

Navify Kidney Companion

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Chronic Kidney Disease (CKD)

A significant and growing global health challenge that places major burden on patients and healthcare systems

What is chronic kidney disease?



Kidneys gradually **lose their function**



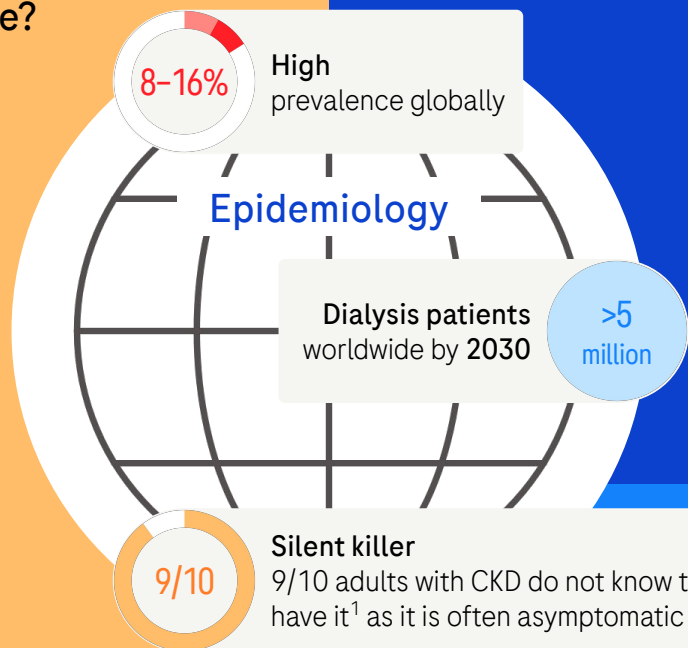
Waste builds up in the body



Symptoms can include fatigue, frequent urination, nausea, headaches, muscle cramps



Late-stage disease can **require dialysis**



Burden

3×
per week



Dialysis for late-stage patient

\$1
trillion



Dialysis costs by 2030²



Roche categorized CKD as a **signature disease** with the highest number of **unmet medical needs**³

Urgent unmet medical needs

Opportunities to improve patient care and optimize efficiency in the hospital



Early diagnosis

Early detection of CKD allows intervention before invasive and expensive treatment such as dialysis is required



CKD diagnosis can take **>1000 days**



Increased risk of **serious complications**



Increased **need for dialysis**



Optimal management of the fast progressing patients

Identifying those most at risk of disease progression **allows effective prioritization of treatment and resources**



Insufficient time available to focus on patients



Lacking the data to make confident decisions



Difficult to identify fast progressors in the patient population

Improve CKD care pathways with a powerful ML algorithm

Trained on large RWD datasets to identify fast progressors across all disease stages



Traditional care pathway



Fast progressing patients may be missed with a manual method

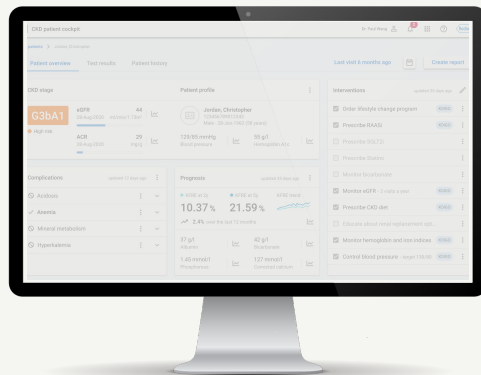


Unidentified fast progressors are at risk of developing complications



Increased need for costly and invasive treatments such as dialysis

CKD InSight



CKD InSight approach



Algorithm-driven triage identifies high-risk fast progressing patients early



Fast progressors can be given aggressive therapy to divert course of disease



>50% of slow progressors can be referred back to primary care



Inefficient use of clinician time and increased healthcare costs



Identify patients at risk of fast progression early through smart digital insights

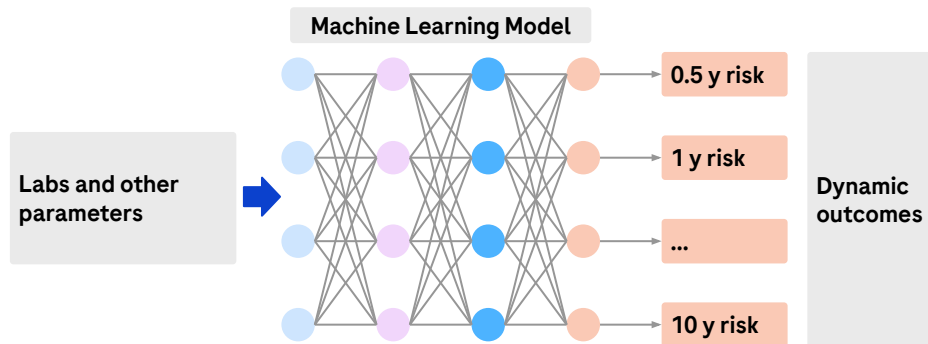


Reduced burden on clinicians and decreased cost to healthcare system

RisKD Algorithm Overview

RisKD Algo: Powerful, nonlinear machine learning method utilizing the valuable information available in very large EHR datasets to identify fast progressing CKD patients across all disease stages and for different time horizons

- Early stage CKD (1-2) => 0.89 AUC at 5 years where KFRE not applicable*
- Late stage CKD (3-5), => 0.96 AUC vs 0.94 AUC for KFRE at 5 years*



* Initial results of ongoing evaluation

Ongoing and Future Work

Detailed evaluation on various aspects important for the practical application using different datasets

Assessment of impact in practice

Publication

Data Science Team: Nicolas Sillitoe, Christian Wohlfart, Martin Klammer

Doing now what patients need next