

# Chronic Kidney Disease

Identifying and Engaging CKD Patients  
with Intermountain Healthcare

## MDCLONE USE CASE

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## Overview

Kidney disease is the ninth leading cause of death in the United States. About 37 million US adults are estimated to have chronic kidney disease (CKD) and most are undiagnosed. Every 24 hours, about 340 people begin dialysis treatment for kidney failure.

Patients with CKD are at far greater risk for cardiovascular disease and death than those without. CKD Stage G2 patients have a 51 percent greater risk of death from cardiovascular disease (CVD) than non-CKD patients. CKD Stage G3 patients are more likely to die from CVD than progress to dialysis.

Those with CKD incur increased hospitalization and medical expenditure costs. Patients over age 65 with CKD incur costs of greater than \$23,000 (PPPY) compared with \$8,000 for patients without end-stage renal disease (ESRD), CKD, diabetes, or congestive heart failure. Medicare beneficiaries with CKD and ESRD cost the healthcare system more than \$100 billion in 2017.

Seventy percent of late-stage renal disease patients at Intermountain Healthcare were “crashing” into dialysis unaware of their disease — a worst-case scenario for both patients and the bottom line. Intermountain set out to reduce hospitalizations and prevent unnecessary morbidity and mortality by identifying and engaging patients in early stages of CKD. Early detection of progressive kidney disease is important because therapies such as angiotensin-converting enzyme (ACE) inhibitors or ARBs (angiotensin II receptor blockers) can slow the rate of progression in many patients.

## Challenges

Intermountain Healthcare needed a scalable platform to be able to manage and quantify (from a cost perspective) the many disease processes associated with CKD. The team needed a solution that could identify at-risk patients, utilize both structured and unstructured data elements to implement a course of action or care transformation, and lastly, show potential ROI by enrolling identified patients into a kidney care transformation plan. The solution needed to be able to extract data from demographics, medical records, labs, medication history, procedure and surgery history, radiology, and more.

## Key Questions Answered

- Accurately identify acute kidney injury (AKI) patients, and certify CKD patients by stage
- Determine risk factors to stage progression
- Identify high-risk patients missing follow-up tests and/or those that have not been referred to a nephrologist

- Establish clinical outcome by number of encounters, prove the hypothesis that more interactions with the patient correlates to better outcomes
- Identify patients with elevated blood pressure (>140/90 when albumin-to-creatinine, or ACR, is 300)
- Identify candidates for ACE inhibitor / ARB medications (when ACR >300 or ACR >30 in diabetic patients)

## Results to Date

As part of a comprehensive care management system for CKD, a care process model (CPM) was developed by a multidisciplinary team of clinical experts from SelectHealth and Intermountain Healthcare. The CPM recommends screening, diagnosis, and treatment processes to improve care and outcomes for patients with CKD.

Intermountain combined data from Cerner, SelectHealth claims, external labs, and three legacy platforms. More than 7 million patients were uploaded to MDClone's longitudinally structured data lake.

Clinicians using MDClone's self-service platform identified more than 80,000 patients with CKD, most of whom were unaware they had a problem. Two thousand late-stage CKD patients were identified for proactive outreach. In one year 1,700 people were identified and prioritized for engagement to manage to their gaps in care and comorbidities in order to avoid progression of the disease and, as a result, greater than 50% of candidates were educated and placed on a home dialysis modality.

Increased patient volume at the Intermountain Kidney Clinic brings welcome additional revenue to the organization, and the costs savings are also substantial. Home dialysis not only rapidly returns patients to productive living, it costs approximately \$70,000 less per member per year. Similar savings are achieved by providing a controlled start to dialysis as opposed to unexpected renal failure. Kidney transplant procedures were found to be \$50,000 less expensive when performed early enough, leading to a pre-emptive kidney transplant program.

Identification and early engagement of CKD patients has enabled greater frequency of care in an average of eight encounters per patient, targets achieved on addressing gaps in care, all patients seen in stage G3A and G3B avoiding dialysis and 86% avoidance of hospitalizations, resulting in a savings to the organization in the range of \$6 million on its one-year anniversary. The early success of Intermountain's CKD program has led to other initiatives targeting hypertension management, coronary artery disease, diabetes, hyperlipidemia, and opioids in surgery, all of which are paying significant dividends.

Intermountain determined they needed to:

- Prioritize and reach out to high-risk patients to dismiss or establish CKD diagnosis and engage PCPs in treatment and follow-up plan
- Determine active gaps in care, what percentage of patients have CKD and are not on the care pathway
- Determine how many deteriorated rapidly within 3 years
- Build a predictive model to identify quickly deteriorating patients

## About the Technology

The MDClone ADAMS Platform is a self-service data environment empowering users to organize and access information quickly, sparking ideas and insights that power research, drive better patient outcomes, and create impactful healthcare innovation.

### **Data are everywhere. Insights are hard to find.**

Navigating data in a health system can be challenging, expensive, and time consuming. Answering simple questions can take months or longer due to siloed systems, complex data models, unstructured data, privacy regulations, and limited support from IT and data teams.

With MDClone's unique underlying technology, healthcare organizations can leverage ideas from across the entire ecosystem, overcoming common obstacles that hinder research, innovation, and collaboration.

### **Fast Access to Dynamic Data Exploration, Analysis, and Action**

The rapid cycle of idea-to-data-to-insight enables healthcare organizations to ask for information, discover insights, act on new understandings, measure performance, and share ideas around the world to improve patient health and outcomes.

- Independent self-service discovery
- Interact with all patient data from any source
- Leverage structureless data
- Collaborate freely using synthetic data

Learn more at [mdclone.com](http://mdclone.com)

## About Intermountain Healthcare

Intermountain Healthcare is a Utah-based not-for-profit system of 24 hospitals, 215 clinics, a medical group with some 2,500 employed physicians and advanced care practitioners, a health insurance company called SelectHealth, and other health services. Intermountain is widely recognized as a leader in transforming healthcare through evidence-based best practices, high quality, and sustainable costs.

[intermountainhealthcare.org](http://intermountainhealthcare.org)





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