVE HEALTH COMPREHENSIVELY

To improve the capacities of the Health System, in terms of health progress in its various perspectives, the best alternatives must be evaluated to integrate different levels of complexity, evaluate the configuration and role of primary health care and its complementarity with the other levels of care, observe the institutional rules of the Health System and identify, with comparative methodologies, the critical success factors.

Effective capacities are related to the various functions that health systems must fulfill, as they have been exposed in their place, which means the understanding and analysis of the relationships between stewardship, financing, provision of services, public-private roles , the levels of government involved and their roles, epidemiological surveillance, health research, technology assessment, control of medicines and supplies, among other aspects, their reciprocal relationships and the final meaning that their interactions imprint on the Health System.

6.4. TIMELY RESPONSES TO PUBLIC HEALTH PROBLEMS

As explained, public health is essential in generating quality public policy. It implies examining all the strategies and functional and institutional articulations, planned to impact the main public health indicators, which must measure the very quality of the policy and its management. Some of these indicators are life expectancy at birth, avoidable mortality and years of life lost due to disability, giving a perspective of how effective public health is.

On the other hand, they are essential elements to examine the quality of the policy, the areas of public health policy of promotion and prevention, epidemiological surveillance, monitoring and behavior of communicable and non-communicable diseases of impact, policies of immunizations, the fight against certain diseases associated with the environment, consumption, habits, or self-care.

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In this space, the concept of One Health takes on special significance, because it leads to an examination of the structure and forms of public management in which sectoral policies link the health sector and the way in which other sectors are integrated into politics and systems. sanitary. Present in this logic are the sectoral intersections of an institutional and private nature, the networking spaces that emerge from these intersections, and the emergence, to a greater or lesser extent, of collaborative management. In number 6.6. the most pertinent topics of analysis on this approach are specified.

6.5. INTEGRATION OF PUBLIC HEALTH INTERVENTIONS AND PRIMARY CARE

Another examination of problems that requires deepening and carrying out research work is that of the integration of public health interventions with primary health care, with a view to developing them with a view to specific populations, settled in specific territories, that operate on people's daily lives, strategies for health promotion and disease prevention are adopted and a broad participation of communities is promoted, promoting self-care and permanent dialogue with health authorities and other institutional sectors.

Primary health care denotes one of the most important dimensions of the study of Health Systems. Since the declaration of Alma-Ata in 1978, the validity of the primary health care approach has been preserved. Placing people at the center of health care, establishing which lifestyles are most desired by communities, articulating multifactoriality and multisectoral care, focusing on disease prevention and health promotion, Carrying out specific actions in the territory and associated with people's daily lives, as well as organizing a basic care network that is functional, timely, and universal, among other aspects, are part of the concept of primary health care. Issues associated with primary health care refer schematically to the following topics of interest:

- Essential axis to reorganize health systems
- Disease prevention and health promotion
- Universal access to social health services
- Community participation, expectations and needs of people
- Promotion of healthier lifestyles
- Teams of health workers that facilitate access to technology and medicines and their proper use.
- Organization and management of health networks and their integration with other services and levels of complexity of care.
- Organization of the primary health care operation teams and the institutional matrixes that must support this management.

In this field, it is essential to carry out comparative and evaluative research, to propose reforms

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to health systems that are conducive and, again, to learn from the best practices and models of primary care in the world, evaluating their results, the conditions in which they can operate successfully and propose the best results and performance indicators that correspond to the country in which you want to develop a primary health care system.

6.6. IMPLEMENTATION OF HEALTHY PUBLIC POLICIES IN ALL SECTORS

Public health is not unique to the institutional health sector, as has been insisted on. A problematic field of analysis and study on courses of action of public policy has to do with the presence of the health component in different sectors, the way in which the articulations and the cross-sectoral content of that policy are carried out.

What, in the literature of international organizations, such as the United Nations, has been designated as governance, implies that synergies are added, including, therefore, all interest and value groups, as part of a strategy aimed at that the objectives are agreed and fulfilled with the greatest possible participation of all and obtaining the best results.

In such a perspective, this vision with greater reason opens a field of work at the investigative level about how the synergies and integrality of public institutions should be carried out at all levels and in all sectors, to guarantee Health governance.

In this sense, the balance and prospective policies should be evaluated and investigated against the health systems, based on comparative analyzes and best practices, on the following topics:

- Experiences and evaluation of institutional strategies that allow the creation of collegiate spaces where different sectors of the State are accommodated in the resolution of health problems.
- Experiences and analysis of leadership of health authorities in integration processes.
- Perspectives and practices in the creation of agendas and public policy in the field of comprehensive health
- Decision-making systems in health policies integrated under the One Health concept.
- Identification of key articulations that promote virtuous circles for the development of comprehensive health systems.

6. 7. THE HUMAN FACTOR AND ITS GREAT CHALLENGES FOR GLOBAL PUBLIC HEALTH

Human talent in health is key in the perspective that health systems function and meet their objectives. It is the main living element of the management and organization of health processes and their achievements. Although it seems

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trivial, the complexity of problems associated with this topic is high. It is assumed that the achievement of the Sustainable Development Goals and any of the problems that have been discussed are insurmountable without human health talent. There is a dimension of quantity and another of quality.

In terms of quantity, the critical threshold that must exist at the first level of care is at least 44.5 doctors, nurses and midwives for every 10,000 inhabitants, assuming that there are no biases in the geographical distribution of this talent, for example, with a low presence in rural, scattered and border areas, or worse still, where there are conditions of strong social conflict or rampant violence. Likewise, it is desirable that the sufficiency of human talent allows the organization of first level care groups, as teams close to everyday life and to the communities.

On the quality side, it is necessary to guarantee adequate working conditions, quality of performance, formation of interprofessional teams according to the demands of the health networks that have been integrated. The relevance of the health model, its demands, based on the epidemiological profile of the population and the dynamics that are projected, must be consistent with the budgets and plans for expansion and availability of human talent in the short, medium and long term, the latter, taking the pulse of trends, projections and simulations with predictive models and algorithms.

For the WHO, it is essential to improve the quality of professional profiles in health, given that in recent decades there has been a decline in training standards in health sciences, in terms of quality and relevance, although it is not a universal statement. In his logic, progress should be made in profiles based on competency-based training, flexibility in the curriculum, a well-qualified teaching staff, and development of programs with an interprofessional approach.

One of the dilemmas raised by the WHO is that of high training in medical specialties versus having health personnel that is appropriate to the first level of health care. Next is the non-correspondence of the specialties in their composition with the epidemiological requirements. And finally, there is the fact that remuneration in primary care may be insufficient, or in other cases that remuneration in foreign countries is more attractive than in the country of origin, contributing to generate externalities in deficit countries.

In the case of the Americas, under the auspices of the WHO and PAHO, at the 29th Pan American Sanitary Conference, the human resources strategy for access to and universal health coverage was agreed upon (OMS-OPS 29a Conferencia Sanitaria Panamericana, 2017).

The strategic lines focus on three aspects: the governance and stewardship of human talent, the conditions and capacities, and the adequacy between the health sector and the educational apparatus.

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What is related to Stewardship supposes a combination of aspects of a substantial administrative approach, such as planning models, intersectoral articulation, human talent information systems, exercise of transformative leadership and strategic orientations on the various dimensions of human management in health.

The Rector's Office brings up the fact that reforms to health systems and their eventual strengthening is only possible with the participation of human talent in health, because in the absence of this or contrary to it, there is no possibility of achieving the consolidation of processes and expected results. The aspects to consider in this plan are:

- The transformations and innovative public policies of health systems must have human talent in health as their main ally.
- The incentives must be appropriate so that human talent in health is aligned with the transformation approaches, which requires identifying them, testing them and evaluating their effectiveness and their appropriation by these agents of the Health System.
- Fair remuneration systems based on a strategy of dignity, which considers the priorities of the healthcare model as a complement and generates positive signals to locate personnel in geographical and demographic areas that must be treated with equity.
- That the institutions that make up the Health System allow participation in the management and decisions of health personnel according to their affinity with the institutional government.
- That the quality of care integrates the human talent of health as a first-order actor in the understanding that quality systems are universal to the organization.
- Interaction skills, communication, negotiating skills and managerial vision.
- Capacities to promote integration with the perspective of articulating policies and gathering the support required by other national and international authorities.

The articulation between the Health System and the educational system explores the following orientations:

- Consult the epidemiological profiles, the priorities of the health system and examine the balance between supply and demand for human talent.
- It guides the training and generation of competencies so that the primary health care system is optimal.
- Depending on the fields and lines of research.
- In keeping with ethics, social commitment and the humanization of health care, generating behavioral competencies.

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- Generating an understanding of the rules of operation and the institutions that make up the Health System.

- Generating awareness about the objectives and balances required in the Health System.

The administration of health systems, with all the demands and specialties that they entail, requires human talent capable of understanding the nature of health institutions, their objectives, their specificities, their sectoral and intersectoral relationships, the identification of groups of value and management systems of the public health administration. In this sense, another fundamental challenge is to generate capacities to manage health institutions.

7. CONCLUSIONS

There are health threats to humanity that emerge from a complex of economic, social, and environmental imbalances. The dynamics of global health and one health express significant regional imbalances, which are reflected in health indicators. Diseases are not distributed equally across the globe.

Infectious microorganisms, which can trigger a large-scale pandemic, are powerful threats. The uncontrolled action of the human being in his relationship with other men, with nature and its complex reactions with respect to man, are opening a portal of instabilities that can lead to chaos, once a critical threshold is reached. Social factors play a determining role in global health.

The vision of *Global Health and One Health* are a response to imbalances of various kinds that affect human health, other species and the planet. It is not just a matter of concepts, it is that the expression of reality of those terms is only possible with a determined action of the State, which cannot be abstracted from the complexity of all the factors that intervene in the health-disease process, which implies that it must respond with public policies at different levels, involving the dissimilar social and economic actors, at the sectoral and intersectoral levels, at the global, regional, national and local levels.

Global *Health* and *One Health,* are institutionally expressed in the existence of world, regional and local bodies, as well as in the bodies that deal with sectoral issues that are articulated in colossal world bodies.

It is not possible to advance in the solution of health problems on an exclusively national scale. Nor is it possible to blur national problems in a global action. Both spheres must complement each other. Global solidarity and joint learning about public health problems and solutions are essential.

States must have the capacity to network, learn from international experience, identify the conditions that make health systems successful. Collecting good practices at this level is essential.

Each country is called to develop national capacities, to generate health sovereignty, strengthen scientific research and harmoniously in-

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tegrate the specialized functional components that make up the Health System, with an active role of the State.

There are some well-identified challenges, such as universal coverage in the provision of health services, responding to the specific and highest-priority health problems of the population, integrating service provision networks, strengthening and articulating primary health care with other levels of complexity, apply healthy public policies with an intersectoral approach.

In the primary health care approach, efforts should be focused on disease prevention and health promotion, guaranteeing universal access, promoting healthy lifestyles, structuring teams of health workers that facilitate access technologies and medicines and manage the Health System in an integral way.

In the human talent in health, a solid strategic planning must be developed, guided by the stewardship in health, adapt the educational model to the epidemiological profiles and the demand in health, guarantee proportionate remunerations and conditions of dignity, have an equitable distribution of talent design and implement the appropriate incentives, based on the fundamental criterion that human talent is the support of any Health System and the definitive factor in its success. In addition to this, there must be human talent with managerial skills for the administration and management of health institutions.

Collegiate spaces should be established and managed where different sectors of the State are accommodated, given the complexity of health problems, with a gestational approach to their resolution, with the broad participation of various state, private and community actors.

Successful health systems must be taken as references through evaluative and comparative research, understanding the conditions that allow their establishment and their achievements. Deriving from it models and approaches that may have the possibility of being adopted as good practices and establishing strategies that can lead to developing these models and implementing them in other realities.

The public sector has adopted various approaches according to the emphasis and phases of public intervention, has generated public policies with dissimilar signs with less or better success in the past, but a corollary of the historical analysis and the challenges of global health and a single health today, indicates that governments must take on the challenge of playing an active role in the leadership and organization of health systems, which are attributed in short for being inclusive, effective and efficient. Health and illness is a factor that is expressed in the value of life and constitutes a human right of the first order.

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