

MEXICO

HEALTH REVIEW

HIGHLIGHTS 2019



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Mexico Health Review provides business and political leaders with the information and industry analysis necessary for success in the Mexican health industry.

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MEXICO

HEALTH REVIEW

2019

The Mexican healthcare sector has been through a roller-coaster 2019. Budget cuts have limited public sector maneuverability and uncertainty has made many investors cautious regarding short-term expansion and investment plans. While the hurdles have been significant, the Mexican economy remains steady and the local market for pharmaceuticals and medical devices shows promise. The current administration led by President Andrés Manuel López Obrador positioned universal healthcare at the top of the agenda, along with the need to address the rise in chronic diseases and to counterattack corruption in the system.

Among the industry's buzzwords and phrases at this time of change are Big Data, analytics, innovation and technology interoperability. As Industry 4.0 practices penetrate the health sector, one key hurdle stands in the way: Mexico's fragmented system, which makes it difficult to share data and achieve the data integration that characterizes Industry 4.0.

Healthcare is also essential for the country's economic growth. As the industry opens further to private investment, the opportunities are many. Both old and new companies are entering or expanding in the market, attracted by the country's large population and its changing epidemiological profile, which will only increase the need for new healthcare services. Moreover, many are investing in innovative solutions or technologies to better identify existing challenges and develop comprehensive strategies to solve them, while optimizing resources and keeping bottom lines in the black.

Mexico Health Review 2019 is a comprehensive report on the state of the industry, the key developments that have shaped the past year and most importantly, a signpost for the direction in which this key sector is moving.



OUT WITH THE OLD, IN WITH THE NEW

ZOÉ ROBLEDO
Director General of IMSS

Q: What are IMSS’ priorities in terms of health and healthcare?

A: Our main goals are to efficiently and effectively implement expenditure, achieve better collection, fight corruption and move toward universalizing medical services in Mexico together with other health institutions. The objective is that nobody is left without the opportunity to exercise their right to health. From IMSS’ side, we want medical units to operate at their maximum capacity for all levels of care, every day of the week and on both shifts. This will allow us to grow our patient capacity without the need to build new medical units. Technology will be key in increasing access to healthcare. IMSS will also launch a telephone medical consultation service, home care and telemedicine. These elements will be used to expand access to health facilities as they reduce the need for visits and bed use by up to 20 percent.

IMSS’ directors are also visiting IMSS-Welfare’s rural hospitals with President López Obrador. These hospitals provide primary and secondary-level medical care to the population without social security. Employing a preventive approach and a comprehensive healthcare model based on medical care and community action will allow more than 13 million people from remote communities in the country to receive treatment.

Q: What are your main objectives as head of IMSS for the next six years?

A: Historically, IMSS has always supported Mexico’s population and we are proud to do our part, strengthening what works and has worked and returning to the institute’s founding principle of social security. We want to guarantee that employees have access to quality health facilities, identifying areas of opportunity and evolving to face the new realities transforming the country’s health landscape. We will promote a more inclusive IMSS and work every day with a very clear idea: guarantee medical care for all Mexicans. We must move from the idea of rights on paper

to guarantee real health rights for all. To achieve this, we will implement actions to increase affiliation and collection in proportion to the economically active population.

Q: What problems will be solved through the “Agreement to strengthen access to justice and social security for workers or their beneficiaries,” signed by STPS and IMSS?

A: This agreement will allow joint reviews between the STPS and IMSS, so IMSS can access more information regarding the relationship between workers and their employers. In case of omitted information, IMSS will analyze the company’s processes to determine the correct classification for occupational risk insurance and the correct fees derived from it. We want to identify aggressive outsourcing schemes that under-declare salaries and thereby affect the contribution base. Finally, we want to have more reliable information regarding work-related accidents and other useful statistical data.

Q: What are IMSS’ major achievements to this day?

A: Among the most important achievements is the significant reduction in the mortality rate of women due to pregnancy and the 50 percent reduction in the risk of death for children due to infectious diseases. We have also moved forward with population changes. In recent years, services have been adapted to new conditions characterized by an aging population. PrevenIMSS was created to promote health and timely detection of chronic diseases. However, we continue to address other health matters at the same time. We improved our primary healthcare model and reduced mortality due to cervical-uterine and breast cancer. Vaccination has also improved and we are seeing better results in reducing the risk of dying from cardiovascular diseases.

In the area of transplants, we are the leading public institution. IMSS’ transplant productivity grew by 97.5 percent over the past decade, from 1,728 transplants in 2008 to 3,412 in 2018. This has been possible thanks to the training of specialists through agreements with several hospitals abroad, including Claude Bernard University in Lyon, the Vall d’Hebrón Hospital in Barcelona, La Paz University Hospital in Madrid and the Tokyo Pediatric Hospital.

The Mexican Institute of Social Security (IMSS) is Mexico’s leading healthcare and social protection institution. It was founded in 1943 and combines research and medical practice, with the administration of social security and pensions

R&D LEADS TO SUSTAINED, INCLUSIVE GROWTH

CRISTÓBAL THOMPSON

Executive Director of AMIIF



Q: What are AMIIF's near-term priorities?

A: AMIIF delimited a strategic plan in 2014 and though we continue to make small adjustments, we have three defined axes: boosting access to innovation, optimizing the impact innovation has on social development and well-being and incorporating social issues into AMIIF's agenda. Creating more benefits for patients through pharmaceutical innovation has been our priority but we have a debt to society that can only be met by incorporating social issues into our agenda.

We are participating in one of the president's flagship programs, Jóvenes Construyendo el Futuro (Young People Building the Future), which targets people between 18 and 29 years of age who were neither working nor studying. We are proud to say that 35 of the first 200 companies that joined the program were AMIIF members. We believe this is an exceptional initiative and we have even been recognized by CCE for the support and enthusiasm we bring to the program.

We are also working on programs that improve access to health services, exemplified by our work at the Esquipulas clinic. This is a primary attention facility that provides services to the indigenous population in Chiapas. The idea is to implement this successful experience of providing medical attention to vulnerable populations in other areas of the country. As part of CCE's commitment to help the president tackle extreme poverty, we have also reached out to CONEVAL to analyze the places where this vulnerable population is located and the possible actions we could take to eliminate the conditions that generate poverty. This is a CCE initiative but we want to participate in areas where we can provide more support. It is challenging but we definitely have to be a part of it, even though our participation might not be necessarily related to the pharmaceutical industry.

Q: How is AMIIF's work in clinical research helping Mexico reach the Top 10 in R&D globally?

A: When AMIIF was created in 1950, life expectancy in the country was 49.7 years; today, we live, on average, for 75.4 years. This increase in life expectancy can be linked to the impact of vaccinations, antibiotics and other types of medications. OECD-member countries normally have higher

health expenditures and a higher life expectancy of 80 years, such as Switzerland, Spain or Japan.

We believe there is a great opportunity to introduce more innovation and foster the development of medicines in Mexico. For instance, when a new cancer drug is approved by the FDA, it takes COFEPRIS 56 months in average to approve it for use in Mexico. Canadians take two and a half years, while the average for the OECD is 18 months. Being able to provide this early access is fundamental.

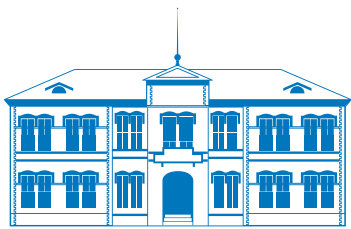
Q: What will be the government's role in promoting clinical research?

A: We hope public investment in health grows to 1 percent of GDP during this federal administration, as was promised during López Obrador's campaign. Although we understand it will not be easy, it is important to do it and we hope to see this increase reflected in the next federal budget starting in 2020. Annually, the industry invests US\$141 billion in clinical research. The Top 15 companies in the market invest around US\$100 billion of that amount. The industry still has the potential to attract significant investment to the country. Moreover, every job generated in clinical research generates 4.4 indirect jobs, which means that this sector generates an economy in itself. Every additional peso invested in clinical research generates MX\$1.67 in revenue. In Mexico, AMIIF's members invest a little over US\$300 million, which is a low number and even though we could double it, US\$600 million would still be insufficient.

Mexico needs to venture into research and attract more investment. To foster this, there are legislative changes we could make as a country. For instance, Argentina just passed a law that states that any clinical study petition is automatically approved if it has not been resolved after 30 days. Brazil is also working to accelerate clinical studies.

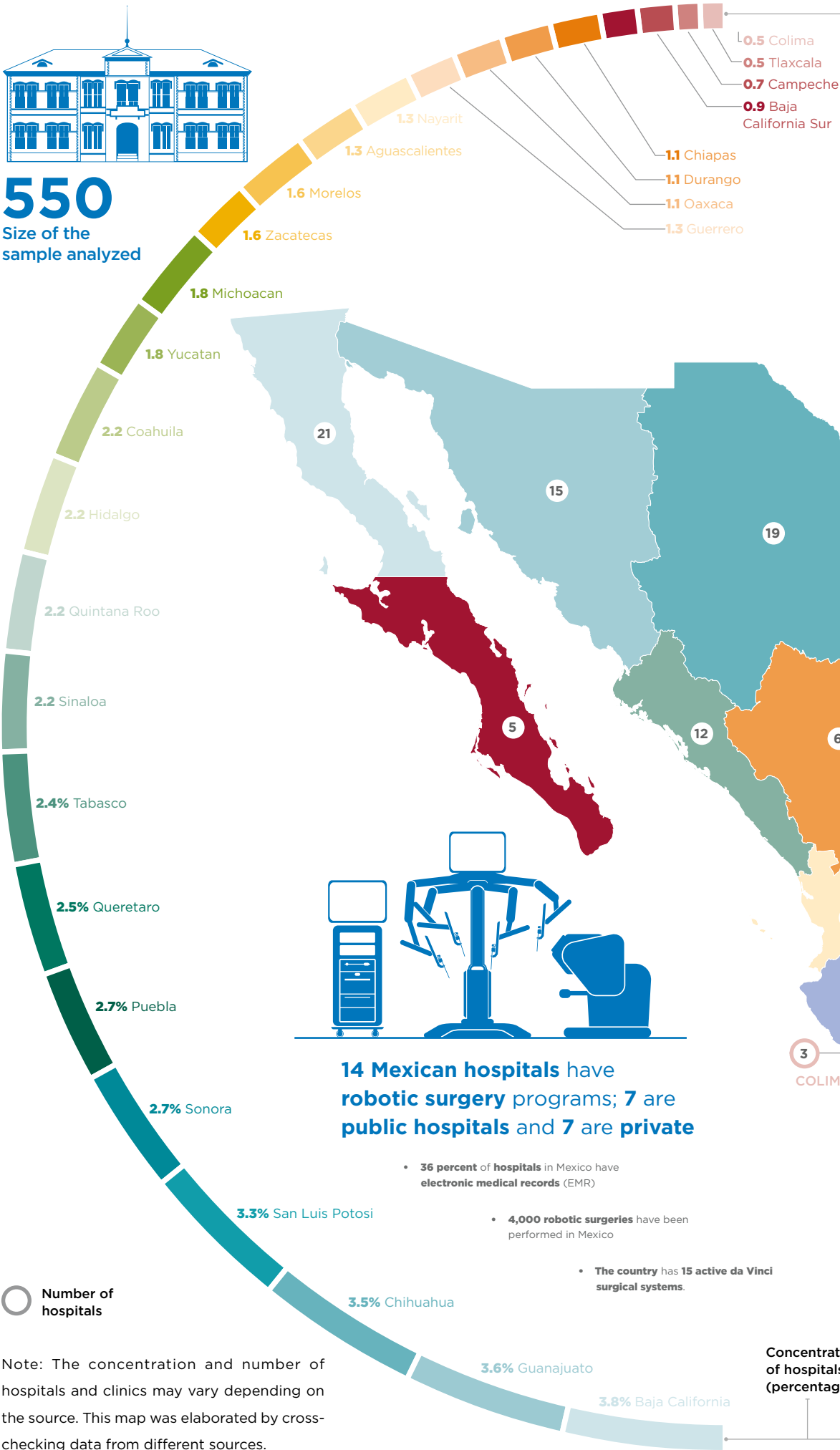
The Mexican Association of Pharmaceutical Research Industries (AMIIF) represents more than 60 national and international pharmaceutical companies committed to the development of new medicines and therapeutic solutions

HOSPITALS AND CARE PROVIDERS



550

Size of the sample analyzed



14 Mexican hospitals have robotic surgery programs; 7 are public hospitals and 7 are private

- 36 percent of hospitals in Mexico have electronic medical records (EMR)
- 4,000 robotic surgeries have been performed in Mexico
- The country has 15 active da Vinci surgical systems.

○ Number of hospitals

Concentration of hospitals (percentage)

Note: The concentration and number of hospitals and clinics may vary depending on the source. This map was elaborated by cross-checking data from different sources.

Concentration
of hospitals
(percentage)

17 Average of hospitals and
clinics per state:

- 8 of every 10 Mexicans have access to health services
- The average waiting time for a medical consultation in the public sector is 30.2 minutes



16%
Mexico City

According to estimates from the Ministry of Health, there are 4,449 hospitals in Mexico. The following map only considers a representative sample of 550 hospitals based on the cited sources to show a graphic representation of Mexico's hospital concentration.



IMSS is the **main health insurance**
provider in **Mexico**, covering
29.5 percent of the **population**



Only **40 percent**
of Mexicans have
health insurance

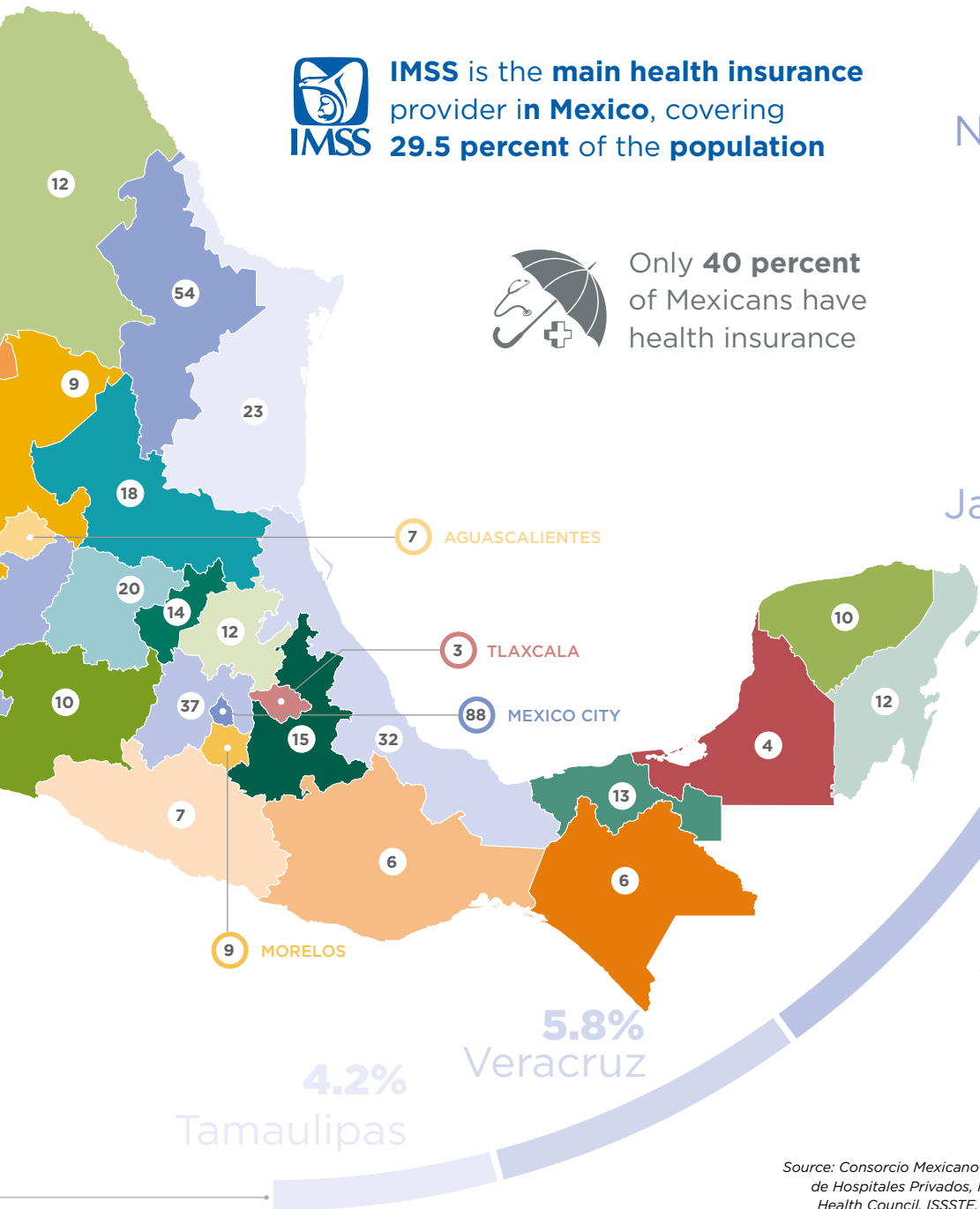
9.8%
Nuevo
Leon

7.5%
Jalisco

6.7%
State of
Mexico

5.8%
Veracruz

4.2%
Tamaulipas



Source: Consorcio Mexicano de Hospitales, Asociación de Hospitales Privados, Ministry of Health, General Health Council, ISSSTE, Global Health Intelligence



RESEARCH THE BASIS OF PREVENTION, PROPER HEALTHCARE

DAVID KERSHENOBICH
Director General of INCMNSZ

Q: How has the Integral Attention Center for Diabetes Patients (CAIPaDi) impacted the incidence of diabetes in Mexico?

A: As part of INCMNSZ, CAIPaDi provides comprehensive care with the help of various specialists in ophthalmology, psychology, orthodontics and many other areas. The center is also focused on newly diagnosed patients, meaning those who have been diagnosed with diabetes mellitus within the last five years.

CAIPaDi's focus is on adherence to treatment through a preventive and therapeutic approach. The center does not only treat diabetes but tries to prevent further complications. To help with this objective, INCMNSZ opened a Metabolic Disease Research Unit (UIEM) to generate knowledge on the pathophysiology of diabetes mellitus. The unit conducts research projects at CAIPaDi regarding the most important conditions related to diabetes. Both UIEM and CAIPaDi work together as a clinical and metabolic research unit that links prevention, diagnosis and treatment of diabetes mellitus.

Q: What kind of partners supported the creation of UIEM?

A: UIEM wants to be recognized as a center of innovation and academic excellence in the study of metabolic disorders. INCMNSZ has several collaborators and academic partners but Monterrey Institute of Technology, in particular, collaborated in the creation of this new unit. Other universities, such as UNAM, have also joined the project due to its focus on research. INCMNSZ's relationship with the best universities in the country is proof of the institution's commitment to healthcare, education and research on metabolic diseases.

Q: How important is the Research Support Network in INCMNSZ's research studies?

A: The Research Support Network gathers different specialists and researchers from the INCMNSZ in the areas of bioinformatics, biostatistics, computational

biology, molecular biology, genomics, flow cytometry and metabolomics, among others, to support the institute in developing highly specialized studies on physiopathology issues, such as metabolomics and genomic studies to find alleles of susceptibility in the Mexican population. The Research Support Network is the third axis, together with INCMNSZ and UIEM, in the development of cutting-edge research in relation to diabetes mellitus and its complications. All three create the necessary conditions for professionals from the biomedical and academic fields to interact and offer solutions in the diagnosis, prevention and treatment of diseases.

Q: What is INCMNSZ's approach to treating chronic degenerative diseases through genomics and nutrition?

A: Nutrition and genomics are key factors for the prevention of chronic degenerative diseases, such as diabetes. INCMNSZ works on identifying genes related to diabetes susceptibility and the metabolic-molecular conditions that can prevent contraction of the disease. Our approach combines genetics, nutrition and micronutrient studies to clarify all issues related to diabetes. The institute also performs metabolomics studies to know which genes establish a metabolic precondition to diabetes to look for new ways of treating patients. There are other diseases and conditions with a genetic or epigenetic component, such as fatty liver and bacterial resistance. INCMNSZ compares these to diabetes to determine if there is a difference in how different some people react genetically to the disease compared to others.

Q: What genetic particularities impact the Mexican population's propensity to develop nontransferable diseases?

A: The human genome is divided according to ethnicities and Mexico is a mixture of Amerindian, Asia-Pacific and European gene variations. This combination leads to greater or lesser susceptibility to the development of certain diseases. Similarly, the possibility of harming the liver and other organs is different for each ethnicity. If other factors are added to these genetic conditions, such as food and pollution, there is greater understanding on the population's susceptibility to certain diseases.

The National Institute of Medical Sciences and Nutrition Salvador Zubirán (INCMNSZ) is one of the Ministry of Health's National Institutes of Health. It provides tertiary-level medical care to adults and specializes in nutrition and internal medicine

UNIVERSITY ALLIANCES STRENGTHEN MEXICAN HEALTHCARE

SVEN BOES

CEO of Hospitals TecSalud



Q: What differentiates TecSalud's model from other hospitals and care providers in Mexico?

A: One of our main differentiators is that we are the only academic medical center based in Mexico. This gives us both the privilege and responsibility to transform healthcare through research, innovative teaching methods and the best clinical practice.

Q: What is TecSalud's capacity and what strategic alliances has it created to continue growing?

A: With more than 220 beds in our two teaching hospitals and 1,500 physicians, TecSalud attended more than 70,000 patients in 2018. TecSalud has a diverse range of partnerships with the goal of transforming the health system as a whole. An example of this is the international alliance with Houston Methodist Hospital, which has helped us to adopt international practices. In Mexico, TecSalud has partnered with Hospital ABC in Mexico City, Hospital Puerta de Hierro in Guadalajara, Hospital CIMA in Chihuahua, the National Institute of Medical Science and Nutrition Salvador Zubirán, the National Institute of Cardiology Ignacio Chavez and the National Institute of Oncology in Mexico City. For our graduate and medical residency programs, we have partnered with private and public hospitals creating a multicenter rotation of students and residents in the city of Monterrey. Our medical school has partnered with various prestigious institutions in North and South America, such as Pontifical Catholic University of Chile and Johns Hopkins Medicine International. In addition, we are working closely with the largest insurance companies, medical suppliers and pharmaceutical companies in Mexico creating a new values-based practice for patients.

Q: What difference does it make for your partners to work with a hospital backed up by Monterrey Institute of Technology?

A: In Mexico, there are other healthcare providers that are doing extraordinary work but TecSalud's advantage is the capability to combine our clinical staff with faculty and researchers from our medical school. With our main hospitals in the city of Monterrey and the presence of our medical school in other cities, such as Guadalajara and Mexico City, TecSalud is making an important impact on the lives

of patients throughout Mexico. Being part of the Monterrey Institute of Technology is a plus for every partner because they can see the impact our university and graduates have on our country and around the world. Given that we are a not for profit organization, we can concentrate on patient care and safety without having to think of economic factors.

Q: What research areas is TecSalud prioritizing?

A: At the TecSalud Research Department, we are moving from traditional basic and clinical research into more innovative and international medical research. We have seven strategic research groups. Those groups combine academic and clinical researchers and are supported by our doctoral, master and undergraduate students, not just from our medical school and health sciences, but also by students from the School of Engineering and the EGADE Business School. These strategic research groups work on innovative therapies and visual sciences, bioengineering and regenerative medicine, cancer research, cardiovascular and metabolomic medicine, bioinformatics for clinical diagnostics, human genetics, and metabolic diseases.

Q: How can TecSalud's research groups help reduce Mexico's disease burden?

A: The topics on which our strategic research groups have been working on are the main chronic conditions that affect the Mexican population, such as heart disease, obesity, diabetes and cancer, among others. Our researchers work through alliances with other universities and institutions in Mexico and other divisions within Monterrey Institute of Technology researching new ways to impact risk factors of disease that include social, economic and even environmental aspects. We think that partnering with those who are working on the same lines of research and not duplicating efforts but complementing them, is the best way to develop concepts that can reduce the disease burden on the Mexican population.

Monterrey's Institute of Technology Health System (TecSalud) is a growing medical academic center that integrates teaching, research and clinical services. It has two teaching hospitals in the city of Monterrey and three Medical Schools



INVESTMENT NECESSARY TO ACCELERATE ACCESS TO MEDICATIONS

RODRIGO PUGA
President and Country Manager of Pfizer Mexico

Q: How will Pfizer’s US\$26 million investment at its Toluca plant accelerate the launching of new products in Mexico?

A: We are planning to improve our manufacturing plant to ensure that our products are manufactured using state-of-the-art technology. Our investment in clinical trials is directly linked to launching new molecules in the market. We have roughly 30 clinical trials in Mexico with approximately 500 patients and we are collaborating with research centers across the globe to generate data to bring these breakthroughs to the market. We are also investing in scientific projects through Instituto Científico Pfizer (Pfizer Scientific Institute).

Pfizer’s new mission is to be able to launch innovative medicines that change patients’ lives at a faster pace. Patients are at the center of everything we do and innovation is our driving force. We do not want medicines that are just a bit different; we want to find breakthroughs that save patients’ lives. Innovation has characterized Pfizer for 170 years.

Q: How is Pfizer adapting its R&D strategy to address existing and future healthcare problems?

A: About 15 percent of Pfizer’s global profit – approximately US\$8 billion – is used to fund R&D every year in many therapeutic areas. At this point, we are focusing on those diseases where we can generate significant scientific advances and on those that have been overlooked. We are investing in oncology, inflammation, immunology, new vaccines, rare diseases, antibiotics and cardiovascular diseases. One of our products uses genetic modifications to cure hemophilia type A and B. We are also developing new antibiotics to combat superbugs. Unchecked, antimicrobial resistance will kill more people than cancer by 2050, at an estimated rate of 10 million lives per year. Our goal is to launch 25 new therapies by 2025.

Q: What role will genetic medicine play in Pfizer’s pipeline and how are you involving local institutions in this research?

Pfizer is one of the largest multinational biopharmaceutical corporations in the world. It is headquartered in New York City and in 2018, ranked 57th on Fortune’s list of the 500 largest US corporations by total revenue

A: Genetic medicine will play a major role in our strategy, as a significant part of our efforts to discover new medications uses and new information about the human genome. Our scientists are modifying genes from patients so their own bodies can fight diseases that have no treatment. Genetic medicine and immunotherapy are becoming increasingly important in pharmaceutical research. The latter has led to the development of immune-oncology, which aims to modify the immune system to fight cancer cells without medication.

In 2018, we established an alliance with INMEGEN to strengthen research on the Mexican genome to develop treatments specifically for the local population. Genetics can change significantly from one area to the next. Our goal is to use this alliance to understand the genome of local populations. For the past 15 years, Pfizer’s Scientific Institute has allied with scientists and institutions to bring basic research to Mexico. We also work with local universities and the National Medicine Academy to recognize the best medical students from all universities.

Q: What are the main access barriers Pfizer has identified in the Mexican market and how are you overcoming them?

A: Since January 2019, the company has been directed by Albert Boula, who is reinforcing our position to put patients at the center and our focus on developing markets to look for ways to make innovative medications more available to patients. We are becoming more creative in developing ways to increase access to healthcare, such as developing innovative payment schemes that will increase access by allowing public institutions to pay for results instead of products.

Mexico has some of the greatest challenges in the region regarding the introduction of innovative medications. For every 100 medications registered in Mexico, only four reach the patients who need them. For instance, we have a product that treats metastatic breast cancer and doubles life expectancy. However, patients in the public system cannot access this medication. Moreover, introducing innovative medicines to public institutions takes around five years. Mexico must recognize the benefits of increasing access to health.

INNOVATIVE PAYMENT MODELS CAN INCREASE ACCESS TO INNOVATIVE MEDICATIONS

ANA LONGORIA

President and Director General of Novartis



Q: How will Novartis' US\$20 million investment in Mexico for 2019 be allocated?

A: At the World Economic Forum, Novartis' CEO met with Luz María de la Mora, Deputy Minister of Foreign Trade at the Ministry of Economy, and committed US\$20 million to Mexico. This sum is part of Novartis' 2015 commitment to invest US\$50 million in the country by 2020. At this point, we have invested over half of that promised amount. We expect to continue investing in the country as the pharmaceutical industry expands thanks to Mexico's growing population.

The investment will go to clinical research, an area with significant opportunities in Mexico. In 2018, Novartis invested US\$3.5 million to perform over 70 clinical trials in several therapeutic areas in Mexico.

Novartis has only five Global Service Centers and we decided to install one in Mexico in 2015 because the country offers an excellent location, is cost-competitive and has many talented professionals. We have high expectations for this center as it continues growing. We now perform several operations here that were previously done in the US and other Latin American countries.

Q: How is Novartis collaborating in the introduction of innovative medicines to the Mexican market?

A: Novartis has one of the strongest pipelines in the industry, which allows us to launch a large number of new products per year. We are increasingly focusing on oncology, mental diseases and cardiology. Recent technological advances are allowing for the discovery of new medications at a faster pace. Mexico's regulatory system must adapt to the growing number of new medications and we are developing new models to bring innovative medicines closer to the Mexican population.

In developed countries, about 10 percent of the population has access to innovative medications. In emerging countries, these are only available to 1 percent of the population. The pharmaceutical industry has been unable to bring its products closer to those who need them. A way to fix this is through innovative access models in which the public sector

pays only for results. We are talking with local authorities to introduce these models, which forces us to ensure that the medications we sell benefit the patient. This will be increasingly important with the arrival of personalized medicine, which allows laboratories to tailor their products to ensure they are useful for patients.

We have also made significant advances in our transformation area, which focuses on how technologies like AI and social media can better support patients during their journey fighting a disease.

Q: How will Alcon's spinoff help Novartis strengthen its position in the pharmaceutical industry?

A: Alcon separated from Novartis on April 4, 2019. This will allow Alcon to strengthen its position in the ophthalmic products market and will allow Novartis to strengthen its commitment to certain therapeutic areas. From the division, we kept ophthalmologic medicines. We will focus on our medicine portfolio, as our pipeline has extremely interesting products that will enter the market in the next few years.

Q: How did Novartis help Centers of Excellence to improve treatment of diabetic patients?

A: These centers help health institutions with which we collaborate through the incorporation of best therapeutic practices, from opportune diagnosis to adherence to treatment and support for the patient's family. Often, institutions have all the necessary tools for a successful treatment plan but they do not know how to build one. In these cases, we help them to use their own tools to create effective protocols for the correct management of diabetic patients. We identified several areas we can improve to make treatment more efficient and give patients what they truly need. We have replicated this model for patients with heart failure and have had great results.

Novartis has multiple research laboratories focused on therapeutic areas, including neuroscience, oncology, respiratory diseases, dermatology and immunology. The company has 10 potential blockbuster launches planned for the next years



MEXICO HEALTH summit 2020

SHERATON MARIA ISABEL
MEXICO CITY
SEPTEMBER 3, 2020

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BIOSIMILARS AN OPPORTUNITY TO TRANSFORM THE PHARMACEUTICAL MARKET

AMÉRICO GARCÍA

Director General of Mexico and Latin America at Apotex

Q: How has Apotex advanced in growing its chronic degenerative diseases portfolio?

A: We maintain our efforts to penetrate the market for central nervous diseases medications, which has not been easy. Doctors in this area perceive us as newcomers so it has been hard to convince them to use our medications. This year, we will focus on strengthening our portfolio. We also launched a new division in Mexico called “cardio-analgesic” that handles both cardiology and analgesic products.

Q: Considering Mexico's epidemiological profile and the change in the population pyramid, what business opportunities do you see in the coming years for Apotex?

A: Mexico is an interesting market. Part of it behaves as an emerging market and another as a mature one because the change in the population pyramid is more common to mature markets. As Mexicans live longer, they are much more prone to chronic neurodegenerative diseases, which will undoubtedly increase, along with diabetes and cardiometabolic diseases. At the same time, there is a significant poverty rate in the country. This segment of the population is more sensitive to acute diseases, such as dengue.

Q: How is Apotex contributing to the administration's goal to increase access to medications?

A: Universal healthcare coverage should be the ultimate goal of any healthcare system. However, this will be hard to achieve with the current state of the Mexican healthcare system. It is necessary to develop a long-term strategy that operates no matter which party is leading the country. The former administration made an effort to increase patient interchangeability among public institutions, which was a good first step. It would also be convenient to merge public healthcare institutions, which will be a complex and long-term process that must be done in a sustainable way.

Apotex manufactures and commercializes generic and innovative drugs in more than 115 countries. It has over 1,100 active projects that represent more than 500 molecules in 50 countries

The current administration has greatly reduced the budget for several areas in the healthcare sector. Among OECD countries, Mexico is among the lowest investors in healthcare as a percentage of GDP, so the only solution to improve the system is to increase public investment. It is not possible to achieve healthcare for all by reducing the budget.

Q: What trends are affecting the generics and biosimilars industry worldwide and in Mexico?

A: Biosimilars are expected to change the industry and they have brought significant advantages to those countries in Europe and the Americas that have adopted them. We launched a biosimilar in Canada that resulted in significant savings to its healthcare system. However, these products have failed to enter many regions, such as the US, which has extremely high barriers for the introduction of biosimilars. The story is similar in Mexico. While some products have been approved, their registration takes a very long time. We are in a transition period for the regulation and acceptance of biosimilars. Generics, on the other hand, are growing at an accelerated pace. A trend we see in the Latin American market is the consolidation of pharmacy chains, which later release their own branded generics. This is destroying independent pharmacies and generating oligopolies. For instance, Chile has three large pharmacy chains that control most of that market. We are beginning to see this phenomenon in Mexico and we have to prevent it to avoid the death of independent pharmacies, which will eventually hurt patients.

Q: What are Apotex's main goals for 2019 and what are your expectations for the future of the pharmaceutical industry?

A: Over the past five years, we have positioned Apotex in the Mexican market and doubled our sales. In the short term, my goal is to double the size of the company again, following our quality commitments to continue benefiting patients. To do so, we will focus on incorporating other therapeutic areas, exploring new market niches, growing the areas where we are strong and creating a closer relationship with our current clients. In the future, we want to see Mexican institutions strengthened and rule of law continued.

BETTER DIAGNOSTIC METHODS HELP BUILD STRONGER PREVENTION PROGRAMS

ANDRÉS BRUZUAL

General Manager of Roche Pharmaceuticals Mexico



Q: How is Roche Pharmaceuticals combining its diagnostics and pharmaceutical divisions to improve the prevention and treatment of diseases?

A: With significant advances in the last few decades, we are now able to detect diseases at an opportune stage and offer more effective treatments. For 70 years, Roche has been developing therapies in areas where treatments did not exist. Our focus has always centered on offering a combination of the most advanced diagnoses and treatments to increase not just chances of survival, but also patients' quality of life.

Q: How is Roche Pharmaceuticals innovating within the Mexican healthcare sector?

A: One of our companies is Foundation Medicine (FMI). This foundation is focused on developing precision medicine. Using advanced diagnostics, we can gather a specific picture of the patient and their condition. This allows us to develop medicine that is highly personalized to their profile. Oncology is an area where this has seen major growth. Using gene characteristics, one can create a therapy which is more likely to have a positive response. Combining these diagnostics with a personalized treatment will undoubtedly lower the burden of the most prevalent disease. Personalized treatment also focuses on improving quality of life and reducing complications.

Q: What specific treatments does Roche Pharmaceuticals offer the market for cancer patients?

A: Our portfolio of therapies contains 14 different medications against cancer and various types of tumors. These medications help treat over 1 million people worldwide every year. We have been innovating in Mexico for over 70 years and this has allowed us to make major advances to tackle chronic-degenerative diseases such as breast, cervical, ovarian, colon and lung cancers, as well as rheumatic arthritis and various other diseases of lower prevalence but major impact, such as hemophilia and multiples sclerosis.

Due to our investment and research, which last year was close to US\$11 billion worldwide and around MX\$220 million in Mexico, we reached a new goal with the arrival of four new innovative molecules for distinct conditions, including two for the treatment of lung cancer. Part of this

development of new treatments are immunotherapies, which represent a change in the way we treat tumors. Our treatments specifically cater to patients with the mutations PD-L1 and ALK positive.

Q: How can Roche Pharmaceutical's cancer approach support earlier diagnostics?

A: We have always been at the forefront of medical education. The development of better diagnostics has led us to create programs and educational modules for health professionals. These have aided efforts to prevent and diagnose disease at an early stage. This is particularly the case in the area of cancer, the third cause of death in Mexico. We have different prevention programs directed at both doctors and patients, like Prohibido Rendirse and Respirar y Vivir. We are now launching a campaign that will certify professionals in early detection of breast cancer and reduce the time it takes to refer people to specialists. The promotion of health is a significant component of opportune detection of cancer. Our work with diverse actors allows us to reach different social groups which can be targeted for early detection. The combination between providing information to the population and providing medical education to health professionals is the best way to prevent cancer amongst the Mexican population.

Q: What integral mechanisms need to be implemented to increase access to innovative medications in Mexico and what role will your company play in their generation?

A: At Roche Mexico, we focus on helping the population have access to the best solutions in health and the benefits that a complete and innovative treatment can bring. We think our role should not be limited to developing therapeutic solutions but also commit fully to ensure patients have equal access to diagnosis and treatment. We need to work from our respective position to meet common goals.

Roche Pharmaceuticals is the largest biotech company in the world, specialized in drug development for oncology, immunology, infectious diseases, ophthalmology and neurosciences



MEXICAN PHARMACEUTICALS DEMAND GOVERNMENT SUPPORT

ALFREDO RIMOCH

Director General of Laboratorios Liomont

Q: What is the reach of Laboratorios Liomont's core business?

A: We are active in various areas of the market, with our core business being branded generics. In this area, we are market leaders for a number of products. We also offer a diverse line of OTCs. We provide internationally-recognized brands and participate in several markets in Central and South America. We are also active in the European market, where we have been approved by EMA and have a presence in Spain, Portugal and Italy. Similarly, we have been audited and verified by the FDA in the US, where we sell OTC products.

Apart from generics, we have built state-of-the-art facilities for the production of biosimilars and are also working on the development of vaccines. In Mexico, we have the rights to manufacture and distribute a recombinant vaccine for influenza that is unique in the world.

Q: Laboratorios Liomont has inaugurated a new plant for sterile and recombinant products in Ocoyoacac, Mexico State. What does this mean for the company?

A: Laboratorios Liomont has taken significant steps in biotechnology. We just finished constructing this state-of-the-art plant with the latest technology for sterile products. While still subject to approvals, we have already started doing the technology transfer for fill and finish of recombinant products. We are strong believers in collaboration with academic bodies in Mexico and other countries. One example of this is our work with UNAM's biotechnology institute. In Cuajimalpa, we also built a biotechnology plant that will produce monoclonal antibodies, which will then be turned into finished sterile products at the Ocoyoacac site. The latter has been designed and built to manufacture large volumes of biosimilars and recombinant vaccines using the latest technologies based on isolators. Biotechnological medications produced at this plant will offer vital alternatives for the Mexican population.

Laboratorios Liomont is a Mexican pharmaceutical company that has been developing, producing and marketing branded generics for a diverse range of applications for over 80 years. The company is present in Central and South America, Europe and the US

Q: Do you feel the government needs to take a more active stand in supporting Mexican pharmaceutical companies?

A: In terms of volume, the government has traditionally been a major buyer of our products. Since the last elections, things have gotten more complicated for participating companies. During the tender approvals in October 2018, we had a lot of prime material and finished products lined up, but the government recently stopped buying these products. What alarmed us in the last tenders was that reference prices had lowered to such a level that in most cases they were unattainable due to production costs. I think there needs to be more understanding from the new administration regarding increased manufacturing costs due to stronger regulations.

The government keeps insisting on more investment for quality control but at the same time, it expects prices to go down. This could make the entry of foreign producers more unfair if they do not adhere to the same regulatory standards for manufacturing. We are strongly committed to Mexico's well-being and industrial development. The public sector should have a primary role in strengthening Mexican research and Mexican companies to ensure future accessibility to high-quality treatments.

Q: What is the status of new-product approvals?

A: At the moment, COFEPRIS is a black box. We have products ready and have applied for inclusion into the national registry, but we still do not have a response. Officially, it can take between one to six months before you get a reply from the commission, even if the product meets all the necessary requirements. We have been in some processes for over a year but do not know their status yet. Especially when companies are expecting to enter markets where patents have expired, delays in approvals only help multinationals maintain a monopoly over certain treatments, which increases barriers and costs for the general population. Also, we lack a regulatory process that promotes innovation. CONACYT is not supporting R&D in the industry, so our collaboration with the council no longer exists. Sadly, this is pushing prestigious researchers to move to other countries to continue their work there.

MEDICAL RECORDS ARE PATH TO SECTOR OPTIMIZATION

XAVIER VALDEZ

Regional Manager for Real World Analytics and Services of IQVIA



Q: How does IQVIA view R&D in Mexico?

A: At a corporate level, this is a fundamental area for the company because it helps us identify future releases and to work more efficiently with clients depending on their therapeutic focus. Locally, however, R&D has not evolved significantly. Our main focus has been to take advantage of global studies and research to prove a product's efficacy. That being said, we do see a great opportunity for R&D to grow in Mexico. The country hosts institutions with global prestige that work to the highest standards. At the same time, we have a large patient population that is diverse enough to cover the different treatments we analyze.

The main area of opportunity in the country is accelerating the time it takes for protocols to be approved, together with increased certifications for hospitals and training of doctors. We estimate approximately US\$6 billion is invested globally in clinical research annually yet Mexico receives only US\$200-300 million. If we could attract more of these resources, doctors would benefit from better training and patients would have access to innovative treatments.

Q: How is IQVIA taking advantage of Industry 4.0 advances and what long-term impact are you expecting in the healthcare sector?

A: We are still betting on technology and the development of new solutions to improve our sales force. Our customer relationship management solution, called OCE, gives us greater control of our promotional strategy with clients and stakeholders through an omnichannel platform and helps us achieve close data integration within the different areas of the company. Big Data is a key element in our solution. This provides results based on solid analysis of the information we offer to clients and that we receive as feedback from them.. The company has invested heavily in OCE and as part of our Latin American hub, Mexico is fundamental in our approach to technology and analysis. We already have multinational clients using OCE in Mexico and we have more projects in the pipeline that we hope to consolidate in the midterm.

As the healthcare sector evolves, we see a dire need for data integration between different industry players. The government wants to make changes to how Seguro Popular operates but it may not have a clear idea of what it means to have medical records at a national level without being dependent of a particular institution. Cloud implementations are essential for this to work and to conduct efficient research related to the best treatments for each patient.

Q: How is your focus on data access impacting the evolution of the OCE platform and the development of other platforms?

A: We are merging OCE with our doctor database. We have information related to doctors' areas of expertise, hospitals where they work and other variables that allow for segmentation based on contact preferences. This helps us create directed campaigns based on a specific treatment or an area where we want to promote a certain solution. After we receive information back from doctors, we can use that to strengthen our algorithms and further boost our campaigns depending on how doctors build their treatments or the information they wish to receive.

Data access is also a priority to generate databases that help us draw conclusions about treatments and their efficacy. At the beginning of 2018, we released a platform called Oncology Dynamics where we gather data from 250 oncologists on patients, types of cancer, treatments and how patients are responding to them. Although our database is small, it is already yielding interesting results related to treatment use and efficacy, as well as how doctors are treating complications related to a specific disease. We collected the first batch of data in March 2018 and we have been adding to that with quarterly reports.

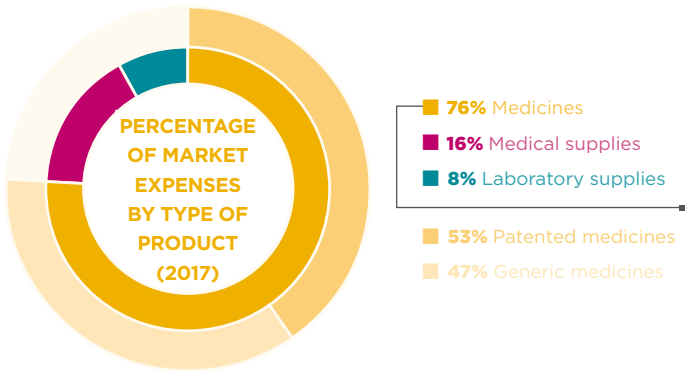
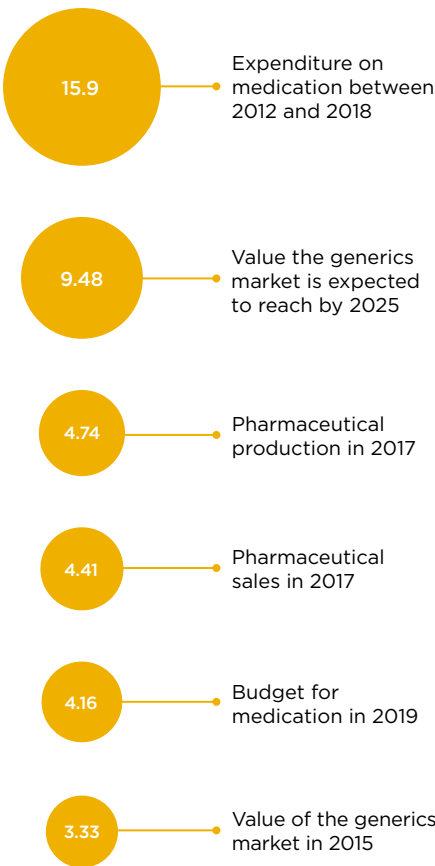
***IQVIA** is a US multinational based in Durham, North Carolina. With a network of more than 50,000 employees, it delivers human data science to the health information technologies and clinical research industries*

MEXICO'S MANUFACTURING COMPANIES GROW ALONGSIDE GENERICS

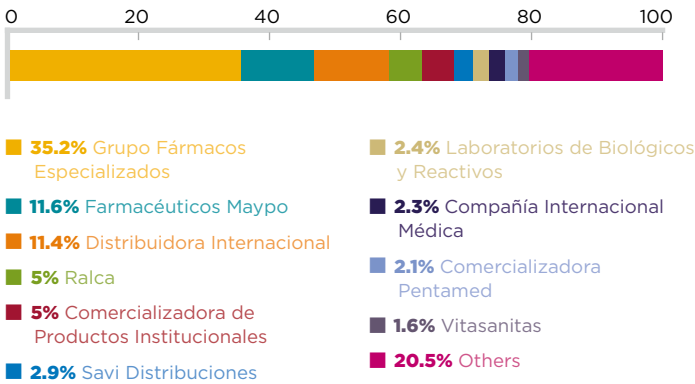
Mexico has a strong medicine manufacturing arm that supplies the entire country and exports to other parts of the Americas. About 95 percent of manufactured medicines are generics and can cost up to 80 percent less than their patented variant. However, these products represent only 53 percent of the

medicine market's value. Medicine production is expected to continue growing but as the public sector opens tenders to countries that do not have FTAs with Mexico and offer lower prices, manufacturers are looking to increase exports and sales to the private sector to continue growing.

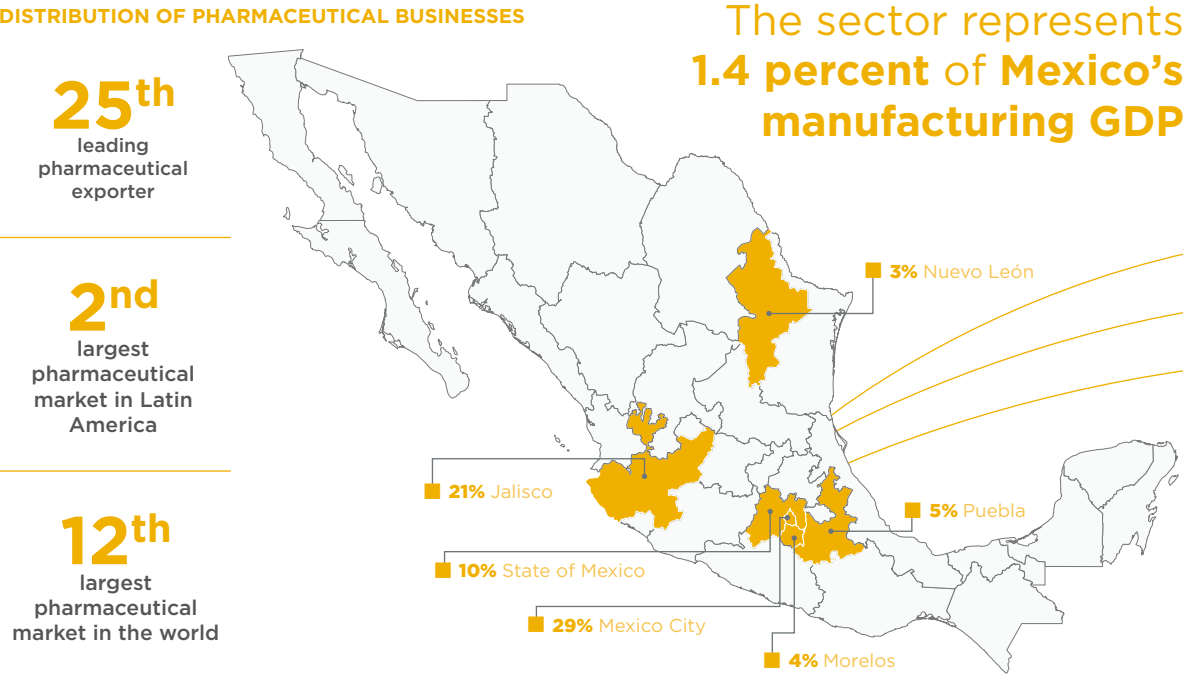
MEXICO'S PHARMACEUTICAL MARKET (US\$ billion)



IMSS AND ISSSTE'S MAIN MEDICATION SUPPLIERS THROUGH TENDERS (2012-2018)



DISTRIBUTION OF PHARMACEUTICAL BUSINESSES

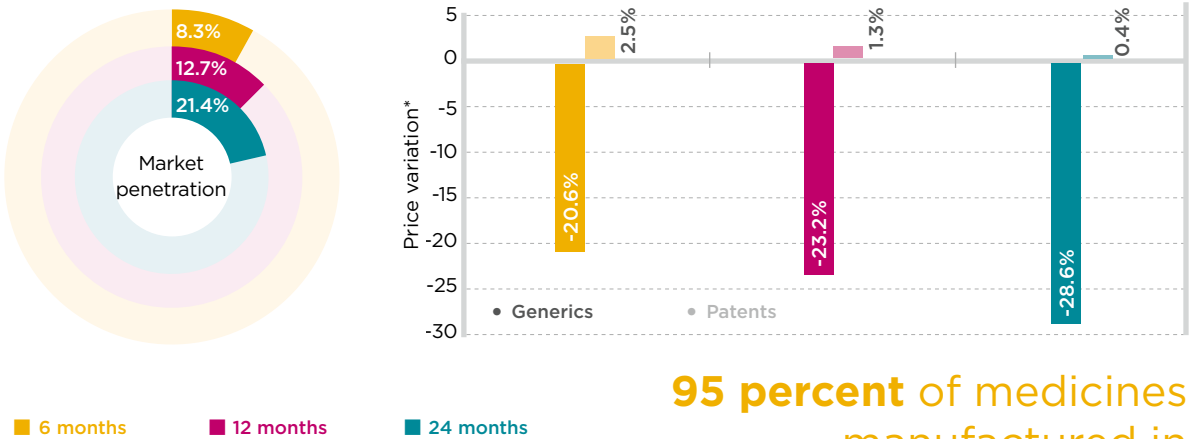


Source: ProMéxico, CIEP, COFECE, COFEPRIS, SHCP and ANAFAM

TIMELINE FOR THE INTRODUCTION OF A GENERIC MEDICINE TO THE MARKET



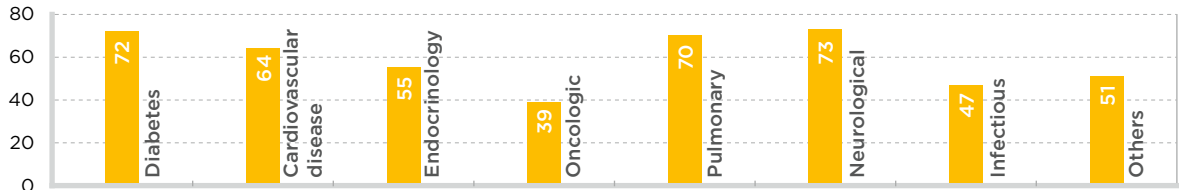
GENERICS AFTER PATENT EXPIRATION



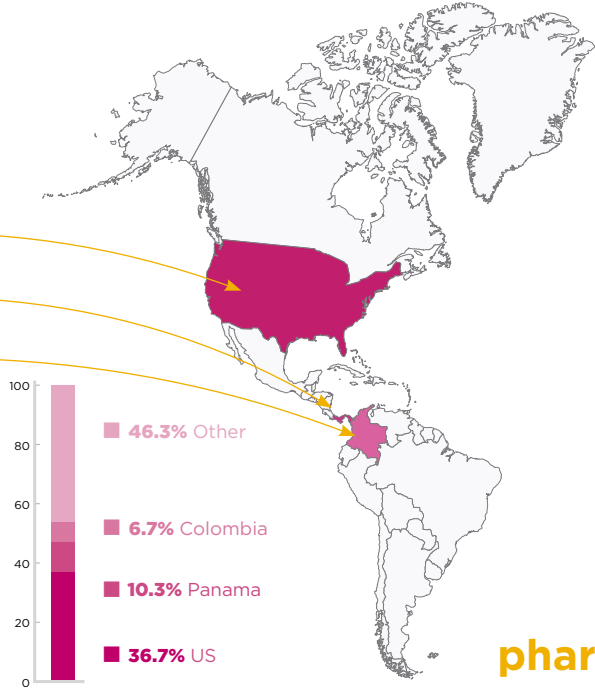
*The baseline price is the cost of the patent medication one month after its release

95 percent of medicines manufactured in Mexico are generics

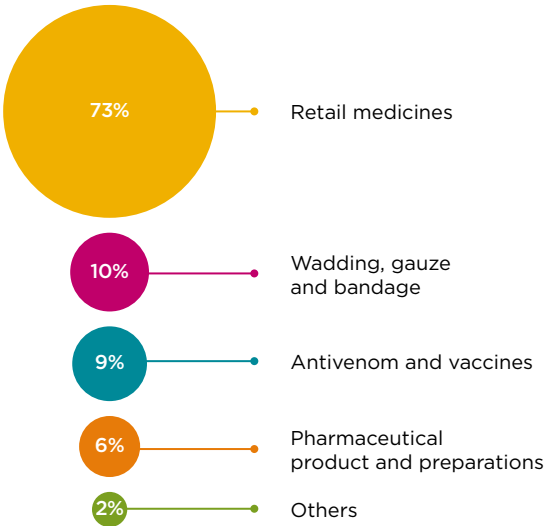
COST DIFFERENCE BETWEEN PATENT AND GENERIC DRUGS IN MEXICO (percentage)



MAIN PHARMACEUTICAL EXPORT DESTINATIONS



MEXICO'S PHARMACEUTICAL EXPORTS



Mexico has 795 pharmaceutical businesses





DEMOGRAPHIC CHANGES IMPACT TECH DEVELOPMENT

ALEJANDRO PAOLINI

General Manager of Siemens Healthineers Mesoamerica

Q: How is Siemens Healthineers shaping the future of the medical imaging and diagnostics segments in Mexico?

A: We are convinced that innovation and technology are the keys to optimizing global healthcare systems and fully improving care for all people. For more than a century, Siemens Healthineers has pushed the boundaries of medical technology with a broad solutions portfolio. Our digital technologies enable healthcare providers to increase the value of their journey while expanding precision medicine, thus transforming care delivery and improving patient experience. We are working closely with different players from the healthcare sector to find new opportunities and introduce new business models that can improve the quality of healthcare in Mexico.

We are also introducing new technologies to the country: our ACUSON Sequoia ultrasound and our Biomatrix MRI. ACUSON Sequoia is a remarkably fast, fully focused B-mode imaging system with no degradation of near-field or far-field resolution. Biomatrix, on the other hand, is an innovative and exclusive technology that automatically adapts to the patient's anatomical and physiological characteristics. Biomatrix's sensors capture respiratory and head motions, boosting consistency in the images and helping the user to select the optimal exam strategy. This combination ensures high-quality results.

Q: What are the challenges and opportunities in the market given the goals of the federal administration to increase healthcare services?

A: It is very important to focus on improving healthcare in the country. Mexico invests around 6 percent of its GDP in healthcare, while developed countries invest 9 percent or more. There is much to be improved — infrastructure, hospitals, equipment and systems — so Mexicans can access quality healthcare. There is also a great need to increase

private investment in healthcare, otherwise, the gap will not be filled. The increasing aging and growing population, as well as the prevalence of chronic-degenerative diseases are making healthcare a priority worldwide. Mexico should not be an exception. Besides innovation, we need to create new partnerships and business models that offer clinical, operational and financial advantages for our customers.

Q: How will Siemens Healthineers' ACUSON Sequoia change diagnostic practices in Mexico?

A: Mexico has the second-highest OECD obesity incidence among adults at 33 percent of the total population. However, this problem does not only affect Mexico but more than 600 million people around the world. Imaging patients with different sizes and characteristics is normally a challenge. Siemens Healthineers designed the new ACUSON Sequoia to adapt to the bioacoustics variations of each patient, including tissue density, stiffness and absorption. This platform has unique features that allow up to 40cm of penetration with high-resolution images, reducing the need to repeat scans, unclear diagnoses and contributing to more confident results.

Q: How is digitalization changing healthcare practices and how can it be implemented in Mexico's fractured system?

A: Digitalization in the healthcare sector is already a reality. AI, Big Data and healthcare analytics have improved operations and management of laboratories and hospitals and have benefited the patient, allowing faster and more accurate diagnostics with more personalized and less invasive treatments.

In Mexico, we can use digitalization to improve the patient experience, prioritizing complex cases that require more attention and avoiding unnecessary interventions. For example, data analytics can be implemented to prevent diseases and to determine the patient pathway. It is possible to use digitalization to increase efficiency, productivity and improve healthcare processes. Information is the main engine for AI and in Mexico we have a lot of it. Unfortunately, much of it is fragmented. It is vital to integrate and standardize this data if we want to develop a national AI policy.

Siemens Healthineers has over 170 years of experience and 18,000 patents registered worldwide. Its portfolio includes medical imaging, laboratory diagnosis and advanced therapies, technological and digital solutions

EFFECTIVE COMMUNICATION IMPROVES EFFICIENCY IN OPERATING ROOMS

PABLO BUFANO

Managing Director of Dräger México



Q: What are the main challenges of competing in the market for operating rooms?

A: The main priority is the patient's safety and well-being. This means always having sanitized equipment and allowing the doctor to access as much information about the patient as possible. Ensuring all this information is synchronized and updated in real time is very important. We put significant emphasis on creating a protocol and a coded language to feed our system with information that the doctor and operating room staff can control. This increases efficiency during the procedures, given that no unnecessary actions are taken due to misunderstandings.

Q: What differentiates Dräger México from its local and international competitors?

A: Since 1889, we have specialized in acute care and now offer integrated solutions that support our customers to improve clinical outcomes through constant innovation. Regarding client relations, we provide staff training and equipment maintenance to ensure our solutions are used to the best of their capabilities. Our goal is to do our training state by state; we want to talk to all governments and determine the particular needs of each. After that, we can find a way to bring most of the doctors in for special days of training, including lectures and demonstrations.

The medical sector in Mexico is focused on saving the patient. However, we are taking this one step further by creating solutions that help the patient to recover faster. Our technology's success rate also depends on the skills of health professionals, which is the main reason behind the training we offer. We are even holding events at universities to work directly with medical students. Our goal is to integrate these events into academic plans, which could have a long-lasting impact on the health sector in Mexico.

Q: What are Dräger México's main goals for the coming years?

A: We are focusing to increase our share in the private sector and have redefined our priorities with key accounts to meet their needs. We also want to work with small and medium-sized hospitals for which we have developed

financial solutions that will help them to access our solutions. In addition, we are working on offering diplomas or certifications to medical professionals who receive our training. The idea is to strengthen hospital teams. Lastly, we are working on integrating all our services into one system. We want to improve communication between different medical teams and equipment through a central station that can bring together all data. We have been working with 50 companies from all over the world to develop a common language that allows different equipment brands to communicate effortlessly. The protocol has already been approved and Dräger intends to launch its first product in 2019.

Q: What do you think Mexico needs to become a hub of medical device manufacturing and capitalize its presence in the American region?

A: Mexico is already a very important player in the medical equipment industry. It moves between eighth and 10th place worldwide as a global exporter and more than 150,000 people work in this industry. Exporting more than 90 percent of its products to the US, obviously that means that the country is not looking at the rest of the Americas and perhaps that is an aspect to correct if Mexico wants to be relevant in Latin America.

Q: How does Dräger México provide a solid platform of innovation that helps to anticipate the needs and to exceed the expectations of its customers?

A: Being a family business has allowed Dräger to allocate an important part of its profits, much more than our competitors, to R&D issues. We are essentially an innovative company and that has led us to always be at the forefront of technology. Our focus is on really understanding the needs of our customers, their pains and how we, as Dräger, can help them to solve those problems.

Dräger is a German company specialized in medical technology and safety. Its products and solutions target hospitals, fire departments, emergency services companies, government agencies, mining and other industries



OMNICHANNEL STRATEGY INCREASES ACCESS TO HEALTHCARE

RICARDO MARTÍ

Commercial Director Pharmacy, Health and New Businesses of Walmart, Bodega Aurrera, Superama and Sam's Club

Q: How does Walmex help increase access to healthcare?

A: Our goal is to improve the quality of life of Mexican and Central American families. Walmex is operating in over 648 cities in six countries: Costa Rica, El Salvador, Guatemala, Honduras, Mexico and Nicaragua. Our infrastructure covers the needs of 85 percent of the population of the regions where we operate and we made sure to be only 10 minutes away from our clients' homes. Walmex receives over 5 million clients per day, which provides a great opportunity to increase access to health. Our strategy for the healthcare sector follows five pillars: growth, omnichannel, productivity, agility and people & culture.

Our goal is that patients can access the medications they need using the channel and payment method of their choice. We are constantly innovating to open new sales channels for our clients and to develop end-to-end strategies that ensure that the product is available as fast as possible. All our decisions are focused on the patient. For us, speaking about health means speaking about well-being, so we treat these topics together. We want our patients to perceive us as experts in our field so they can trust us.

Q: What is Walmart's approach to healthcare provision?

A: We approach access to health from different perspectives. The first is physical access, which we handle through our over 2,400 points of sale in Mexico where we distribute OTC analgesics, anti-flu agents and vitamins, among many others. Of those stores, 1,370 also sell prescription medication and 340 have a doctor's office. The second perspective is economic. We all know that medicines are expensive due to the high costs to research and develop new products. However, we try to negotiate better prices with laboratories to be able to offer our clients the best available price. We also decided to develop our own brand of generic medications, which are just as effective as patented medicines but

represent savings of 20 to 80 percent. Walmart offers more than medications; we offer everything related to health, from nutritious foodstuffs to exercise tools, which are often key to addressing obesity-related diseases that are increasingly common among the Mexican population.

Q: How does Walmart guarantee the quality of the medications it provides?

A: Our brand Medimart has become a reference point in the pharmaceutical industry. It covers a wide variety of products, from OTCs to specialized medications for many diseases. This brand follows strict quality guidelines from production to the moment medications are sold. We ensure that the labs that manufacture our brands adhere to all existing COFEPRIS regulations.

Q: How does Walmex differentiate from other points of sale in the competitive generics market?

A: Our differentiation is in our value proposition: making health available to everyone. There is a Walmart 10 minutes away from 85 percent of the population because our goal is to be close to anyone who needs our products. Healthcare should not be linked to income. For that reason, we want to offer a diverse portfolio of products that range in price so everyone can afford them.

Q: How is Walmex introducing new technological trends such as Big Data to improve its operations?

A: A trend we are seeing in the market is data mining as the more information we have about patients, the better service we can provide them. We are extremely careful in our operations to ensure our client's privacy is protected. New technologies are increasing connectivity among systems and among people. Smart watches can communicate with smartphones, which in turn can convey information to doctors on the patient's health. Doctors can analyze this information to make immediate decisions and recommendations to their patients. Technology is opening the door to many opportunities. We are seeing that pharmacies are increasingly developing an omnichannel strategy for sales to allow clients to buy their medicines in any way they prefer, either through apps, online or at stores.

Walmex (Walmart de México y Centroamérica), part of Walmart Inc., operates retail stores in 648 cities in Costa Rica, El Salvador, Guatemala, Honduras, Mexico and Nicaragua. It also has 26 distribution centers

PRODUCT DIFFERENTIATION, AVAILABILITY AND DIGITALIZATION TO CONQUER MEXICAN MARKET

MACEDONIO GARZA

Director General of Farmacias Benavides



Q: How is Farmacias Benavides strengthening its presence in areas with insufficient health coverage?

A: Our expansion process continues in markets where we have not had a strong presence, primarily in the central region of the country. Besides inaugurating new locations, we are strengthening our brand presence with complementary services, such as home delivery and primary medical attention, at points of sale. Over the past 12 months, we have opened 100 new business units in markets where we did not have a presence.

Q: How is Farmacias Benavides transforming its business model to become not only a point of sale but of wellness?

A: We have created partnerships with players in the digital arena and e-commerce platforms such as Rappi and Cornershop. We started collaborating with both companies in the first half of 2019 and our expectation is that these ventures will help us become more accessible to clients that demand digital purchases and home delivery services. Improving medicine availability is among our main priorities, and it is a truly complex problem. In Mexico, recent studies show that a patient often needs to visit more than two pharmacies to fill a prescription. We have worked to ensure that Farmacias Benavides is the sales point where patients can find all their prescribed medications. We have made significant investments to improve product availability at all our locations by understanding consumer demand. We also are forming alliances with logistics experts to improve deliveries and to comply with customer expectations.

Q: How are technological innovations impacting Farmacias Benavides' business?

A: We have been in the Mexican market for 102 years. We continue to strengthen our value proposition to stand out from the traditional transactional pharmacy, moving toward a model of health and primary medical attention. This will allow us to become a point of reference for our clients. In addition to home delivery services, we are remodeling our pharmacies to have a homogenous brand presence.

Over the past 12 months, we converted and remodeled 437 pharmacies. We have also taken advantage of the fact that we have access to all leading brands from the Walgreens Boots Alliance. In 2018, we introduced our generics brand ALMUS. So far, we have released 117 products through ALMUS and we expect to double that number in the coming 12 months. ALMUS is already a reference in Europe and complies with all international quality standards, which makes our offering unique for those clients looking for alternatives to commercial brands.

We are also introducing high-quality generic products through the Farmacias Benavides brand. We have 73 Farmacias Benavides products, mostly focused on vitamins and medicines for acute conditions that complement the rest of our offering.

Q: How will you balance your operations between digitally-driven solutions and traditional point-of-sale operations?

A: Many of our pharmacies are located in rural populations and suburban regions where internet solutions do not play a predominant role. Still, we continue working with both strategies to ensure we are as convenient as possible for our consumers in markets where players like Rappi and Cornershop are present, while maintaining a strong customer-service approach in areas where clients favor the traditional visit to the pharmacy.

The market will evolve eventually but it is still early for us to declare a great digital transformation, especially since most of our transactions are still done through the traditional pharmacy model. However, we remain attentive to changes in legislation that will permit the use of electronic prescriptions.

Farmacias Benavides has over 100 years of experience and is one of the largest pharmacy chains in Mexico. The company was acquired by Walgreens Boots Alliance in 2014 and has 1,174 points of sale in 24 states



LAB EYES NATIONWIDE EXPANSION

JOSÉ CARLOS PÉREZ Y PÉREZ
Executive President of Grupo Diagnóstico Proa

Q: How did Grupo Diagnóstico Proa’s business strategy evolve to make it one of the largest players among clinical laboratories?

A: Laboratorio Médico del Chopo, which would later become Grupo Diagnóstico Proa, turned 70 in September 2018. The company grew under three pillars: placing patients and their doctors at the center of its business strategy, bringing services closer to the patient’s home and providing accessible prices. We started as a single laboratory and now we have over 280 franchises.

From the start, the laboratory’s goal was to be a one-stop service provider for the most common tests required by doctors to save patients the need to visit multiple locations. The laboratory also incorporated radiology services. Rather than expand the existing location, we opened different branches to be closer to patients’ homes.

Q: What role does Grupo Diagnóstico Proa play in Mexico’s healthcare system and in increasing access to healthcare?

A: We have two clients: doctors and patients. The first are those who request the tests and the second are those who require them. Doctors diagnose and interpret the tests and we are the physician’s partners throughout the entire treatment. We are constantly organizing events and training sessions for doctors. We also have medical representatives who visit doctors on a monthly basis to collect their questions and to provide them with more information on existing tests.

Providing healthcare for all Mexicans is a challenge so big that it can only be addressed through joint efforts from all healthcare players. Our healthcare system is based on curing diseases instead of maintaining health through prevention. It is necessary for the public and private sectors to jointly develop a platform that allows the exchange of information, for instance through an electronic clinical file. Allowing

individuals to have access through the cloud to all their medical data and to bring it to any institution the patient desires will allow care providers to increase the reach of their services and provide care to more people.

Q: Temasek and LIV Capital acquired 32 percent of Grupo Diagnóstico Proa’s assets. What does this acquisition mean for the company’s growth and local operations?

A: Among 25 venture capital firms, we chose those that best understood Grupo Diagnóstico Proa’s long-term plan: to expand throughout Mexico. We predict that the market will eventually consolidate into six to eight large players based on economies of scale, instead of the over 9,000 small laboratories that exist now. The alliance with Temasek and LIV Capital will give us the capital to continue growing and expand our reach to the rest of the country. If the conditions are right, Grupo Diagnóstico Proa will launch an IPO. We plan to continue opening offices in the states where we currently have no presence, preferably through an association or the acquisition a local laboratory chain. But if this is not possible, we are always prepared to open a new branch.

Q: What new services is the group developing to address Mexico’s changing medical needs?

A: From the start, Grupo Diagnóstico Proa focused on diabetics. First with glucose tests; then the glucose tolerance curve, which requires the introduction of glucose and measuring its digestion hourly, and lastly with hemoglobin glycosylate tests. This last one allows more precise monitoring of blood glucose. We also have a 72-hour blood test, which connects a small monitor that continuously measures the patient’s blood glucose over three days.

The group has strong capabilities in diagnostics and radiology, for which we are the largest group in Mexico with over 1,160 assets such as 27 MRI systems, 57 computed tomographers, 3 PET/CT, 183 ultrasounds, 182 general XR equipment, 82 mammography equipment and more than 600 other multi-purpose systems including densitometry, cardiology and colposcopy.

Grupo Diagnóstico Proa, founded in 1948, owns several diagnostics chains, including Laboratorio Médico del Chopo, Imagenus, Care Diagnostics and Acceso Salud. The group has over 3,500 employees

PUBLIC-PRIVATE PARTICIPATION NEEDED TO BOOST HEALTHCARE

JAIME CERVANTES

CEO of Vitalmex



Q: How do Vitalmex's certifications make a difference for customers who hire the company's services?

A: In the health sector, we often talk about the state of hospitals and the infrastructure, but not about the human factor. At Vitalmex, we invest significant resources into creating the best working conditions because we understand that a company's workforce is its main asset in an industry focused on offering services.

We hope that treating employees well translates to better care for patients. We try to share this with the industry through robust integrity and compliance standards, hoping that these will eventually be the norm. The government has already started to shift the industry toward this mindset with its *Plan de Bienestar* (Plan for Well-being) by evaluating companies based on their values and how they treat employees, patients and all other partners.

Q: What benefits does your system provide to the healthcare industry?

A: Vitalmex combines its knowledge, equipment, personnel and other key elements to deliver not only health products but also an added-value service through our consultancy that helps customers solve their needs regarding inputs and clinical management. We understand that patients want to receive the best service, which demands accessibility and a fair price.

Today, however, healthcare prices are fragmented. In Mexico, it takes seven steps to bring a product to the market, without taking distribution into account. This represents between 15 and 40 percent of the price of any new product. Logistics, meanwhile, contribute another 45 percent to the final price. These costs lead to patients paying way more than the original cost of manufacturing the new medicine. Our country does not have the financial capacity to carry this burden, so we need to re-organize costs within the public sector.

The key benefits we provide are efficiency, removing unnecessary expenses related to intermediary processes

and applying technology and innovation to counter the lack of good administration. Apart from cutting costs, information is also an important factor. Mexico does not have a strong national registry to adequately channel resources to patients. Without this information, we are going to continue making errors in health administration. There is also the problem of corruption and resources being wasted instead of being invested in patients.

Q: You employ an articulated service model. What is the difference with the integral model and how can the industry apply this model universally?

A: An integral model is based on packages that group laboratories, analysis, surgery and other activities. In the articulated service model, as we call it, companies focus on services and providing patients the best care throughout their treatment. This means building the know-how to define what technology and logistics the patient needs at all times. Building this approach requires investment, however, to develop the right teams and facilities to make this happen.

Q: How is Vitalmex helping bridge the gap between the public and private sectors?

A: We formulated a five-year plan to help the government create a model that allows better coexistence between the public and private sector. We have understood that this country does not need more hospitals. The existing infrastructure is underused, which mainly comes from a lack of cooperation between the public and the private sector. Many private hospitals are practically empty. If the government and private industry come to an agreement, we can avoid building hospitals and making unnecessary investments. We can standardize patient care through contracts, and providers like Vitalmex can work efficiently between institutions to cut costs.

Vitalmex sells, rents and loans medical equipment to hospitals and health centers. It also provides services such as consultancy on how to solve problems related to supply chain management, as well as medical and technical training



MEXICO'S OLDEST DISTRIBUTOR OF MEDICATIONS LOOKS TO THE FUTURE

JOSÉ ALBERTO PEÑA
Director General of Grupo Marzam Healthcare Distribution

Q: What results has Grupo Marzam obtained from its diversification strategy in its sales channels and product offering?

A: We began seeing good results from this strategy in 2018, mostly in sales to the private sector where we developed several channels, including independent, regional and national chain pharmacies, self-service stores, private hospitals and insurers. Moreover, we are diversifying our client base to incorporate the public sector, which now represents 4 percent of our sales. Our channels in this sector are consolidated tenders, decentralized hospitals and state healthcare systems, among others. Grupo Marzam also diversified its product offering from prescription medications to now include consumer, hygiene and beauty products, generics and medical supplies and devices. All these different sectors are now growing steadily. In 2018, the company's objective was to ensure that our growth remained sustainable for the long term.

Q: How is Grupo Marzam contributing to the development of a patient-centric model?

A: While we do not interact directly with patients, we want to create links with those that do, including government, private pharmacies, hospitals and insurers. We want to position ourselves as the best business partner for those who treat patients by ensuring efficiency, good service and dynamism. We are now analyzing our logistics platform to see if the way we work is the best solution for our clients as most of it was designed 15-20 years ago. The market, our commercial partners and consumers have changed. Technology is playing an increasing role in logistics and it is necessary to take that into account when analyzing our internal operations to see whether we need to change. We have to decide how we should change in the coming years to address the needs of the future. For instance, in some Mexican regions where we have distribution centers, business

has changed enormously and we are discovering that these centers are not in the best location to meet current and future market needs.

Our new distribution center in Lerma is different from the previous 10 as it was developed with the goal of providing service to our own group companies instead of to other companies. The center will allow us to increase our efficiency and assure the optimal handling of our stock. It was the creation of this center that led us to question our internal operations to address whether they could be improved. This is the time for us to change.

Q: How will Marzam use technological trends to improve its operations?

A: For the past two years, we have been developing a technological roadmap that we will follow for the next five years. This roadmap let us identify the company's needs and how to implement new solutions without paralyzing our operations. Technology has to improve our operations, not become an obstacle for business. Technology is allowing us to make our operations safer, faster and more dynamic while being fully focused on clients. Technology evolves on a daily basis but we are well-positioned for these changes. For instance, our entire sales force manages orders through their smartphones. They also have access to stock information online and in cities where we have a distribution center, we can offer same-day delivery in some cases. In the worst-case scenario, the product is delivered the following day. Previously, it took us between four to five days to release a credit line for a pharmacy. Now it takes us two hours.

Q: How can the technology you are introducing into your practices be used to predict market changes?

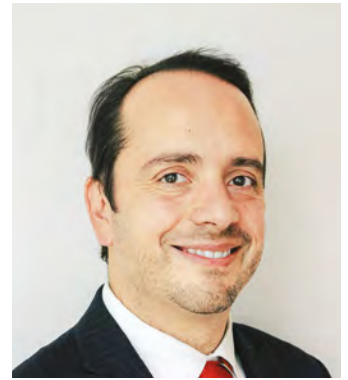
A: Close monitoring of changes in the market may allow us to predict which medications specific areas might need, based on data from that same year. We use this information internally to determine how much of a product's stock should be allocated to a specific location. So far, we are using last year's data to estimate the following year's stock but we want our estimates to be in line with current market needs, not last year's.

Grupo Marzam Healthcare Distribution, created in 1934, is now the oldest distributor of medications in Mexico. The company has 11 distribution centers and 43 regional centers with 16,000 clients in the public and private sectors

COLD CHAIN A GROWING PRIORITY FOR LIFE SCIENCES

EDUARDO TAPIA

Director of Life Science and Healthcare at DHL



Q: How does DHL improve its clients' supply chains in the life sciences sector?

A: DHL invests in the generation of solutions specific to our client's needs. The company analyzes its clients' supply chains to identify areas that can be improved in terms of efficiency or service. Our goal is to find ways to add value to their supply chain and to work together with clients to develop better strategies to deliver the medication or medical device to the patient. For instance, some clients in Mexico have asked us for strategies to reach their diabetic patients faster. In these cases, we are improving and developing e-commerce platforms that allow us to deliver the medication as soon as the diabetic patient needs it.

DHL Supply Chain Mexico has 100,000m² exclusively adapted for pharmaceutical products and medical devices. The company has over 20 years of experience in this sector, through which it gained significant knowledge in the pharmaceutical, medical devices, diagnostics and animal health. Mexico is the seventh-largest market for DHL Supply Chain's pharmaceutical division. We have over 60,000m² with controlled temperature, which is essential for the pharmaceutical sector. We ensure that these rooms adhere to the highest standards of quality thanks to the almost 1,000 employees that specialize in the life sciences area.

Q: What investments has DHL Supply Chain made to continue improving its services for the life sciences sector?

A: In 2018, we developed areas in our warehouses to wash surgical instruments. These areas, which are located in warehouses close to hospitals, receive medical devices and washing them so doctors can use them right away. Our objective is to help clients take advantage of the infrastructure capabilities of a logistics operator to bring products closer to customers.

Q: How is DHL supporting Mexican hospitals to manage their own logistics?

A: DHL provides logistics services to a major hospital in Mexico. In this case, we receive, administer and redistribute the products from many medical device suppliers, improving the hospital's inventory processes. We are seeing an

increasing number of hospitals willing to partner with logistics operators to take advantage of the latter's platforms, systems, infrastructure and experience.

Q: How does DHL offer added value to manufacturers of biotechnological products and APIs?

A: The market for biotechnological products has grown significantly in Mexico and all these players look for logistics companies that offer solid controlled-temperature solutions. These clients know that DHL already has experience in the management of these products. We provide clients with the entire solution and equipment they need to safely transport the product to the patient.

Q: What are the three main goals for the life sciences division and your growth expectations for the coming year?

A: We will continue growing alongside our clients. We are already strong in the sector but we want to strengthen our medical devices division and create more alliances with local manufacturers. In the past couple years, we have focused on animal health, for which we now have solid operations.

During 2018, we increased our investment in the life sciences sector by 70 percent, especially to strengthen our cold-chain capabilities. We will continue investing in infrastructure and training and continue improving our processes for the proper handling of medications. We will also invest in the development of platforms to allow us to have a greater amount of real-time information with which to make decisions. We are investing heavily in IoT principles, which will allow us to provide more information to clients on the status of their products on the road. We can also provide them with a comprehensive analysis of their logistics and commercial strategy. This information will allow clients to make better-informed decisions.

DHL is an integrated logistics company founded in 1969 in San Francisco. In 2002 it became part of the Deutsche Post Group. It offers logistic solutions for the life sciences and healthcare sector through transportation, products and solutions services

MEXICO

HEALTH REVIEW 2020

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PRIZE STIMULATES R&D INNOVATION IN BIOTECH, NANOTECH

WIGGINS AWARD

David G. Goodwin, Director of Goodwin Associates

Q. What year was the Wiggins Award established?

A. It was first established in 1992 by the Wiggins Foundation, an endowment established by the late Dr. Robert Wiggins, a pioneer in the field of nanotechnology. The award honors outstanding research and development in the fields of biotechnology, nanotechnology, and related fields.

Q. What is the Wiggins Award and WIGGINS Prize for Innovation in Biotechnology and Nanotechnology?

A. The Wiggins Award is a biennial award that recognizes and encourages innovative research and development in the fields of biotechnology, nanotechnology, and related fields. The Wiggins Prize for Innovation in Biotechnology and Nanotechnology is a separate award that recognizes and encourages innovative research and development in the fields of biotechnology, nanotechnology, and related fields.

Q. How is the Wiggins Award and Wiggins Prize for Innovation in Biotechnology and Nanotechnology selected?

A. The Wiggins Award and Wiggins Prize for Innovation in Biotechnology and Nanotechnology are selected by a panel of experts in the field of biotechnology, nanotechnology, and related fields. The panel consists of leading scientists and engineers in the field of biotechnology, nanotechnology, and related fields.

Q. What are the criteria for the Wiggins Award and Wiggins Prize for Innovation in Biotechnology and Nanotechnology?

A. The criteria for the Wiggins Award and Wiggins Prize for Innovation in Biotechnology and Nanotechnology are: 1) The research and development must be innovative and original. 2) The research and development must be significant and impactful. 3) The research and development must be feasible and practical. 4) The research and development must be commercially viable.

Q. What are the prizes for the Wiggins Award and Wiggins Prize for Innovation in Biotechnology and Nanotechnology?

A. The prizes for the Wiggins Award and Wiggins Prize for Innovation in Biotechnology and Nanotechnology are: 1) A cash prize of \$100,000. 2) A certificate of recognition. 3) A plaque. 4) A letter of commendation from the Wiggins Foundation.

Q. How can I apply for the Wiggins Award and Wiggins Prize for Innovation in Biotechnology and Nanotechnology?

A. You can apply for the Wiggins Award and Wiggins Prize for Innovation in Biotechnology and Nanotechnology by submitting a proposal to the Wiggins Foundation. The proposal should include a description of the research and development, a budget, and a timeline. The proposal should be submitted by the deadline of December 1st of each year.

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R&D: THE PATH TO OPPORTUNITIES BEYOND AUTOMATION

DAVID BERMAN
Senior Director, Global Center of Excellence of Deloitte

In 2016, IBM Deloitte launched the world's largest study of automation. One through the Deloitte Research and Innovation Center, which is a global center of excellence for Deloitte. The study found that 45 percent of companies plan to automate at least some of their business processes by 2020. This is a significant increase from 2015, when only 35 percent of companies planned to do so. The study also found that 60 percent of companies plan to automate at least some of their business processes by 2020. This is a significant increase from 2015, when only 45 percent of companies planned to do so. The study also found that 60 percent of companies plan to automate at least some of their business processes by 2020. This is a significant increase from 2015, when only 45 percent of companies planned to do so.

Automation will continue to grow, and it will be a key driver of productivity and innovation. Companies that embrace automation will be able to reduce costs, improve efficiency, and create new products and services. Automation will also create new jobs, as companies need people to manage and maintain the automated systems. Companies that do not embrace automation will be at a disadvantage in the future. Automation is a double-edged sword, but it is a powerful tool that can be used to create a better future for all.

Deloitte is a multinational digital growth accelerator. We help our clients to transform their business and to create new opportunities for growth. We are a leader in the field of automation, and we are committed to helping our clients to embrace automation and to create a better future for all.

There's a great deal of interest in the study of automation. One through the Deloitte Research and Innovation Center, which is a global center of excellence for Deloitte. The study found that 45 percent of companies plan to automate at least some of their business processes by 2020. This is a significant increase from 2015, when only 35 percent of companies planned to do so. The study also found that 60 percent of companies plan to automate at least some of their business processes by 2020. This is a significant increase from 2015, when only 45 percent of companies planned to do so. The study also found that 60 percent of companies plan to automate at least some of their business processes by 2020. This is a significant increase from 2015, when only 45 percent of companies planned to do so.

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