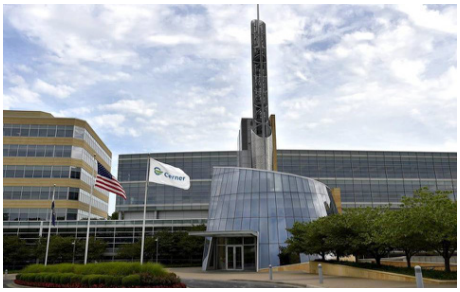
Case study: Healthe Clinic Genomics Study

Healthe CLINIC

At a glance

- Founded in 1979
- Headquarters: North Kansas City, Missouri
- Over 28,000 associates worldwide
- Five on-site clinics, pharmacies and fitness centers
- 34,600+ covered U.S. lives
- Nine-time winner of "Best Employers for Healthy Lifestyles" award from the National Business Group on Health



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Cerner shows genetic testing combined with health coaching lowers risk factors

Introduction

Cerner is a global health care company with over 28,000 associates worldwide. In addition to over 40 employer-sponsored on-site health centers operated by Cerner nationally, Cerner operates five on-site medical home clinics (or, "Healthe Clinics") for its own associates; four in Kansas City and one in Bangalore, India. As part of its mission, Cerner focuses on improving the health of communities, with Cerner associates as the first community.

From 2016-2017, the Healthe Clinic completed a genomic research study evaluating the effectiveness of genomic and biometric data and its impact on lifestyle factors. The purpose of the study was to enhance a participant's involvement in his or her own health and care by leveraging genetic data to improve lifestyle habits and prevent future chronic illnesses.

Know the population

A person's health is influenced by family history and shared environmental factors. Learning about genomic conditions help provide individualized approaches to disease prevention, intervention and treatment.

86% of the nation's health care costs are spent on treating people with chronic diseases **that are preventable**.[1]

Genomic factors play a role in **9 of the 10** leading causes of death in the United States[2] *(heart disease, cancer and diabetes)*

Engage members

The Healthe Clinic genomic research study focused not only on personalized medicine, but *efficient* medicine, to more accurately predict what lifestyle changes would *best* improve the participant's health in the least amount of time.

Participants had the opportunity to meet with a health or wellness coach or registered dietitian (RD), where they were given recommendations such as weight management, improving A1c and lipids. Recommendations were derived from evidence-based practices and enhanced based on an individual's DNA make-up.

In the study, participants received a personalized care plan based on their genomic risk factors and biometric data. Genomic data came from the participant's 23andMe® results and was never shared outside of the Healthe Clinic's care team. Example recommendations included a low-fat diet, moderate intensity exercise, a folate supplement, or early screening for osteoporosis. As a result, the participant learned to manage weight better on a low-fat diet, or that a B-6 supplement could help to better manage the risk of depression.

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Methodology

Study participants were Healthe Clinic members and under the care of a primary care provider and care team including an RN and health or wellness coach, and in many cases, an RD. Participants voluntarily provided 23andMe® genomic data. Genomic data was never shared with the participants' employer. The pilot and prototype models that produced the risk analysis were entirely based on single nucleotide polymorphism (SNP) genotype information related to overweight/obesity, type 2 diabetes, metabolic syndrome, depression, and/or osteoporosis.

Information for the math models and the biometric data was stripped of other personal identifiers (such as name, address, date of birth) before sharing with a Cerner Math Physician Executive. This raw data was interpreted by the co-investigator and evaluated along with the member's lab data, biometrics, survey scores and PHQ-9 scores.

The Healthe Clinic genomics team presented the results to the participants and provided health coaching. Health and wellness coaches and RDs used motivational interviewing to guide members based on their readiness to change. Members received personalized recommendations based on their genomic data and current health status and were encouraged to set goals. All information was captured and recorded in the member's Electronic Health Record (EHR).

Over a 12-month period:

- Biometric screenings, lab data, PHQ-9 performed three times
- Lifestyle/behavioral questionnaires performed at initial and 12 months
- Participants choosing additional sessions with the health or wellness coach or RD met every four to eight weeks, depending on his or her health goals

Single nucleotide polymorphism (SNP)
Most common type of genetic variation among people

- Each SNP represents a difference in a single DNA building block, called a nucleotide
- Roughly 10 million SNPs in the human genome
- Pilot used only phenotypic information (age, weight, BMI, gender, Vitamin D level, folate level, etc.) for assessing:
  - whether or not the conditions that were the subject of the study were present, either at the time of screening, consenting, and enrollment or during the follow-up period of the study
  - whether or not the coaching or prescribed intervention, if clinically indicated, was clinically beneficial in the pilot follow-up
- Four genomics based classification models developed off of ~200 associates' 23andMe® SNP genotypes and clinical data
  - Models developed prior to the establishment of Cerner Math
  - Part of Healthe Clinic's clinical trial with actionable nutrigenomics

Assessed genomic and biometric disease risk factors

- Overweight/Obesity
- Type 2 diabetes
- Metabolic syndrome
- Depression
- Osteoporosis

Manage outcomes

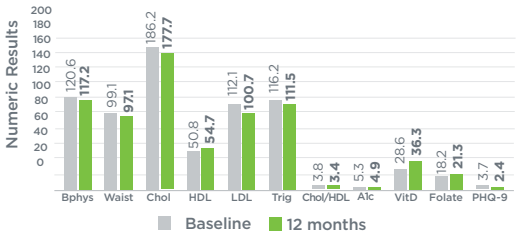
Overall, strong relationship was seen between the genomics markers measured and composite outcomes: weight (BMI), type 2 diabetes (HbA1c), depression (PHQ-9, folate), osteoporosis (Vit D), survey score.

The strong relationship in this meaure indicates actionability of guidance provided by the genomics data and predictive math models for the five areas studied. Coaching and interventions by the clinic and adherence by study participants yielded beneficial improvements for most. A Number Needed to Treat (NNT) under 10 is highly effective. This study's NNT was 2, indicating the need to treat only two people to improve 1.

The Healthe Clinics are committed to using genomic data to enhance personalized health care for its members. The clinics are focused on strategic partnerships with clients that will build on the success of this pilot and scale pharmacogenomics and nutrigenomics for all associates. Cerner will play an important role in shaping health care in the future. Genomics can contribute to improving health and preventing disease.

Results for phenotype biomarkers

Cohort overall showed **modest improvements** in all measured variables



Improvements most pronounced in participants whose initial survey score was **below the median**.

"At Cerner, we want to empower our associates to obtain their optimal level of health. With the results of this study, we are better equipped to help members receive more personalized health and care to improve their lives."

-David Nill, MD.
VP, Chief Medical Officer,
Healthe at Cerner

[1] Centers for Disease Control and Prevention (CDC)

[2] Office of Disease Prevention and Health Promotion. 2020 Topics and Objectives – Genomics [Internet] https://www.healthypeople.gov/2020/topics-objectives/topic/genomics

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