

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

