

# PROVIDING HUMANITARIAN SERVICE TO DISADVANTAGED PEOPLE WORLDWIDE

## **F. Marc LaForce, MD**

*2015 Jimmy and Rosalynn Carter Humanitarian Award Recipient*

F. Marc LaForce, MD does not credit an early interest in science as the driving force in his decision to pursue medicine. Instead, he says, he was driven by the philosophical concept of fairness instilled in him during his Benedictine education: “I saw medicine as a profession where, thanks to the training and responsibilities of doctoring, you could do justice.”

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*“People have a right to decent health. That belief creates its own piston for seeing that it gets done.”*

—F. Marc LaForce, MD

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This simple concept, a recognition of the inherent worth and dignity of every individual, has guided Dr. LaForce’s remarkable career, and his most recent achievement, development of a group A meningococcal vaccine and its widespread use in sub-Saharan Africa. So dominant was the yearly plague of serogroup A meningococcal meningitis across this area that countries stretching across the African continent were defined by it. They became known as “the meningitis belt.”

“Dr. LaForce’s vision, tenacity, clinical and scientific expertise, and charming diplomacy have created mass immunization programs that are well on the way to eliminating this dreaded pestilential disease that has swept annually through sub-Saharan Africa, afflicting and killing thousands,” wrote William Schaffner, MD, NFID Past-President.

NFID is proud to honor F. Marc LaForce, MD with the Jimmy and Rosalynn Carter Humanitarian Award for his extraordinary work in vanquishing an epidemic scourge that has inflicted suffering and death to the people of sub-Saharan Africa for millennia. His work to create and bring MenAfriVac® to the people of the meningitis belt has provided a profound humanitarian service.

### **A WITNESS TO SUFFERING VOWS TO END IT**

Dr. LaForce’s inherent sense that we should live in a just and fair world was further defined during his undergraduate study. As a philosophy minor at Saint Anselm College in his native New Hampshire, he was captivated by the philosophical concept of fairness.

In Burkina Faso in 2007, Dr. LaForce had an experience he will never forget, one that helps explain his dedication. He met Jean-Francois, a



smart, strapping 18-year-old who was the eldest of six children. “This young man had unlimited potential. I saw him on day seven of his hospitalization when it was clear that he was now stone deaf,” LaForce recalls. “I remember the attending physician telling his mother, “Being deaf in Africa is not easy...”

Later, sitting in his office in France, he started to wonder how Jean-Francois was doing and called a contact in Burkina Faso. He got sad news: the young man’s family was in mourning. While he was playing soccer with his siblings, the ball rolled into the street. Jean-Francois followed the ball and never heard the truck that struck and killed him.

“I started to cry,” says the doctor. “I vowed that I’d do whatever was required. We had to press on.”\*

\*Excerpted from Portraits, the magazine of Saint Anselm College, with special thanks to author Laurie Morrissey.

### **DEVELOPING A NEW MODEL FOR VACCINE DELIVERY**

The major challenge, according to Dr. LaForce, was not the science of developing the meningitis A vaccine, but the cost. “Price point,” he says, “was challenge number one, two, three, and four.” Dr. LaForce was advised against creating a vaccine that the affected countries could not afford. That would be far worse, the Secretary General of Niger told him, than having no vaccine at all.

From his work in resource-poor sub-Saharan African countries earlier in his career, Dr. LaForce understood the problem well. Resources allocated to eradicating meningitis A had better be worth it, because they would come at the cost of another public health need. Before they began, they recognized that without cost containment and the ability to implement a long-term immunization strategy, there was no hope of conquering meningitis A.



A study led by the World Health Organization (WHO) focused on defining the cost of goods to make a monovalent A or bivalent A, C meningococcal vaccine. Based on that research, 25 million or more doses would be needed annually to remain under the 50 cents per dose threshold that would allow widespread vaccine uptake in affected countries.

According to Dr. LaForce, the first three years of working on meningitis A were the hardest. These were the years when he and his colleagues developed a new model — a virtual vaccine company. This, he says, was a complete change in development direction away from partnering with an established pharmaceutical company on vaccine development. In those first few years, Dr. LaForce was part businessman, part economist, part politician, and part manager.

While this period was challenging, in typical fashion for a man who takes such an interest in others, Dr. LaForce found great pleasure in meeting and working with new people during the process. He enjoyed putting partners together and was gratified to watch the trust among them grow over time. “As trust expanded, our outputs exceeded inputs,” he said. “We got much more than what we started with.”

Through this entire process, he never took his eye off the ultimate goal—to eliminate suffering and death, and bring better health to a severely affected population. He had a picture of a young man much like Jean-Francois on his desk. He would tell everyone he worked with, from physicians, to bureaucrats and philanthropists, “Whatever you decide, it has to be good for him. He’s the customer.”

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*“Marc has always been an articulate, logical, collaborative, and productive scholar. His contributions are numerous, but the meningococcal serogroup A vaccine is the ultimate achievement.”*

—Samuel L. Katz, MD, Recipient, 2015 NFID Maxwell Finland Award for Scientific Achievement

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## A GROUNDBREAKING VACCINE BROUGHT TO THE MENINGITIS BELT

While much has been written of the “meningitis belt” or the “problem of meningitis in Africa,” the 300 million people in the affected areas live in many different countries, and each has unique politics, power structures, and competencies. By focusing on working within the available opportunities within each country, Dr. LaForce says they were able to find the “sweet spot” for each country, city, and public health area. This part of Africa is part Anglophone and part Francophone, so it was no small advantage that Dr. LaForce is fluent in both English and French and was able to communicate easily as he crossed borders during the planning stages.

Partnering with WHO helped tremendously during this stage. Dr. LaForce describes WHO recommendations and experience as the “glue and mortar that bridges issues that may look very disparate across countries.” They met with African officials year in and year out, making sure there was ongoing communication about vaccine development and plans.

As a result of the efforts of all involved, vaccine delivery flowed brilliantly. Dr. LaForce says this was due in no small part to the fact that “Africans know how to do vaccine campaigns.” Having overcome the major challenge of affordability, they could enjoy what they considered the easy part — immunizing millions!

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*“Marc has unbuckled the meningitis belt — the century-old epidemiology of a dreaded disease has been completely altered by his work.”*

—John Boslego, MD, Program Leader for Vaccine Development, PATH

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In December 2010, MenAfriVac® was introduced during mass vaccination campaigns in Burkina Faso, Mali, and Niger. These countries are part of sub-Saharan Africa's meningitis belt where annual meningitis epidemics normally killed 10 percent of those sickened, leaving another 20 percent with disabilities. But at the close of the epidemic season in June 2011, not a single case of meningitis A had been reported among the 19.5 million people who received MenAfriVac®.

To date, over 200 million Africans have received one dose of the vaccine. The incidence of group A meningococcal disease in vaccinated populations has been zero. Serogroup A meningococcal infections have disappeared where the vaccine was used and carriage has been largely eliminated in immunized populations.

### PLANS TO SUSTAIN A MENINGITIS-FREE POPULATION

The first goal of the immunization plan was to establish herd immunity by vaccinating everyone age 1 to 29 years in the first immunization wave. This phase was a remarkable success, but there is still more to do.

In the intervening four years since the immunization program began, WHO prequalified the vaccine for newborns. Starting later this year, the meningitis belt countries will begin delivering a single dose of MenAfriVac® at age 9 to 12 months with measles vaccine. It will take two to three years to ramp up coverage.

A simultaneous catch-up program is also planned. Children younger than age 4 years have been protected by herd immunity. Starting this year, they will be vaccinated along with infants. The overall vaccination strategy is focused on perpetuity. "Public health," says Dr. LaForce, "is a long-term issue."

Dr. LaForce says his work is not done as long as there is a single case of meningococcal disease in sub-Saharan Africa. He and his colleagues are confident that group A disease will soon be a thing of the past, but serogroup C, W, Y, and X disease still circulates. The logical next step, an affordable pentavalent meningococcal vaccine, is currently in Phase 1 trials with a goal of rolling it out as soon as the current MenAfriVac® catch-up program is completed.

### F. MARC LAFORCE: SCIENTIST, INNOVATOR, AND HUMANIST

MenAfriVac® is a vaccine of firsts. It is the first vaccine specifically designed for Africa in response to calls from African health officials. It is also the first time a vaccine has been introduced in Africa before reaching any other region of the world.



The innovative vaccine-development model pioneered by Dr. LaForce and his collaborators produced the vaccine at one-tenth of the \$500 million investment usually required to bring a new vaccine to market. At less than 50 cents per dose, the vaccine was produced at a price that African countries could afford.

"For the first time in history, Africa has a safe, affordable technology that provides long-term protection against the primary cause of periodic epidemics that kill and disable thousands of victims in Africa's meningitis belt," said Dr. Jean-Marie Okwo-Bele, director of the Immunization, Vaccines and Biologicals department at WHO. "This would not have been possible without the vision and determination with which Marc has led this work for over a decade. What has been achieved during this time under his leadership is truly remarkable."

Dr. LaForce recognizes that eliminating meningitis A in sub-Saharan Africa is "a big deal." But with his hallmark humility, he adds, "I was in the right place at the right time and was very lucky — I had the great fortune to work with the smartest and most dedicated people.

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*"We should live in a just world. Having a potential good that you know should be delivered, and it can't be delivered economically — this is unjust."*

—F. Marc LaForce, MD

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