



Dr. C. Everett Koop

Pediatric Surgery: Subspecialties Meet the Unique Needs of Children

When Dr. C. Everett Koop, surgeon-in-chief, arrived at Children's Hospital in 1946 as the Hospital's first full-time pediatric surgeon, the surgical roster included three patients. "One was a true surgical case, and the other two were long-term patients suffering from orthopedic problems," Dr. Koop explained.

He has been at the helm of a service that in 34 years has grown to encompass nine divisions with "enough depth in each service that there is nothing, surgically speaking, that is unavailable here at Children's Hospital."

Today one-half of the Hospital's 238 beds are allocated to the surgical service, and the number of surgical admissions in 1979 to the institution was 5291, one-half of all admissions. The number is expanding.

The growth of the surgical service at Children's Hospital parallels—and in many cases is responsible for—the advances made in the field of pediatric surgery worldwide. The program has been the training ground for dozens of highly skilled pediatric surgeons who now staff or direct departments in hospitals throughout the world and whose work benefits millions of children.

Dr. Koop's involvement with pediatric surgery came almost by accident, but once his interest was aroused, his commitment was total. "I realized that children didn't get a fair shake in surgery, and I saw this as one of the great inequities in medicine. Children had as much wrong then as they do now. And yet we were so ill-equipped to take care of them," Dr. Koop said. Pediatric surgery was so new at the time of Dr. Koop's arrival at Children's that he was but the sixth surgeon in the country to change his surgical practice from adults exclusively to children, and he was one of the first to champion pediatric surgery as a specialty based on physiologic principles rather than seeing children as small adults.

Once at the Hospital, Dr. Koop turned his energies to building a staff of general surgeons as well as surgical subspecialists. The first specialist to be brought in was a neurosurgeon, in 1947, because the large numbers of babies being born with spina bifida, or open spine, and hydrocephalus, increased spinal fluid in the head, presented a major challenge in pediatric care. He was the nation's first full-time pediatric neurosurgeon. Urology came

next, in 1948, so that the many children with anatomical defects of the urinary tract could be treated.

"Because many children's services had grown up around the specialty of orthopedics, and because it was common practice in those days for every children's hospital to have an ear, nose and throat man on staff, we already had those specialties functioning. However, they were not yet associated with an academic program in the university," Dr. Koop explained. Plastic surgery had a more rapid development at Children's Hospital in the late 1940s than it might have otherwise because of the presence of Dr. Robert Ivy, a pioneer in the field, who was at the Hospital of the University of Pennsylvania, Dr. Koop said.

In the next few years the other subspecialties—cardiovascular surgery, dentistry and ophthalmology, were brought into the fold as well. "Cardiac surgery at Children's differed in its scope, though, from what is normally thought of for adults. At Children's the cardiovascular surgeons concentrate their efforts on the heart and the vascular system, while the general surgeons are responsible for the other surgical problems of the chest. Most heart surgeons who treat adults do both heart and chest procedures," Dr. Koop explained.

"Along with the emergence of our department of highly skilled surgeons came the development of a superb anesthesia department," said Dr. Koop. "When I first came to Children's I realized that if you can't put the baby to sleep and wake him up, the surgical procedure won't work. I consider it a great privilege to have grown up with this specialty."

Children's Hospital is providing the setting for dramatic advances in newborn, or neonatal, surgery as well. The turnabout in the survival of tiny infants suffering from major, life-threatening surgical defects came in 1962 with the establishment of the nation's first neonatal intensive care unit at Children's Hospital.

The unit was the creation of Dr. Koop, who was frustrated by the high mortality rates of infants undergoing surgery. It was funded through a five-year pilot grant from the United States Children's Bureau. "I hoped to show that with intensive nursing care of these babies in a carefully controlled environment, and with closer backup by the anesthesiologists, respiratory therapists and laboratory staff, we could overcome many of the problems which caused so many infants to die."

Dr. Koop's hunch proved valid. Today the survival rate in these infants has been turned around. "If we lost 90 percent of the babies with a particular defect 25 years ago, today we save 90 percent," Dr. Koop explained. He cited esophageal atresia as the "index case" for illustrating the success of the neonatal intensive care unit. "This problem, where the baby's esophagus ends blindly, instead of being connected to the stomach, presents as meticulous a challenge as you can find in the diagnosis, anesthesia support, pulmonary care and actual surgery. I can learn much that I want to know about a pediatric surgical service by looking at the gross statistics on esophageal atresia," Dr. Koop said.

At Children's Hospital those statistics are impressive. "In the 1950s, when we did our first assessment of survival for esophageal atresia, we were saving 50 percent, which was considered phenomenal in those days. Today we never expect to lose a full-term baby with esophageal atresia, and we haven't lost one for the past nine years. We've done about 475 of these procedures, and even with premature infants who have additional life-threatening problems the survival rate is 87 percent," Dr. Koop said.

Another innovation has been creation of a day surgical center, where youngsters may undergo certain procedures in the operating room without being admitted overnight to the Hospital.

The children come in the morning, undergo surgery and usually are home by dinner. The service has been in such demand that the Hospital is currently seeking approval from the Health Systems Agency to construct a larger Center on the fourth floor of the building, with funds contributed by the Widener Estate.

Dr. Koop explained, "With the huge expansion of our orthopedics and otorhinolaryngology services and the demand for more patient bed days by our plastic surgeons, it seemed we'd never be able to satisfy our surgical needs because of a freeze on beds by the Health Systems Agency.

"By expanding our outpatient surgery we can open up beds in the Hospital automatically and provide more operating time for those services that require development.

"It isn't sufficient just to have an outpatient surgical service, though. One must have a self-contained unit to do best by the patient and to prevent infections that these children can catch from others if they are not in a separate area."

Despite its pioneering role in neonatal surgery and some of the other subspecialties, Dr. Koop feels proud that "we never have ridden one hobby horse, so to speak. This is not a hospital where patients come just for one kind of problem. Its attractiveness as a training program is that there is a constant variety of all types of surgical problems, ranging from the common to the esoteric.

"And although a lot of surgery in children is routine, we pay just as much attention to that child as to the one undergoing a complex procedure. We have to remember that children have remarkable bounce, but limited reserve, and that they offer the same challenges in intraoperative and postoperative care no matter how straight-forward or how intricate the surgery," Dr. Koop said.

"I think one of the other unusual aspects of our surgical department is the operating room staff, especially the dedication and longevity of many of the OR nurses. They help make our department a 'team effort' that creates a pleasant environment for all who are involved.

"When I came to Children's Hospital, my goal was to develop the most comprehensive surgical team for children that could be found anywhere in the world. As I recently told the Hospital's Board of Managers, I now feel that goal is in sight," Dr. Koop concluded.