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Uniting health care perspectives through the integration of EHR and claims data

We measure health outcomes in a variety of different ways depending on the need or objective. We may measure outcomes based on the condition we are treating or studying, the stakeholder's point of view or the type of data we have available to use.

In general, patients and providers tend to leverage clinical measures to assess outcomes. For example, when treating obesity, BMI is the measure of interest, but for rheumatoid arthritis, it may be mobility and pain. However, much of the evaluation conducted by payers is based upon costs and the observation of health care interactions that are deemed suboptimal, such as future health care engagements with the emergency room or inpatient hospitalizations. This may result in a disconnect between patients, payers and providers as to what a "good" outcome may be, as the lens through which each stakeholder is observing the outcome is slightly different.

This disconnect can be attributed in part to the data foundation that each stakeholder utilizes to evaluate the impact that treatment decisions have on patient health. For payers, it's primarily based upon administrative claims data, which is derived from the payment of health care services (hence the focus on cost). Providers and patients leverage data from electronic medical records (EMR) and electronic health records (EHR) data that is created through the delivery of health care (hence the focus on clinical benefits). What if we could combine those two assets and make them available at scale for everyone to evaluate health care utilization and outcomes? How might our individual perspectives change? What types of new payment models, interventions and clinical programs could we develop? How could we improve the identification of unmet market needs and the development of novel therapeutics? The possibilities to change how we think about health care, alter existing models and collaborate on ways to improve patient and population health are truly endless.

Understanding the drivers of variability could lead to novel interventions for patients to maximize outcomes and health.

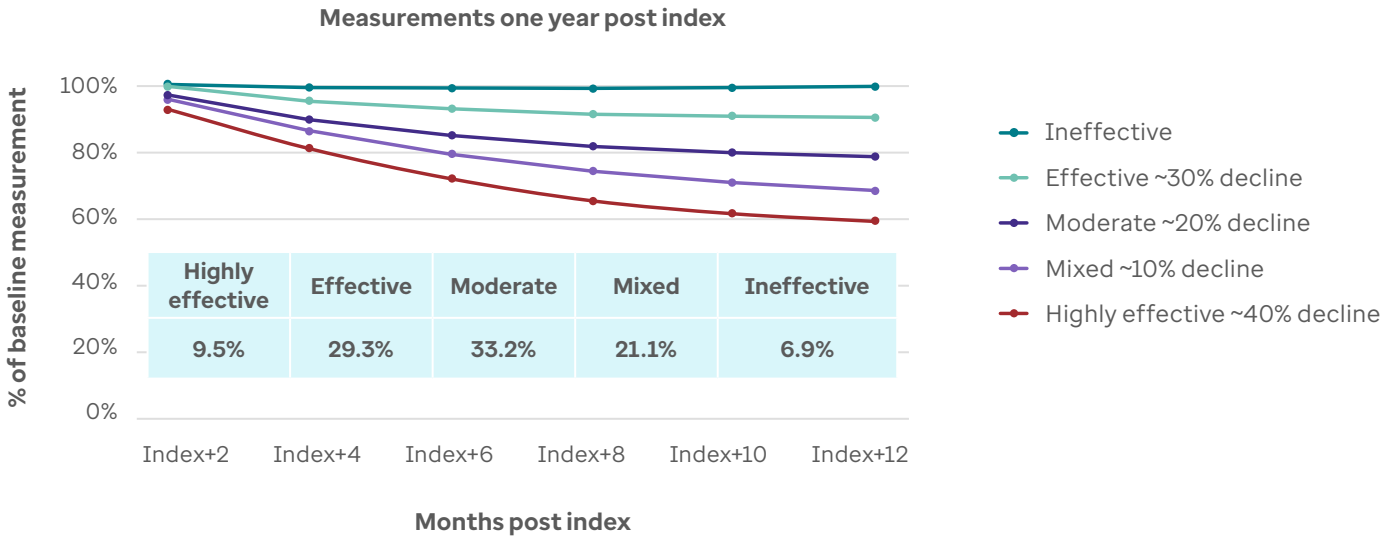
Integrated data tells the full story

Let's look at a real-world example using bariatric surgery to illustrate how the integration of EHR and claims data can change what we can collectively learn about outcomes. The American Society of Metabolic and Bariatric Surgery estimates that 252,000 bariatric surgeries1 were conducted in 2018, at an average cost of between $17,000 and $26,000,2 depending on the technique. That means that annually in the United States, we spend an estimated $4 billion to $6 billion dollars on this surgical procedure to manage obesity. This same meta-analysis identifies additional average cost savings and payouts for the surgical procedures and various types of benefits on mortality and comorbidities. But does this type of analysis really tell us the entire story? On average, the answer is yes, but what if we had access to a deeper, richer data source that enabled us to further delve into a cohort of bariatric surgery patients? What lessons could we learn, and how could that change how we collaborate with these patients to maximize outcomes?

Utilizing integrated EHR and claims data, it's possible to analyze these patients in a slightly different way to develop further insights into bariatric surgery outcomes and how they may be improved. The first key finding is that while patients see weight loss on average, bariatric surgery does not work for all patients, nor does it work equally across patients. A multivariate segmentation of BMI over time for patients who had bariatric surgery shows that roughly 7% of patients had no appreciable impact on BMI one year post-surgery, and that impacts from surgery vary from 10% to as high as 40% reduction in BMI. Figure 1 below illustrates the results of this segmentation approach.

Integrated data assets allow us to get very specific when evaluating clinical impacts of treatment.

Figure 1



1. American Society for Metabolic and Bariatric Surgery. Estimate of Bariatric Surgery Numbers, 2011-2018. Asmbs.org/resources/estimate-of-bariatric-surgery-numbers. Published June 2018. Accessed Feb. 25, 2021.
2. American Society for Metabolic and Bariatric Surgery. Fact sheet: Metabolic and Bariatric Surgery. asmbs.org/resources/metabolic-and-bariatric-surgery#:~:text=The%20average%20cost%20of%20bariatric,two%2Dto%2Dfour%20years. Published October 2018. Accessed Feb. 25, 2021.

Understanding the drivers of variability could lead to novel interventions for patients both pre- and post-surgery to maximize outcomes and health. This is a fairly high-level view of the overall results – additional controls on pre-BMI level and other variables would be required to fully develop insights. Let's take this a step further. If we profile these patients further along in their post-surgery period and examine differences in specific variables of interest available in both claims and/or EHR data, what else can we learn? We can see major differences between the segment with the better BMI outcomes compared to those with no appreciable reduction.

Figure 2

BMI outcomes comparison

Most effective pathway group

- Highest level of HCP interaction
- Higher interaction with nutritionists
- Patient reported increase in physical activity and dietary changes
- Fewer comorbidities
- Higher degree of control of other comorbidities such as diabetes and hypertension
- Lasting impact at five years post index

Least effective pathgroup

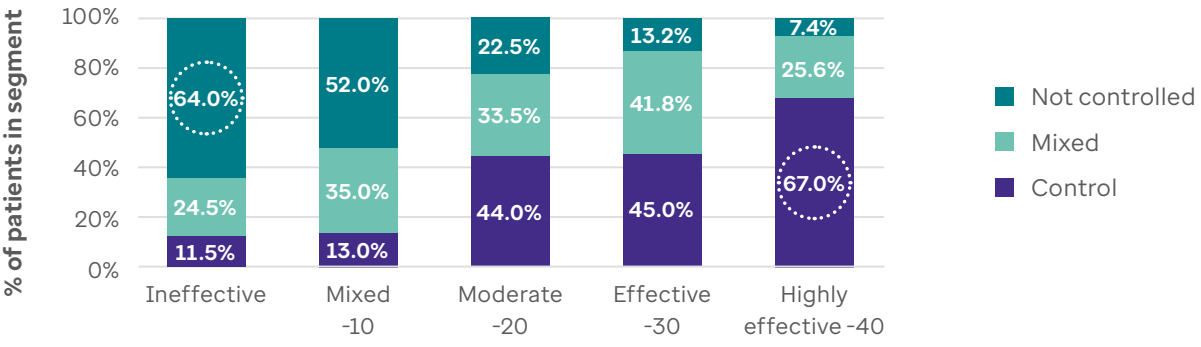
- Lowest level of HCP interaction
- Fewer interactions with nutritionists
- Little mention of physcial activity or dietary changes
- Higher level of comorbidities
- Lower degree of control of other comorbidities such as diabetes and hypertension
- No appreciable benefits five years later for majority of the group

The learnings in figure 2 point to several areas where changes in policies, procedures and engagement models could result in a higher degree of outcomes. The first would be predictive models to apply on pre-surgical patients and identifying those most at risk. This would enable a more tailored approach to be taken with these patients to enable them to achieve their goals regarding weight loss. For providers, the interactions with PCPs and nutritionists would point toward ensuring certain services are available to patients and more proactive appointment scheduling and follow-up with surgical patients. Overall, the combination of data types has enabled a more complete understanding of impact of bariatric surgery and potential areas to enhance outcomes in specific situations.

Evaluating outcomes and value

One of the interesting capabilities of these types of integrated data assets is that we can get very specific when evaluating clinical impacts of treatment. Examining just the impacts of diabetes control relative to BMI losses post-surgery shows a positive correlation between BMI reduction and A1c control as demonstrated in figure 3.

Figure 3



* Source: Optum Market Clarity Data

We can see that those patients with very good weight-loss results are also much better at keeping their A1c levels in control over time, while those with no reduction in BMI are generally not maintaining their A1c levels. This multivariate view of health outcomes offers the potential to be more targeted in how we engage with patients on their health management, and how we develop more specific interventions to treat the entire patient versus one disease at a time.

Let's switch gears to cost. An examination of costs also shows a longer-term benefit to reduction of health care costs over time in the segment with the highest degree of BMI reduction. That is consistent with other published research, but with the integration of clinical data, a payer could consider changing their quality and reimbursement policies to leverage a combination of cost and clinical outcomes.

Academically, this all looks good, but the real value is the ability to implement changes and enact policies based upon the integrated data and, unfortunately, we are not yet at that point of scale. There are larger de-identified research databases that facilitate these types of analyses for research purposes, but many payers remain dependent primarily on claims for much of their research and patient management processes. That's not to say there are no situations where clinical data is being utilized, such as in prior authorizations or in a specific disease area. In fact, some payers have quality programs in bariatric surgery that do integrate claims and EHR data. However, these efforts are usually siloed and are the exception rather than the rule across many organizations.

To some degree, all organizations can gain benefit from these de-identified datasets to begin shifting the conversation to clinical outcomes per dollar rather than just cost or just clinical outcomes. But we can't fully recognize the value of integrated data until payers invest more in linking EHR data at scale for their members, and providers and patients make cost a more consistent part of their evaluation of outcomes. If all stakeholders had access to integrated data at scale, we could:

- **Develop** more detailed models of stakeholder influence on outcomes and cost, and enact more targeted change
- **Identify** success factors for the best clinical outcomes per dollar and enact patient programs
- **Determine** which patient types are most likely to struggle in achieving outcomes and tailor programs to enact behavioral changes
- **Alter** reimbursement models to reward the best clinical outcomes per dollar
- **Create** patient health incentive programs to monitor progress more frequently
- **Construct** new value-based contracts that are measured on more than just claims data

Integrated data can enable all stakeholders to challenge traditional models and develop new methods for how we measure value and pay for and administer health care. But first, we need to prioritize the infrastructure and process to consistently obtain, standardize and normalize this data to achieve these goals.

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