WHITE PAPER

ZS ResearchCenter

The business imperative for health equity in life sciences: Repairing the patient journey

Addressing drivers of health to improve outcomes

By Nan Gu, Judith Kulich, Harshil Gagnani and Howard Deutsch

Introduction

Over the last few years, we have seen a groundswell of support for health equity activities from all corners of healthcare, making a focus on health equity ubiquitous throughout the industry. Loosely speaking, health equity means that everyone has a fair shot at being as healthy as possible. Programs to improve health equity have been incorporated into CEO agendas, investor reports and organizational financial commitments in the hundreds of millions of dollars.

A recent ZS Research Center review of public statements from the top 15 pharmaceutical companies indicates that while the vast majority of companies are taking positions on and making commitments to health equity, only half are discussing it as a growth driver or a competitive advantage. Much of the life sciences industry's recent activity in health equity has been on the clinical development front, including incorporating new standards required by the U.S. Food and Drug Administration (FDA) into clinical trials to better understand the efficacy and acceptability of drugs in the real world. However, on the commercial side, we do not see similar focus or progress on improving equity in access to care and quality of care.

One reason for this lack of commercial focus is that life sciences companies are still unclear on how health equity initiatives affect financial and patient outcomes. As a result, they lack the motivation to take these programs to a strategic level. While almost all manufacturers we've engaged with believe that improved patient outcomes, social justice and positive public perception are worthy of investment, they still struggle to realize the financial benefit and appreciate the strategic partnership opportunities of closing health equity gaps.

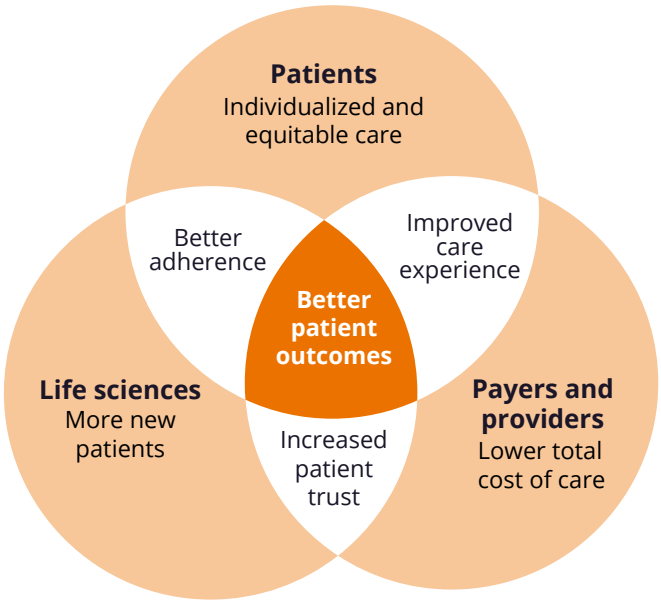
The ZS Research Center recently conducted a study focused on identifying the health inequities and drivers of those inequities along the patient journey within and across various diseases. We believe life sciences companies can leverage the insights uncovered in our study to prioritize areas of focus, design better customer engagement programs and make a tangible impact on patient outcomes. For example, our study found that addressing nonmedical and nonbiological drivers of health has the potential to increase the number of patients who received treatment by 5% to 18%. Furthermore, by mitigating these drivers at both the drug treatment and branded drug treatment stages of the journey, we found the number of patients using branded drugs could grow by 45% to 75%.

The value of improving health equity

It's common for patients to delay or discontinue their healthcare journey. Sometimes the reasons are clinical in nature, such as experiencing a bad side effect or less than acceptable efficacy. But in many cases, patients drop out owing to social and behavioral drivers of health, such as an inability to visit the doctor's office or afford a medication co-pay. We believe that if the set of patients adversely affected by social or behavioral drivers are given a fair shot at being healthy, it can result in a win for all stakeholders—including the patient, the payer, the provider and the manufacturer.

FIGURE 1:

How addressing health outcome disparities benefits healthcare stakeholders



If we consider the patient journey, one clear way to quantify the value of health equity is to consider how many more patients can continue their journey unimpeded if specific barriers are mitigated. Measuring changes in the disparities of patient journey metrics is one way to quantify the value of investing in health equity.

While academic literature has many examples of health disparities and the drivers of those disparities—including socioeconomic status, income, education, race and ethnicity, access to healthcare and other factors—ZS's proprietary research has added to the body knowledge in two ways:

1. By creating a set of disease-agnostic metrics across the patient journey to enable comparison across diseases and stages of the patient journey. Comparisons of this nature are integral to the prioritization across disease areas, particularly in the presence of limited time and resources.

2. By using this consistent framework to quantify patient journey disparities, the drivers of those disparities and the opportunity for improvement in four disease areas: chronic obstructive pulmonary disease (COPD), Type 2 diabetes (T2D), early and metastatic breast cancer (BrC) and HIV.

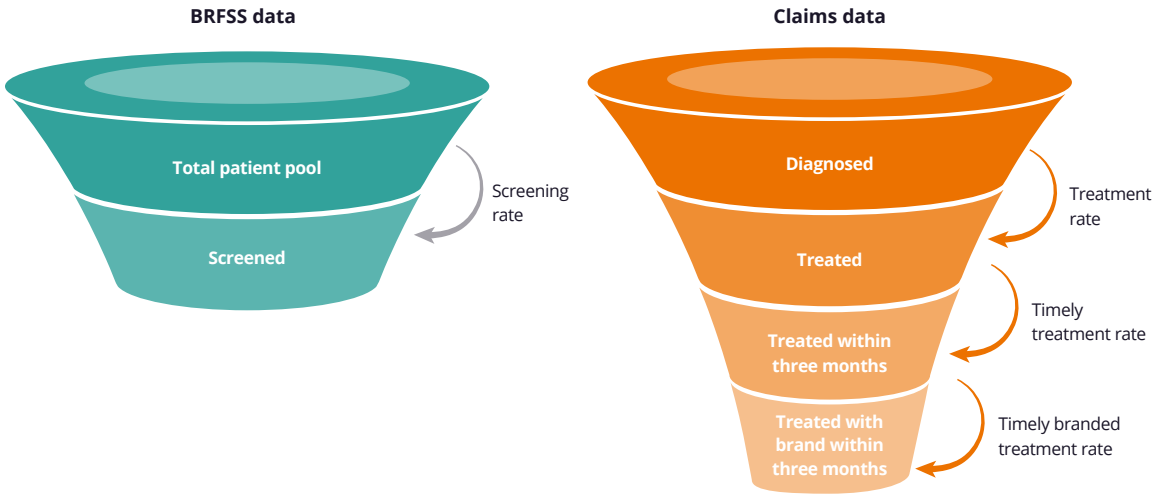
How we analyzed patient journey data

To understand disparities in the patient journey, we analyzed anonymized data of individuals. Because no single data set provides comprehensive information across the patient journey, from screening to treatment, we relied on two data sets: Behavior Risk Factor Surveillance Survey (BRFSS) data from the Centers for Disease Control and Prevention (CDC) and Symphony Health Integrated Dataverse (IDV®), an ICON plc company, to create the whole journey. See the appendix on page 15 for a detailed methodology.

The outcome measure at each stage of the patient journey is a ratio of the number of individuals at that stage, compared with the number of individuals at the previous stage. See Figure 2 for a graphical representation of the metrics along the patient journey.

FIGURE 2:

A picture of the patient journey through BRFSS and claims data



Across this patient care journey, we studied various clinical and nonclinical risk factors and social drivers of health and determined the magnitude of effect each driver has on the health outcome. We identified approximately 20 drivers based on correlation and business logic, which we then grouped in the following categories for summarization. Race and ethnicity and socioeconomic status are grouped together as both sets of drivers are strongly correlated. Some drivers are only relevant for specific diseases, and these are denoted in parentheses below:

- **Clinically relevant:** Age and gender
- **Socioeconomic and race:** Race and ethnicity, income, education, employment and outdoor employment rates (COPD)
- **Access to healthcare:** Access to healthcare, primary care physicians (PCPs) per capita, distance to healthcare facilities, private insurance and households with vehicles
- **Living conditions:** Urban versus rural, communal housing, total population and population density
- **Others:** Food insecurity, obesity (HIV), drinking, smoking (COPD), physical activity (T2D, BrC), internet access and air quality index (COPD)

We then conducted a disparity-drivers-opportunity assessment across the four diseases to evaluate the variability and extent of impact of different driver categories on different disease types, as well as across the various stages of the patient journey. We recognize that it is practically infeasible to eliminate care gaps and disparities entirely and have adopted a more conservative approach based on comparisons across different populations. See page 15 for methodology.

The disparity-drivers-opportunity assessment highlighted variation in the extent to which each driver has an influence on different disease types. It also shed light on some differences in the influence of various drivers across the different stages of patient journey. We identified two key findings that life sciences companies can leverage to deliver better health outcomes while furthering their commercial goals:

1. Addressable health disparities represent a substantial opportunity to improve patient journey metrics—and hence patient outcomes—while at the same time increasing value to life sciences by increasing the number of well-treated patients.

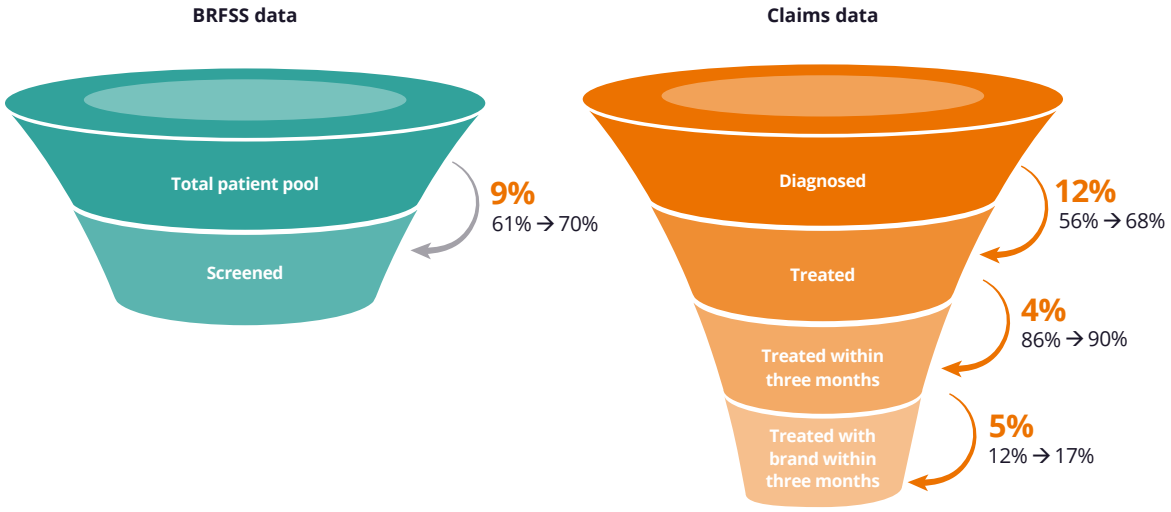
2. Life sciences has a unique ability to address health equity. While some common drivers exist, many causes of health disparities vary across diseases and care continuum stages. This gives life sciences novel ways to address health equity beyond traditional market access, sales and marketing efforts.

Addressing disparities represents opportunity

Across the patient funnel, we see significant opportunities to improve patient journey metrics, which are defined in our analysis as screening rate, treatment rate, timely treatment rate (which is a proxy for time-to-treatment) and treatment with branded medicines.

FIGURE 3:

Opportunities to improve the patient journey in T2D



The percentages listed in orange and the ranges below those numbers represent the absolute percentage increase in the number of patients in that stage of the care continuum if equity barriers are addressed.

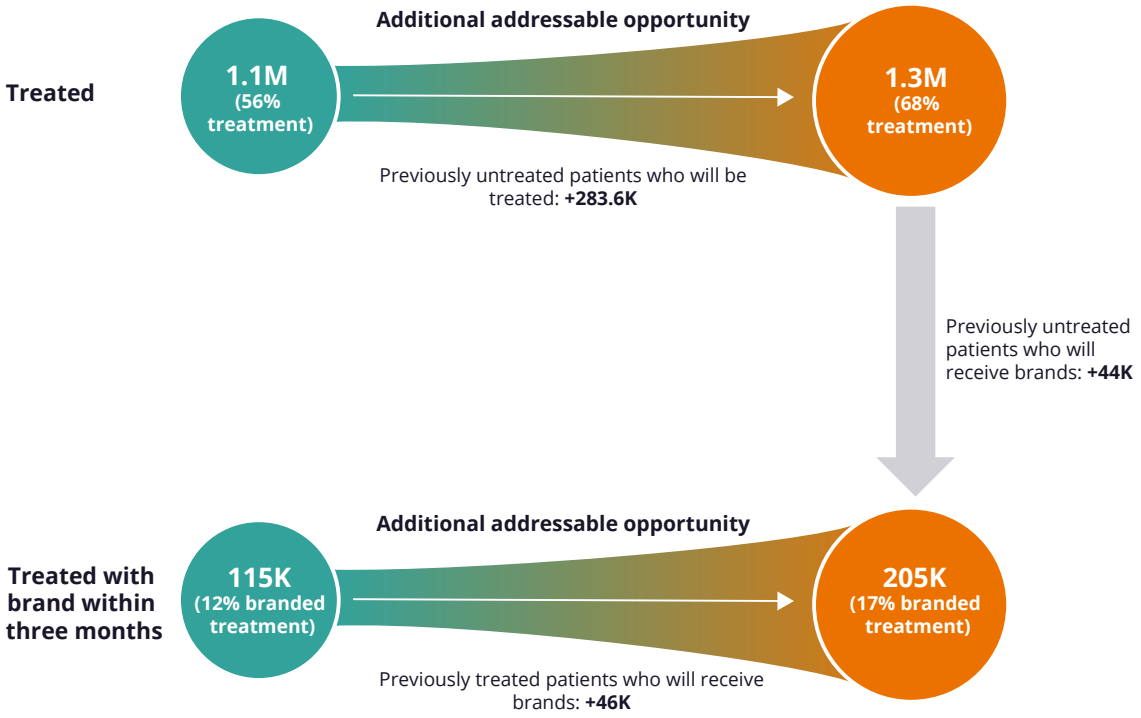
If we look at T2D in Figure 3, we can see the opportunity to improve patient journey metrics in each stage of the funnel. Increasing the overall drug treatment rate represents a significant opportunity for improvement across all the diseases we examined. By considering disease incidence, we can put some real numbers on these rates. In T2D, the current drug treatment rate is 56% and could be as high as 68%. This represents getting another 280,000 **newly** diagnosed diabetes patients **per year** on treatment.

From a commercial life sciences perspective, we focus on the potential impact of addressing health inequities to the number of patients on branded treatment, which will be influenced by two separate contributions:

1. **Increase to the overall treatment rate,** of which a portion will be on branded treatment, representing patients who are not currently drug treated or drug treated in a timely manner, but could be.
2. **Direct increases to the branded treatment rate,** which represents patients who are drug treated with generics but could be better treated with branded products.

FIGURE 4:

The total opportunity to increase the number of patients on branded therapy in TD2

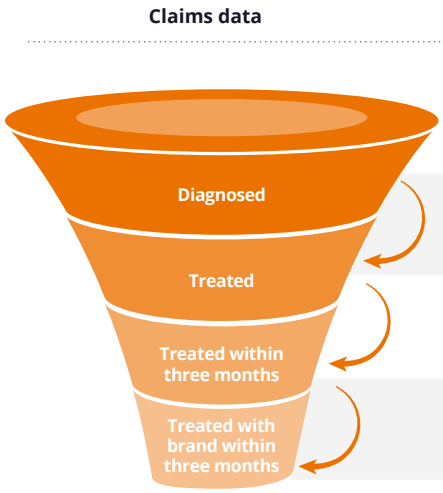


The total commercial opportunity for life sciences in T2D is represented by two groups of patients: untreated patients, a fraction of whom will receive branded products, and patients who are currently treated with generics but could be better treated with branded products.

In the case of T2D, we estimate that mitigating health disparities could potentially help treat approximately 90,000 more patients with branded products. Approximately 50% could come from increasing treatment rates and another 50% could come from making branded treatment rates more equitable across populations. As shown in Figure 5 below, across diseases, the number of additional potential patients on branded treatment is 134,000 for COPD and 6,000 for BrC, mostly early stage. In HIV, the smaller patient counts hinder precise estimates for branded drug treatment, but an additional 4,000 HIV patients could be drug treated by addressing disparities.

FIGURE 5:

Opportunity to improve patient journey metrics



Claims data	COPD	T2D	Breast cancer		HIV
			Early	Metastatic	
Diagnosed	10%	12%	6%	3%	10%
Treated	5%	4%	7%	6%	
Treated within three months	4%	5%	2%		
Treated with brand within three months	+134K patients on branded therapy	+90K patients on branded therapy	+6K patients on branded therapy	+600 treated within three months	+4.1K patients treated

Improving patient journey metrics

As we can see, the opportunity for improving metrics in these disease states is substantial. Furthermore, this opportunity comes from expanding the current patient pool, which creates some interesting implications.

- The opportunity comes from growing the pie. The opportunity for one life sciences company is not at the expense of another. In actualizing this opportunity, collaboration between life sciences companies is possible and perhaps even preferred. In fact, a consortium of life sciences companies creates more trust, or as one patient put it: "It would have to be that way for [patients] to be receptive."

- The opportunity is aligned with the goals of payers and providers—up to a point. The additional patients on branded treatment are estimated by reducing existing disparities, which may be aligned with payer and provider health equity or patient outcome goals. Some healthcare players, such as Elevance Health (formerly Anthem) have advanced the concept of "pharmacoequity." This refers to the notion that everyone should have access to the most appropriate and efficacious medicines, with good adherence.

Caveats and limitations:

- In this report, we are centering around patient outcomes both for compliance reasons and for enabling better partnerships with other healthcare stakeholders. Better patient outcomes and not financial measures both represent a common goal for all of healthcare.
- Though we attempt to control for issues related to access, such as the payer book of business, it is not practical to incorporate the formulary status of individual products in such an analysis. As a result, some portion of the branded treatment rate increase may be throttled by utilization management, such as step edits in Medicaid.

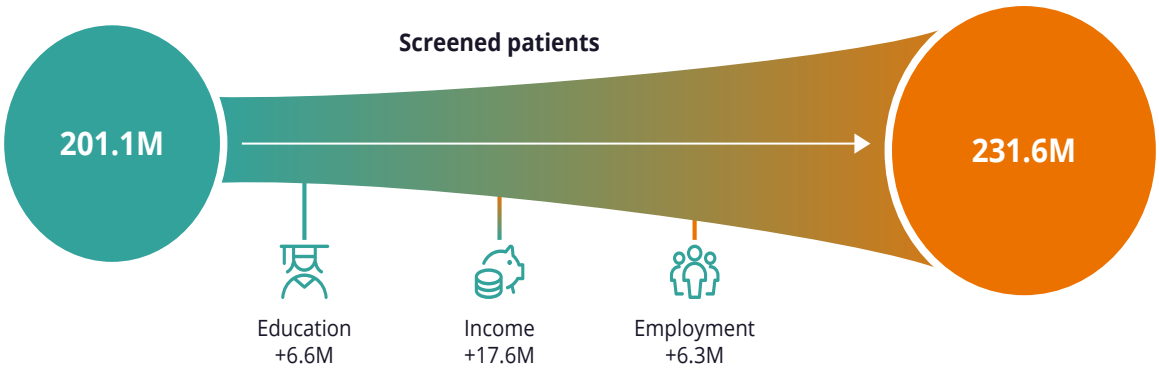
Where life sciences can act on screening

We include an assessment of screening disparities in our analysis and the number of patients affected, but we do not estimate its commercial opportunity. That's because screening is performed selectively for high-risk populations, and it is difficult to estimate the additional incident patients that would be detected due to improved screening. Many relevant factors, such as diet and family history, are not available in the data sources.

Nevertheless, screening rates do differ based on various drivers of health and can be improved. In the T2D cohort for example, an additional 30 million individuals can be screened by reducing disparities. Such a large number may warrant further study to understand the true impact to undiagnosed diabetics.

FIGURE 6:

An additional 30 million patients can be screened by targeting specific drivers

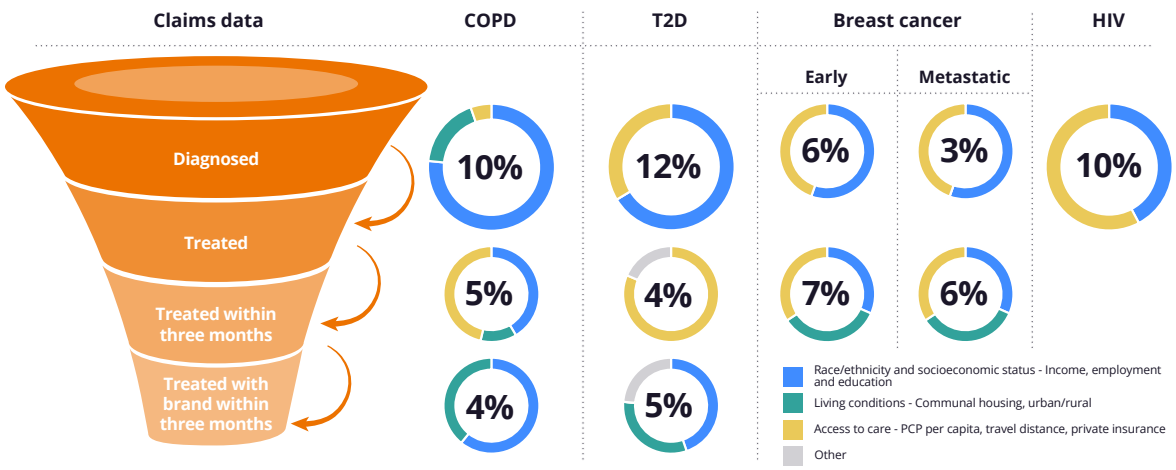


Opportunities across the care continuum

Our method of estimating opportunity lets us attribute specific improved health outcomes to specific drivers of health. When we look across diseases at the drivers of health influencing care continuum opportunities (Figure 7 below), we see some common themes. For example, looking at treatment rates across diseases, race and ethnicity and socioeconomic status, represented in black below, makes up the lion's share of opportunity for improvement. Similarly, looking at the COPD care continuum stages, we also see socioeconomics as a major driver.

FIGURE 7:

The opportunity for improvement in patient journey metrics across diseases and drivers



Like Figure 5, here we have identified the top three drivers for each opportunity. Circle sizes and the numbers within represent the absolute percentage increase in the number of patients in that stage of the care continuum if equity barriers are addressed. The colored ring surrounding each circle indicates the contribution of each type of driver to the opportunity. For example, for T2D, addressing socioeconomic and access to care drivers allows a 12% increase in drug treatment rate.

Looking closely, we can understand the unique role of life sciences in health equity. Payers and providers will naturally operate across diseases and aim to address drivers of health that are common across many diseases, such as socioeconomic drivers.

However, it is not enough to just focus on the top drivers of health in the quest to address health equity. Doing so would leave a lot of patients unable to complete their treatment journey. Life sciences, on the other hand, can focus within specific diseases to understand the totality of a patient's journey across drivers of health. In addition to their disease-specific focus, life sciences companies are uniquely positioned to look across geographies and apply best practices from one area to similar areas around the country.

Life sciences progress on health equity

Life sciences doesn't just have the potential to fill numerous gaps in the advancement of health equity—in many places companies are already making progress. For example, life sciences companies have a significant role to play in health literacy, which refers to a person's ability to find and understand information and services related to their healthcare decisions. The Healthy People 2030 initiative has recognized the relationship between health literacy and health equity, and some life sciences companies, such as Bristol Myers Squibb (BMS) and Pfizer, have made strides on their own. Both companies have created materials to help providers and healthcare professionals (HCPs) communicate health-related information to patients. Commercial organizations within life sciences companies are also actively working on creating multicultural and inclusive marketing materials and patient support services.

Another important focus for commercial life sciences organizations is creating and maintaining partnerships with the rest of the healthcare ecosystem. As we've noted, payers and providers don't always have the time and resources to address issues across all diseases. In patient interviews, two people with multiple sclerosis agreed that patients "have to work for it" to get services to address their needs, such as repeatedly submitting applications to payers.

These patients also told us that they didn't fare any better with providers, in terms of getting assistance with things like transportation and childcare, which they agreed would make things a little easier. Life sciences companies are well positioned to offer direct support to patients in this realm, or act as partners to payers and providers to improve the patient experience.

BMS is doing this through its Specialty Care for Vulnerable Populations initiative, which focuses on special care delivery through partnerships with community-based organizations and local specialty teams. The initiative is aimed at achieving optimal and equitable outcomes for people who are high-risk for cancer, HIV and cardiovascular diseases in the U.S. BMS is also partnering to develop care coordination models, improve patient navigation and bolster disease and self-care education.

Further, Merck developed its evidence-based Alliance to Advance Patient-Centered Cancer Care, a multidisciplinary program aimed at enhancing treatment access. This initiative advanced patient-centered care and reduced disparities in cancer care in underserved communities by integrating cancer care with primary care, while enhancing communications between patients and HCPs. Merck's Bridging the Gap: Reducing Disparities in Diabetes Care program aims to improve access to high-quality diabetes care by building sustainable partnerships and disseminating key findings to advance cross-sector approaches.

Access to care as a key focus area

In our analysis, we found that a group of drivers related to access to care were very influential in addressing drug treatment rate disparities. Across disease types, access to care is a key category that has the potential to influence health outcomes. These factors include the number of primary care physicians per capita, distance to healthcare facilities and having commercial insurance. Life sciences companies have a substantial opportunity to create impact by investing in initiatives such as telehealth, travel programs and free clinics for uninsured and under-insured individuals. Furthermore, strategic collaboration with local health systems and patient advocacy groups can bolster patient engagement at diagnosis and result in a greater proportion of patients getting on treatment.

The path forward for life sciences

Based on what we've learned in our research and our engagements with life sciences companies in this space, we're united in our belief that health equity should not be a solely philanthropic endeavor. Nor should the focus be only on clinical and medical endeavors. We believe there are three key initial steps life sciences can take to advance the cause of health equity on the commercial side of the business.

1. Build capabilities to understand the disparities in your focus disease areas.

Our research has clearly demonstrated the opportunity that accompanies life sciences companies' decision to invest in health equity. While we summarized several common themes, the devil is in the details. Each disease, each step of the patient journey and each geography requires different solutions. Life sciences companies should acquire the necessary data and insights to identify and quantify disparities. The process we're describing here is just one way to glean information on disparities. Companies that can supplement and contextualize our data with their own insights from patients, customers and partners will be better able to focus on where and how to act.

2. **Establish clear accountability to lead health equity in your organization and drive changes in business processes. Give that person or team a voice and the power to drive change.**

In our experience working with life sciences, many companies started their health equity journey in a grassroots manner, wherein leadership established a vision and drove a few large-scale initiatives but left the rest of the organization to figure out what health equity meant for them. For most of these organizations, eventually, one or more health equity leads were appointed to delineate responsibilities between different functions clearly, coordinate efforts and bring different parts of the organization along on the same journey. These leads are generally charged with coordinating and influencing others across the organization. They often inherit a tangled web of pilot initiatives.

But we think there's a better way. First, the health equity lead and their team should be at most two steps from the C-suite. This structure gives them more license to work across the organization and spend less time going up and down the chains of command. Second, when creating or refining this role, the organization should do a scan to understand the full extent of health equity activities being undertaken across functions, including R&D, manufacturing, medical, market access, commercial and patient support. This scan will allow the lead to set their remit and focus areas quickly and leave others alone. Third, a governance process should be established for a few common scenarios, such as:

- Creating a process or capability to generate insights on health disparities across functions and brands to ensure a consistent language and understanding across the organization.
- Establishing a common prioritization rubric and business case template to assess commercial investments.
- Leading a team across R&D, medical, commercial and philanthropy or foundations to evaluate requests and partnership opportunities with customers and other healthcare entities. This team can quickly assess and triage these opportunities to engage in the best way.

Finally, companies can compare their progress with industry benchmarks to determine where to focus next. It's important to note that progress is often not uniform within an organization and often slower than expected. An important part of the health equity team's role will be channeling passion toward productive goals while providing evidence of impact and value to skeptics.

3. Enhance intervention and partnership capabilities to address population-specific issues in a compliant manner.

Life sciences companies have several potential tools they can leverage to address health inequities. Some are extensions of core competencies with an added equity lens, such as multicultural and inclusive marketing and health literacy standards. These internal capabilities should be reviewed, benchmarked and tailored to specific patient populations as needed.

A second avenue is collaboration with organizations outside of healthcare to better reach specific communities and address their needs. The concept is something all life sciences companies already employ, but equity requires additional nuance. As we've noted, disparities, drivers and opportunities will vary by disease, geography and demographic. Striving to reach specific communities in specific geographies is a great way to start small and learn fast. Different types of organizations will be needed to address different issues. Partnering with community and patient advocacy groups may be the way forward on improving awareness and screening, but an organization that provides free meals may be a better fit if food insecurity is a key issue.

Finally, as we've mentioned in previous projects, partnerships between healthcare organizations are key and every sector has its own role to play. Life sciences can generally address the needs of patients within a disease area better than payers and providers, but concerns such as antikickback considerations may dampen enthusiasm. Building up and connecting capabilities across account management, account marketing, patient support, legal and compliance can help speed up the process.

APPENDIX

Our research methodology

To understand health outcome disparities, it is important to study the data across the patient care journey because no single data set provides comprehensive information across the care continuum. We studied the following two data sets:

1. BRFSS data from the CDC for insights into screening rates and disease self-awareness rates.
2. Symphony Health Integrated Dataverse (IDV®), an ICON plc company, for insights into the drug-treatment rate, drug-treatment rate within three months, which is a measure of timeliness, and the branded drug treatment rate.
   - Our analysis cohort sizes across diseases were: 70,700 for COPD; 122,600 for T2D; 38,500 for BrC; and 3,400 for HIV.

Calculating health outcomes

Individuals in BRFSS are assigned a statistical weight based on sampling proportions. We calculate health outcomes by weighing each individual appropriately.

In data from Symphony Health's Integrated Dataverse (IDV®), we analyzed patients longitudinally from their initial disease diagnosis to understand the corresponding treatment rates. Treatment rates were calculated using the patient population for each disease area from Symphony Health's Integrated Dataverse (IDV®) of pharmaceutical and medical claims, from Jan. 1, 2018 to Sept. 30, 2021. We used business rules to define the analytical cohorts for each disease. For example:

- **Patients are new to the disease, with confident data capture**
  - Each patient must not have had any diagnosis or treatment claim for the disease in the past three years and the patient must have shown claims activity in each of the three years.
- **Patients are confirmed to have the disease**
  - After an initial diagnosis claim for a particular disease, the patient must have had a second diagnosis claim for the same disease within 30 days, or the patient must have had at least one diagnosis claim for the disease and one treatment claim from a defined market basket.

- **Patients treated with drug**
  - After the patient was initially diagnosed and confirmed, we used a three-month sliding look-forward window after the date of diagnosis to determine the individual treatment rates.

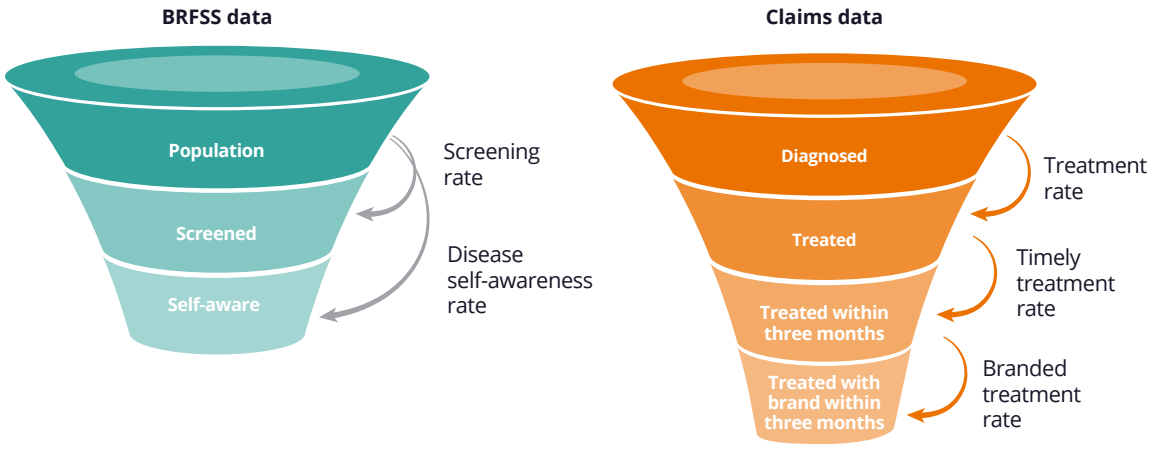
We applied additional rules in specific diseases to reflect their specific natures:

- **Patients should not have had a similar disease**
  - If a COPD patient had only a single diagnosis claim, then that patient must not have had any asthma diagnosis claims.
  - If a BrC patient has only a single diagnosis claim, that patient must not have had any other (non-breast) cancer diagnosis claims.
- **BrC patients were separated into early and metastatic stage at initial diagnosis**
  - Early: Patients with mastectomies and related procedures within three months of initial diagnosis.
  - Metastatic: Patients with at least three secondary neoplasm diagnosis codes.

The outcome measure at each level is a ratio of the number of individuals at that level. See Figure 8 below for a graphical representation of the data and outcome metrics.

FIGURE 8:

Disease-agnostic patient journey and associated outcome metrics



The same view from Figure 3, with additional data elements available from BRFSS for reference.

The next step was to identify the nonclinical risk factors and drivers of health that can affect the outcome. We used individual-level data from BRFSS and Symphony Health's Integrated Dataverse (IDV®), supplemented with ZS proprietary country-level data, to understand the importance of drivers such as age, sex, race and income to identify the actionable (see Figure 10) drivers that can be addressed to achieve equitable health outcomes. We used multivariate statistical models (XGBoost) to understand the magnitude of individual drivers. We estimated opportunity by benchmarking to high performers within the data (see next section).

Defining actionable drivers and opportunity

While it was critical to include as many factors as possible in our disparity analysis to optimize explanatory power, it was important to distinguish clinical risk factors from potentially actionable drivers. For example, the top driver for most disparities in our analysis was age, which we interpreted to be a clinically meaningful way to determine screening, diagnosis or treatment for a patient and not a disparity to be corrected. Along similar lines of reasoning, several drivers were excluded from the opportunity quantification. See Figure 10 on page 18 for details.

Opportunity methodology

1. We divided the total data into groups, as defined by the top driver. For example, if the driver was income, the various income buckets were the groups.
2. We increased the health outcome measure to the 80th percentile group or the top group, in most cases.
3. We repeated this for each of the three top drivers, with no double counting allowed. For example, an individual subject to multiple increases only received the maximum increase.
4. Where possible, we reweighted opportunities based on demographic (age, gender, race and ethnicity) and income to adjust for data capture biases. Where available and where the number of patients was significant enough to split into cohorts, we reweighted to match the "self-aware" cohort of BRFSS.

FIGURE 9:

Actionability of drivers in our opportunity analysis

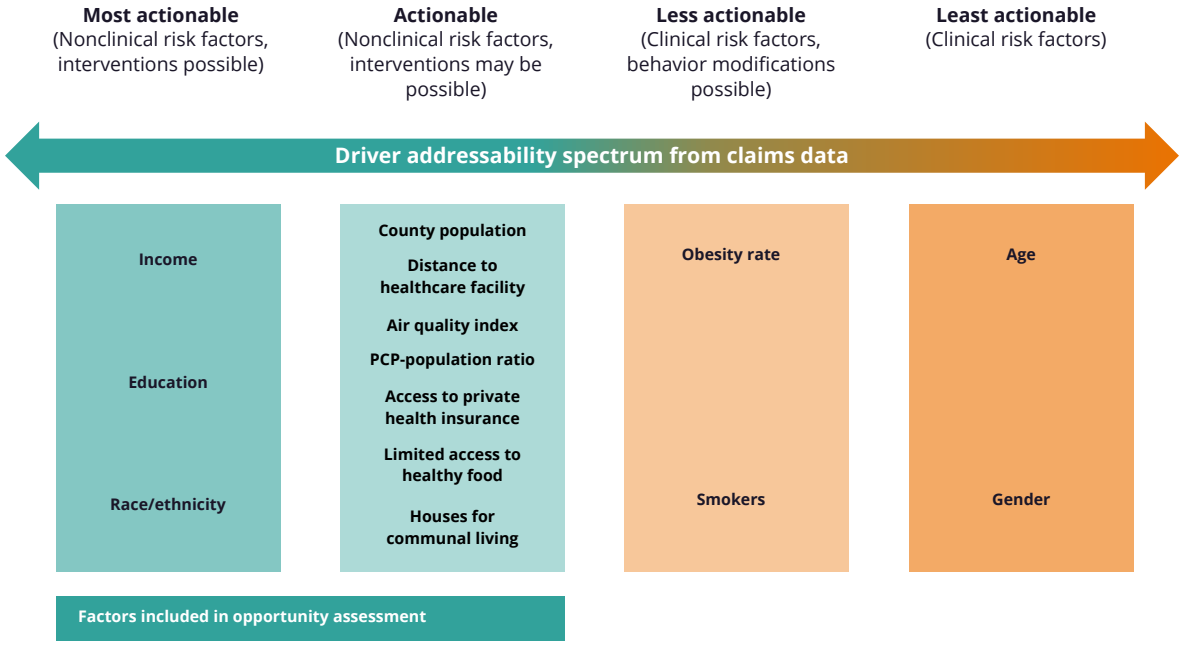


FIGURE 10:

Extrapolated baseline population and patient counts for each part of the funnel across diseases

			BrC			
	COPD	T2D	Overall	Early stage	Metastatic	HIV
Total population	331.5M	331.5M	168.4M	-	-	331.5M
Screened	100.8M	201.1M	116.9M	-	-	131.6M
Newly diagnosed	2.95M	1.95M	220.6K	207.3K	13.2K	41.8K
Treated	2.12M	1.1M	173.2K	164.6K	11.5K	30.1K
Treated timely	1.65M	934K	137.6K	122.3K	9.5K	26.6K
Treated with brand	298.3K	114.9K	10.8K	5.7K	1.8K	8K

These numbers do not include the incremental opportunity described in this report.

- U.S. population source - U.S. Census data 2020
- Screening data source - BRFSS data: 2018 and 2020
- Diagnosed - We calculated this by multiplying the total population by the disease incidence rate
  - COPD (0.89%): Prevalence and incidence of COPD in smokers and non-smokers: the Rotterdam Study, comparable to incidence estimates using CDC data
  - T2D (0.59%): CDC Diabetes report
  - BrC (0.13%): SEER Statistics Network
    - Metastatic breast cancer (6% of incident BrC): Estimation of the Number of Women Living with Metastatic Breast Cancer in the United States
    - Early stage breast cancer incidence taken to be total BrC incident - Metastatic BrC incident
  - HIV (0.0126%): U.S. Department of Health and Human Services HIV Portal

About the authors

Nan Gu is an associate principal and a member of ZS's patient health and equity team, focusing on health equity research and partnerships across healthcare. He is also a member of the healthcare ecosystem team, where he helps to create innovative solutions to address the evolving healthcare landscape. Nan has more than 11 years of experience in healthcare consulting. In the past three years, he has focused on health equity and the role life sciences companies can play in addressing this issue. Nan holds a Ph.D. in physics from the Massachusetts Institute of Technology and a B.A. in mathematics and physics from Cornell University.

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