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Mary Ellen Avery, Premature Babies' Savior, Dies at 84

By **DOUGLAS MARTIN**

Dr. Mary Ellen Avery, a medical researcher who helped save hundreds of thousands of premature infants with a single, crucial discovery about their ability to breathe, died on Dec. 4 in West Orange, N.J. She was 84.

[Children's Hospital Boston](#) made the announcement days after her death, but it was not widely disseminated.

Dr. Avery was the first woman to be appointed physician in chief at Children's Hospital; the first woman to head a clinical department at Harvard Medical School; the first woman to be chosen president of the Society for Pediatric Research; and the first pediatrician to lead the [American Association for the Advancement of Science](#).

But as she told Harvard Magazine in 1977, her principal contribution to medicine was in finding out why so many babies died at birth. The answer: their lungs lacked a foamy coating that enables people to breathe.

"There was one moment of insight," she said. "And that was it."

When Dr. Avery was awarded the American Pediatric Society's highest award in 2005, Dr. Jerold F. Lucey, professor of [pediatrics](#) at the University of Vermont, called her achievement "the major advance in neonatal care in the last 50 years."

Dr. Stella Kourembana, chief of newborn medicine at Children's Hospital, said Wednesday that Dr. Avery's work had allowed premature infants "to survive and have a wonderful life." And exceptionally premature infants, she said, now "have a chance at life."

In 1991 Dr. Avery was awarded the National Medal of Science by President George Bush.

Dr. Avery and her colleagues published 23 papers from 1959 to 1965 addressing what was then the most common cause of death among **premature babies**: an inability to breathe. At the time, the malady was called **hyaline membrane disease** because glassy membranes were found in autopsies of infants who had gasped for breath and quickly died. It is now called **respiratory distress syndrome**.

When Dr. Avery started her work, as many as 15,000 babies a year died from the syndrome. By 2002, fewer than 1,000 did. Estimates of lives saved exceed 800,000.

Her first assignment was to find out more about the foam that formed in the lungs of people with **pulmonary edema**. “They literally foamed at the mouth,” Dr. Avery said in an interview for a children’s hospital newsletter.

As she worked in the nursery, she became concerned about premature babies who were unable to exhale. In a way, she said, the task could be described as studying bubbles inside the lungs. Her research included finding a quite useful 19th-century children’s book on how soap bubbles are formed.

Dr. Avery ultimately identified a mix of fat and proteins in the lungs that came to be called surfactant. She helped prove that it was the absence of surfactant — not the presence of membranes — that caused infant deaths. Babies who spend nine months in the womb almost always develop surfactants before birth, and continue to produce them throughout life. But some premature babies are born without it.

Dr. Avery built on the work of others, among them Dr. John A. Clements, who had identified surfactant in studies for the United States Army on toxic gas inhalation. At the Harvard School of Public Health, where she made her discoveries, her mentor was Dr. Jeremiah Mead, an expert on lung mechanics.

Dr. Avery’s work was translated into clinical practice partly by Tetsuro Fujiwara, a pediatrician in Japan. Advancing her experiments, he developed a surfactant replacement, made from the lungs of cows. Dr. Avery was an enthusiastic advocate of the treatment.

Mary Ellen Avery was born on May 6, 1927, in Camden, N.J. Her father owned a manufacturing plant, and her mother was

vice principal of a high school. She was inspired by a pediatrician, a neighbor, who patiently answered her questions and took her to see premature babies.

Dr. Avery graduated summa cum laude from Wheaton College in Massachusetts with a degree in chemistry. At the Johns Hopkins University School of Medicine she was one of four women in a class of 90. She graduated in 1952.

She then contracted tuberculosis. In an interview with the [U.S. National Library of Medicine](#), she said that recuperating took nearly two years, but it helped her realize a new ambition: “to know more about the physiology of the lung.”

She returned to Johns Hopkins for her internship and residency, then spent two years at Harvard on a fellowship conducting her research on premature babies' lungs. She returned to Johns Hopkins to supervise newborn nurseries. Later, she was chairwoman of pediatrics at McGill University for five years and physician in chief of the Montreal Children's Hospital.

In 1974, she assumed her positions at Harvard and at the children's hospital in Boston. She wrote several textbooks that are widely used, especially “The Lung and Its Disorders in the Newborn Infant,” now regarded as a classic in the field.

Dr. Avery, who never married and who was known to friends as Mel, is survived by nieces and nephews.

She also worked on behalf of public health issues in developing countries, like eliminating [polio](#). She spoke out on political issues, advocating [abortion](#) rights and opposing nuclear arms. She told Harvard Magazine that doctors make too much money.

In an oral history for the Center for the History of Medicine at Harvard, Dr. Avery characterized scientific research as a slog that often leads to discouragement. “You can either quit or say I will start over,” she said. “If it's a question that's worth pursuing, it's probably worth continuing to pursue.”

