



Improving the
health care experience
**with data
and analytics**

Improving the health care experience with data and analytics

For over a decade, the Institute for Healthcare Improvement (IHI) has provided a framework built on a better patient experience, lower costs and improved population health.

However, the question remains, "How do we provide health care that is effective and efficient and still deliver better outcomes?"

Of course, there is no one solution that will cure all the challenges in health care. So let's start where we can potentially make significant impact with the right health care intelligence.

20%

Health care spending, led by chronic disease, is approaching 20% of all the U.S. gross domestic product (GDP).¹

1. The cost of chronic diseases in the U.S., Milken Institute, 2018.



HOME

Impacting cost and quality

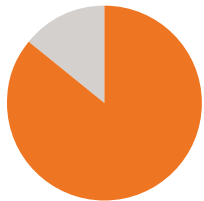
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Explore how key areas of the health care experience can be improved with data, advanced analytics and health care expertise — critical elements to control costs and help improve outcomes for each individual.

The data and analytics opportunity

Tackling the high cost of chronic diseases

A chronic condition is one that lasts a year or more and requires ongoing medical attention or limits activities of daily living. Chronic conditions are a key contributor to rising costs and increased health complications, which impact clinical outcomes.



Chronic diseases account for the majority of health care costs. For the U.S., that translates to **86% of all medical costs.**²

One in four Americans has multiple chronic conditions. The number rises to three in four Americans age 65 and older.³

As the population continues to age, conditions such as heart disease, diabetes and cancer, which are among the leading causes of death and disability, hold some of the greatest potential to reduce costs and improve outcomes.

2. Buttorff C, Ruder T, Bauman M. *Multiple chronic conditions in the United States*, Santa Monica, CA: Rand Corp.; 2017.

3. National Center for Chronic Disease Prevention and Health Promotion. Multiple chronic conditions. <https://www.cdc.gov/chronicdisease/about/multiple-chronic.htm>. Accessed May 27, 2019.

4. Berwick DM, et al. Eliminating waste in U.S. health care. *JAMA*. 2012;307:1513–16.

Reducing unwarranted clinical variation

Unwarranted clinical variation is the difference in care that cannot be explained by type or severity of illness or patient preference.

This variation is one of the root causes of preventable harm and poor outcomes, and **it's responsible for over 30% of health care costs.**⁴

Reducing clinical variation provides a significant opportunity to take costs out of the system and improve clinical outcomes.

Cedars-Sinai and Optum® Advisory Services recently published the results of a study in the *American Journal of Managed Care* based on findings from 26,424 inpatient visits. The results showed that embedding a real-time clinical decision support system into the electronic health record (EHR) at Cedars-Sinai was associated with a statistically significant improvement in both 30-day readmissions and the probability of complications, compared with encounters without clinical decision support adherence.



COST SAVINGS OF ALMOST

\$1,000 PER PATIENT

with embedded clinical decision support in EHR



DATA ANALYTICS
OPPORTUNITY

 PHARMACY CARE AND MEDICATION ADHERENCE



Meet Jason

AGE 60 YEARS OLD • MANUFACTURING PLANT SUPERVISOR

Jason has severe coronary heart disease and rheumatoid arthritis in his knees, which he manages with a specialty medication. He was recently discharged from the hospital, where he had a coronary artery bypass graft.

This story is based on a real-life example. For privacy, individual names have been changed.





Getting to the heart of the problem

Cardiovascular disease costs are expected to exceed \$1 trillion by 2035. If left unchecked, the economic and health burden will continue to escalate.



\$161B

in estimated losses makes cardiovascular disease the single largest source of lost productivity annually.⁵



610K

people die each year from heart disease.⁶



20%

of heart failure patients are readmitted within 30 days, and up to 50% within 6 months.⁷

5. CDC Foundation. Heart disease and stroke cost America nearly \$1 billion a day in medical costs, lost productivity. <https://www.cdcfoundation.org/pr/2015/heart-disease-and-stroke-cost-america-nearly-1-billion-day-medical-costs-lost-productivity>. Published April 29, 2015.

6. Centers for Disease Control and Prevention (CDC). Heart disease facts. <https://www.cdc.gov/heartdisease/facts.htm>. Accessed April 8, 2019.

7. O'Connor CM. High heart failure readmission rates: Is it the health system's fault? *JACC: Heart Failure*. May 2017. <http://heartfailure.onlinejacc.org/content/5/5/393>.





PHARMACY CARE AND MEDICATION ADHERENCE

Returning home

JASON RECEIVES AN IMPORTANT CALL

Jason is eligible for OptumRx pharmacy benefits through his health insurance plan. Because of this, within 24 hours, Brandon, an OptumRx specialty pharmacist, receives an automatic notice alerting him that Jason has been discharged from the hospital.

Brandon immediately schedules a formal medication review with Jason, which is a proven best practice for quality medical care.⁸

Unlike most pharmacy benefit managers, who have access to only pharmacy claims data, Brandon can access Jason's medical, lab and pharmacy claims information (with Jason's permission). Without the clinical medical information, it can take weeks before a health plan member's status is updated in the pharmacy record.

When Brandon talks with Jason, he confirms Jason has stopped taking his rheumatoid arthritis medication at his doctor's order because it can suppress his immune system. But Jason lets Brandon know he's concerned about pain.

8. The Joint Commission. National Patient Safety Goals. NPSG.03.06.01: Maintain and communicate accurate patient medication information. Effective January 2019.

9. Kilcup M, Schultz DE, Wilson B. Postdischarge pharmacist medication reconciliation: Impact on readmission rates and financial savings. *JAPhA*. Jan/Feb 2013. <https://www.semanticscholar.org/paper/Postdischarge-pharmacist-medication-reconciliation%3A-Kilcup-Schultz/6a10407ea6ed5ad19102f2cf4f91304fdb47a4d>.



Studies show that **up to 71% of adverse health events** experienced by patients discharged from the hospital are drug related.⁹

The specialty pharmacist also learned about Jason's in-home situation — that he was managing his own care and feeling overwhelmed. The pharmacist laid out a plan:

1. **Call the physician** and discuss alternative ways to manage Jason's arthritis pain.
2. **Contact an OptumHealth case manager** about in-home care and health counseling.
3. **Let Jason know that he can call 24/7 with questions** and get options, whether that means lower-cost drugs or tips for making sure he takes his medication as prescribed.



 PHARMACY CARE AND MEDICATION ADHERENCE

Health impact

Every interaction is an opportunity to help people like Jason better manage their medications, avoid post-surgery complications, lower costs and feel better again.

In addition, when a pharmacy care professional makes an initial outreach, it's more likely the individual will engage in a relationship and call with more routine questions later on. **The result: valuable opportunities to engage someone more frequently in their health.**

Having a combined view of Jason's health care data allows Brandon and the entire care team, medical and pharmacy, to help Jason make the best choices including:

- Avoiding a serious drug interaction
- Managing his rheumatoid arthritis
- Preventing a visit to the emergency room shortly after surgery





PHARMACY CARE AND MEDICATION ADHERENCE

How data, analytics and health care expertise enable a better health care experience

- 1 **Connects data of traditional pharmacy coverage with data from non-pharmacy services** to provide a more holistic picture of the care received — a strong foundation for better outcomes.
- 2 **Combines data with evidence-based medical practice guidelines** to give a clear view of conditions and potential lifestyle changes.
- 3 **Uses artificial intelligence (AI) to power predictive analytics** that help provide members with several options for the best course of action. Options include getting appropriate treatment, making healthy lifestyle modifications, adhering to medications and seeing appropriate care providers.

OVERALL RESULTS

33% lower readmissions
at 60 days post-discharge¹⁰

Up to **\$25** per member per month
in medical cost savings depending on the
degree of synchronization¹⁰



Predictions are so accurate that today members will accept the engagement option almost 60% of the time.*

¹⁰. Optum Enterprise Analytics, 2017 & 2018.

*OptumRx Analysis



Meet Susan

IN HER 40s • PREGNANT WITH TWINS

After six in vitro fertilization (IVF) treatments, Susan is pregnant with twins and has pre-existing type 2 diabetes. Knowing she's at high risk, she turns to Rachel Humphrey, MD, a maternal-fetal medicine specialist. Dr. Humphrey estimates a physician's office might take a week to schedule a patient like Susan given normal workloads and available resources.



This story is based on a real-life example.





Delivering the right data at critical moments

Every 21 seconds someone in the U.S. is diagnosed with diabetes. Care for people with diagnosed diabetes accounts for 1 in 4 health care dollars in the U.S.¹¹



90–95%

of Americans with diabetes have type 2 diabetes.¹²



50%

of women with gestational diabetes will go on to develop type 2 diabetes.¹³



\$636M

in increased medical costs is due to mothers with gestational diabetes based on ~180,000 delivered newborns.¹⁴

11. American Diabetes Association: *Diabetes Care*. Economic costs of diabetes in the U.S. in 2017. 2018; 41(5):917-928. doi: 10.2337/dci18-0007. Epub 2018 Mar 22.

12. CDC. Type 2 diabetes. <https://www.cdc.gov/diabetes/basics/type2.html>. Accessed May 7, 2019.

13. CDC. Gestational diabetes. <https://www.cdc.gov/diabetes/basics/gestational.html>. Accessed April 15, 2019.

14. American Diabetes Association: *Diabetes Care*. The economic burden of elevated blood glucose levels in 2012: Diagnosed and undiagnosed diabetes, gestational diabetes mellitus and prediabetes. September 2014.





COMPLEX CONDITION MANAGEMENT

Fast action

SUSAN CONNECTS WITH AN OPTUM NURSE

Knowing prompt care is essential for Susan, Dr. Humphrey works with a dedicated Optum nurse, who immediately contacts Susan to begin education and establish daily communications.

The nurse — a Certified Diabetes Educator (CDE) who's part of an Optum diabetes specialty team — keeps Dr. Humphrey well informed. With Optum, the doctor is able to view information in the EMR about Susan's medications, dosage amounts and time-of-day blood sugar levels.

Medications are tracked in the specialty team's system, and an easy-to-interpret report is sent regularly to Dr. Humphrey. The system prioritizes and color-codes critical blood sugar levels. Insulin dosages are calculated using evidence-based research, and a proprietary database of gestational diabetes patients through the Optum program helps refine and inform protocols.



With constant monitoring and support, Susan keeps her diabetes under control. She is able to easily record her personal information by one of two methods: secure website or automated phone line. **But the best part of this real-life story is that Susan delivers two healthy babies without complications.**





Health impact

Uncontrolled diabetes during pregnancy can result in babies who are born early, require a cesarean section due to their size and have respiratory distress.

Mothers are also at risk of hypertension. The traditional scheduling delay to see a specialist — plus an additional two weeks to complete diabetes education — could have meant suboptimal treatment for 5–10% of Susan's pregnancy.

Instead, immediate contact and ongoing interaction resulted in a healthy outcome for mom and babies.





COMPLEX CONDITION MANAGEMENT

How data, analytics and health care expertise enable a better health care experience

- 1** **Real-time data** to the physician and Susan's **access to 24/7 clinical support** to minimize risks and control costs
- 2** Reporting with critical vital signs embedded into the EMR to **monitor the patient's daily health status**
- 3** Diabetes specialty team: a cumulative **150 years of CDE experience** with six registered nurses and two registered dietitians who are CDEs, plus six additional OB diabetes-trained registered nurses

OVERALL RESULTS

9.4% reduction in neonatal intensive care unit admissions, gestational non-insulin diabetes¹⁵

12.8% reduction in blood glucose levels for insulin patients risks¹⁵

93% compliance for insulin patients¹⁵

15. Optum Diabetes Management Services Insulin; Jan 1, 2012 – Dec 31, 2016; July 28, 2017



Meet Mark

OVER 70 YEARS OLD • MARRIED • RETIRED

Mark and his wife, Carey, have been through a lot. They have built a home, raised children and managed through tough times together. But nothing fully prepared them for Mark's complex set of clinical conditions. Mark has Parkinson's and diabetes and has been diagnosed with renal failure, which is linked to kidney cancer. The last thing Mark and Carey need is to spend their time together trying to decipher the health care system, filling out paperwork, making phone calls and handling bills.

This story is based on a real-life example. For privacy, individual names have been changed.



The prevalence of cancer

Each year in the United States more than 1.6 million people are diagnosed with cancer. The cost of cancer care continues to rise and is expected to reach almost \$174 billion by 2020.¹⁶



Kidney cancer is among the 10 most common cancers in both men and women.¹⁷

— 55+ —

75% of all new cases of kidney cancer are diagnosed in people 55 and older.¹⁸

16. National Cancer Institute. Cancer prevalence and cost of care projections. <https://costprojections.cancer.gov/>. Accessed June 29, 2019.

17. American Cancer Society. Key statistics about kidney cancer. <https://www.cancer.org/cancer/kidney-cancer/about/key-statistics.html>.

18. Cancer Treatment Centers of America. Kidney cancer. <https://www.cancercenter.com/cancer-types/kidney-cancer/about>. Accessed May 7, 2019.



Behind the scenes

AUTOMATED APPROACH GETS MARK PREAUTHORIZED

Simplifying the health care experience is possible with the help of advanced technologies and artificial intelligence. Mark's lab results, medical records, health plan claims and other pertinent patient information are compiled and communicated, so health plans and providers can work together to get payments done right the first time. This helps prevent denials, increases clinical validation, reduces costs and, for Mark and Carey, saves precious time.

In addition, Mark and Carey can get real-time price estimates based on their specific health plan coverage, taking into account factors like copay and deductible amounts. Scheduling appointments is at their fingertips, and their physicians are able to quickly make network and quality-conscious referrals — all of which makes their journey easier to navigate.



 CARE AUTHORIZATION AND PAYMENT

Health impact

Let's imagine that Mark shows up at a facility for treatment and, unfortunately, there are some complications and he needs to be admitted to the hospital for an additional procedure. In this case, a prior authorization is required.



About **50%** of prior authorizations are fully manual.¹⁹

If a preauthorization is denied, it can quickly bring everything to a halt.

The hospital communicates automatically to Mark's insurance carrier so the health plan can cover the procedure and process any required prior authorizations. Using a powerful communications engine, providers and health plans have all the necessary information to ensure claims are paid quickly and accurately. For Mark and Carey, this means not having to deal with any unnecessary and inaccurate bills. The health impact: Mark receives the care he needs when he needs it most.

19. Council for Affordable Quality Healthcare. Adoption of Electronic Prior Authorization, Medical. 2016–2018 CAQH index.



How data, analytics and health care expertise enable a better health care experience

- 1 Payers and providers connect to data and analytics on **one common clinical and financial exchange**
- 2 **Half a billion annual clinical transactions** lead to reduced time, which translates into lower costs
- 3 **650+ data sources connected**
- 4 **Clinical scenarios are identified** that require prior authorization and verify that the claim includes a preauthorization number

OVERALL RESULTS*

94% medical necessity acceptance

One nationally recognized Medicare Administrative Contractor that has deployed the solution has seen:

31% reduction in claims in the suspended/deny category

21% reduction in redetermination requests

17% drop in provider calls and pending claims

* Optum Analysis



Making a difference

The stories illustrated in these pages demonstrate that the use of data, analytics and technologies does not require wholesale reinvention. What is required is to understand that the digital resources and tools combined with the right health care expertise will have the greatest positive impact on the health care experience.

Optum works with care providers, health plans, employers, government agencies, and pharmacy, life sciences and research partners to use innovative methods like AI to lower costs and improve quality. With the use of advanced analytics, smart data integration and technologies, it's possible to help minimize the higher risks associated with complex conditions and remove variation in care for thousands of people just like Jason, Susan and Mark.

Ultimately, Optum aims to seek out wasteful spending and inefficiencies when and where they happen so that people have the best health care experience possible, one that helps each person get the care they deserve to lead a healthier life.



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OptumIQ, the mark of health care intelligence, is infused into Optum products and services. It's the unique combination of curated data, leading analytics and applied health care expertise.

Explore more data-driven insights for health care at optum.com/iq

OPTUM IQ™



**MAKING A
DIFFERENCE**