

## Healthcare Engineering Lecture Series

**Title:** Hemodialysis Principles and Clinical Applications

**Speaker:** Sarah Torregiani, MD, Nephrologist, Engineer, Consultant, Physician Advisory Services, Philadelphia, PA

**Education:**

- Fellowship, Nephrology, University of Pennsylvania Health System
- MD, Thomas Jefferson University
- MS, Biomedical Engineering, Rensselaer Polytechnic Institute
- BS, Electrical Engineering, Lehigh University

**Qualifications:**

- 15 years of clinical experience treating kidney failure patients
- Medical director of hemodialysis unit
- Appeals author with a leading revenue cycle company in the healthcare payment space
- Director of the Christiana Care Nephrology fellowship program

**Time:** April 8, 2021, 4:00 – 5:20 pm

**Abstract:**

Kidney failure affects almost 750,000 people per year in the United States, disproportionately affecting minority and low-income patients. After one year of treatment, those on dialysis have a 15-20% mortality rate, with a 5-year survival rate of under 50%. Persons who receive transplants have a survival rate of about 80% after 5 years. Technological advancements have the potential to extend the quality life and survival of kidney failure patients. This lecture will provide an overview of kidney physiology and renal failure followed by a discussion of the technology involved in treatment with dialysis. The dialysis system will be reviewed including pump, filter, fluids and monitoring systems. Blood access systems and water treatment will be reviewed. Urea kinetic modelling will be introduced. We will also discuss technology in development such as the wearable artificial kidney and implantable artificial kidney.

**Lecturer Biography:**

Sarah Salwen Torregiani, M.D. is a clinical nephrologist who worked in private practice for 15 years. She currently works as an appeals author with a leading revenue cycle company in the healthcare payment space. While in practice she was medical director of a hemodialysis unit and assistant director of the Christiana Care Nephrology fellowship program. Prior to medical training she completed an M.S. in Biomedical Engineering at Rensselaer Polytechnic Institute with a focus on cellular mechanics and a B.S. in Electrical Engineering at Lehigh University.