**Evaluation of Sodium Deposition in Soft Tissues of Patients with Kidney Disease and its Association with Patient Symptoms**

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### Background

- Salt increases the amount of fluid intake → requiring high ultrafiltration rates during dialysis → hemodynamic instability → reduced blood supply → death
- Salt causes hypertension and inflammation

**Sodium is:**
- Arguably the most relevant toxin in kidney failure
- Stored in body tissues attached to negatively-charged proteins
- Regulated by the immune and the lymphatic system

### Study Aim

- **To measure body sodium storage with Magnetic Resonance Imaging (MRI) in chronic kidney disease and hemodialysis patients**
- **To explore the relationship between sodium storage and symptoms: itching, fatigue, restless legs**

### Hypothesis

- Sodium accumulates in body tissues in chronic hemodialysis patients
- Sodium accumulation drives symptoms (fatigue, itch, restless legs)
- Sodium also may drive asthma and shortness of breath

### Progress

- Chronic kidney disease patients store sodium → MRI scanner to listen to salt instead of water
- Special coil designed to image sodium
- Scanning children to see if sodium accumulation is due to multiple disorders or failing kidneys

### 2018-2020 PROJECT ROADMAP

**Now**

- The current study compares sodium in body tissues of children and adults
- Begun our patient engagement initiative. We have recruited patients
- Examining the causes of shortness of breath in the hemodialysis population by measuring lung structure and function

**Next**

- Explore sodium removal with MRI during hemodialysis
- Importance of shortness of breath
- Plan patient partner involvement in the upcoming study

**Later**

- Explore outcomes (survival, hospitalizations, morbidity, quality of life) related to long-term sodium storage in chronic kidney disease/hemodialysis patients

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