

## Lowering Infant Mortality in Cuba: Fernando Domínguez MD PhD Neonatologist, Ramón González Coro University Maternity Hospital, Havana

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Neonatologist Dr Fernando Domínguez served two years in a remote municipality of Cuba's Guantánamo Province upon graduation from medical school in 1973. Continuing his commitment to vulnerable populations, he joined the Cuban team in the Democratic Republic of the Congo, serving as a family doctor attending neonates and children. After returning to Cuba, he completed his pediatric residency and later became head of the neurodevelopment department at Havana's Ramón González Coro University Maternity Hospital, where he has worked for over three decades.

Dr Domínguez holds a doctorate in medical sciences, and since 1995 has served on the board of the Cuban Society of Pediatrics, where he was President from 2005-2011. He is also a member of the Ministry of Public Health's National Bioethics Commission; President of the Scientific Council of the Manuel Fajardo Medical School; on the Executive Board of the Latin American Association of Pediatrics; and a member of the Permanent Commission of the International Pediatric



Association (IPA). Since 2010, he has served on IPA's Commission for Child Environmental Health and is the Editor-in-Chief of the pediatric section of Infomed, Cuba's national health portal.

**MEDICC Review:** In 2014, Cuba posted record low infant mortality—4.2 deaths per 1000 live births. Walk us through the process of how Cuba arrives at infant mortality figures.

**Fernando Domínguez:** A baby born with a single sign of life, even if it's only a matter of seconds, is recorded as a live birth in Cuba. If there are no signs of life, it is registered as a fetal death. From the moment of birth to the baby's first birthday is the period considered for infant mortality statistics. This is in accordance with international norms established by WHO. Within an hour of birth, the doctor attending the mother and child registers the time of birth, the baby's weight, the mother and child's post partum health, how the baby was born (cesarean or vaginal), and any complications. This is known as the medical register and is maintained by the hospital for statistical purposes; these data are then sent to provincial and national health authorities.

It's important to note that 99.9% of births in Cuba occur in hospitals; the majority of the remaining 0.1% of babies are born en route—in a taxi, truck or other transport. These births, and related medical data, are recorded once the mother and child reach the hospital.

**MEDICC Review:** So how has Cuba achieved such low infant mortality? Isn't this achievement incongruent with the

resource scarcity and budget constraints that have dogged the country for so long?

**Fernando Domínguez:** There's this idea among pediatricians and neonatologists, especially in Latin America, that you need huge amounts of resources to lower infant mortality. Why? Part of the reason is that doctors like me and my Latin American colleagues are reading scientific research in high-impact journals—all published in developed, industrialized countries. These are results from contexts with cutting-edge diagnostic techniques and technologies. Many pediatricians in the global South, influenced by these studies, conclude that the way to save infant lives is with first-line antibiotics, high-tech ventilators and other costly resources. But it starts way before that.

What really has an impact on infant mortality in developing world contexts is ensuring optimal maternal health, before and during pregnancy, and that each child is born in the best health possible. For example, a baby born with a healthy birth weight has a much better chance of survival than a baby born under normal weight or with low birth weight. This doesn't require huge resources. If you look at countries around the world with the lowest infant mortality rates, you'll see they've also succeeded in diminishing low birth weight—defined as less than 2500 grams. As soon as you

## Interview

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decrease the low birth weight rate, you have an impact on infant and under-5 mortality. If a mother goes to term and the child is born with a healthy birth weight, without infections or anemia, the prognosis is very good for that baby.

Our low birth weight rate is now 5%—lower than the USA. Can we lower it further? Probably. We are continuously evolving the program to try to improve our low birth weight rate. One area where there is still work to do is with women under the age of 20—teen pregnancy is classified as high risk in Cuba and these mothers are more likely to have low birth weight babies. So if we can decrease teen births, we may be able to have an impact on the low birth weight rate. Nevertheless, teen mothers who decide to have their babies are given all the support and services they need for a healthy birth, including specialized attention at maternity homes.

**MEDICC Review: Speaking of maternity homes—these are facilities for high-risk pregnancies, correct? Are women obliged to move into one once their pregnancy is classified as high risk?**

**Fernando Domínguez:** Living in a maternity home for a period of time is completely voluntary, a decision made by the mother in consultation with her medical team. Here, we also see the benefits of universal education: in Cuba, women have at least a ninth grade education and understand how maternity homes protect and promote their health and that of their fetus. I'll tell you a story: when I was serving in Guantánamo Province after medical school, I had a patient pregnant with her fifth child. Her home was separated from the neighboring town by a river. She was geographically isolated, which put her at risk. Her husband said: she can't go to a maternity home. Who will take care of the other four children? And I explained that she'd be going to the maternity home for a couple of months and if she didn't, both she and the child could be at risk. If she were to die, I explained, then she wouldn't be gone for a couple of months, she'd be gone for good. Who would take care of the other children then? Cuban parents understand the how and why of maternity homes and when we explain the percentage of high-risk pregnancies that present complications, and how those complications can be prevented, they weigh the logic of the argument. As a result, most agree to live in a maternity home for the time indicated by their doctors.

Maternity homes offer several important benefits: women receive a diet tailored to their nutritional needs, their stress levels are lowered, and they learn how to be better mothers. As soon as they meet other mothers-to-be in the maternity home, they're learning how to hold a baby, how to maintain proper hygiene, how to feed the baby, breast feed, etc. Plus we hold classes and workshops. Maternity homes aren't 'mommy warehouses.' Pregnant women aren't just parked there—if that were the case, these facilities wouldn't be fulfilling their goal: to lower infant and maternal mortality rates.

**MEDICC Review: When you started medical school, the infant mortality rate was 45 per 1000 live births. Substantial progress has been made since then. Is it be lowered the rate further?**

**Fernando Domínguez:** This is a very interesting question. The top three causes of infant mortality in Cuba are: congenital conditions and genetic disorders; complications during the perinatal stage; and infections—mainly acute respiratory infections. Can we lower the

number of infant deaths due to perinatal complications and infections? Yes. Can we lower the number of congenital malformations? Probably—especially since each of Cuba's 168 municipalities has a genetic counselor and genetic testing is available.

How low can we go? We don't know. Scandinavian countries and Japan, for example, have lower infant mortality, so it is possible, but there is a limit. I liken it to the 100-meter sprint. When I was a child, I remember a Cuban sprinter setting a record for running 100 meters in 10 seconds. I never thought someone could go faster because human beings, with their biological characteristics, have limits to how fast they can run. But then came improvements in training, track conditions, footwear, and—lo and behold—look at Usain Bolt! But with infant mortality, there's a limit. What's the limit? We don't know but we'll never see a rate of zero infant mortality. We can record 0% infant mortality in a municipality, we can record zero infant deaths during a certain period, but obviously, it won't be like that over greater areas or time frames. This is so because there are prenatal and post-partum factors that contribute to infant mortality, which can't be mitigated—certain genetic conditions, for instance, which are incompatible with life but the parents choose to have the baby anyway.

**MEDICC Review: Your comment begs the question: are parents encouraged to abort a fetus once a genetic condition is detected? Especially life-threatening conditions, since—bioethics aside—this would be a fairly straightforward way to lower infant mortality.**

**Fernando Domínguez:** Our duty as doctors, as caregivers, isn't to serve statistics, it's to serve our patients, to improve their health and contribute to the happiness of their family. Of course, in Cuba, we have strict national protocols regulating abortions, which are legal in our universal system. As soon as a genetic disorder is detected in a fetus, the parents receive specialized services, beginning with a genetics counselor who then becomes part of the antenatal care team. This counselor explains the diagnosis and nature of the disorder, the complications that can arise, treatment, and the options available to them—abortion and the possibility of taking the baby to term among them. Many of these parents opt to have the baby regardless of the genetic condition. They know they can count on universal services throughout the child's life, including a national pediatric cardiology network, a similar network for neonatal surgery and other highly-specialized services, which allay fears. Some of these couples have been trying to get pregnant for a long time and feel it may be their only chance to have a child. Our job is about the human element, not indicators.

**MEDICC Review: Can you give our readers some specifics about Cuba's infant mortality prevention program? What steps have been taken to improve newborn health and survival rates?**

**Fernando Domínguez:** Our emphasis is always on prevention first and we've seen good results using this approach. Our primary care system provides at least 13 antenatal checkups for every pregnant woman, plus we have meticulously designed protocols. This is achieved through national programs implemented decades ago, such as the Maternal-Child Health Program, coupled with prenatal and pediatric intensive care units. Our programs are also adaptable, they evolve with changing circumstances—economic, environmental, or whatever contextual change affecting health. In the

Special Period [economic crash in the 1990s when Cuba lost 85% of its aid and trade—Eds.] for example, we had to ensure proper nutrition for pregnant women. But we were finding if we just gave them extra food, they would share it with their other children or elders, they wouldn't eat it themselves. So we amended the nutrition program so that they were given fortified meals at their workplaces, in schools, in maternity homes. How we maintained health during the Special Period is interesting and is also relevant to infant mortality: our doctors embody the principle to serve, they sense a calling. They're not doing it for the money; they're doctors because they want to help people. So we fought tooth and nail for the health of our patients during the Special Period and that's reflected in the indicators, most of which held steady during the economic crisis.

Another thing: you can't look at factors in isolation. Our system is universal and guarantees access; we take a preventive approach; and Cuba is illiteracy-free. This is a very important element that can't be underestimated: if someone can't read, how are they going to understand the treatment prescribed by their doctor? All of these actions have contributed to improving both maternal and infant health. But we've also taken steps to specifically address the causes of infant mortality in Cuba. The primary care team works together to prevent premature births; each high-risk birth is attended by a neonatologist—not a resident, but a specialist; we standardized the use of progesterone for all pregnant women with premature birth risk; and we follow strict protocols in pre-delivery wards. Babies are not released from the hospital until they weigh 2500 grams. This is because lower-weight babies are at greater risk for infection. If the baby weighs 2450 grams, she won't be discharged even if the family has a wonderful, spacious home, with all the necessary conditions, plenty of food and air conditioning. Because if that child gets sick—even if she gets a cold—there are consequences. If protocols aren't followed, there are sanctions.

**MEDICC Review:** *If a newborn gets sick, there are consequences. What happens in Cuba when a baby dies?*

**Fernando Domínguez:** The process begins with an in-depth investigation and analysis of what happened, first at the primary care level where the pregnant woman and her unborn baby received antenatal care and then in the hospital delivery room where the baby was born, with the entire team that was involved in the birth. Then that same investigation and analysis is pursued within the whole hospital and later moves to the municipal and provincial levels. The results are reported to the Ministry of Public Health at the national level. If protocols weren't followed to the letter, there are sanctions.

We also have an autopsy protocol—nearly 100% of infants who die undergo autopsies; this isn't true for the entirety of the United States, even. But there is no substitute for autopsy. There are imaging and laboratory studies you can do in the case of infant death, for example, but they can be inexact, suggesting various illnesses as the cause. This happens frequently with pulmonary illnesses—a major cause of newborn deaths—they can look like a lot of different things. These tests may suggest the cause of death was A, but then the autopsy reveals that it was B. Or A and B. Only an autopsy can confirm the true cause.

Determining the exact cause of death is the purview of each maternity hospital's perinatal mortality commission, which makes

a detailed analysis of factors and processes surrounding the death, the entire clinical history of mother and baby, plus the autopsy, to make their determination.

These commissions play a very important role; it's not just a question of counting infant deaths or when the infant died or if it was stillborn. It's much more than that: by determining the precise cause of death, our approach and treatment can be improved and resources can be appropriately allocated to continue having an impact on infant mortality.


Recently a PAHO representative came to observe how Cuba handles an infant death. We went to a small municipality between Camagüey and Las Tunas Provinces in central Cuba to observe the perinatal mortality commission. When he saw the obstetrician who attended the birth, the neonatologist who treated the baby, the family doctor who attended her antenatally, the director of the local polyclinic and the director of the hospital, plus the municipal health director, all discussing step by step what happened, he said, 'Now I understand what you mean by rigorous application of norms.' He observed the entire process and I think he came away understanding how serious we are about infant mortality.

**MEDICC Review:** *Can you speak a little about the maternal mortality rate, which hasn't decreased at the same pace as infant mortality?*

**Fernando Domínguez:** It's declining, but we still have challenges around maternal mortality. Can we lower maternal mortality? It's likely, yes. This isn't my specialty, but the challenges are different, more complex. More complex because one of the causes of maternal mortality is related to emergencies that arise during pregnancy, and emergencies are hard to anticipate. At the moment a woman has an emergency—a placenta-related crisis, for example—the solution often depends on the medical team in attendance.

**MEDICC Review:** *You're obviously very passionate about your work, even though you, like all Cuban doctors, earn a modest living. What motivates you to practice medicine?*

**Fernando Domínguez:** There's a 25-year-old woman right now in the ward next door. She weighed 26 ounces when I delivered her and dropped to 21 ounces shortly thereafter. I have a picture with her mom, just after she was born. Now she's here giving birth to her second child. Every day she gives me a hug, and her tenderness, the gratefulness of her family—you can't buy that and no one can take that away from me.

Would we have seen better indicators sooner if our health system had more resources? Probably. No one can hide the fact that resource scarcity is one of our biggest problems. But very early on, Cuba took a health approach that prioritizes vulnerable populations—women, children, those in remote geographical regions. Today, we have all sorts of national programs—for rural populations, older adults, HIV patients and of course, women and children—which prioritize the most vulnerable. When in crisis, in a shipwreck or fire, for example, what happens? Women and children first. What inspires me is helping them to be as healthy as they can. 

[see Facts & Figures at <http://www.medicc.org/mediccreview/facts-and-figures-jan-2015.php>—Eds.]