

CUBA'S LONG TRADITION OF HEALTH CARE POLICIES: IMPLICATIONS FOR CUBA AND OTHER NATIONS

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In the late 1960s, at the same time that Cuba's economy was struggling under the burden of the chaotic "10 Million Ton Sugar Cane Harvest" campaign, a graduate of the Johns Hopkins School of Public Health (SOPH) was writing about the extraordinary results of "supposedly original" health care policies implemented by the Cuban revolutionary regime since 1959.² This was followed by similar articles by the faculty of the SOPH at Columbia University and at the University of California, Los Angeles.³

Since 1962, laudatory reports about Cuba's health system transmitted from the Pan American Health Organization (PAHO) to the world were the creation of the Cuban Communist Party (PCC) and of the Ministry of Public Health (MINSAP) and Schools of Medicine (SOM) and Public Health, without regard for dissenting views from insiders, who faced potential charges of treason to the motherland for expressing their views. Misinformation about Cuba's public health system has continued to date, because of the scarcity of in depth independent studies. The only

critical study with suggestions to improve the Cuban health system's efficiency of which I was aware at the MINSAP was by Milton Terris, a Johns Hopkins SOPH faculty member, conducted in 1987, following a critical paper written in 1984—but censored in Cuba—by Nicholas Eberstadt, a Harvard economist who found contradictions in Cuba's main health statistics.⁴

Over the period 1959–2013 over a hundred papers and a dozen books have been published in English by Western experts proclaiming the inferior health care of pre-revolutionary Cuba and providing status baselines on health care before 1959 close to Haiti and China, distorting the logic of health care policies and outcomes in Cuba over two centuries, and making biased predictions for the transition. The studies highlight decreases since 1959 of mortality, morbidity, and increases of physicians, primary care coverage, mass organizations, epidemic control, disease prevention, biomedical research, and pharmaceutical, biotechnological and equipment production, health care

1. The author acknowledges the encouragement of Kent Bream and 6 groups of students at the University of Pennsylvania, who commented on his lectures in 2010–2013; the continued support of Maria Werlau and Jorge Pérez-López of ASCE; and of Yamil Kouri, reorganizer of science in totalitarian Cuba, exiled in the United States.

2. Navarro V. Health, health services, and health planning in Cuba. *Int J Health Serv.* 1972;2:397–432.

3. Stein Z, Susser M. Cuban health system: trial of a comprehensive service. *Int J Heal Serv.* 1972; 2:551–66; Roemer MI. Political ideology and healthcare: hospital patterns in Philippines and Cuba. *Int J Heal Serv.* 1973; 3:487–92.

4. Terris M. The health status of Cuba: recommendations for epidemiologic investigation and health policy. *J Public Health Policy* 1989;10:78–87; Eberstadt N. Literacy and Health. The Cuban Model. *Wall Street Journal* 1984,10 Dec:26. I also heard Yuri Zhilinskas, Soviet-Baltic advisor at the MINSAP making a criticism (censored in Cuba) on Cuba's planning and financing in 1980 at a meeting of the Health Management Society. He published a book while at Havana: Zhilinskas Y. [*Planning and Financing Methodology of Soviet Public Health*]. La Habana: CNICM, 1979.

for all, and life expectancies, paradoxically “at no direct or very low costs.” The studies minimize the suppression of human rights and depression of living standards prevailing in the island associated with the Soviet-style totalitarian military-paramilitary state and central planning, and are blind to the forced equity at the bottom resulting from policies of the regime, widespread misery, and the induced “social dementia” caused by daily misinformation and terror suffered by 99% of the population supported by the Soviet, Chinese, and Venezuelan regimes.

This study starts from the view that the revolution vanquished the existing unified health system in Cuba when it confiscated the private, mutual and charity health care sectors. Cuba’s national health services have developed over 200 years, remodeled twice, showing three interrelated stages of health policies and outcomes: colonial, democratic-autocratic, and totalitarian. The aim of this study is to clarify the confusion regarding the health policies of the revolution and the alleged results, often analyzed without proper consideration of previous progress, and to infer implications for the future of health policies in Cuba and other nations and global health policies.

METHODS

This study compares Cuba’s healthcare policies and results during the colonial and republican periods with those of the revolutionary period. The main sources of facts, data and methods used have been described in two previous papers presented at ASCE meetings.⁵ This study starts with a synthesis of previous health policies and system research pioneered by the author during his life in Cuba, including: medical education at Havana’s SOM, 1962–; biomedical research at the National Center for Scientific Re-

search (CNIC) and other institutions, 1968–; health-care practice in Las Tunas, Oriente, 1972–; public health trainings at the National SOPH, 1974–; COMECON biomedical research at Havana and Moscow National Cancer Institutes, 1977–; global healthcare at the MINSAP/PAHO in Managua, 1988–; global health research at Global Forums for Health Research with the World Bank and donor organizations in Geneva and Bangkok, 1999–2001–.⁶

RESULTS⁷

Main Health Indexes Improved More in 1800–1958 than in 1959–2013

No report published by the current Cuban government has recognized that in 1800–1953 Cuba’s health system (Figure 1) reduced:

- infant mortality from about 300 to 32 deaths x 1000 live births;
- maternal mortality from about 800 to 125 deaths x 100,000 live births;
- gross mortality from about 30 to 6.5 deaths x 1000 inhabitants; and
- gross birth rate from about 50 to 26 live births x 1000 inhabitants, while
- life expectancy at birth doubled from about 25 to 64.2 years.

Further, no report written by the revolutionary state has accepted that Republican Cuba:

- eradicated smallpox and yellow fever before the United States did so, with 100% coverage of immunization of population and sanitation of cities and the countryside (Figure 2);
- tropical medicine was born in Havana with Carlos J. Finlay’s discovery of yellow fever etiology and eradication in 1901;

5. Stusser RJ. Demystifying the Cuban health system: Insider’s view. Proc Cuba in Trans ASCE Conf 2011;(21):222–34, Access to health, freedoms and living standards in Cuba. Proc Cuba in Trans ASCE Conf 2012;(22):315–31.

6. The author worked on cancer research for 13 years with oncologist Zoilo Marinello, President, State Science Committee; passed an Academy of Science’s course on National Scientific Policy; in 1986 he established communications on long-term policies with Lino Lemes, professor at the Nico Lopez Higher PCC School; and frequently communicated during 1984–2005 with pediatric hematologist Ernesto de la Torre, President, National Health Commission.

7. This section draws heavily from RJ Stusser. *The Progress of Medicine and Public Health in Cuba*. Book in preparation with 62 lectures given to U.S. Delegations of the People-to-People Program, Havana, Nov 2000–02, and in U.S. universities in 2010–13. Four panels containing information on many policies and results are excluded because of space reasons.

Figure 1. Cuba 1800-2007: Main Health Indexes Improved—Including Urban and Rural Population Care (non-linear X axis)

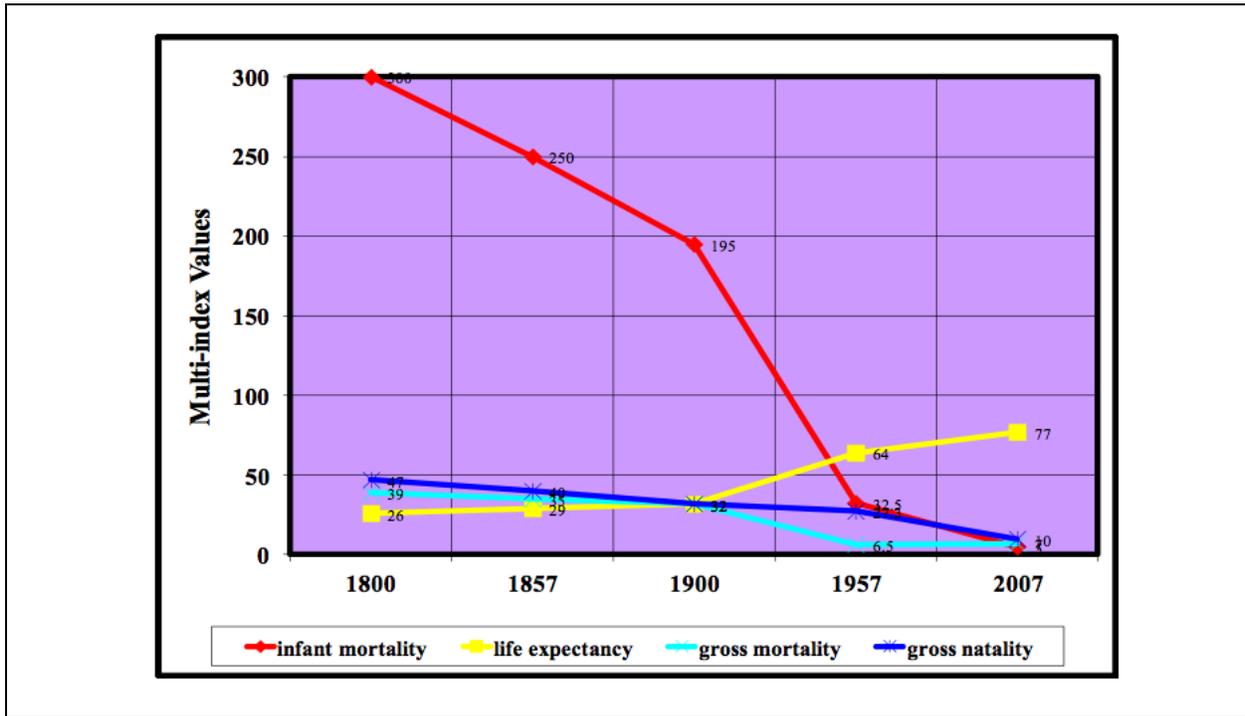


Figure 2. Cuba 1520-2007: Main Epidemics Controlled—Including Urban and Rural Population Care (non-linear X axis)

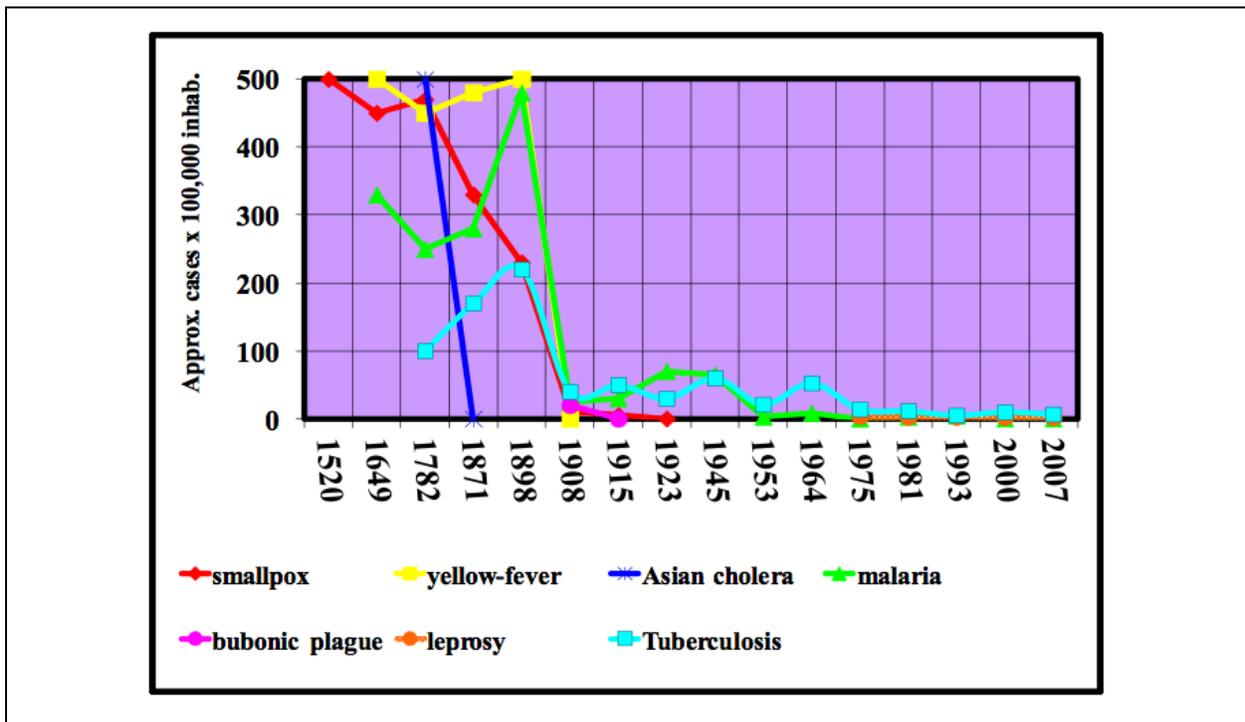
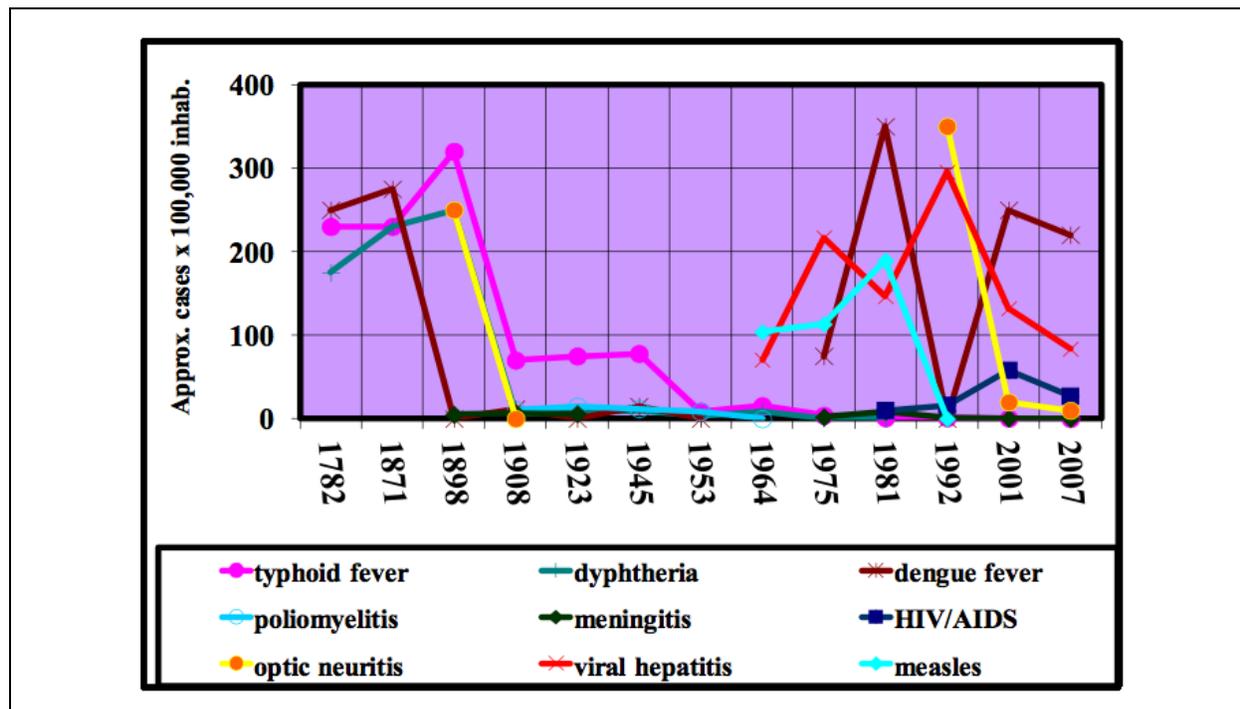


Figure 3. Cuba 1782-2007: Other Epidemics Controlled—Include Urban and Rural Population Care (non-linear X axis)



- in 1901–58, malaria and dengue were much reduced by controlling mosquitoes, and newborn tetanus by Finlay’s training of midwives in asepsis;
- the last outbreaks of cholera and bubonic plague were in 1871 and 1915, respectively;
- immunization reduced diphtheria, tetanus, and pertussis and improved hygiene and education did the same with respect to gastroenteritis, typhoid fever, viral hepatitis, leptospirosis, syphilis, and intestinal parasitism; and
- tuberculosis (TB) and poliomyelitis declined following world trends, prior to the use of anti-TB BCG vaccine and combined chemotherapy in the 1940s and anti-polio vaccines in the 1950s (Figure 3).⁸

This performance, which situated Cuba in 1958 in a position comparable with that of developed countries, was achieved without government-directed uni-

versal coverage and excess physicians of a state healthcare monopoly.

Cuba’s Colonial Health Care and Living Support Systems

Cuba’s colonial proto-scientific health care and living support systems transformed into scientific ones, guided by the models of Spain, France, the United Kingdom, and the United States. Three geographic characteristics of Cuba facilitated this: (1) largest Caribbean island (45,000 square miles, similar in size to the State of Pennsylvania); (2) elongated shape; and (3) strategic position (key to the New World through the Mexican Gulf). These characteristics made easier transportation, travel, trade, exchange and access to goods and services from the Port of Havana to the entire island, with relatively few rural villages isolated from roads, railroads and ports. Knowledge, technologies, and investments from Europe and the United States supported the development of a modern self-sustaining market economy.

8. Cuba’s delayed transition needs. *Lancet* 2006 368(9544):1323. Paper written by the author from Havana submitted anonymously.

Havana, captured by the British in 1762, was the third richest city in America, after Lima and Mexico, ahead of New York and Boston. Population, food, housing, and transportation infrastructure were increasing, as were also safe water and sewage systems, medicine, hygiene, and epidemiology. The 500–600 primary health infirmaries in operation—one in each sugar mill town—were complemented with facilities to deal with common infectious, mental, TB, leprosy, and other diseases. This health system was comprised of vigorous private, insurance, charity and state sectors. The mutual regional clinics, adapted by Cuba from Southern Europe, combined healthcare and social welfare. Around 1850, Cuban emigrants to Key West, Philadelphia, and New York fostered there mutual clinics, which preceded the Health Maintenance Organizations (HMOs) that became popular in the United States in the 1970s.

Cuba established the University of Havana SOM in 1728 (37 years before the establishment in Philadelphia of the Jefferson SOM, the first in the U.S.) and in 1842 the School of Pharmacy. In 1804 Tomas Romay began a national smallpox vaccination campaign. In 1848 the Chemistry Research Institute for Applied Research in Agriculture, Industry, Medicine and Hygiene was founded. In 1853 what would become the largest pharmacy in Latin America (selling 500 products) was built in Havana and established an urban and rural network of pharmacies.⁹ In 1861 the Academy of Medical Sciences was founded; it was there that Finlay (Jefferson SOM's graduate) in 1881–1901 defended the yellow fever's etiologic hypothesis of the mosquito, with results from entomological studies and clinical trials. In 1881 Havana's Clinical Studies Society was founded, followed by dozens of clinical, surgical and hygiene societies with journals and institutes. In 1887 the Histo-Bacteriologic Laboratory was founded, beginning rabies vaccination and producing Pasteur's vaccine.

Cuba's Republican Health Care and Life Support Systems

In 1902–58 a modern democratic-autocratic free-market economy was developed in Cuba. Private industrial investments, coupled with U.S. and French human freedoms and the latest technological advances, made it possible for Cuba in 1899–1929 to reach the life and health levels of the U.S. southern states. The progress of automotive transportation, distribution of electricity, telephones, radios, and TVs made it easier to travel and trade and facilitated access to goods and services to all citizens in the island, even those in isolated rural villages.

In 1901 the University of Havana Dental School was founded. Finlay confirmed his yellow fever hypothesis with Henry Carter, Aristides Agramonte (a Columbia SOM graduate), and other U.S. army physicians led by Walter Reed, eradicating yellow fever (and practically doing the same with malaria) in Havana in 1901 and throughout Cuba in 1909, with Cuba being the first country in the world to do so. In 1909 Finlay founded the world's first National Health Department. Between 1905 and 1915 Finlay was nominated seven times for the Nobel Prize in Medicine (sometimes jointly with Carter or Agramonte) but he died in 1915 without receiving such honor.¹⁰ In 1923 Cuba eradicated smallpox through national vaccination, including in all rural areas (26 years before this was accomplished in the U.S.).

In 1927 Juan Guiteras (Penn SOM faculty) founded the Finlay Public Health and Preventive Medicine Institute (second health institute; first SOPH), adding to it the Las Animas Infectious Hospital. It investigated rabies, yellow fever, and poliomyelitis viral pathogenesis in the nervous system of monkeys, searching for vaccines. In 1936 Pedro Kouri at the Calixto García Hospital, discovered the liver fluke disease, and founded the Tropical Medicine Institute.

9. Aguiar JL. The path taken by the pharmaceutical association of Cuba in Exile. *Herencia* 2013; 19:1:70–75.

10. Nomination Database for Nobel Prize in Medicine 1901–1953. <http://www.nobelprize.org>

In the 1930s the Havana Children's Hospital was founded by Agustín W. Castellanos as director and Pedro Castillo as head of research. Castellanos and Raúl Pereira pioneered Angiocardiography, Superior/Inferior Cavographies, and Retrograde Aortographies in 1934. They founded the first Cardiac Center, opening the doors for further advances in catheterism, hemodynamics, cardiology, cardiovascular surgeries, and transplants. In 1941 Manuel Carbonell et al closed ductus arteriosus in babies and Angel Giral conducted 400 cardiac surgeries in children. Over the period 1951–60, 600 closed and open heart surgeries were conducted at the Cardiac Surgery Institute. In 1953 Castellanos and René Montero opened the first Center for Premature and Congenital Weak Children, with mobile X-rays and a lab with micro and ultramicro-analytical methods. Castellanos and Pereira were nominated several times to the Nobel Prize in Medicine until 1961, but could not receive it because they were exiled in the U.S. All our Nobel Prize nominees died without receiving them.

In 1946–60 Cuba published over a dozen international papers studying the poliomyelitis epidemics, and in 1950 proposed a “Program for Poliomyelitis Control.” In 1955 Juan Embil, Reinaldo Martin, and Castellanos opened in their Children's Hospital a first Virus and Rickettsia Laboratory.¹¹ They studied sero-epidemiologically the poliomyelitis virus types circulating in Cuban children in their lab and in a lab in Washington, D.C., and serological levels of thousands of immunizations with the Salk vaccine, and 12,000 immunizations with the Sabin trivalent vaccine, both still in clinical trials, creating the conditions to eradicate poliomyelitis, among many other

contributions. Castellanos also built 28 Municipal Childrens' Dispensaries.¹²

There were daily ferries to Key West and several flights to Miami from Havana. Cuba advanced peacefully through both World Wars. It suffered economic stagnation after the Great Depression in 1930–1945, but in the 1950s it was poised to become a Caribbean tiger in the 1960s or 1970s, as South Korea did. Cuba followed until 1958 the world trend in raising gradually the population's coverage of primary healthcare and schooling (the exceptions were: USSR, Germany, and the UK). Any patient could reach a Havana emergency hospital within 12 hours from Santiago of Cuba via bus, train, or ambulance, or within 2 hours in an airplane.

By 1958 Cuba had markedly lowered morbidity and mortality from infectious diseases. Cardiac and cancer diseases and strokes were the first, second and fourth leading causes of death. In 1958 Cuba had 6000 physicians, 3624 pharmacists, 2260 pharmacies, about 500 laboratories, and 60 drug manufacturers, handling 40,000 different products for 6 million inhabitants.¹³ The low infant and maternal mortality rates, high life expectancies at birth, and advanced private-mutual-public health system were very close to those of the U.S. and UK, with lower infant mortality than France, Germany, Italy, and Japan. Cuba was a “medical and health power” as measured by indexes of well-qualified professionals and population health status. These facts were erased from Cuba's history with the advent of the revolution and its propaganda campaigns.

11. Ramirez Corria F. Poliomyelitis viruses in Cuba, 1946–47 epidemic. *Abstr Int Congr Trop Med Malar* 1948;56:42; Paul JR, Ramirez Corria F, Horstmann DM. Analyses from an epidemic of poliomyelitis which occurred in Florida and Cuba in 1946. *Am J Trop Med Hyg.* 1949;29:543–54; Freyche MJ, Payne AM, Lederrey C. Poliomyelitis in 1953. *Bull WHO* 1955;12: 595–649; Beato Nunez J. [Poliomyelitis]. *Arch Med Cuba* 1956;7:153–68; Perez Sora PE, Martinez R. [Organization of program for poliomyelitis control in Cuba]. *Rev Med Cub* 1950;6:476–81; Embil J Jr, Gervais L, Hernandez C et al. [Use in Cuba of the oral antipoliomyelitis vaccine with attenuated live viruses]. *Rev Cub Ped* 1960;32:483–92; Embil J Jr. Response of Cuban children to oral vaccination with living attenuated poliovirus vaccines. *BMJ* 1960;1(5180):1157–62; Cox HR, Cabasso VJ, Embil J, et al. Immunization against poliomyelitis with a trivalent oral vaccine. *Pathol Microbiol* 1961;24:61–72; Embil J Jr, Gervais L, Hernandez Miyares C et al. [Use of live attenuated poliomyelitis virus vaccine for Cuban children]. *Bol PAHO* 1961;50:207–12.

12. Castellanos AW. *History of my Life*. Miami, FL: Ed. Universal, 1987.

13. Beato VF. La medicina en Cuba. *Herencia* 2003;9:2:12–21.

Cuba's Totalitarian Health Care and Living Support Systems

In 1959 began to create a subsidized and totalitarian captive economy, with PCC first secretaries Fidel and Raúl Castro in power for 54 years. The deterioration of the domestic transportation and communications systems required more physicians and teachers for the growing isolated rural villages. Cuba's strategic position in the Caribbean facilitated a Soviet bridgehead for military interventions in the Americas, Middle East, and Africa. Cubans accessed physicians with backward Soviet-Chinese medicines and supplies, and interacted with teachers lacking complete and trustworthy information. But worst of all, Cubans were subjected to continued repression and misinformation. The Cuban people were blocked from private businesses, owning private property, enjoying the human rights and living standards they formerly were used to, and travel and interactions with foreigners.

Cuba's healthcare regressed under the influence of the USSR, with the progressive impoverishment of hospitals, polyclinics, cities, towns, and countryside infrastructures. In 1962 the medical career was shortened to 6 years (including internship year), plus 2 years of rural service, and educational standards lowered to foster "promotion for all," consistent with the practice of the national educational system. In 1970, Eduardo Reyes-Co, neuroanatomist, complained during a faculty meeting that he had to promote incompetent students to the next level. José Bustamante, director of the Brain Research Institute, trained in the USSR on "brainwashing" techniques and psychiatric advisor to the State Security Department directed by Ramiro Valdés on the scientific application of physical and mental torture, developed the "medical psychology program" of the Havana University SOM, based on Pavlov's conditioned reflexes theory.

In the 1970s, Fidel Ilizastigui, internist (trained by Pedro Castillo and Castellanos), creator of the new study plans, was removed as Deputy of Havana University's Presidency because he rejected the idea that

university studies should be generalized at the municipality level for all the citizens.¹⁴

In 1985–2000 the system received a massive infusion of unproductive family physicians assigned to work at the block level, in a program directed by Cosme Ordoñez, whose field of excellence was mental and social control. Since 2002 Cuban students were prepared in university polyclinic SOMs with lower educational standards in basic sciences and hospital medicine than foreign students at the Havana Latin American SOM. In Cuba there are no high-level scientific trainings for nearly all physicians and specialists. Cuba is a medical power in quantity of physicians but not in their quality.

In 1964 René Vallejo created the Surgery-Anesthesiology Institute (INCA) at the Havana Emergency, Finlay Military and Naval Hospitals for elite leaders and foreigners. In 1966, a nest of expropriated houses around 43 Ave, 34 St, Kohly, became the Government Clinic complex complemented with areas at the former Miramar Clinic (restricted to students, diplomats, and guests since the late 1980s), and a facility at the Revolution Government Palace. The Center for Medical-Surgical Research (CIMEQ), in the Biltmore suburb, reserved for leaders and foreigners began operations in 1982. That same year, the Central Bank building in Havana became a 1000-bed hospital with areas set aside for leaders and foreigners. Similar facilities also exist in the Heart, Cancer, Neurology, Endocrinology, Blood, Kidney, Digestive, Eye, Retinitis, Orthopedics, Neurological Restoration, and Elderly Institutes, among other facilities with in-patient treatment facilities. The Hygiene, Health, and Tropical Medicine Institutes were established within remodeled previous hospitals or homes. Their directors and deputies are clinical "collaborators" in leaders' clinics and homes; they are able to travel annually to Western trainings, meetings, and obtain the latest U.S. journals and data regarding drugs, supplies, and equipment for the leaders special needs, from donations and purchases,

14. Riera P. [Intelligence Service of Communist Cuba.] Coral Gables, FL: Service Offset Printers, 1966; Ilizastigui F. Personal communication in Havana SOM 1993.

probably, in Florida, California, Mexico, Canada, and so on, circumventing the U.S. embargo.

In 1962, Castro prophesied “the future of Cuba must be necessarily a future of men of science.” Yamil Kouri, a student at Harvard SOM in the late 1950s while Havana’s SOM was closed, returned to Havana after the revolution triumphed in 1959 to complete his M.D. At the Reina Mercedes Hospital he founded the Center for Endocrinology and Biochemical Research. After visiting several scientific centers in the world he planned, founded, and directed the National Center for Scientific Research (CNIC) in 1965.¹⁵ The CNIC trained the main scientists that have staffed the network of biomedical centers mentioned above, and created others. Among the new are Centers for Animal Health, Genetics, Neurosciences, Immunoassay, Genetic Engineering and Biotechnology (CIGB), Molecular Immunology (CIM), Biomolecular Chemistry, and the Finlay Institute for Vaccines. CNIC graduates were often rewarded with scientific trainings and opportunities to travel abroad to East and West Europe, and exceptionally to the United States. Since 1962 Chilean, Mexican, U.S., European, and other foreign scientists, as well as PAHO and the United Nations Development Program (UNDP), have supported Cuban research. Since 1968 a Digital Research Center has cooperated with the Cardiology, Neurosciences, and Immunoassay Centers, developing equipment for clinical tests.

In 1959–90 the strong private network of Cuban pharmaceutical labs and manufacturers was severely underused and related to importing outdated products from East Europe and China. The rationing card for medicines (nearly all consumer goods are rationed) consists of minimal quantities of vital medi-

cations. In the 1990s, the state pharmaceutical industry began to produce more products, but never reaching the level of production and quality that would have been reached if it would have continued its previous path during those 30 years. The ban on private initiatives and public-private partnerships in the biotechnology industry have hampered the development of the biotechnology industry and resulted in the minor public health and economic returns it has had to date. Pharmaceutical, biotechnology and equipment industries allied with strong U.S., West Europe and Japan firms would have been more creative and effective for the health sector and for the economy. Both Castros have systematically rejected individual creativeness and initiative, allowing only assimilation and follow-up research and promoting manufacture of known products but not discovery of effective products for cancer, cardiac, stroke, Alzheimer’s, AIDS, diabetes, and other diseases.

With regard to the “unique” Cuban vaccine preventing sero-group B meningococcal disease, two issues remain unclear. In 1987 Concepción Campa of the Finlay Institute created it with the Cuban strain over the technological platform given by Carl Frasch, Center for Biologics Evaluation and Research, Bethesda. Until 1989 it passed pre-clinical and clinical trials designed in collaboration with Clair Broome, Centers for Disease Control, Atlanta. It showed “an 83% protective efficacy rate” in analysis and quality control made by Cuban scientists alone.¹⁶ First, in 1990–91 this vaccine controlled an “undisclosed meningococcal meningitis epidemic evolving in Cuba since 1978,” but was not effective in Brazil

15. This author in 2013 discussed issues personally with Yamil Kouri, the founding director of the CNIC. The author was trained as a physiologist at the CNIC in 1968–70, and heard very little about Kouri, who was responsible for the state reorganization of science in Cuba, but ran into trouble with Castro and went into exile in the U.S. Despite his great contributions, he was erased from the history of Cuba. The same happened with Hilda Molina, founding director of the Neurological Restoration Center, created in the CNIC Lab House, after she had disagreements with Castro. Goyenechea F. [History of Neurosurgery in Cuba]. *Rev Cub Neurol Neurocir* 2013;(3).

16. Plahte J. Development, organization and management of techno-economic networks: the Cuban biotech sector and vaccine industry, Part 2; Strategic evaluations and techno-economic networks. Vaccine innovation in the Cuban biotech sector: for public health—or for profits? Part 1, *TIK Working Papers on Innovation Studies*, Centre for Technology, Innovation and Culture, 2010; Frasch CE. Vaccines for prevention of meningococcal disease. *Clin Microbiol Rev* 1989;2:S134–8; Reid-Henry SM, *The Cuban Cure*. Chicago: Univ. of Chicago Press, 2010. Thorsteinsdóttir H, Sáenz TW. History of science. Tackling meningitis in Africa. *Science* 2012;21;338(6114):1546–7; Sotolongo F, Campa C, Casanueva V, et al. Cuban Meningococcal BC Vaccine: Experiences and Contributions from 20 Years of Application. *MEDICC Rev* 2008;9:16–22.

and other countries, raising the possibility of having to adjust it with different strains to make it effective. Second, after the agreement in 1999 between GlaxoSmithKline (Brentford, UK) and the Finlay Institute, covering testing, clinical trials, and marketing of the vaccine, why has little materialized from this deal to date? The same has happened in 2004–13 with the U.S.-based CancerVax (Carlsbad, CA) agreement with Cuba's CIM on the “unique” Nimo-tuzumab drug for brain cancer and CIMAvax vaccine for lung cancer. These drugs were effective in Cuba's clinical trials—influenced by PCC ideological policies—but not so effective in U.S. clinical trials. This could be explained by diverse ethnographic patterns, risk factors and immunological responses of Cuban and U.S. patients or by poor efficacy of the medications. Scientists need many degrees of freedom of thought, choice and action; science cannot be politicized because discoveries rarely respond to a command system. The “unique” Heberprot-P for ulcerated diabetic feet developed by the CIGB, could show similar outcome if it were to enter in U.S. clinical trials.¹⁷

Health informatics, telemedicine and electronic-health have suffered from the tight restrictions on having phones, computers, and access to internet faced by physicians and by the population, as well as the prioritization of scarce resources for internal repression and foreign espionage. These have continued even after transforming the facilities of the “secret” Soviet Radio-Electronic Base at Lourdes into the Informatics Sciences University. Cuban officials are apprehensive of using use telemedicine, because do not want to lose the social control provided by the physical contact with physicians.¹⁸

Totalitarianism failed after 1958 not because of the U.S. embargo, but because of the self-imposed internal blockade imposed by the system. Cuba's civilized living standards and infrastructure were devastated by the alignment with the USSR and China against the free world. Cuba has been stealthily in transit since the 1970s, when it created secret overseas capitalist enterprises, seduced by Yugoslavia's totalitarian market economy, but the old leaders are terrified to lose power. Cuba's ruined economy only survived because of subsidies from the USSR (nearly half the annual gross domestic product [GDP] in 1959–89) and Venezuela (over a third of the annual GDP in 1999–2013), exports of services, and foreign family remittances and tourism (1993–2013). This backing has allowed Cuba to cover up its inefficient totalitarian central planning system and pass off inherited health care advances from before 1959 as the result of the totalitarian intervention.

Between 1959 and 2013, Cuba produced 15 times as many physicians while its population doubled, creating a mass of cheap medical labor similar to the unproductive Soviet and Chinese health systems. In 1958, Cuba had the 14th lowest infant mortality rate in the world; it has the 31st lowest now. About two million persons and thousands of physicians have emigrated from Cuba during 1959–2013. Today, half of Cuba's doctors work overseas where they get some relief from the penury they suffer at home, in “temporary emigration” that allows them to improve knowledge and skills via the only contact with foreigners they are permitted to have. The regime, of course, obtains great financial returns and political support for this “slave human traffic.” Physicians are forced by law to work 2 years of rural service; they are frequently sent to the most distant villages as punish-

17. The author pioneered teaching of clinical trials in Cuba in 1975–2005, guiding pharmaceutical/biotechnological research using manuals. Thorsteinsdóttir H, Sáenz TW, Quach U, et al. Cuba—innovation through synergy. *Nat Biotechnol.* 2004;22:DC19–24; Randal J. License to test cancer vaccines in U.S. a victory for Cuban biotechnology. *J Natl Cancer Inst.* 2004;96:1740–2; Scheye E. The Global Economic and Financial Crisis and Cuba's Healthcare and Biotechnology Sector. *Proc Cuba Trans ASCE Conf* 2010;(20):222–9; Fuente J. Wine into vinegar—the fall of Cuba's biotechnology. *Nat Biotechnol.* 2001;19:905–7; Armario C. Garcia supports US testing of Cuban diabetes drug. *Miami Herald* 10/8/2013; Berlanga J, Fernández J et al. Heberprot-P: novel product for treating advanced diabetic foot ulcer. *MEDICC Rev.* 2013;15:11–5.

18. The author pioneered research in e-health and telemedicine in primary care. In 2003–05 he turned down a position of leader of Health Care Computerization/Electronic-Health Records Projects in the Informatics Sciences University to come to the United States. Stusser R, Albert M. [Vedado project: e-health in primary health care]. *Rev Cub Med Gen Integr.* 2006;22(4).

ment for low quality of care. Most of them prefer to go to the most difficult rural communities abroad than to serve in Cuba's own distant villages.

Located only 90 miles from the U.S., Cuba could have accelerated its modernization process—as South Korea did in Asia starting from a much lower baseline—but a totalitarian revolution triumphed in 1959, and Cuba's economy and society deteriorated despite predictions by its leaders that the island would reach U.S. living levels in 1970. In 1959–89, subsidized by its Russian “metropolis,” Cuba suffered a life and health Sovietization, but in 1990–2013, subsidized by its Venezuelan “colony,” it has undergone a more painful process of Haitianization. In the 1990s Cuba became the first “medical power” in terms of density of physicians (Soviet-style poorly-qualified) per population, but lost the 1958 position of “health power” based on indexes of health population status among many advanced developing countries that have overcome it.

DISCUSSION

World Revolutionary Framework of the Cuban Revolution

Diagram 1 depicts the revolutionary framework of the Cuban revolution and impact on republican life and health systems. The Soviet-style totalitarian socialism practiced in Cuba (and North Korea) is radically different from the French democratic market socialism (or social democracy) in West Europe. Lenin substituted the equality at the middle ideal of the French revolution for abrupt equity at the bottom, forced by the supposed “dictatorship of the proletariat,” suppressing most freedoms and living levels (as tried for months the Paris Commune in 1871 and made part of the Soviet revolution 75 years later).¹⁹

Fabrication of First Misinformation About Cuba's Public Health Achievements

Castro's Moncada Program (1953) omitted Cuban successes in eradication of cholera, yellow fever, bubonic plague, and smallpox, and reducing other epidemics through sanitation and immunization. In 1962, the revolution launched a “National Campaign for Children's Anti-Polio Immunization.” The first lesson was that the “humanitarian” Committees for the Defense of the Revolution (CDR) and other minor mass organizations were behind its success.²⁰ However months after, that “compassionate revolution” exposed all immunized children as well as the Cuban, U.S., and world populations to the risk of a nuclear holocaust, with 9 bases with Soviet missiles with nuclear warheads managed by Soviet troops in Cuba pointing to U.S. cities.

Some reports about poliomyelitis in Cuba in 1962–2013 mentioned a Czechoslovakian virologist in the 1960s, omitting experimental efforts searching for a vaccine conducted by the Finlay Institute and Infectious Hospital Las Animas, and studies of poliomyelitis serotypes and levels of immunizations at the U.S. scientific level in 1955–60 by Embil, Martin and Castellanos at the Virology Laboratory of the Havana Children's Hospital. In the latest official overview of poliomyelitis in Cuba, epidemiologists Enrique Beldarrain, Helenio Ferrer, Conrado del Puerto, Miguel Galindo, Gabriel Toledo, and virologist Pedro Mas, did not recognize any scientific effort against poliomyelitis before 1959. They reported only 10 cases and zero deaths of poliomyelitis between 1963 and 1989, when PAHO declared it eradicated.²¹

Facts pointing out successes during the colony and republic regarding public health have been systematically erased or distorted. Moreover, there are refer-

19. Montaner CA. [*Cubans: History of Cuba in one Lesson*]. Miami, FL: Brickell Communications Group, 2006.

20. Since 1960 the neighborhood-block level CDRs are the main PCC paramilitary community organizations for surveillance and repression of neighbors, coordinating with counter-intelligence troops in cities and countryside. In the 1960s CDRs contributed to the incarceration of hundreds of thousands of Cubans disaffected with communism. In the mountains CDRs served the military Cuban and Soviet troops in the killing of thousands of insurgents, and relocating dispersed families to isolated/captive towns.

21. Observe omission by Cuban officials of pre-revolutionary efforts on poliomyelitis research in: Beldarrain E. Poliomyelitis and its elimination in Cuba: an overview. *MEDICC Rev* 2013;15:30–6; Mas Lago P, Ramon Bravo J, Andrus JK, et al. Lessons from Cuba: mass campaign administration of oral poliovirus vaccine. *Bull WHO* 1994;72:221–5.

in Cuba during 1991–94 as healthy for Cubans as it promoted weight reduction.²³

Abandonment of Children’s Cardiovascular, Premature and Virology Centers

In 2001, this author witnessed that Alta Habana Children’s Hospital, Cardiac Center, MINSAP authorities, and Children’s Polyclinic were reluctant to dialogue with a People-to-People U.S. Delegation led by Abraham Rudolph and Stanford Ewing accompanied by 6 other Pediatric Cardiologists. The Cuban officials were keeping quiet about many things. For example, that Castellanos and Pereira’s Cardiac Center made the first Angiocardiograms of the world in 1935; that Montero in his Premature Center pioneered the use of ultramicro-analytical methods in children since 1953; that Embil in his Virology Lab made discoveries and laid the foundations in 1955–60 for the eradication of poliomyelitis; and that the Children’s Hospital (G Ave, 27 St, Vedado), which hosted those advanced centers, has been abandoned by the totalitarian regime to vanish all traces of medical and public health advances before 1959.²⁴

CONCLUSIONS AND IMPLICATIONS

The cumulative results of the Cuban health system under three development policies have been compared. In 1959–2013 Cuba experienced growth in the number of physicians with a paradoxical decline in its health status. The fragmented, distorted and slow-changing health achievements are residual effects of revolutionary violence exerted on previous higher standards of freedom, living support, and health care, achieved by more harmonious and proportional prosperity in Cuba until 1958.

The forced expansion of healthcare coverage and deceleration of integral health trends was due to the un-

necessary and counterproductive take-over of the private, mutual and charity sectors by the state, with concentration of resources on national-transnational ideological, para-military, and military invasions and enterprises. The progressive decay of most nationalized industries and the ban on Cuban private firms and partnerships with Western firms in the pharmaceutical, biotechnology and equipment industries have minimized public health and economic returns of investments in those industries. In 1985–2000 Cubans in progressively more miserable conditions reached physicians with insufficient resources to address their needs.

It is just to increase the coverage of living and health care for all in accord with growth in economic prosperity and to the degree that higher equality does not charge the population with the highest indirect costs of suppression of most human rights and private life support for most of the population, depressing living standards achieved previously by a democratic developing nation. Taking into account only the lowering of infant and maternal mortalities and of infectious morbidity and raising life expectancy at birth, without measuring living bio-physical, mental, and socio-economical integral health quantity and quality of children, women, men, and the elderly, creates the paradox that “the U.S., the richest country in the world shows ‘apparently’ similar demographic and morbidity indices to those of Cuba, the most self-improverished nation in the world from 1959 to today.” Governments, donor organizations and U.N. agencies need to work together to develop new indexes to measure integral health quantitatively and qualitatively to avoid emphasis on selected policies and outcomes that could compromise integral health achievements of the last 200 years.

23. Ordúñez-García PO, Nieto FJ, Espinosa-Brito AD, Caballero B. Cuban epidemic neuropathy, 1991 to 1994: history repeats itself a century after the “amblyopia of the blockade.” *Am J Public Health* 1996;86:738–43; Franco M, Orduñez P, Caballero B, Cooper RS. Obesity reduction and its possible consequences: what can we learn from Cuba’s Special Period? *CMAJ* 2008 8;178:1032–4; Author’s name withheld. Letter. “Health consequences of Cuba’s Special Period.” *CMAJ* 2008;179:257; Franco M, Bilal U, Orduñez P, et al. Population-wide weight loss and regain in relation to diabetes burden and cardiovascular mortality in Cuba 1980–2010. *BMJ* 2013;346:f1515; Stusser RJ. E-response: Population trial of extreme coercive physical healthism in Cuba 1989–2010. *BMJ* 2013. <http://www.bmj.com/content/346/bmj.f1515?tab=responses>

24. Zerquera F. [Origin and development of pediatric cardiology in Cuba]. *Rev Cub Pediatr* 2009;81:29–33.