Barbara R. Cole, M.D.—ASPN Phone History Interview February 16th, 2018, by Julie R. Ingelfinger, M.D. Deputy Editor, the New England Journal of Medicine, Professor of Pediatrics, Harvard Medical School, Senior Consultant in Pediatric Nephrology, MGHfC at MGH

Dr. Cole was in Mount Pleasant, South Carolina at home, and Dr. Ingelfinger was in Whitefish, MT, at her son Franz's home.

How did you first get interested in the field of pediatric nephrology and what were the conditions like at that time?

In my freshman year of medical school, the person who taught my Physiology lab was a woman, Virginia Tucker. Virginia was a fluid and electrolyte specialist and had studied with Daniel Darrow. In fact, she used the laboratory that Dr. Darrow used when he was at the University of Kansas. Virginia took care of all the pediatric nephrology patients at KU. I worked in Virginia's lab during the summers, and while there, I accompanied her to her clinics and sometimes made rounds with her. During my third year in residency I realized that my mind was far better with processes and not so good with memorization and that PN would be a good place for me.

At that time, most pediatric nephrologists were working singly in medical schools. A few places had 2 or 3 such specialists. At KU, we occasionally treated acute renal failure with peritoneal dialysis and results were dismal. There was no dialysis nor renal transplantation for pediatric patients.

When I went to Washington University, I learned that there had been a renal transplant performed in a 15 year old in the early 60's. The first renal transplant after I arrived occurred in 1971 and was performed at Barnes Hospital where the adult nephrologists were referring a few patients for transplantation. Dr. Charles Anderson was doing pre-transplant transfusions of small amounts of white cells in an attempt to reduce rejection. The available anti-rejection drugs at that time were only corticosteroids and azathioprine.

Acute post-strep glomerulonephritis was fairly common at that time, as was minimal change nephrotic syndrome. Our practice was primarily an out-patient one, although acute patients were often hospitalized, frequently for long periods. in large part, those children with chronic, progressive diseases succumbed.

Who was your inspiration and who were the leaders in the field that you knew of, where were they, and what was their expertise?

In addition, Dr. Stan Hellerstein was the Pediatric Nephrologist at Children's Mercy Hospital in KC, MO. He, too, had studied with Dr. Darrow. Those whom I admired from afar were the bulwarks of Pediatric Nephrology—Clark West, Mac Holliday, Henry Barnett and Chet Edelmann, and Ellen Lieberman, etc. Renee Habib was the best known renal pathologist in the "world." At Washington University, Dr. John Kissane was the renal pathologist. He was particularly interested in cystic diseases of the kidney and that attracted me.

What were the major issues confronting the field of pediatric nephrology and the practicalities of research (clinical or experimental) in these areas and how has treatment changed over time?

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Too few people choosing PN; this seems still to be the case. Dialysis equipment was not yet adapted to pediatric use, especially for small children. Through the years, both hemo- and peritoneal dialysis techniques and equipment have been greatly improved.

Renal pathology techniques included light and electron microscopy, and there were immunofluorescent techniques, but all was pretty elementary. Many more techniques are available today. Laboratory research was limited primarily to whole animal studies—a black box approach. Micropuncture techniques ushered in more knowledge about single nephron function. Today more techniques have elucidated the physiology and pathophysiology of individual segments of nephrons.

Clinical research was hampered by too few patients with any one disease. Today multicenter trials have increased knowledge of the effects of medications and allowed some identification of etiologies and pathogenesis of diseases. Clinical research today, as well as some bench research, has led to much better immunosuppressive approaches to transplantation.

When did the differences between pediatric and adult nephrology first appear and why do you believe that the field developed?

I think the field developed because of a growth in the knowledge of general pediatrics and the acknowledgement that diseases of the kidney were too complex for general pediatricians to treat. Adult nephrologists did care for kids for a while, and I remember an IPNA meeting about 1980 in which a European adult nephrologist told me he saw no reason for pediatric nephrology to be a specialty! However, an increasing awareness of the effects of growth and development on pediatric diseases, and the effects of those diseases on growth and development occurred. Further, we all began to acknowledge that care of the pediatric patient demanded care of the whole family. We began to learn more about how to talk to the patient and how to talk to families—and that they were not the same.

Can you describe some "firsts" or "new developments" that you developed or adopted/used in clinical practice.

Alan Robson and I first reported the use of intravenous methylprednisolone on the treatment of rapidly progressive glomerulonephritis, and we continued to use that treatment on severe glomerulonephritis was. Alan and I also perfected the technique of inulin clearances without urine collection in children. We used that technique for many years. I think it has largely been supplanted by nuclear medicine techniques, but it served us well for a long time.

My collaboration with Philip Needleman studying the renal effects of atrial natriuretic factor led to considerable knowledge about that peptide

(and its newer name: brain natriuretic peptide) but to date, it has not been useful in clinical medicine to any extent. It has, however, been helpful in explaining the pathophysiology of some diseases.

What would you like to tell the current and future pediatric nephrologist?

Pediatric Nephrology is a wonderfully interesting field. It requires passion, creativity, compassion, and not the least of all, great energy.