

Lipid Panel Clinic

Overcoming Unstructured Data Challenges
with Self-Service Data Queries and Analysis

MDCLONE USE CASE

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Overview

Atherosclerotic cardiovascular disease, in which cholesterol plaque builds up in arterial walls and obstructs blood flow, is estimated to cost more than \$800 billion worldwide. One of the most common inherited conditions affecting the heart and blood vessels is familial hypercholesterolemia, found in 1 in 250 individuals.

Intermountain Healthcare's insurance plan, SelectHealth, covers more than 1 million people, and in this population, the potential familial hypercholesterolemia population is approximately 4,000. Direct incremental costs for familial hypercholesterolemia can range from \$17,000 to \$43,000 in the first year, driven primarily by inpatient costs for hospitalization and interventions. The estimated total opportunity if early detection and treatment occurs could be greater than \$100 million.

Familial hypercholesterolemia can require early specific therapies to lower risk in families, as demonstrated in a 20-year study of children with the disease by Luirink et al., in NEJM. Currently, half of men with the disease that are untreated will have a heart attack, an 8-fold increase from the general population. Additionally, women with the disease have a 6-fold increase in risk of heart attack.

The opportunity to impact familial hypercholesterolemia is amplified once an "index" patient is identified, as this is an autosomal dominant mutation with 50% inheritance. For example, a positive mother of six children may identify that three of the six children have the mutation as well. If a clinician can identify these individuals, they may be able to treat them and reduce long term risks to the family.

Challenges

There is a significant number of individuals below the age of 40 who remain at high cardiovascular risk based on elevated LDL cholesterol (e.g., ≥ 160 mg/dL) and may have unidentified familial hypercholesterolemia (whether molecular positive or polygenic risk). There is evidence that individuals younger than 40 years of age with an LDL cholesterol level ≥ 160 mg/dL are more likely to have one of the familial hypercholesterolemia mutations.

A team at Intermountain sought to compare the risk of major adverse cardiac events (all-cause death, myocardial infarction, ischemic stroke, and heart failure hospitalization) in those less than age 40, comparing LDL cholesterol ≥ 160 mg/dL contemporary controls to patients with an LDL cholesterol < 160 .

Without a platform like MDClone, generating a list of patients that met the inclusion criteria was challenging due to the amount of unstructured data clinicians needed to traverse. The team needed a tool that could convert unstructured free text to a structured form so that it could be queried and then analyzed. It help them pare down their data set to home in on the patients who most required care.

Key Questions

- + How can clinicians leverage guidelines that are already in place for lipid management?
- + What are best practices for diagnosing and treating familial hypercholesterolemia?
- + What is the magnitude of the underlying health risk and the potential for future poor health outcomes?

Results to Date

Using the MDClone ADAMS platform, Intermountain was able to create a session that generates a list of patients who qualify for additional lipid clinic assistance. The initial patient population is focused on cardiac care at Intermountain Medical Center (Murray, UT). Once the list is generated, a lipid clinic resource calls either the patient or their primary care provider and asks if the patient would like to be included in the clinic. The patient list is updated with the patient's decision, and if the patient joins the clinic, the patient's progress is then monitored.

Self-service data access has helped clinicians identify and diagnose more genetic familial hypercholesterolemia in the past 2 years than the prior 15 years combined. More than 1,700 patients have been identified and outreach is ongoing.

The team was able to prove that there is an associated risk with baseline characteristics, such as $LDL \geq 160$, for the younger population. They also determined the prevalence of the population that is predisposed from a health or wellness perspective versus heredity. They thus demonstrated that earlier intervention is needed for patients to avoid early myocardial infarction or major adverse cardiac event outcomes.

Conclusion

The Intermountain team has been able to provide evidence based therapy for every day patient care, including a trusted probability of adverse events by risk factors, by leveraging community based data previously locked away in unstructured text.

With the results from the study, Intermountain can now risk stratify patients across a broader western states geography and begin proactive therapies, such as high-intensity statins, earlier in the progression of the disease. Importantly, this also reduces adverse events and leads to lower costs and higher quality of life for patients.

The team also found that testing for familial hypercholesterolemia in traditionally large Utah families has high value. This has prompted efforts to improve implementation of

therapies and behaviors that will reduce healthcare costs. Once fully realized, the estimated savings from reduced hospitalizations could be \$2 million annually.

Leveraging the success of this use case, additional teams at Intermountain would like to establish clinics/outreach programs for other diseases.

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.

About Intermountain Healthcare

Headquartered in Utah with locations in eight states and additional operations across the western U.S., Intermountain Healthcare is a nonprofit system of 33 hospitals, 385 clinics, medical groups with some 3,900 employed physicians and advanced care providers, a health plans division called SelectHealth with more than one million members, and other health services. Helping people live the healthiest lives possible, Intermountain is committed to improving community health and is widely recognized as a leader in transforming healthcare by using evidence-based best practices to consistently deliver high-quality outcomes at sustainable costs.

Learn more at intermountainhealthcare.org.



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Transform care.**

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