

A first-hand look at public health in Cuba

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A ROUGH ASSESSMENT of the transformations produced in the Cuban public health system over the past 50 years requires knowing, as a starting point, the context prevailing before the triumph of the Revolution in 1959. To that end, it would suffice to quote the words contained in Fidel Castro's famous statement of defense, *La historia me absolverá*, before the military court that tried him in 1953 for the successes of Moncada. Castro said:

Society moved to compassion upon hearing of the kidnapping or murder of one child, but it is indifferent to the mass murder of so many thousands of children who die every year from lack of resources, agonizing with pain. Their innocent eyes, death already shining in them, seem to look into some vague infinity as if entreating forgiveness for human selfishness, as if asking God to stay his wrath [...]

Such was the situation prevailing when the Revolution triumphed: a health scenario ravaged by tetanus, diphtheria, measles, whooping cough, polio, tuberculosis and other diseases. Children were suffering from gastroenteritis and respiratory infections, which were the leading causes of death. Infant mortality rate, with no reliable statistical records, was above 60 per 1,000 live births, and life expectancy was only 60 years for a population of about six million.

In 2010 Cuba reached an infant mortality rate of 4.5 per 1,000 live births, the lowest in the Americas.

Infant mortality rate, which measures the number of deaths of infants during the first year of life - the most critical period for the survival of a human being - is an expression of the quality with which the country cares for and protects its children, their health, material security, education and social inclusion. It is therefore an international demographic indicator that shows these advances in a synthetic form.

Among the factors that contributed to these favorable results are, first, the political will of the revolutionary government to provide free health care to all citizens, with a focus on mothers and their children; the existence of a high educational level among the population; and a national vaccination program with a coverage of almost 100 % of children.

The reasons behind the low infant and child mortality rates

Care for pregnant women and children. Pregnant women are ensured an average of 12 medical visits. In the first appointment, laboratory tests are requested of the couple, including serology for (syphilis) and HIV; 99.99% of women give birth in hospitals. Pregnant women at risk of premature birth are immunized between the 28th and 38th week of gestation, with “lung maturation” to prevent hyaline membrane disease, which causes respiratory distress in the newborn.

Depending on their social status, pregnant women are admitted into a Hogar Materno (Maternity House), where they receive nutritional support and participate in a comprehensive health education program. Women of childbearing age at risk of anemia receive iron and folic acid supplement, at no cost, during pregnancy, a vitamin supplement to prevent anemia. Women with diabetes are also assisted by endocrinology specialists, with the aim of having their diabetes controlled up to the time of childbirth. All pregnant women, without exception, are submitted to perinatal screening for congenital malformations (ultrasound in the first trimester and alpha-fetoprotein test between the 20th and 22nd weeks), and women older than 37 years may take the amniocentesis test, essentially as screening for Down’s syndrome. In the first visits, pregnant women are evaluated by a Genetic Counseling specialist.

All that is supported by a healthcare system accessible to all, universal and free of charge, by a high level of educational development of the population and by the reproductive right of women to freely choose the number of children they wish to have.

Healthcare for children starts at birth, with a sample of the newborn’s umbilical cord blood and heel stick blood to screen for possible endocrine, metabolic and genetic disorders, which when diagnosed in time can be successfully treated: phenylketonuria, congenital hypothyroidism, galactosemia, biotinidase deficiency, and congenital adrenal hyperplasia. According to a schedule, healthy children benefit from an average of 12 medical visits a year. They are also examined by a geneticist. During that period, they are immunized against 13 preventable diseases.

The development of a national vaccination program enables maintaining the country free of 15 communicable diseases such as polio, diphtheria, newborn tetanus, measles, rubella, mumps, typhoid fever, meningeal tuberculosis, whooping cough, human rabies, autochthonous malaria, West Nile virus, yellow fever, Chagas disease and cholera.

Ten other diseases are also controlled, taking into account their low incidence levels: meningococcal meningitis, meningitis and pneumonia, haemophilus influenzae type b, leptospirosis, hepatitis B, brucellosis, mumps, adult tetanus, child AIDS and congenital syphilis. Currently, nine of the 15 vaccines administered to the population are produced in Cuban scientific centers, and the others are purchased from pharmaceutical companies overseas.

Table 1 – Infant mortality in the past 51 years – Cuba 1960-2010
(rate per 1,000 live births)

Year	< 1 year	Year	< 1 year	Year	< 1 year
1960	37.3	1977	24.9	1994	9.9
1961	39.0	1978	22.4	1995	9.4
1962	41.7	1979	19.4	1996	7.9
1963	38.1	1980	19.6	1997	7.2
1964	37.8	1981	18.5	1998	7.1
1965	37.9	1982	17.3	1999	6.5
1966	37.3	1983	16.8	2000	7.2
1967	36.4	1984	15.0	2001	6.2
1968	38.3	1985	16.5	2002	6.5
1969	46.7	1986	13.6	2003	6.3
1970	38.7	1987	13.3	2004	5.8
1971	36.1	1988	11.9	2005	6.2
1972	28.7	1989	11.1	2006	5.3
1973	29.6	1990	10.7	2007	5.3
1974	29.3	1991	10.7	2008	4.7
1975	27.5	1992	10.2	2009	4.8
1976	23.3	1993	9.4	2010	4.5

Source: National Bureau of Statistics, Ministry of Public Health.

About the welfare system

In early 1960, just three months after graduation, more than 300 doctors left for the Rural Service with a backpack, a stethoscope, a few surgical instruments and the basic medicines each of them had managed to gather. They were thus responding to the requests, suggested at meetings of medical students, to provide a solution to the adverse health conditions of the time.

This breath of “new times in the Revolution” was subsequently complemented by the demise of the private practice of medicine and the extension to two or more years of the Rural Medical Service, with the establishment of the spirit of scientific resilience, the progress of medicine and preventive dentistry and the fulfillment of the highest principles of internationalism in health, which have increased in these 50 years of Revolution.

In Cuba today, for a population of just over 11 million, there are 13 research institutes offering assistance, teaching and research services; 146 General and Specialized Hospitals; 11,466 Family Doctor Offices; 131 Dental Clinics; 122 Nursing Homes for the Elderly; 231 Grandfather Homes; and 141 Maternities located mainly in remote areas bring pregnant women closer to services with delivery rooms.

Education and health

To raise the health levels of the population, the efforts of the Revolution began with the National Literacy Campaign in 1961, which paved the way for health education; and the implementation, since 1960, of a social policy that ensured equity in access to services, which were gradually expanded through rural health clinics, maternity hospitals and clinics that began to provide primary healthcare in the country, so as to prioritize care for the most vulnerable groups of society.

Perhaps the first major contribution of the Revolution to public health – which would enable implementing the ambitious educational programs developed in the Medical Sciences - was the introduction of the concept of universal medical education, by integrating medical and nursing students during their learning process with teachers' assistance units, which also enabled universalizing human resources training programs in the health area.

More than 100,000 physicians graduated in the country in the period between 1959 and 2010. Of these, 73,025 were working at the end of the first quarter of 2011. Among these, 43,088 are women. There are also thousands of graduates in the areas of dentistry, medicine, and health technology. The country has 13 medical universities and 17 medical schools.

Scientific centers have also been created for providing systematic assistance to science activities in which research meets the country's needs in the short and long term. General guidelines have been developed and material and human resources ensured for the success of these activities. Let us recall that at the time of the triumph of the Revolution, the country had about 6,000 doctors; of these, 50% emigrated to the United States, encouraged by the government policies of that country.

In the following years, the government decided to expand and improve the national health system, as well as the system of medical and hospital services; develop preventive medicine; continue to boost rural medicine; enhance labor medicine programs and its application in the treatment of occupational diseases; raise the cultural health level of the people; and emphasize the preservation of the environment and natural resources.

The methodological budgets that shaped the Cuban Medical School were also formulated, establishing prevention as a primary concept of the health system, in order to eliminate the remnants of the old medicine that focused on the disease rather than the patient.

For many years now, the overall mortality rate in Cuba has not been the result of the so-called "diseases of poverty", but like in the highly developed countries, of heart diseases, cancer and stroke. The life expectancy of Cubans today is nearly 80 years.

Scientific development and solidarity

The health development strategy adopted by the Revolution in those years also contributed effectively to foster a scientific area dedicated to the research

and development of medical and pharmaceutical products through genetic engineering and biotechnology, as well as a modern pharmaceutical industry.

Regarding the drugs produced and sold by the Center for Genetic Engineering and Technology, we mention, as examples: *Heberprot-P*, which promotes the healing of diabetic ulcers; *Heberpenta*, a pentavalent vaccine produced jointly with the Finlay Institute, for the active immunization of children against diphtheria, tetanus, whooping cough, hepatitis B and *Haemophilus influenzae* type b; *Heberbiovac HB*, a recombinant vaccine against hepatitis B; *Quimi-Hib*, a vaccine against *Haemophilus influenzae* type b; *Heberon the Alpha R*, recombinant human *Interferon-alpha 2b* for the treatment of human papillomavirus infections among others; and *Heberkinase* (recombinant streptokinase), indicated for treating acute myocardial infarction.

Advanced medical equipment like the Immunoassay Center's Ultramicroanalytical System (UMAS), which has been used for over 25 years with remarkable results in the diagnosis and prevention of congenital malformations, have also been produced. The Cuban program for congenital hypothyroidism alone has enabled, since 1986, diagnosing 788 children affected by this disorder which, if not timely detected, causes profound mental retardation, called "cretinism". Furthermore, in the course of 28 years the Alpha Fetoprotein Program has enabled studying more than 3.6 million pregnant women, with 7,868 cases of severe malformations detected, for an incidence of 2.22 per 1,000 cases studied.

Recently, a national social study was conducted among 366,864 people with major disabilities: mainly physical-motor, visual, hearing and mental and disorders of the functions and structures of the organs (chronic renal failure).

Advances in clinical test techniques, with the use of Suma, currently enable establishing a new network of laboratories in all municipalities in the country to perform preventative mass diagnosis, in supposedly sane people, of various diseases such as cervical, colon and prostate cancer, diabetes, kidney failure and various infectious diseases like dengue fever, leprosy and AIDS.

Historically, since the triumph of the Revolution the action of Cuban international medical cooperation has been underscored, as a result of the teachings of Fidel Castro, by human and compassionate assistance, in response to the health needs of countries affected by natural disasters that lack either personnel to assist the population or medical-sanitary facilities to bring assistance to remote areas.

Table 2 – Chronology of vaccination, 1960-2010

1960s
<p>1962: Vaccination against polio and DPT (tetanus, diphtheria and whooping cough).</p> <p>1964: Establishment of the “Vacinatórios” at the Integral Polyclinic for the permanent immunization of the population. Immunity level rises to 60% on average.</p> <p>1968-1969: Immunization Campaign against diphtheria, tetanus, whooping cough, tuberculosis and smallpox for children under 15 years of age in rural areas.</p>
1970s
<p>1971: Vaccination against measles for children 6 months to 5 years of age.</p> <p>1974: Establishment of Community Polyclinics increases immunity levels to 75% -80%.</p> <p>1975: First National Immunization Campaign with tetanus toxoid for housewives home (98%).</p> <p>1976: Reactivation dose of tetanus toxoid for housewives.</p> <p>1979: Three million people are vaccinated as a result of the increase in groups A and C meningitis.</p>
1980s
<p>1980: Vaccination in schools against typhoid fever, diphtheria, tetanus, whooping cough and severe forms of tuberculosis.</p> <p>1982: Launch of the long-term strategy for the protection of children against congenital rubella (in view of rubella outbreaks in seven-year cycles; in 1967, 1974 and 1981). In 1986, all girls between 12 and 17 years old were vaccinated (over half a million girls).</p> <p>1984-1985: Tetanus vaccination campaign for the elderly. Medical students with a work-study plan vaccinated 200,000 people over 60 years of age.</p> <p>1985: Reactivation of tetanus toxoid for housewives and elderly people vaccinated 10 years before.</p> <p>1986: As part of the strategy to eradicate congenital rubella syndrome, a vaccination campaign against rubella benefits more than 600,000 women of childbearing age (18-30 years), with a 75% coverage.</p> <p>The entire population under 15 years old also receives the MMR vaccine (measles, mumps and rubella), covering more than 2 million people (96%).</p> <p>1988-1990: The entire Cuban population under than 20 years old is vaccinated (about 3 million people) with the Cuban vaccine against group B meningococcal meningitis, the only one of its kind in the world.</p>
1990s
<p>1990: Beginning of field tests with the recombinant anti-hepatitis B vaccine.</p> <p>1991: Inclusion of the vaccine against meningococcal meningitis B in the vaccination scheme.</p> <p>1992: Inclusion of hepatitis B in the vaccination program. More than 12 million doses are administered. (In 2010 the entire population under 31 years, and old and high risk groups of other ages, were protected).</p> <p>1999: Vaccination campaign against Haemophilus influenzae type b for all children born since January 1998.</p>
2000-2010
<p>2000: The vaccine against Haemophilus influenzae type b is included in the immunization program.</p> <p>2004: Second dose of the vaccine against mumps, rubella, measles for children in the first school year.</p> <p>2005: Incorporation of tetravalent vaccine to protect, with a single dose, all children under one year old against diphtheria, tetanus, whooping cough and hepatitis B.</p> <p>2006: Incorporation of pentavalent vaccine, which adds to the previous vaccines immunization against Haemophilus influenzae type b.</p> <p>2007: Campaign against measles, rubella and mumps in the population 12 to 24 years old, reaching over one million people in this age group.</p> <p>2010: Vaccination against pandemic influenza A H1N1, during which over one million people, selected for their higher risk level, were vaccinated.</p>

Source: Prepared by the author, 2011.

On these occasions, more than 40,000 health workers provide services in 68 countries worldwide, in virtually every continent.

Special mention should be made of collaborative actions by Cuban doctors in the programs of the Bolivarian Alliance for the People of Our America (ALBA), particularly Operación Milagro for patients with eye problems, which since 2004 has benefited over two million people in 34 countries of our America, considered by many “the largest medical solidarity program in history”; and studies to identify genetic diseases and disabilities, conducted also in Venezuela, Bolivia, Saint Vincent and the Grenadines, Ecuador and Nicaragua, enabling the governments of those countries to provide the services required by people in need of medical and material assistance.

The changes and experience accumulated since the triumph of the Revolution in 1959 in the scientific, social assistance, human resources and material areas are not confined to the country. Cuba shares what it has, inside and outside its borders, as an expression of the humanistic essence of the Revolution and an example of the possibility that a more caring and just world will prevail.

This is why despite the topography of the places where the Cuban medical brigades are located, i.e., generally more inaccessible areas, they show similarities and some differences. However, the common denominator of the work of doctors, nurses and technicians in the places where they provide services are certainly the social vision and unremitting vocation to endeavor to alleviate the pain of the needy, limitless dedication and willingness to share, also, scientific knowledge with others, immersed in the sad face of poverty in a world where injustice still prevails.

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Abstract – Over the last five decades, after the triumph of the Revolution in 1959, Cuban medicine has made remarkable advances in several areas. This article provides a thematic timeline of those advances. The development of new drugs, hygiene and sanitary education for the people, the construction of hospitals and polyclinics, and free access to medical care for the entire population are some of the key factors analyzed. Other topics include the growing number of professionals in the medical field that make it possible to provide primary and preventive services (vaccination) to everyone, and the humanitarian campaigns of Cuban doctors who, in keeping with the humanitarian values of the Revolution, have become an example of solidarity around the world.

Keywords: Medicine, Vaccination campaigns, Access to medical services, Solidarity, Prevention.

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