



Response capacity and challenges of the Cuban health system against communicable diseases*

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ABSTRACT

This article presents distinctive and essential features in the transformations of the Cuban health system that have allowed the eradication and reduction of the incidence rates of some communicable diseases at levels lower than 0.1 per 100 000 population. The results obtained are a consequence of the importance given to the prevention and control, as well as to the risks and potential damages, of these diseases. The structure and functioning of the hygiene and epidemiology subsystem and its interrelations with the rest of the system, based on the different models of service provision, have been permanent integration scenarios for decision-making. Diseases such as poliomyelitis, malaria, diphtheria, whooping cough, rubella, mumps, post-mumps meningitis, measles, yellow fever, cholera, severe forms of tuberculosis, human rabies transmitted by canines, leishmaniasis, Chagas disease, vertical transmission of HIV, congenital syphilis and clinical forms such as neonatal tetanus and congenital rubella syndrome were eliminated. Some communicable diseases are analyzed in more detail and, in particular, the social response developed against tuberculosis, leprosy, AIDS and vector-borne diseases. However, the current health context presents challenges for the sustainability of the achievements made in the country. Assuring the maintenance of universal coverage with access of the Cuban population to health services will always be a principle of Cuban public health.

Keywords

Prevention and control; strategies; communicable diseases; Cuba.

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The Cuban National Health System's (SNS) response capacity for prevention and control of communicable diseases is historically rooted in the political, economic and social transformations that have taken place in the country since 1959 (1).

Accumulated knowledge about prevention and control of these disease is supported by scientific evidence, and can

therefore be applied to the development of Cuban public health as well as civil society's involvement at various stages (1–3).

Fighting epidemics has brought communicable diseases under control. It has also strengthened epidemiologic surveillance systems, health programs and services; and has developed Cuban science and technology in the field of medicine and vaccine manufacturing (4).

Studies of the causes and determinants of communicable diseases, conducted with support from foreign institutions and experts, revealed deficits in knowledge, gaps in surveillance systems, and other social determinants. Human resources training to resolve these shortcomings thus became imperative (4).

Achieving Cuba's current communicable disease indicators by reducing deficits and taking advantage of opportunities required almost six decades of deliberate, sustained effort by the SNS. Vaccine-preventable diseases were eliminated, along with malaria, leishmaniasis, Chagas disease, mother-to-child Human Immunodeficiency Virus (HIV) transmission, congenital syphilis, neonatal tetanus and congenital rubella syndrome. In addition, adult tetanus; *Haemophilus influenzae* type B meningitis; meningococcal meningitis from serotypes A, B and C; hepatitis B and typhoid fever have ceased to be public health problems. Influenza and pneumonia are the only infectious diseases among the 10 leading causes of death in Cuba, with an overall mortality rate of 60.6 per 100 000 population. At the end of 2016, the overall mortality rate for communicable diseases was 9.5 per 100 000 population (5).

This article presents some of the characteristics of the Cuban health system that have enabled it to control or eliminate diseases like tuberculosis, leprosy, HIV/AIDS and vector-borne diseases since 1959.

Development

Cuba's outstanding success in achieving health goals in the Americas is a result of eliminating barriers to access to health services by financing a single comprehensive health system that guarantees coverage and universal health care to the population (6–8,10).

One of the most relevant steps taken toward controlling communicable diseases was the creation of the Vice Ministry of Hygiene and Epidemiology in 1962 with provincial and municipal centers of the same name and functions tailored to meet local needs (3). Hygienists and epidemiologists in the Municipal Hygiene and Epidemiology Centers or units ensured fulfillment of all stages of national prevention and control programs in communities and municipalities (3, 6, 9).

The foundations and regulations for the first communicable disease health

promotion, prevention and control programs were established in epidemiologic forums and were based on the design and implementation of the first health programs (3). The primary health care structures and service delivery models provided appropriate settings in which to introduce and apply these programs in local settings (3, 4, 6).

One of the health system's priorities for controlling these diseases was creation of specialized high-tech services for epidemiologic surveillance in programs such as maternal and child care (mother-to-child transmission of infectious diseases and vaccine seroprotection, among others), and blood and organ certification. One example is Cuba's Analytical Ultramicro Immunoassay System (SUMA) for diagnosing HIV infection, hepatitis B and C, dengue, Chagas disease and leprosy, which is implemented locally in all municipalities (11).

Achievements, sustainability and challenges to control of some communicable diseases

Leprosy. According to the 1961 census, leprosy prevalence was 5.7 per 10 000 population (12, 13). In 1962, the first National Leprosy Control Program (PNCL) was introduced, which included active screening of patients, contact testing, and treatment modification. Ten years later, these were updated through application of scientific advances, regional strategies within Cuba and improvements in the health system. Steps were taken toward decentralizing services toward community polyclinics (12, 13), the institutions providing primary care.

During this period (1962–1972), leprosariums were closed (12), leaving the Guillermo Hernández Fernández-Baqueiro Dermatology Hospital, located in the Boyeros municipality in Havana, as the only institution dedicated to research and rehabilitation of leprosy patients. The hospital was equipped with modern technologies for diagnosis and non-pharmacological treatment of leprosy, making it the national reference center for this and other dermatologic diseases.

Following World Health Organization (WHO) recommendations, modifications were introduced in the leprosy program that reduced prevalence and aided in curing patients afflicted with the disease (12, 13).

Thirty-one years after the original program was implemented, the stratified approach had lowered the prevalence rate to 0.79 per 10 000 population, seven years ahead of the goal proposed by WHO for the year 2000 (12, 13). Once the duration of multibacillary leprosy treatment was shortened, the national prevalence rate continued to decline, and leprosy was eliminated as a health problem in all Cuban provinces. WHO had proposed the year 2015 for countries in the region to meet this goal (13).

The program's current objectives are low morbidity, early diagnosis, opportune treatment, and preventing disabilities caused by the disease (13).

The prevalence rate has remained stable since 2003, ranging between 0.2 and 0.3 per 10 000 population (13) (Figure 1).

Although the detection rate tends to decline, new cases are still being diagnosed. Challenges include strengthening surveillance of populations at risk and outreach opportunities; encouraging negative reporting by developing registries of suspected leprosy cases; early detection of cases and disabilities; developing strategies to promote inclusive environments; ongoing training for staff participating in comprehensive surveillance, patients and families; maximizing use of advanced diagnostic techniques; developing risk stratification as a permanent tool; revitalizing the role of nurse surveyor in the PNCL; and promoting research in health services and systems.

Tuberculosis. Until 1959, passive screening for tuberculosis (TB) was only conducted in the population visiting tuberculosis clinics spontaneously. There was no epidemiologic approach. In 1958, the incidence rate was 18.8 per 100 000 population (14, 15).

The first program was established in 1963, providing both sanatorium and outpatient treatment. In 1971, with the program integrated into all health services, controlled outpatient treatment was established. This strategy produced a steady decline in incidence until 1991 (4.7 per 100 000 population), and eliminating TB as a public health problem in Cuba was considered feasible (16).

During the 1990s, Cuba experienced a profound economic crisis. Reported cases of tuberculosis increased, reversing the downward trend and reaching a rate of 14.7 per 100 000 population in 1994 (16, 17).

In 1996, TB began a steady decline until the present, with rates between 6 and 7 per 100 000 population since 2001, lowest among children aged <15 years (5) and 1.0% multidrug-resistant strains of *Mycobacterium tuberculosis* (18). At the end of 2016, the TB incidence rate was 5.7 per 100 000 population (5) (Figure 2).

Mortality has declined since 1902 (230.9 per 100 000 population) with rates <1 per 100 000 population from 1981 until the period of economic crisis when it rose to 1 per 100 000 population in 1994 (19). In 2016, the reported rate was 0.3 per 100 000 population, ranking it 35th

among causes of death in Cuba and sixth among infectious diseases (5).

Evident progress has been made. The End TB Strategy goals of reducing by half the 1990 TB prevalence and mortality rates were met before 2015 (19).

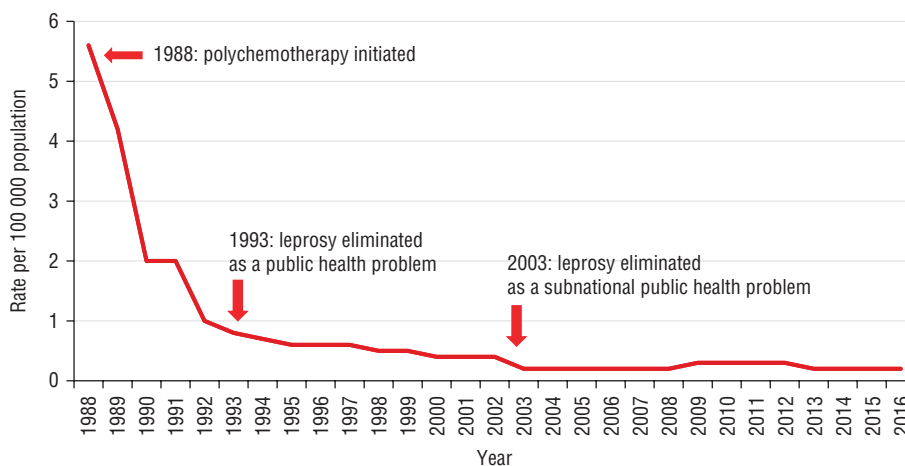
The TB control and eradication program is based on strengthening the comprehensive intersectoral intervention strategy. Its main components are combining passive and active detection in primary and secondary care, prioritizing vulnerable groups known to the family doctor and nurse, optimizing treatment processes, reinforcing contact tracing of

diagnosed cases, extensive application of quality control in case detection, treatment and control of sources of infection, consolidating operations research and evaluation at the municipal level, and ensuring intersectoral participation in TB control (20). The challenge is systematizing this strategy at all levels of the health system, until an incidence rate of ≤ 1 per 100 000 population is reached.

Following the new strategy and goals for TB prevention, care and control by 2030, approved in 2014 by the 67th World Health Assembly (21) and the Strategic Framework towards elimination of tuberculosis in low incidence countries (22, 23), a national strategic plan was developed to accelerate actions toward pre-elimination of TB in 2035 and elimination in 2050.

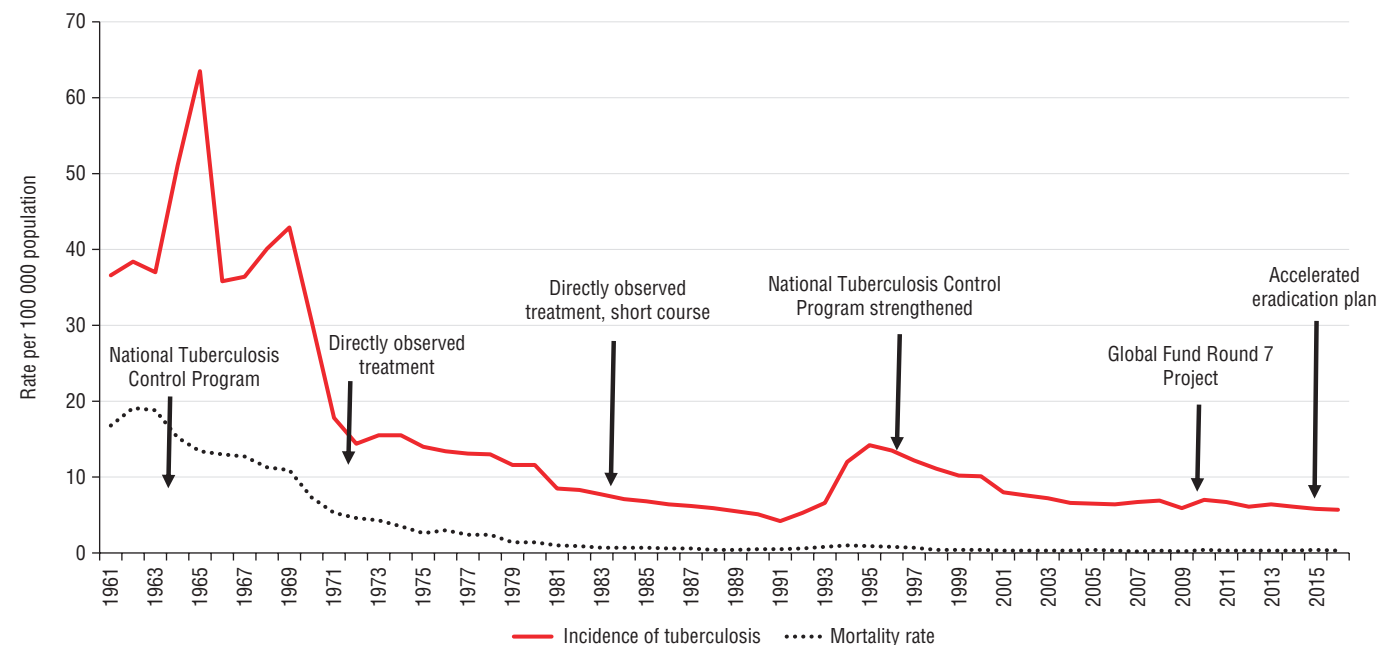
HIV/AIDS. Since 1983, the Cuban government and the Ministry of Public Health have taken steps to control the epidemic. One of the first measures was to ban importation of blood products from Western Europe and the United States. The Santiago de las Vegas sanatorium was also set up as a temporary emergency measure to contain transmission of the infection, and educational strategies were developed to promote responsible protective behaviors. In 1986, the National Prevention and Control Program was implemented, which included pioneering strategies like screening donated blood and developing

FIGURE 1. Prevalence rates for leprosy in Cuba, 1988–2016



Source: Data from the National Medical Records and Health Statistics Bureau, Ministry of Public Health, Cuba.

FIGURE 2. Morbidity and mortality for tuberculosis and interventions in Cuba, 1960–2016



Source: Data from the National Medical Records and Health Statistics Bureau, Ministry of Public Health, Cuba.

diagnostic procedures for detecting seropositive individuals. Ten years later, this program was integrated into the sexually transmitted infections (STI) program.

As in other countries in the region, the epidemic in Cuba is urban, with slow and sustained growth, concentrated in men (80.8%) and predominantly sexually transmitted (99.2%). Between 1986 and 2016, a total of 26 360 patients were reported (5), 82.5% of whom are currently living with HIV. Men who have sex with men (MSM) account for 89.9% of male cases. There have been 4 603 deaths (18%) (Figure 3), 90.3% of them from AIDS.

Prevention and control are outlined in five-year national strategic plans that substantiate and articulate policies and strategies to reduce social inequities and mitigate impacts on individuals and the general population (24). Updates are made according to epidemiologic stratification, scientific evidence, good

practices, lessons learned, and national and international commitments (25).

To fulfill these plans, multisector work with the community is indispensable, as is research at all levels of medical care; evaluation of programs, services and technologies; social and educational communication with the general public; sex education; and education about rights and legal aspects (25).

The National STI-HIV/AIDS Prevention Center, created in 1998, leads information, education and social communication strategies based on research carried out by the National Statistics and Information Bureau (ONEI) (26). These studies promote monitoring risk behaviors in the general population through participatory prevention activities in worksites and schools, public satisfaction, and estimating needs for services; and they constitute evidence of ways to transform research into action.

It must be noted that the State finances human and technological capacity building; active case finding; blood quality assurance; creation of the national laboratory network, including the National Reference Laboratory, which confirms positive diagnoses made in network laboratories; and comprehensive care centers providing specialized care for HIV/AIDS patients.

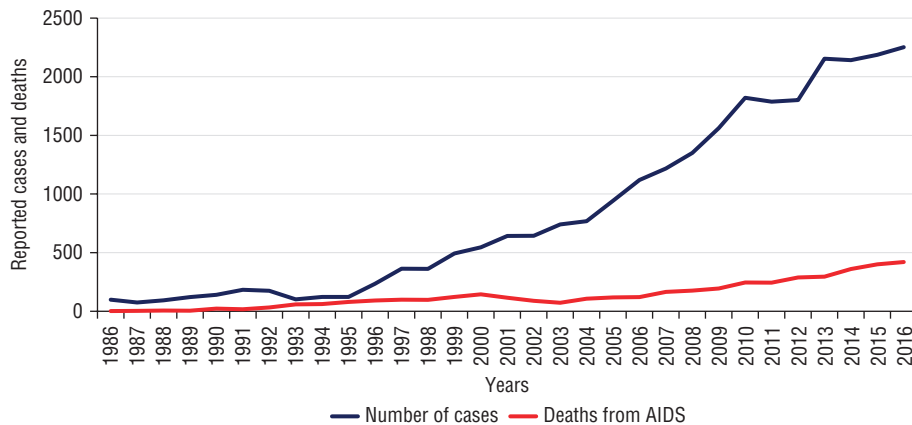
The State guarantees safe production of blood products; free antiretroviral treatment for 100% of patients who require it; and procurement of condoms, lubricants, diagnostic tests and other supplies. National efforts are augmented by collaboration with international agencies and organizations, including the Global Fund to Fight AIDS, Tuberculosis and Malaria (UNAIDS), WHO/PAHO, *mediCuba-Suisse* and *Fondos-Bélgica*.

Participation of government sectors, civil society organized into People Living with HIV (PLWHA) and MSM subgroups (Table 1), and non-governmental organizations (NGOs) has been essential. The Task Force for Confronting and Fighting AIDS (GOPELS) oversees fulfillment of intersectoral plans with community participation (25).

In the social sphere, the following are noteworthy: free access to decentralized preventive, diagnostic and comprehensive services in primary health care; social mobilization with sociocultural projects; food support for PLWHA; and drafting and updating legal statutes and strategies addressing PLWHA and MSM (27–29).

Challenges to sustainability include strengthening local responses with participatory models in which key populations design, implement and evaluate strategies; promoting care-seeking

FIGURE 3. Reported cases and deaths from HIV/AIDS in Cuba, 1986–2016



Source: Computerized HIV/AIDS Registry, Ministry of Public Health, Cuba, 2016.

TABLE 1. Civil society response to HIV/AIDS in Cuba, 1986–2016

Civil Society Organizations	Actions
Youth Studies Center	Social research on youth, contribute results to youth organizations and advise youth policies
Federation of Cuban Women	Operates from a gender perspective. Consultative status recognized by the United Nations Economic and Social Council
MSM Project	Distributes educational material at MSM meet-up sites. Contributes to public debate on sexual orientation, vulnerability of “sexual minorities,” stigma, discrimination and silence.
MSM Transvestite Project^a	Builds empowerment in this population through networking among people who practice transactional sex and their partners. Monitors and facilitates involved with drag shows. Reduces stigmatizing of homosexuality and diverse gender identities. Fosters social and political dialogue about sexual rights.
Teens and youth in voluntary youth and school-based organizations	In primary care: more than 7 000 teen circles; participants become multipliers and prevention facilitators with other adolescents. Raise family awareness through the determining influence of their aspirations and choices. Contribute to the increased number of youth who know their serological status and use health services through the Get Tested movement.
Cuban Council of Churches’ Life and Community Health Program	Conduct awareness and training activities for leaders, lay people and pastors; train health promoters in the church community; prevention and primary education in churches and community; community at-home care; special liturgies for World AIDS Day; summer camps with children of people living with HIV.

^a Now Red-Trans Cuba.MSM:

Men who have sex with men; HIV, Human Immunodeficiency Virus

Source: Created by the authors based on published outcomes.

attitudes and awareness of serological status; HIV pre-test and post-test counseling emphasizing key groups, priority municipalities and the most affected peoples' councils; decentralizing diagnostic confirmation; adapting national antiretroviral guidelines to current WHO recommendations; and maintaining outcomes attained in eliminating mother-to-child transmission (30).

Vector-borne diseases. In 2016, Cuba reported 187 confirmed Zika patients, 1 836 individuals with dengue fever (serotypes 2 and 3, with an incidence rate of 16.32 per 100 000 population), and 29 cases of severe dengue. Seventy-one imported cases of malaria were diagnosed. There were no cases of chikungunya (31). These diseases are not endemic to Cuba and are reported when outbreaks occur primarily in rainy months.

At the national level, determining dengue virus infection through detection of antibodies in febrile patients in the community reduces transmission by facilitating isolation and avoiding contact with the vector. The main goal of the International Sanitary Control Program (CSI), created in 1980, is to reduce the risk of introducing biologic agents, their reservoirs, vectors or intermediate hosts of diseases covered by CSI and other exotic diseases of national interest (32, 33).

Active surveillance at borders (ports, marinas, national airports and airports in countries or areas where exotic diseases are endemic) has been conducted since 1982, in compliance with legal regulations (34) and formal establishment of control centers at ports of entry. Chemoprophylaxis and presumptive antimalaria treatment is administered to 100% of Cubans and foreigners arriving from endemic areas or countries.

Cubans returning from endemic areas or countries complete a Health Declaration upon arrival and receive an Epidemiologic Surveillance Card. They are then monitored at home by primary health care specialists who perform active screening for exotic diseases in travelers (34).

During implementation of the International Health Regulations (2005) in Cuba, the legal framework was reviewed and adapted. The National Liaison Center was created within the Ministerial Management Center to produce the International Epidemiologic Situation bulletin (35, 36). This provides updates, alerts and scientific evidence for decision-making

about public health events that constitute a significant risk for Cuba.

A recent example was the national response to the Zika virus epidemic. In December 2015, the Ministry of Public Health issued an epidemiologic alert, before the disease was declared an international public health emergency in February 2016. An action plan was implemented taking into account the complex epidemiologic situation in the Americas due to circulation of the virus. These measures reinforced surveillance of international travelers and lowering infestation indices of *Aedes* genus mosquitos (*A. aegypti* and *A. albopictus*) to below transmission levels.

Body temperature scanners and digital thermometers were installed in ports, marinas and airports. Multidisciplinary working groups were organized to stay abreast of the international situation. Diagnostic capacities were created in laboratories; studies on the impacts of the disease in pregnant women and newborns were continued; and stratified analysis of entomologic and epidemiologic indicators was performed. On March 16, 2016, the first autochthonous case in Cuba was diagnosed (31).

A fundamental link in the system's ability to diagnose cases was community participation and interaction between diverse sectors in promotion, prevention and infestation index control activities.

Nevertheless, certain factors condition the probability of introduction and propagation of vector-borne diseases in Cuba. These include favorable hygienic and environmental conditions; climate; increased international health cooperation; and the number of tourists and foreign students entering the country from transmission areas.

The system's timely preparedness was made possible by experience gained fighting epidemics, and awareness of risks that increase the probability of introduction and propagation. One example was preparedness during the A/H1N1 influenza virus pandemic. That infrastructure was reinforced by Cuba's active role combating the Ebola virus in Africa, sending 256 health professionals to Sierra Leone, Guinea and Liberia. Cuba served as an advisor to the governments of several countries and also organized technical meetings with specialists from 34 countries in the Americas, including the United States. The Ebola Training Center was created at the Pedro

Kourí Tropical Medicine Institute where 294 456 health workers and Cuban students were trained in prevention, diagnosis and treatment (37).

The epidemiologic alert about the yellow fever epidemic in Angola is another example of how risk assessment and management is key to controlling vector-borne diseases (38). Students arriving in Cuba are required to present a health certificate. Travelers to the People's Republic of Angola must be vaccinated against yellow fever, and those returning to Cuba from Angola must present a yellow fever vaccination certificate (36).

The sustainability of Cuba's International Sanitary Control program rests on not reintroducing the autochthonous malaria that was eliminated in 1967, making Cuba the first country in the Americas to be certified malaria-free by WHO/PAHO in 1973.

Current challenges are oriented toward improving the quality of surveillance and control of vector-borne diseases, and increasing conscious, systematic intersectoral participation.

FINAL CONSIDERATIONS

The effectiveness of specific programs, technological development, experience combating epidemics, and intersectoral and community participation by civil society have been key elements in the results obtained in communicable disease prevention and control.

The main challenges facing the system lie in control of vector-borne diseases, and the development, strengthening and consolidation of research focused on analyzing social determinants in order to reorient national health policies.

The tenets of Cuban public health (equitable coverage and access to comprehensive health services, free of charge and focused on the needs of the most vulnerable individuals and groups; implementation of corresponding policies, plans and laws; state financing; and alliances with international organizations) are demonstrated in the outcomes of promotion, prevention and control of communicable diseases, and offer lessons learned that can guide other countries in the region (Table 2).

RECOMMENDATIONS

To shorten the duration of epidemics through sustainable outcomes, it is

TABLE 2. Lessons learned from combating infectious diseases in Cuba, 1959–2017

Difficulties	Solutions
<p>Social, economic and political: Political and economic corruption in government; difficulties in access to and coverage of basic services; privatization of health services; inadequate intersectoral work</p>	<ul style="list-style-type: none"> - Reorganize government and state structure and operations. - Create a centrally planned and decentralized national health system in accordance with government agencies at various levels. - Gradual elimination of privatized health services. - Improve basic services in rural and urban areas by incorporating intersectoral work: infrastructure and sanitation; safety and social assistance; potable water and sewage systems; environmental sanitation, food, housing and electrification, among others. - Create strategies, policies and legal guidelines. - Develop of international cooperation.
<p>Cultural: Illiteracy; inadequate health education; traditions, beliefs, myths and taboos about health; inadequate use of mass media</p>	<ul style="list-style-type: none"> - National literacy campaign. - Create institutions and human resource trainings to develop health education strategies. - Incorporate civil society, especially from most affected groups, in the fight against these diseases, especially in vaccination campaigns. - Effective health messaging in TV, radio and print media.
<p>Health: Predominantly curative health care; lack of human resources in the health sector; lack of medicines and vaccines; inadequate coverage and access to health services; constraints on diagnostic capacity for control of communicable diseases; insufficient development of scientific research and its link to biotechnology; lack of active public and sector participation in disease prevention and health promotion. No existing anti-epidemic model.</p>	<ul style="list-style-type: none"> - Create comprehensive health programs with universal coverage and access where anti-epidemic models are developed. - Implement and develop a State Sanitary Inspection agency to control water, air and food quality. - Identify population groups most vulnerable to high-incidence communicable diseases. - Improve epidemiologic surveillance subsystems. - Create a Statistical Information System with reliable health statistics, such as the Mandatory Declaration System. - Train specialists abroad, technical consultancies and exchange experiences. - In-country health sector training of doctors, university graduates, technicians, researchers and teachers. - Improve programs and curriculum by emphasizing a health promotion/disease prevention approach. - Cooperation and financial alliances with agencies, institutions and international organizations. - Create scientific research institutions that can transition into biopharmaceutical manufacturing in order to produce and market domestic biotechnological products (vaccines, medicines, diagnostic equipment). - Create immunodiagnostic technologies and computer programs to process them. - Create a network of diagnostic laboratories with SUMA technology and a network of Specialized Comprehensive Active Screening Centers in all municipalities. - Link immunologic, virologic and public health research projects based on advances in Cuban biotechnology.

SUMA: Cuban Analytical Ultramicro Immunoassay System

Source: Created by the authors based on published outcomes.

necessary to seize opportunities and prioritize resources beyond the health sector, with centralized leadership and governmental political will to create solutions.

To identify consistencies in epidemiologic work by eliminating errors and avoiding their repetition and surprises, it is necessary to systematize an anti-epidemic model that provides lessons learned for others.

Short-, medium- and long-term objectives in prevention and control of communicable diseases can be achieved with greater impact on the population, if

specific health programs are implemented and evaluated based on epidemiologic studies of disease behavior.

Implementing and improving health surveillance systems increase diagnostic opportunities according to service coverage and accessibility, and guarantee the collection, processing and output of statistical data.

New options for health promotion, prevention and control of communicable diseases are ensured by gaining and accumulating new knowledge, and by updating and applying it to technological development.

To achieve better outcomes, health actions must be carried out with the health sector as the technical lead, accompanied by the active participation of social sectors, organized civil society and political organizations.

Conflicts of interest. None declared.

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REFERENCES

1. Rojas Ochoa F. La integración del sistema de salud único. *Revista Especial "La OPS/OMS reconoce los logros de la salud pública cubana"*. 2009;12. Disponible en: http://www.paho.org/cub/index.php?option=com_docman&view=download&category_slug=documentacion-tecnica&alias=208-revista-especial-por-los100-anos-del-minsap-2009&Itemid=226 (Acceso: abril 3 de 2017).
2. Delgado García G. *Revista Especial "La OPS/OMS reconoce los logros de la salud pública cubana"*. 2009;6. Disponible en: http://www.paho.org/cub/index.php?option=com_docman&view=download&category_slug=documentacion-tecnica&alias=208-revista-especial-por-los100-anos-del-minsap-2009&Itemid=226 Acceso el 3 de abril de 2017.
3. del Puerto Quintana C, Ferrer Gracia H, Toledo Curbelo G. *Higiene y Epidemiología: apuntes para la historia*. La Habana: Palacio de Las Convenciones; 2002.
4. De la Torre E, López Pardo C, Márquez M, Gutiérrez Muñiz JA, Rojas Ochoa F. Modelo de lucha anti epidémica. En: *Salud para todos sí es posible*. La Habana: Sociedad Cubana de Salud Pública; 2005:95–161. Disponible en: http://www.paho.org/cub/index.php?option=com_docman&view=download&category_slug=antecedentes&alias=816-de-latorre

- salud-paratodos-indice&Itemid=226 Acceso el 2 de setiembre de 2017.
5. Ministerio de Salud Pública (MINSAP). Dirección de Registros Médicos y Estadísticas de Salud. Anuario Estadístico de Salud 2016. La Habana: MINSAP; 2016. Disponible en: <http://bvscuba.sld.cu/anuarioestadistico-de-cuba/> Acceso el 12 de abril de 2017.
 6. Martínez Calvo S. El enfoque epidemiológico del sistema de salud en Cuba. Revista Especial "La OPS/OMS reconoce los logros de la salud pública cubana". 2009;41. Disponible en: http://www.paho.org/cub/index.php?option=com_document&view=download&category_slug=documentacion-tecnica&alias=208- revistaespecial-por-los-100-anos-del-minsap-2009&Itemid=226 (Acceso: diciembre 1 de 2017).
 7. Rojas Ochoa F. El camino cubano hacia la cobertura universal 1960–2010. Rev Cubana Salud Publica. 2015; 41(S1). Disponible en: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S0864-34662015000500003&lng=es Acceso el 22 de enero de 2018.
 8. Álvarez Sintés R, Barcos Pina I. Formación y perfeccionamiento de recursos humanos en el sistema de salud cubano para cobertura sanitaria universal. Rev Cubana Salud Publica. 2015;41(S1). Disponible en: <http://www.revsalud-publica.sld.cu/index.php/spu/article/view/633/511> Acceso el 12 de abril de 2017.
 9. Spiegel JM, Yassi A. Lessons from the margins of globalization: appreciating the Cuban health paradox. J Public Health Policy. 2004; 25(1):85–110. Disponible en: <https://www.ncbi.nlm.nih.gov/pubmed/15134135> Acceso el 12 de abril de 2017.
 10. Organización Panamericana de la Salud/ Organización Mundial de la Salud (OPS/ OMS) Cuba. Centro de Inmunoensayo (CIE). Centro de Investigación, desarrollo, producción y comercialización. Disponible en: http://www.paho.org/cub/index.php?option=com_content&view=article&id=223:centro-inmunoensayo-cie&Itemid=528 Acceso el 26 de setiembre de 2017.
 11. Beldarraín-Chaple E. Overview of leprosy control in Cuba. MEDICC Review. 2017; 19(1):23–30. Disponible en: <http://www.medicc.org/mediccreview/index.php?issue=42&id=575&a=va> Acceso el 12 de abril de 2017.
 12. Ministerio de Salud Pública de Cuba (MINSAP). Lepra: normas técnicas para el control y tratamiento. La Habana: MINSAP; 2015. Disponible en: <http://files.sld.cu/higienepidemiologia/files/2015/07/programa-lepra-2008-vigente.pdf>
 13. Aldereguía G. La lucha antituberculosa en Cuba: crítica histórica y examen político del problema y endemia. En: Ministerio de Salud Pública. Estudios sobre tuberculosis pulmonar. La Habana: Ministerio de Salud Pública; 1962:23.
 14. Rodríguez R. Quince años de la tuberculosis en Cuba. Rev Cubana Hig Epidem. 1980;18:206–9.
 15. González E, Armas L, Alonso A. Tuberculosis in the Republic of Cuba: its possible elimination. Tuberc and Lung Dis. 1994;75:188–94.
 16. González E, González A, Armas L, Llanes MJ, Marrero A, Suárez L, et al. Tendencia de la incidencia de tuberculosis en Cuba: lecciones aprendidas en 1991–1994 y su trascendencia en 2004–2012. Rev Cubana Med Trop. 2015;67(1):122–38.
 17. Lemus D, Echemendía M, Díaz R, Llop A, Llanes MJ. Vigilancia de la resistencia a los medicamentos antituberculosos en Cuba, 2010–2011. Biomédica. 2014;34(S1):108–13.
 18. González E, Borroto S, Armas L, Díaz C, López E. Mortalidad por tuberculosis en Cuba, 1902–1997. Rev Cubana Med Trop. 2003;55(1):5–13.
 19. Ministerio de Salud Pública de Cuba (MINSAP). Dirección Nacional de Epidemiología. Programa Nacional y Normas de procedimientos para la prevención y control de la tuberculosis. La Habana: MINSAP; 2013. Disponible en: http://www.sld.cu/galerias/pdf/sitios/tuberculosis/programa_2015.pdf Acceso el 12 de abril de 2017.
 20. World Health Organization (WHO). The stop TB strategy. Building on and enhancing DOTS to meet the TB-related Millennium Development Goals. Geneva: WHO; 2006.
 21. World Health Assembly (WHA). Global strategy and targets for tuberculosis prevention, care and control after 2015 (WHA67.1, Agenda item 12.1). Geneva: WoHA; 2014. Disponible en: http://apps.who.int/gb/ebwha/pdf_files/WHA67/A67_R1-en.pdf Acceso el 12 de abril de 2017.
 22. World Health Organization (WHO). Towards tuberculosis elimination: an action framework for low incidence countries. Geneva: WHO; 2014.
 23. Ministerio de Salud Pública de Cuba (MINSAP). Plan estratégico nacional para la prevención y el control de las ITS y el VIH/sida/ 2014–2018. La Habana: MINSAP; 2013:33–37. Disponible en: <http://files.sld.cu/sida/files/2014/03/penprimera-parte.pdf> Acceso el 19 de abril de 2017.
 24. Rojo Pérez N, Sanabria Ramos G, Valenti Pérez C, Louro Bernal I, Pérez Piñero JS, Llanusa Ruiz S, et al. Evaluación de la Estrategia Multisectorial Integrada para la Prevención y Control del Problema de Salud Pública VIH/sida en Cuba, 2004–2013. Revista Anales de la Academia de Ciencias de Cuba. 2015;5(3):1–7. Disponible en: <http://www.revistaccuba.cu/index.php/acc/article/viewFile/428/358> Acceso el 19 de abril de 2017.
 25. Oficina Nacional de Estadísticas e Información (ONEI). Encuesta sobre indicadores de prevención de infección por el VIH/sida 2013. Publicación de resultados [internet]. La Habana: ONEI; 2015. Disponible en: <http://www.onei.cu/publicaciones/cepde/EncuestaPrevencionSida/Informe%20de%20Resultado%20Encuesta%20de%20Indicadores%202013.pdf> Acceso el 19 de abril de 2017.
 26. Ministerio de Trabajo y Seguridad Social de Cuba. Centro Nacional de Formación y desarrollo de Cuadros. Compendio de normas jurídicas para especialistas que atienden el VIH/sida. La Habana; 2008.
 27. Rojo Pérez N, Torres Rojo Y, Gómez Hernández F, Guillard Limonta NR. Creación cultural en la prevención social de la epidemia de VIH/sida en Cuba. Revista Sexología y Sociedad. 2014;20(1). Disponible en: <http://revsexologiaysociedad.sld.cu/index.php/sexologiaysociedad/article/view/467> Acceso el 22 de enero de 2018.
 28. Martínez González JE, Santisteban Mustelier Z, Santoya Arévalo AA, Milanés Céspedes YM. Proyecto socio-cultural "Cruzada por la vida": el movimiento del voluntariado granmense en la prevención del VIH/sida. Experiencias de 10 años de trabajo. Revista Médica Multimed. 2013; 17(1). Disponible en: <http://www.multimedgrm.sld.cu/articulos/2013/v17-1/14.html> Acceso el 19 de abril de 2017.
 29. Organización Panamericana de la Salud/ Organización Mundial de la Salud (OPS/ OMS). La OMS valida la eliminación de Cuba de la transmisión de madre a hijo del VIH y de la sífilis. Disponible en: http://www.paho.org/hq/index.php?option=com_content&view=article&id=11078%3A2015-cuba-eliminates-mother-hiv-syphilis&Itemid=1926&lang=es Acceso el 3 de octubre de 2017.
 30. Organización Panamericana de la Salud/ Organización Mundial de la Salud (OPS/ OMS). Informe anual de casos de dengue, 2016. Número de casos reportados de dengue y dengue grave en las Américas, por país. Disponible en: http://www2.paho.org/hq/index.php?option=com_topics&view=readall&cid=3274&Itemid=40734&lang=es Acceso el 9 de julio de 2017.
 31. Consejo de Ministros de la República de Cuba. Reglamento de las disposiciones e infracciones sobre control Sanitario Internacional. Gaceta Oficial de la República de Cuba. 1982;80(38). Disponible en: <http://www.medioambiente.cu/legislacion/D-104.htm> Acceso el 19 de abril de 2017.
 32. Ministerio de Salud Pública de Cuba (MINSAP). Dirección Nacional de Epidemiología. Actualización del Programa Nacional de Control Sanitario Internacional [Internet]. La Habana: MINSAP; 1998. Disponible en: <http://files.sld.cu/vigilancia/files/2015/06/programa-csi-cuba.pdf> Acceso el 23 de marzo de 2017.
 33. Ministerio de Salud Pública de Cuba (MINSAP). Regulaciones para el control sanitario internacional [internet]. La Habana: MINSAP; 2016. Disponible en: <http://files.sld.cu/higienepidemiologia/files/2016/03/regulaciones-para-el-control-sanitario-internacional-reducido.pdf> Acceso el 19 de abril de 2017.
 34. Gorry C. Cuba se enfrenta al Zika: todos a una. MEDICC Rev. 2016;18(1–2).

Disponible en: <http://www.medicc.org/mediccreview/index.php> Acceso el 19 de abril de 2017.

35. Gala A, Toledo ME, Arias Y, Díaz González M, Álvarez Valdez AM, Estévez G, et al. Implementación del Reglamento Sanitario Internacional en Cuba: evaluación de capacidades básicas del sector salud en provincias seleccionadas. *Rev Panam Salud*

Pública. 2012;32(3):207–16. Disponible en: <http://www.scielosp.org/pdf/rpsp/v32n3/v32n3a06.pdf>.

36. Gail Reed. Meet Cuban Ebola Fighters: Interview with Félix Báez and Jorge Pérez. A MEDICC Review exclusive. *MEDICC Review*. 17(1):6–10.
37. Heymann DL, editor. *El control de las enfermedades transmisibles*. 19a ed.

Washington, D.C.: Organización Panamericana de la Salud; 2011(635).

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RESUMEN

Capacidad de respuesta y desafíos del sistema de salud cubano frente a las enfermedades transmisibles

En el presente artículo se identifican rasgos distintivos y esenciales en las transformaciones del sistema de salud cubano que han permitido la erradicación y disminución de las tasas de incidencia de algunas enfermedades transmisibles a niveles inferiores a 0,1 por 100 000 habitantes. Los resultados obtenidos son consecuencia de la importancia otorgada a la prevención y control de estas enfermedades, así como a los riesgos y daños potenciales. La estructura y funcionamiento del subsistema de higiene y epidemiología y sus interrelaciones con el resto del sistema a partir de los diferentes modelos de prestación de servicios han constituido escenarios de integración permanentes para la toma de decisiones. Se eliminaron enfermedades como la poliomielitis, paludismo, difteria, tosferina, rubéola, parotiditis, meningitis posparotiditis, sarampión, fiebre amarilla, cólera, formas graves de la tuberculosis, rabia humana transmitida por caninos, leishmaniasis, enfermedad de Chagas, la transmisión vertical del virus de inmunodeficiencia humana, sífilis congénita y formas clínicas como el tétanos neonatal y el síndrome de rubéola congénita. Se hace énfasis en algunas enfermedades transmisibles y, en especial, en la respuesta social desarrollada contra la tuberculosis, la lepra, el sida y las enfermedades transmitidas por vectores. Se demuestra que el contexto sanitario actual revela aún desafíos para la sostenibilidad de los logros alcanzados en el país. Garantizar el mantenimiento de la cobertura universal con acceso de la población cubana a los servicios de salud será siempre un principio de la salud pública cubana.

Palabras clave

Prevención y control; estrategias; enfermedades transmisibles; Cuba.

RESUMO

Capacidade de resposta e desafios do sistema de saúde cubano contra doenças transmissíveis

No presente artigo se identificam características específicas e essenciais nas transformações do sistema de saúde cubano que permitiram a erradicação e redução das taxas de incidência de algumas doenças transmissíveis a níveis inferiores a 0,1 por 100 000 habitantes. Os resultados obtidos são uma consequência da importância dada à prevenção e controle dessas doenças, bem como aos riscos e danos potenciais. A estrutura e o funcionamento do subsistema de higiene e epidemiologia e suas inter-relações com o resto do sistema, com base nos diferentes modelos de prestação de serviços, constituíram cenários de integração permanente para a tomada de decisões. Foram eliminadas doenças como a poliomielite, malária, difteria, coqueluche, rubéola, parotidite, meningite pós-parotidite, sarampo, febre amarela, cólera, formas graves de tuberculose, raiva humana transmitida por cães, leishmaniose, doença de Chagas, a transmissão vertical do vírus da imunodeficiência humana, sífilis congênita e formas clínicas como o tétano neonatal e a síndrome da rubéola congênita. É dada ênfase a algumas doenças transmissíveis e, em particular, à resposta social desenvolvida contra a tuberculose, a hanseníase, a AIDS e as doenças transmitidas por vetores. Mostra-se que o atual contexto de saúde revela desafios para a sustentabilidade das realizações no país. Garantir a manutenção da cobertura universal com acesso da população cubana aos serviços de saúde sempre será um princípio da saúde pública cubana.

Palabras-chave

Prevenção e controle; estratégias sanitárias; doenças transmissíveis; Cuba.