

# RenAllCare

*Affordable and Sustainable Dialysis for ALL*

## Context

Kidney disease refers to the loss of kidney function, with two main types: Acute Kidney Injury (AKI) and Chronic Kidney Disease (CKD). AKI is a sudden, often reversible condition caused by illness, injury, dehydration or infections while CKD is a slow, irreversible decline in kidney function, often due to diabetes or hypertension. CKD affects around 10% of the global population (850+ million people), and its global impact is rising, projected to be the 5th leading cause of death by 2040. AKI also affects millions annually, increasing the risk of death, cardiovascular events, and progression to CKD. Both conditions represent a significant global health burden, particularly in vulnerable regions like Sub-Saharan Africa.

Three main Renal Replacement Treatments (RRT) exist: kidney transplant, hemodialysis, and peritoneal dialysis. Hemodialysis, the most common RRT, involves circulating the patient's blood through a dialyzer, which acts as an interface between the blood and a fluid called dialysate. Metabolic waste products in the blood pass through the dialyzer's membrane and are carried away by the dialysate, which is then discarded. A typical dialysis session requires approximately 120 liters of dialysate, primarily composed of ultrapure water precisely mixed with sodium bicarbonate and acetic acid (5-10L/session) to mimic certain chemical properties of blood. Usually a patient is treated with three sessions, of 4 hours, per week.

## Problem

Despite the high prevalence of CKD, access to dialysis is severely limited in low- and middle-income countries (LMICs). The cost of dialysis is prohibitively high, often exceeding the median monthly income, especially in regions like West Africa, forcing patients to pay out-of-pocket. Many start treatment but abandon it due to financial ruin, affecting entire families.

High costs stem from the dependency on consumables (e.g., dialyzers, acetic acid), often monopolized by dialysis machine manufacturers, and from complex supply chains. Additionally, dialysis requires large volumes of ultrapure water and consequent infrastructures to produce it, which restricts it to urban centers. Rural populations face major barriers, either lack of access or unaffordable relocation and transport costs, often not covered by insurance.

## Our Innovation

We are developing a new-generation dialysis machine which uses a disposable sorbent filter to recycle dialysate, drastically cutting water use (from 120 L to 5 L) and acetic acid (from 10 L to 500 mL) per session. A smart control system is also being integrated to simplify operation and reduce staffing needs.

## Your Job

Develop a sustainable strategy for deploying this technology to expand access and create meaningful impact. The initial deployment region will be Senegal.