

# TPG-IHA Cuba Educational Summit

**TPG International Health Academy  
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The 2025 TPG International Health Academy Educational Summit brought 12 American health care executives to Cuba to study the Cuban healthcare system, experience the culture in Havana, and learn from each other and their international counterparts. As leaders in the US healthcare system in the position to change healthcare in the United States for the better, it is incumbent on these executives to gain insights into global healthcare's best practices, see first-hand how another country tackles challenges to keep populations healthy while trying to control costs, and identify ideas to impact the US healthcare system.

## **Overview**

Despite over six decades of the US economic embargo which restricted access to essential medicines, medical equipment, and scientific research, Cuba has created a socialized healthcare system that is internationally recognized as one of the best in the world. Deprivation spawned innovative self-sufficiency and the Cuban government aggressively invested in biotechnology, vaccine development, and herbal medicine research. Some have even gone so far as to state that while the world hindered the sharing of technological advanced to Cuba, Cuba was contributing to global health through their own research and innovation. In 1997, the American Association for World Health stated "a humanitarian catastrophe has been averted only because the Cuban government has maintained a high level of budgetary support for a health care system designed to deliver primary and preventative medicine to all its citizens."

The Cuban socialized healthcare system infrastructure is made up of three specific divisions, each overseen by a distinct governing body: 1) the Provision of Care, governed by the Ministry of Public Health (MINSAP), 2) the National Regulatory Authority governed by The Center for State Control of Medicines, Equipment and Medical Devices (CECMED), and 3) the Biotech Industry (pharmaceutical and biopharmaceutical industry) governed by the BioCubaFarma organization.

This approach has been remarkably successful. While economically classified as a developing country, Cuba's health profile is that of a developed nation. Cuba eliminated most communicable and parasitic diseases by the mid-1990's. Now plagued by chronic diseases (e.g., high blood pressure, heart disease, cancer), the Cuban health system is working towards prevention, treatment, and cures in the same holistic, integrated way has been successful in the past.

## **The Three Divisions of Cuba's Healthcare System**

### **1) Cuban National Health System (SNS)**

In 1959, Cuba established the Cuban National Health System (SNS). The SNS is built upon five principles: 1) universal coverage, 2) available to all citizens, 3) constitutionally guaranteed to be provided free-of-charge, 4) regionalized services allowing access to care, and 5) comprehensive services. This translates to healthcare services for all citizens regardless of political affiliation and offered regionally at city and rural care centers.

The SNS follows a prototypical population care management approach: ensure the environment is safe (e.g., safe drinking water, mosquito abatement), preventive interventions (e.g., prenatal visits, vaccines), and high quality secondary and tertiary care as needed. The SNS emphasizes preventative care, focusing on wellness rather than treatment alone, fostering a healthcare environment that focuses on maintaining the health of the general population rather than primarily treating illnesses once they arise. The approach is simple. Unlike the fragmented US healthcare model, Cuba's integrated approach is community-based to ensure better health outcomes and higher patient satisfaction. Preventive care is a priority to avoid high-cost curative procedures. Emphasis on social determinants of health plays a pivotal role in Cuba's healthcare strategy, addressing factors such as education, nutrition, and living conditions to enhance overall public health outcomes. Healthcare in Cuba is accessible, patient-centered, and is a fundamental human right, and can be appropriately labeled as "Population Care Management." Cuba's SNS is a proactive approach to healthcare that is aimed at improving the health outcomes of the entire population.

Healthcare is provided at three levels: **primary, secondary, and tertiary care**. At the **primary level**, services are provided at one of nearly 11,000 family doctor offices called Consultorios (a first-level clinic for consultation with doctors and nurses) or at one of 450 more comprehensive regional Polyclinics. The Polyclinics and Consultorios are strategically distributed throughout urban and rural areas, enabling citizens to access basic healthcare services, preventive care, and health education. Services include preventive care, check-ups, examinations, vaccinations, and maternity care, provided by family doctors and nurses. Consultorios serve as decentralized, front-line points of access to the multidiscipline Polyclinics.

At each **Polyclinic**, there may be one or several Basic Health Groups coordinating care. Services available at the Polyclinics are comprehensive, and directed at the individual patient, the family, the community, and the environment, with a comprehensive approach based on Promotion, Prevention, Medical Care, and Rehabilitation. Care is provided by family physicians, specialists, residents, nurses, pharmacists, and students in medicine, dentistry, nursing, health technology, and psychology. Polyclinics are equipped with diagnostic and laboratory services, and they house various specialties, providing more complex medical interventions, including outpatient surgery and rehabilitation. Services range from urgent care/emergency services, primary and specialty care including

ambulatory procedures for all ages (children to elderly), and rehabilitation. The goal is to have 80% of all health services provided at this level. Technology is used at this level to analyze statistics for health, hygiene, and epidemiology surveillance, for constant evaluation and investigation.

The threshold for a patient's stay in the Polyclinic is six hours. It is expected that the patient should be stabilized within six hours to go home or is referred and transferred to Secondary Care in a hospital. Medical criteria help define if a patient is stable enough to be sent home with close surveillance by the family or should be transferred to the hospital if beds are available. In some circumstances, a 24-hour stay can be assigned if there are no hospital beds available. Lastly, Primary Health Care is the major training ground for future doctors as well as the study site for clinical trials.

**Secondary level care** is provided in 150 hospitals across Cuba treating patients with more serious health problems. Secondary care provides specialized services, such as advanced diagnostic procedures and therapeutic services. Care is provided upon referral from a primary care provider. This level of care includes hospitalization, routine surgery, and specialized outpatient consultation, addressing more complex medical conditions such as cancer treatment and severe infections. Approximately 15% of cases reach this level.

**Tertiary level** facilities include nationally administered specialized hospitals and centers for the treatment and study of diseases. This level is the most curatively oriented of the three, dealing with patients who have complications from serious illnesses. In all, there are 13 Medical Science Universities, 29 Schools of Medical Sciences, 4 Schools of Dentistry, 5 Schools of Health Technology and Nursing, all covering 11 branches of Medicine. These centers are specialized hospitals to treat serious illnesses and high-risk patients, providing advanced treatments and specialized medical services that cater to more severe health conditions. It is estimated that about 5% of the healthcare system operates at this level.

Since inception of its medical education in 1999, Cuba has developed medical institutions with state-of-the-art infrastructure, medical resources, and teaching-learning medical luminaries. Cuba has 21 medical schools and the Latin American School of Medicine (ELAM). ELAM was established to support nations in Central America impacted by Hurricane Mitch in 1998, exemplifying Cuba's commitment to global health. ELAM is an international school that provides full-scholarship, degree-conferring training to individuals from low-income communities in Latin America and the Caribbean, Africa, Asia-Pacific, the Middle East, and the United States. In turn, graduates of ELAM pledge to return to their communities to work in underserved areas. Financial assistance is funded by MEDICC (Medical Education Cooperation with Cuba), whose mission is to promote US-Cuba health collaboration and highlights Cuba's public health approaches to inform the quest for health equity and universal health worldwide.

The medical education system in Cuba is based on a six-year curriculum. The first two years are dedicated to basic sciences such as anatomy, physiology, and biochemistry. The next

two years focus on clinical sciences, including internal medicine, pediatrics, obstetrics and gynecology, and surgery. The final two years are spent completing clinical rotations in various specialties through various Polyclinics. This program allows students to move from one learning level to another, combining theoretical knowledge and practical experience, allowing them to apply classroom knowledge in the field. The learning approach can be viewed as hands-on learning and practical experience over traditional lectures that encourages professional performance in healthcare activities through education at work, akin to “On the Job” training. Medical students are placed under medical “mentors” who supervise them as they hone their skills in hospitals and health care centers. This training curriculum has successfully provided “fast-tracked” access to doctors in Cuba and significantly improved health and medical sustainability in Cuba. The Cuban medical education program has remained progressively strong and continues to put Cuba on the world map, as demonstrated by the highly competitive international student admission process.

Medical Education is free to all Cuban students, however, there is a fee charged for international students. Compared to medical schools in other countries, the tuition fees in Cuba are relatively low. This makes it an attractive option for students who may not be able to afford the high costs of medical education in other countries. International students make up to 6 percent of annual medical graduates in the country.

Cuba’s model of turning problems into solutions has been embedded into Medical Education. In addition to the preventative focused curriculum, Cuba’s solution-centric medical education system allows medical students access to the community. Communities and rural areas in most countries have documented lower access to medical services. The case is different in Cuba because rural settlements are centralized locations for medical practice and internships. Rather than having students cluster in urban areas, medical mentors allow students to move from one house to another in a specified community to reach out to people. It is a win-win model where students gain wider medical experience from real practices, and the citizens get effective and near-free access to medical care. The result is approximately 90 doctors per 10,000 patients.

Another key difference between many western countries’ approach to medical academic training and the Cuban approach is Cuba’s focus on the integration of natural and traditional medicines with conventional therapies. Cuba recognizes the Department of Natural and Traditional Medicine (NTM) as a broad-profile medical specialty with a unique, holistic scientific focus, using techniques and procedures to promote health, prevent disease, make diagnoses, treat, and rehabilitate with a medical approach based on ancestral practices and non-Western cultures. Its principal goal is establishing a balance, or correcting imbalances, in patients, based on medical assessment that considers the person as a unique whole, taking into account the individual and not just the illness. It includes awareness of the interdependence of physical well-being and the environment, and the impact on overall health. This discipline bases selection of therapies upon a more holistic approach to the patient, and is the approach used in primary and secondary levels of care.

## **2) Center for State Control of Medicines, Equipment and Medical Devices (CECMED)**

Established in 1989, the Center for State Control of Medicines, Equipment and Medical Devices (CECMED) oversees the regulation, control, and surveillance of products and services for human use. It is the regulatory body for pharmaceutical products, equipment and medical devices developed and manufactured in Cuba. The mission of CECMED is to promote and protect the health of the Cuban population through an effective and transparent regulatory system, health surveillance, , and processes to ensure the safety and efficacy of drugs, medical devices, services and other products intended for human use.

The regulatory system also oversees clinical evaluation and clinical trials, analytical control, marketing authorization, post marketing surveillance and pharmacovigilance, lot release, and regulatory inspections and licensing. Regulatory sectors include manufacturing, distribution, importation, and exportation. CECMED is recognized as a competent authority in the performance of all health regulatory functions recommended by PAHO/WHO to ensure the efficacy, safety, and quality of medicines through various certifications. This is essential to the ability of Cuban pharmaceutical companies to actively collaborate with international organizations and foreign governments.

Looking specifically at the pharmaceutical regulatory process, CECMED's comprehensive regulatory framework serves to 1) protect consumers from substandard products, 2) promote ethical pharmaceutical practices, and 3) facilitate access to essential medicines for the population. Through its various regulatory bodies, CECMED ensures adherence to established guidelines across the pharmaceutical lifecycle, from drug discovery to post-marketing surveillance.

CECMED sees their scope as going beyond protecting individual health to protecting the integrity of the healthcare system. Mitigating risks by ensuring that pharmaceutical products are both effective and safe, CECMED is contributing to improved health outcomes for the population. As with any industry, global trends in pharmaceutical innovation brings increasing complexity of the drug development processes, thereby requiring the regulatory landscape to evolve to adapt to these changes.

## **3) BioCubaFarma**

BioCubaFarma is a Cuban state-run biotechnology organization that is responsible for approximately 50% of all Cuban research activities. It was created in 2012 from a variety of pre-existing organizations. Today, 47 companies and institutes make up the BioCubaFarma holding company that manages and coordinates national efforts in the biopharma sector to produce medicines, diagnostic tools, and medical equipment that provide high-quality life science services for high economic and social impact.

The Cuban pharmaceutical industry is characterized by a strong emphasis on research and development, particularly in biotechnology and the production of generic medications. The

country has made significant strides in producing essential medicines, vaccines, and innovative treatments for various diseases. This focus on biopharmaceuticals has positioned Cuba as a leader in vaccine development, notably for diseases such as meningitis and hepatitis B, as well as developing and manufacturing two COVID vaccines and two novel treatments for lung cancer.

Eight institutions constitute the core of the BioCubaFarma network.

1. **The Center of Genetic Engineering and Biotechnology (CIGB):** the CIGB focuses on the research, development, manufacture, and commercialization of **human and veterinary vaccines, and therapeutic molecules such as peptides, proteins, monoclonal antibodies, diagnostic systems, genetically improved plants, functional foods, and aquaculture products.** The CIGB is credited with developing two COVID vaccines, unique to Cuba, during the pandemic.
2. **The Center of Molecular Immunology (CIM):** the CIM specializes in the development and manufacture of products for the **diagnosis and treatment of diseases related to the immune system, and molecular vaccines for cancer immunotherapy.**
3. **The Finlay Institute (IFV):** the IFV is Cuba's pre-eminent **vaccine research and production center.** The institute coordinates research in immunology, molecular biology, and applied microbiology to develop novel vaccines and the fermentation processes needed for their production. Among IFV's top accomplishments is the development of the first vaccine in the world against meningitis B almost 30 years ago.
4. **The Center of Immunoassay (CIE):** the CIE is devoted to the **development, manufacture, and commercialization of the SUMA platform,** an ultra-micro analytical system designed for large public health programs that require neonatal screening, blood certification, epidemiological surveillance, and cancer control. **The CIE also commercializes glucometers and capillary glucose biosensors.**
5. **The Neurosciences Center (CNEURO):** the CNEURO **develops and markets technologies and services for mental health professionals**—including neurologists, neurosurgeons, neurophysiologists, psychiatrists, psychologists, and intensive care physicians—who need tools to evaluate factors such as brain or muscular electrical activity (spontaneous or evoked) or hearing impairment.
6. **The National Center for Scientific Research (CNIC):** the CNIC focuses on the **development and manufacture of pharmaceutical products and supplemental foods** derived from natural products such as sugar cane and beeswax.

7. **The Central Institute for Digital Research (ICID):** the ICID develops, manufactures, and commercializes medical and digital technology devices under the trademark COMBIOMED for the diagnosis and monitoring of CVD and other conditions.
8. **FARMACUBA:** FARMACUBA manages the export of generic drugs, blood-derived products, and human placenta-derived products, and the import of raw materials, packaging materials, pharmaceuticals, reagents, equipment, and spare parts for the Cuban pharmaceutical and biotechnological industry.

Each of these institutions is organized following the principle of a ‘closed cycle’ enterprise that fully integrates all steps of translation—from research to post-marketing follow-up—to ensure the streamlined progress of any R&D program.

In keeping with its mission to prioritize public health and the national health system, BioCubaFarma has consolidated a deep product pipeline that includes prophylactic and therapeutic treatments, innovative biopharmaceutical products for cancer, cardiovascular disease, neurology and other indications, biosimilar products, generic drugs, diagnostic reagents, medical equipment, agrobiotech products, and natural and traditional medicines. More than 400 research and development projects are currently led by BioCubaFarma, many of which are aimed at replacing medicines currently imported, while others are focused on the development of novel standard treatment and natural/herbal product solutions in disease conditions with unmet needs.

## **Prominent Health Institutions in Cuba**

### **Institute of Oncology and Radiobiology**

Cuba’s most recognized work is being conducted at The National Institute of Oncology and Radiobiology (INOR). INOR is one of the Tertiary Care centers of the Cuban National Health System, focusing on the treatment of cancer, related research, and training of oncologists. The institute is the main center for introduction and evaluation of new technologies in oncology through clinical, basic, translational, and epidemiological research. Headquartered here are the professional societies for Oncology, Radiotherapy, Nuclear Medicine, the National Cancer Registry, the Center for the Cuban Research Program on Cancer, and the Advisory Groups for Oncology to the Ministry of Health and the Havana Medical University in Oncology. Oncology Clinical Specialties are comprehensive, including medical and surgical oncology, emergency and critical care services, and tumor-specific services. Ancillary Services include radiology, radiation, nuclear services, as well as clinical and pathology lab services. Research and Training oversees clinical trials, the tumor bank, and training. Finally, Surveillance and Outpatient Services includes outpatient and palliative care services, as well as the national cancer registry and data analytics. INOR is known for introducing and developing advanced medical technologies, supporting treatments of the highest standards that are comparable to prestigious institutions in

developed countries. The treatment options include conventional medicine as well as natural methods.

Radiobiology research is based at the Center of Molecular Immunology (Centro de Inmunología Molecular) or (CIM). Opened in 1994, CIM focuses on biotechnology applications of mammalian cells, development of monoclonal antibodies, and cancer vaccines. The CIM is administratively organized in three main areas: Research and Development, Production, and Quality Assurance. Basic research projects are focused on cancer immunotherapy, especially the development of molecular vaccines. These include antibody engineering, cellular engineering, bioinformatics and regulation of the immune response. CIM conducts clinical trials in diagnostic imaging and cancer therapy of varying origin, as well as other immune system diseases. Among their achievements is the development of the CIMAvax-EGF treatment in 2011 for lung cancer, which became the first Cuban biopharmaceutical product to earn the U.S. drug regulator's permission to carry out clinical trials on American soil. A second vaccine received conditional approval in 2012, CIMAbid (racotumomab or 1E10) for lung cancer, which showed statistically significant extension of survival with excellent safety profile and continues to be investigated in confirmatory clinical trials. In 2018, CIM and the Roswell Park Comprehensive Cancer Center formed a joint venture for a United States trial of the Cuban developed lung cancer immunotherapy treatment CIMAvax-EGF.

### **National Institute of Hygiene, Epidemiology, and Microbiology Science and Technique Unit**

The National Institute of Hygiene, Epidemiology and Microbiology is a Science and Technique unit of the Ministry of Public Health of Cuba, falling under the Central State Administration. Its function is to direct, execute and control the Plan of Science and Technological Innovation, as well as to guarantee the support of Scientific Information in Hygiene, Epidemiology, and Public Health, with an orientation toward primary health care. The Institute is devoted to the scientific investigation, education and technical services related to environmental health and the epidemiology of non-communicable diseases. It has the National Centre of Reference of Information in Hygiene and Epidemiology. The National Institute of Hygiene, Epidemiology and Microbiology is a Collaborating Centre of the World Health Organization research division on Health in Housing. The Centre focuses on research and technical assistance in the design of an environment that will foster the health and functioning of all people, including those with disabilities.

The Institute has been highly effective. Since inception, communicable and parasitical disease have decreased to 1% of total deaths. Immunization rates are greater than 98% with 11 vaccines, 8 of which are produced locally in Cuba, preventing 13 different diseases. To date, 14 communicable diseases have been declared eradicated. The institute works to strengthen and consolidate the processes pertinent to hygiene, epidemiology, and infection in the community, as well as conducting overall health surveillance.

Unfortunately, the success of reducing or eradicating communicable diseases has not carried over to chronic diseases. The Cuban healthcare system focuses on wellness and preventive treatment to combat the rise on chronic diseases such as diabetes and cardiovascular disease. While the country is putting efforts towards better preventive health services, Cuba still faces a drug shortage that limits their ability to address a variety of diseases. Compared to the US and Costa Rica, obesity is lower in Cuba, but male smoking is higher. Hypertension, diabetes, and hypercholesterolemia levels are high in all countries, though Cuba's are lower than Costa Rica. Cuba has a higher proportion of hypertensives on treatment than Costa Rica, though lower than the U.S. The top four causes of death in 2021 in Cuba due to chronic diseases were ischemic heart disease, stroke, chronic obstructive pulmonary disease, and dementia associated conditions. There is much research being conducted in these areas, but the benefits of these efforts remain to be realized.

## **Key Takeaways**

Much can be gleaned from examination of the Cuban National Health System. The commitment by the Cuban Government to a comprehensive approach based on 'Promotion, Prevention, Medical Care, and Rehabilitation' is key to its success. A deep dive into the Cuban Healthcare System gives cause for self-reflection of our own healthcare system in the U.S. Key observations and take-aways include:

1. Due to strained relations with other countries, i.e. the US embargo, resulting in shortages of medicines and medical equipment, Cuba has created an infrastructure and environment of self-reliance through extensive research, product development, and innovation.
2. Cuba has demonstrated significant innovation in the research, development, and manufacturing of medicines and medical equipment, particularly addressing diseases prevalent to the Cuban population. They have shared these achievements with the global community.
3. The Cuban government understands the importance of the health of the population and mandates that the government protect that health. As a result, the Cuban healthcare system provides free access to healthcare services to all its citizens through an elaborate network to ensure social determinants of health are addressed, and education and preventative care is a focus.
4. There is a focus on treating the patient holistically, integrating natural, traditional, and conventional treatment options. Cuban health system representatives argue that there should be standards for health professionals to practice natural and traditional medicine, just as there are for conventional medicine. This would include integrating which modalities are to be included in the medical school curriculum, and how they should be taught.
5. There is an emphasis on prevention as it is believed that prevention lowers cost in the long-term. Prevention is achieved through surveillance and the provision of care at a local level. However, control of chronic disease still remains a challenge.

6. Through constant evaluation and innovation, more healthcare services are provided with minimal fund availability.
7. Innovation is promoted by continued research to find areas of opportunity to fulfill unmet needs, and comprehensive training to prepare healthcare professionals to provide the needed services.
8. Because all aspects of healthcare services are coordinated at the governmental level, there is a full integration and coordination of activities from surveillance to open market provision, thus minimizing the barriers created by a fragmented framework.

Importantly, these takeaways also have substantial implications for the United States' own healthcare ecosystem. Considering the ongoing debate in the U.S. regarding the state of our healthcare system and the role of Federal and State governments in determining the level of health care coverage to be made available and addressing the total cost of care trends, perhaps the Cuban model may offer important lessons.

In short, Cuba's education- and prevention-first model is a direct contrast to the reactive nature of the US healthcare system. While American medicine often prioritizes treatment over lifestyle interventions, Cuban doctors routinely incorporate nutrition, exercise, and disease prevention strategies into care plans. In addition, there is a philosophical debate in the United States with respect to complementary and alternative medicine (CAM) therapies, specifically if "the entire arena" should be embraced vs just a specific aspect or a technique. In Cuba, protocols have been established for introducing aspects of natural and traditional medicine at different levels of pre- and post-graduate education, as well as integrating it into the treatment plan options. The country's polyclinic system ensures patients receive consistent, community-based healthcare rather than navigating a fragmented, for-profit system that often leaves them behind. Resources are judiciously utilized, giving credence to the concept of the right therapy being used for the right patient at the right time. Unlike in the US system, the Cuban population has a deep trust of the public health system and freely participates in preventions such as mosquito abatement and vaccinating children.

As a final thought, innovation has its place, and in an environment of tight funding, innovation is cost effective in the appropriate clinical situation. The Cuban Health System has clearly been able to manage innovative resources to ensure that healthcare resources are stretched as much as possible to provide equitable care to all citizens. As noted, 80% of services provided in Cuba are at the Primary Health center, with only 5% provided at the Tertiary Level. Traditionally in the U.S., academic medical centers are meccas for providing specialized care for patients with medical needs, which include innovative services, and can be challenging to account for financially. In 2020, 626 hospital systems were identified in the U.S., of which nearly 40% were affiliated with at least one major teaching institution. In 2023, 56% of all hospitals were classified as teaching hospitals. Finally, half of all U.S. hospitals reported that charity care costs represented 1.2% or less of their operating expenses in 2023. Hence, it can be observed that, in comparison to Cuba, the U.S. trend towards using innovation to treat their patients, rather than engaging the population to learn

and prevent, is more costly. Could it be a question of a single governing body vs multiple for-profit entities driving a system attempting to control unsustainable cost trends?

### **Conclusions**

In a country that is weak economically, the Cuban socialized healthcare system is a bright exception. While it cannot be labeled as thriving, it is sound in that all citizens have access to health care services free of charge. Healthcare is provided locally, where preventive care is emphasized, focusing on wellness rather than treatment alone. It is a distinctive model that fosters a healthcare environment that focuses on maintaining the health of the general population rather than primarily treating illnesses as, or after, they occur. This is accomplished by addressing social determinants of health locally, and focusing on education, nutrition, and living conditions to enhance overall public health outcomes. Healthcare is accessible, patient-centered, and is a fundamental human right.

The Cuban healthcare system is an integrated and coordinated effort consisting of the provisioning of care, data analytics for constant health surveillance, and research and development, with education and training of future care integrated through the system. Research and innovation are home grown, forced upon this small country due to the embargoes. The transformation from a potentially devastating population health scenario to a scenario where all citizens have free access to health services and has world recognition, can only be labeled as monumental.