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Giants in Obstetrics and Gynecology A profile of Emanuel A. Friedman, MD, DMedSci

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Dr. Emanuel A. Friedman, Professor Emeritus of Obstetrics, Gynecology, and Reproductive Biology at Harvard Medical School, is world-renowned for his contributions to obstetrics, which include the visual description of the labor curve, often called the "Friedman Curve."

Born in Brooklyn, New York, Dr. Friedman describes himself as "coming from humble origins." His father was educated and a rabbi; his mother was a homemaker. Always introverted, he considers that he had a modest family life. He became intellectually "alive" through reading; he was fascinated with Charles Dickens and read all of his novels, which he now says transported him from the "slums of Brooklyn to the dredges of London."

A key part of his intellectual awakening occurred thanks to being drafted into the U.S. Navy during World War II. "I saw a world I had never seen, and I also saw prejudice," Dr. Friedman recalls.

Upon his return from the Navy, he took advantage of the U.S. government's G.I. Bill to pursue an education in medicine. He graduated in 1951 from Columbia University's College of Physicians and Surgeons and was later awarded a Doctorate in Medical Science from Columbia in 1959 and then a Master of Arts from Harvard University (*honoris causa*) in 1969. Dr. Friedman was an intern at Bellevue Hospital, Cornell Division, in New York and completed his residency in obstetrics and gynecology at Columbia Presbyterian Medical Center in New York in 1957. Subsequently, he joined the faculty in a department led by Professor Howard C. Taylor, Jr.

How was the labor curve "born?" This occurred in New York when Dr. Virginia Apgar, the notable anesthesiologist who designed the famous Apgar score method, asked Dr. Friedman a fundamental question that led to his seminal work describing the partogram. Dr. Apgar was interested in caudal anesthesia for pain relief during labor and asked him how she could determine whether the administration of a caudal block would alter the progress of labor. Dr. Friedman quickly realized that there was very little objectively determined information available about the progress of labor. He recognized the importance of the question and sought an opportunity to assess such a fundamental biologic process.

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One night while Dr. Friedman was on call at Columbia, his wife went into labor at another hospital, and he asked whether he could be excused to attend the birth of his first child. When his request was denied, Dr. Friedman sublimated his disappointment and frustration by taking pencil to paper to record serial examinations in graphic form, including frequency of contractions, cervical dilatation and effacement, fetal station, time, and other factors, that described the progress of labor in patients over the course of time. By the next morning, he realized that the frequency of contractions was uninformative but that progressive cervical dilatation had a striking sigmoid (S)-shaped curve characterized by a very slow change at the outset and followed by, after a certain timeframe, an acceleration phase. This was the birth of the "latent phase of labor," the portion of labor during which cervical dilatation progresses quickly. At the end of his call, Dr. Friedman was able to go to the other hospital for the birth of his daughter.

The information Dr. Friedman collected that night subsequently formed the basis for his first article—"Graphic Analysis of Labor"—that was published in the *American Journal of Obstetrics and Gynecology* and is a well-read classic freely available on the Journal website.

Because the circumstances that led to this study coincided with the birth of his first child, we also know the precise date of birth for the Friedman curve—June 11, 1952. Dr. Friedman has always emphasized that he "did not create anything" but rather that he just described a phenomenon of nature. He is also keen to clarify that he never referred to the sigmoid labor curve as the "Friedman Curve."

The first study was then followed by a systematic series of examinations of the factors related to the progression of labor, the development of a nomenclature for labor disorders, studies of the impact of these disorders on the fetus, and a proposed management program to optimize outcomes. The terms "prolonged latent phase," "arrest of dilation," "arrest of descent," "protracted dilation," and "protracted descent," which are all used today to describe abnormal labor, were derived from the pioneering work of Dr. Friedman.^{2–4}

Dr. Friedman participated in the Collaborative Perinatal Project in the United States, which was funded by the National Institutes of Health, that collected information about pregnancies, labor, and their outcomes for approximately 60,000 women.⁵ While examining these data, Dr. Friedman realized that babies who were delivered by mid-pelvic forceps often had neurologic disabilities. Dr. Friedman was legendary for his skills in operative vaginal delivery and as a gynecologic surgeon. Yet, he had in front of him evidence that even the babies he had delivered with his considerable skill were more likely to have sustained damage.⁶ This led him to embark on a crusade to inform the obstetric community that mid-pelvic deliveries, regardless of the surgeon's skill, were unreasonably risky for babies. An unpopular view at the time and opposed by many, this view was accepted, eventually, and mid-pelvic operative deliveries are now no longer performed in the United States.⁷

Dr. Friedman went on to become Chairman of the Department of Obstetrics and Gynecology at Chicago Medical School and then held that same post at Harvard Medical School while

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Manny currently lives in New York City near the Metropolitan Opera House at Lincoln Center and is an avid lover of that art form. When asked about his favorite composer, he revealed it is Richard Wagner. He particularly likes Wagner's later operas; his favorite is *Parsifal*, which he characterizes as a "brilliant and searing composition," uplifting and almost spiritual.

A talented artist as well, Manny loves to paint. Several of his original paintings created over the years hang in his home. He says that he stopped painting when he realized that his daughter proved to be a gifted artist. When asked for his favorite book, Manny told me that, although he has many favorites, he would choose Charles Darwin's *The Origin of Species* for its insights into objective observations and empiric research. A fan of the cinema, he hints that his favorite movie is generally the last one he has seen. Most recently, Manny saw *The Man Who Knew Infinity*, a sensitive biographic story about the gifted mathematician Srinivasa Ramanujan.

When the conversation shifted to what Manny is most proud of, I was pleasantly surprised to learn it is his students and the impact he has had in "molding raw clay into competent physicians and investigators." When reflecting on his life, Manny had only a few regrets; the main one is being born 50 years too soon because he believes that technological advances will soon allow a much deeper understanding of labor and other phenomena than were possible when he undertook his studies in labor using only paper and pencil: "My regret is that I am not fresh and new to the world, to be able to use what is now available to most of you." As to what makes a successful investigator, Manny believes that the keys are intense curiosity and the motivation to ask and answer questions.

Moreover, he believes that our educational system must be modified because it suppresses curiosity and tends to perpetuate accepted facts rather than to challenge ideas that have been pronounced as truth. Insofar as the future of obstetrics and gynecology, Dr. Friedman is optimistic. He believes that he lost great opportunities in the past, not willfully, but because of the lack of sophistication of the times. Today, he says that many more thoughtful approaches will inform and allow extraordinary insights in a neglected field, obstetrics and gynecology.

After a conversation with Emanuel Friedman, I felt humbled by the dignity of this gentle man about to turn 90 years old, one who is incisive, articulate, reflective, and multitalented and who changed obstetrics and gynecology. A partogram exists in virtually every labor and delivery unit worldwide, and all mothers who are in labor can benefit from this simple but powerful tool first conceived in the mind of such an extraordinary man.

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