IMPACT OF SOCIAL DETERMINANTS OF HEALTH ON HEALTHCARE & LIFE SCIENCES INDUSTRY

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Delivering holistic high-quality healthcare is next to impossible without considering the social determinants of health of patients and communities since these determinants are responsible for health inequalities and can affect health outcomes. Social Determinants of Health (SDoH) can be defined as the circumstances in which an individual is born, lives, learns, works, plays, and ages, that in turn affects their health, day-to-day functioning, and standard of living.

Domains of Social Determinants of Health

Neighborhood & Built Environment

Healthcare Access & Quality

Social & Community Context

SDoH

Economic Stability

Education Access & Quality
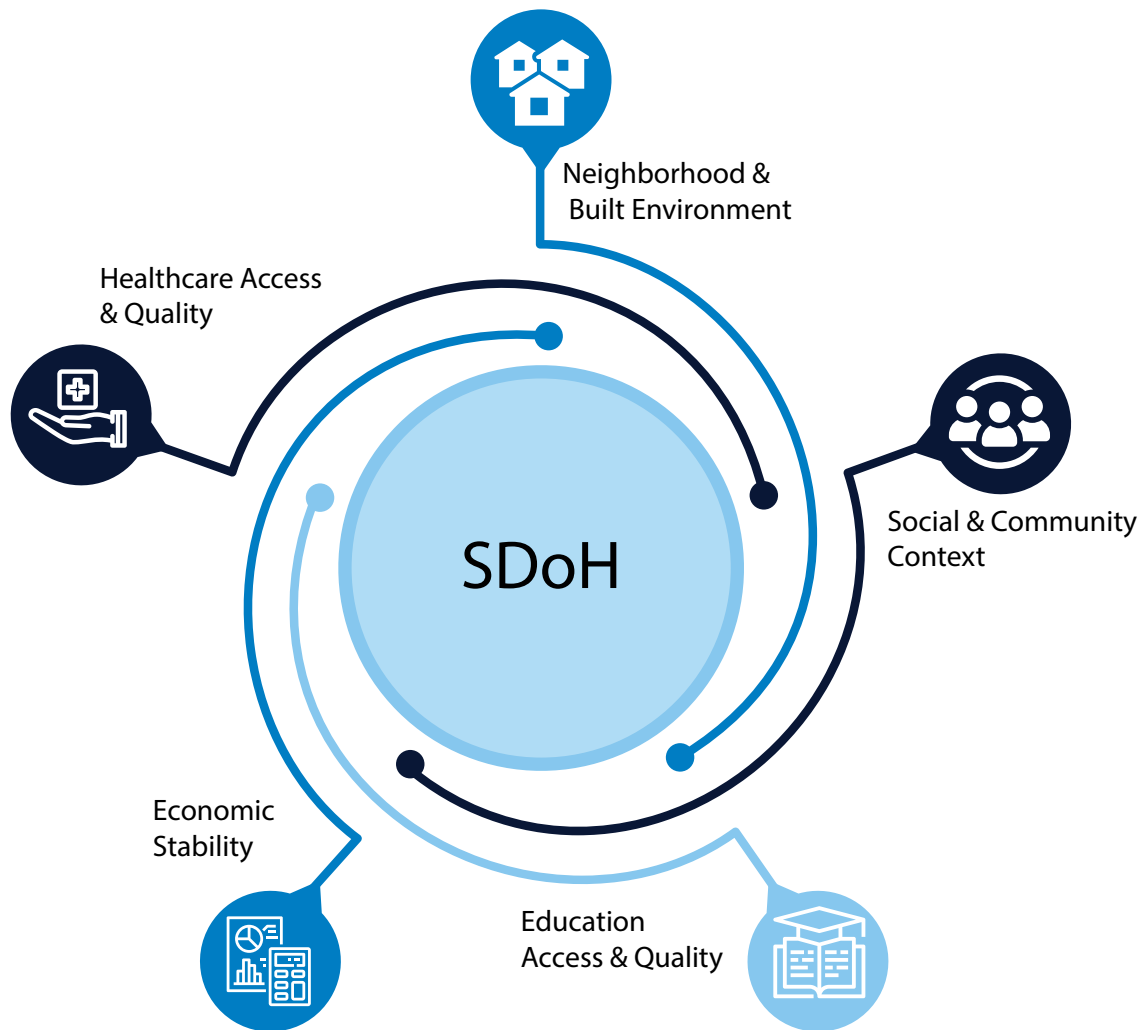
Impact of SDoH on Life Sciences and Healthcare Organizations and How They Can Leverage it to Their Advantage

Social determinants data can be leveraged to transform care outcomes. These data sets are not only used by federal agencies to aid the needy, but are also used by other sectors like life sciences, payers, and providers to boost critical areas, such as population health, patient engagement, clinical trial augmentation, and medication adherence. Negative social determinants lead to disparities in health and impact the overall quality of care. This results in exponential healthcare expenses and a decline in revenue, posing an urgent need to coordinate services across the continuum. To achieve this, increased collaboration among healthcare professionals, payers & pharma companies is required. Leading organizations have already started redirecting SDoH factors in formulating a sustainable and strategic plan to balance two important end results i.e., improved care outcomes and revenue. Some of the examples related to it are cited below:

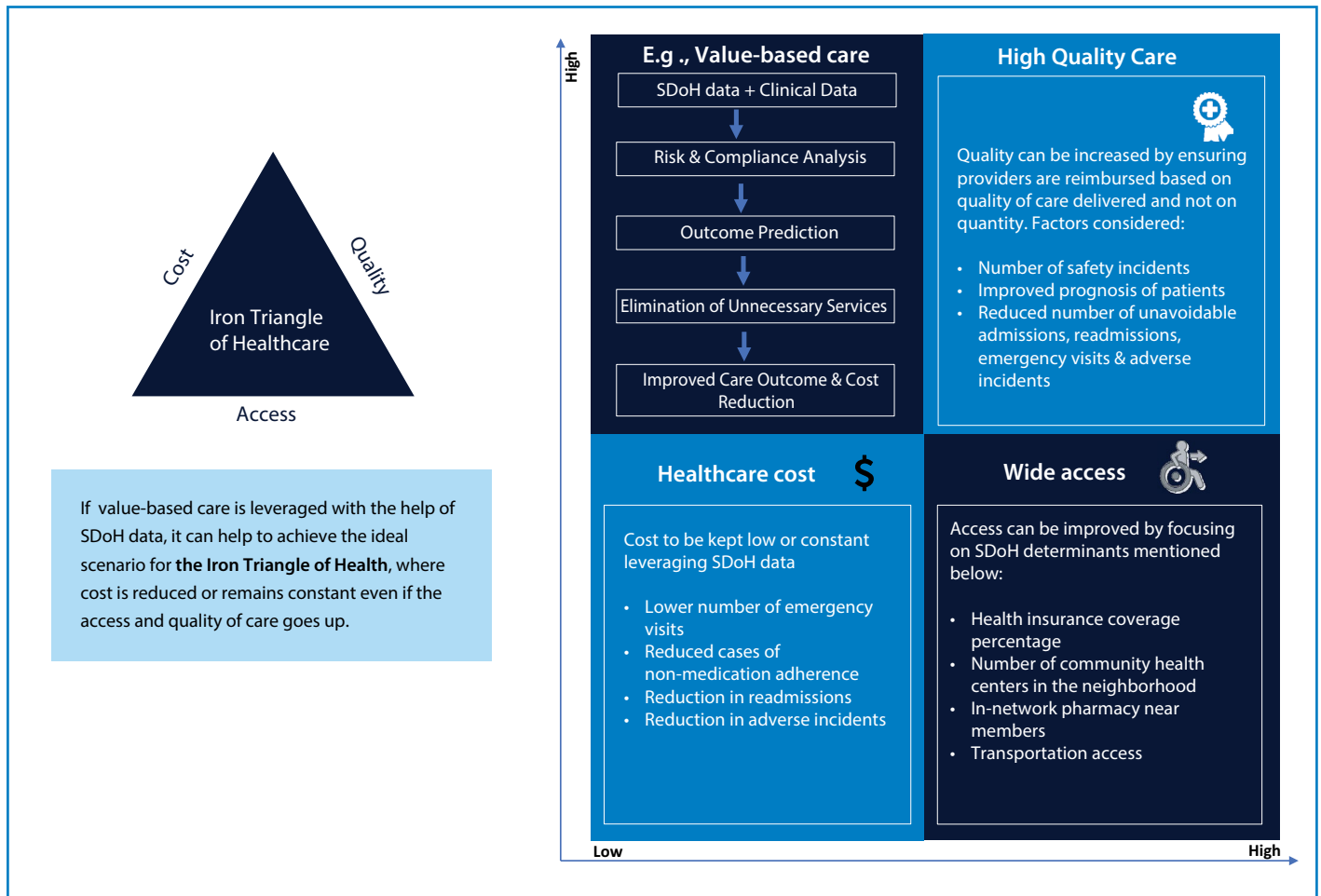| Use Cases for SDoH Data			
Industry	Pharmaceutical Companies	Pharmaceutical Companies, Providers & Payers	Payers & Providers
Application	Clinical trials recruitment & retention	Increasing medication adherence	Improved patient engagement
Problem Statement	Minorities comprise **40%** of the US population but participation in clinical trials is less than **20%**. **Effect-** Lack of genetic variability leads to limited screening, limitations in therapeutic indexes, drug safety, and toxicity resulting in unsuccessful therapies.	The US pharmaceutical industry loses **$250B** annually, an estimated loss of **50%** to **60%** of total US annual drug sales, due to medication non-adherence. **Effect-** It is associated with an estimated 125,000 deaths and a yearly nationwide hospitalization rate of 10%.	**12% to 36%** of Type 2 Diabetes Mellitus patients do not attend their regular medical appointments. **Effect-** Patients with no-shows have **24%** to **64%** chances of poor glycemic control and **60%** greater odds of rehospitalization than those who are regular with appointments.
Purpose	To improve participation of the underrepresented population in clinical trials.	To identify and mitigate SDoH determinants impacting medication access and adherence.	To develop more effective treatment plans by leveraging SDoH data for health risk and behavior prediction.
Datasets Taken into Consideration	• Number of health centers that were never involved in clinical trials • Number of people approached for prescreening phase • Number of prospective patients facing financial burden due to factors like cost of transportation to the clinical site • Percentage of health literacy, language proficiency, and socio-economic status among prospective subjects • Number of physicians having access to the targeted subject population, but not having experience in enrolling their patients • Number of trainings organized for physicians	• Number of patients who were potential cases of medication non-adherence • Number of patients having lack of knowledge about medications' risks and advantages • Number of patients with limited English-language proficiency • Number of patients with no access to transport to fetch their medications • Distance of patients from hospitals and pharmacies	• Number of missed medical appointments for non-emergency care • Number of transportation alternatives available for members • Distance of members from in-network healthcare facilities

Solution Implemented	• Pharma company purposefully chose investigators and sites that hadn't previously participated in clinical trials • Focused on treatment centers providing care to the underserved neighborhood area • Provided training to the physicians and staff inexperienced in clinical trials • Multilingual materials were shared with participants to improve health literacy • Assistance in the form of reimbursement for transport was given to encourage participation	• Analyzed claims data of prescription drugs to identify barriers to adherence • EMR systems were enabled with electronic alerts to raise an alarm if a patient is not refilling medication on time • Employed ridesharing options for meeting pharmacy appointments and home delivery programs for patients who were homebound or had physical limitations • Designed adherence packaging and co-mingled packaging for patients to make the medication regimen easy to understand	• Payer collaborated with one of the taxi services to provide free transport for medical appointments to members who do not have personal transport or have poor access to public transport • Implemented a system for reminder phone calls/emails for targeted patients (Patients who were potential cases of missed appointments)
Benefits	Discovered ways to reach, recruit and retain patients from underserved communities.	An exponential increase in medication adherence leading to a reduction in total healthcare costs & improved revenue for pharma companies. Improved HEDIS® and CAHPS scores.	Addressed the healthcare industry's "no-show" problem.

Use Cases for SDoH Data

	Payers	Payers & Community Health Center	Federal Agency
Industry	Payers	Payers & Community Health Center	Federal Agency
Application	Preventive management	Population health	Public health crisis mitigation
Problem Statement	**50%** of all health burden in the US is attributable to 84 modifiable risk factors. **Effect-** **27%** of the US healthcare spending is attributable to preventable illnesses.	Improper housing is associated with numerous infectious/chronic diseases, injuries, poor nutrition, and mental disorders. **Effect-** **13.5M** nonfatal injuries occur in households and **22,900** people die due to house fires annually. **2M** visit emergency for asthma and **1M** children exhibit high lead blood levels, adversely affecting their behavior, development, and intelligence.	COVID-19 transmission and mortality have a strong association with SDoH factors like transportation, housing density, poverty, healthcare access, environmental conditions, language barriers, employment, and residence in rural areas. **Effect-** Social Determinants of Health influence the prevalence of COVID-19 and COVID-19–related deaths in certain communities.
Purpose	To proactively improve the health of members leading to reduced reimbursements.	To support members by providing permanent housing and care coordination for homeless individuals.	To support COVID-19 preparedness, and management via an urban population health observatory system.
Datasets Taken into Consideration	• Number of members facing food insecurity • Number of members in social isolation • Number of people lacking transportation access	• Number of members lacking housing facilities • Number of members who were provided housing support • Savings due to a reduction in healthcare costs owing to improved housing	• Level of education • Occupied housing density • Number of COVID-19 tests done
Solution Implemented	Launched healthy food delivery service for members from low-income groups & those living in areas lacking fresh food outlets to curb chronic disease conditions.	Leveraged SDoH data to proactively identify members who were facing housing issues and collaborated with the community health center to resolve the issue.	Developed an intelligent surveillance platform embedding SDoH data to improve equity in the distribution of quality health care services (i.e., testing and vaccination).
Benefits	Payer was able to proactively improve the health of the communities they serve by 20%.	An average health saving of **$6,384** annually was recorded for members who were provided housing support.	The surveillance tool incorporated population health data and SDoH indicators for informed decision-making during disease outbreaks.

Interrelation Between SDoH and the Iron Triangle of Health (Access, Quality, and Affordability)

The concept of the Iron Triangle of Healthcare was given by the father of Medicare, William Kissick, where he talks about the three competing issues of healthcare - cost, quality, and access. It is called an iron triangle because the desired state of the triangle would be high-quality care with wide access at a low cost which is difficult to achieve since the cost is often directly proportional to care quality and access.

Iron Triangle of Healthcare

Cost — Quality

Access

If value-based care is leveraged with the help of SDoH data, it can help to achieve the ideal scenario for **the Iron Triangle of Health**, where cost is reduced or remains constant even if the access and quality of care goes up.

E.g ., Value-based care

SDoH data + Clinical Data

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Risk & Compliance Analysis

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Outcome Prediction

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Elimination of Unnecessary Services

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Improved Care Outcome & Cost Reduction

High Quality Care

Quality can be increased by ensuring providers are reimbursed based on quality of care delivered and not on quantity. Factors considered:

- Number of safety incidents
- Improved prognosis of patients
- Reduced number of unavoidable admissions, readmissions, emergency visits & adverse incidents

Healthcare cost $

Cost to be kept low or constant leveraging SDoH data

- Lower number of emergency visits
- Reduced cases of non-medication adherence
- Reduction in readmissions
- Reduction in adverse incidents

Wide access

Access can be improved by focusing on SDoH determinants mentioned below:

- Health insurance coverage percentage
- Number of community health centers in the neighborhood
- In-network pharmacy near members
- Transportation access

Low — High

High

Conclusion

The optimum health for individuals and communities can be achieved through a continuum of three stages in iteration i.e., disease prevention & risk management, appropriate clinical treatment, and social intervention, and in each of these stages, SDoH data plays a significant role. Holistic awareness of the biological, behavioral, and social factors is required to build a more equitable healthcare system that not only improves the care outcomes, but also helps the life sciences and healthcare sector seek its future in social medicine, which is about integrating knowledge from clinical findings, test, genomic analysis, and social determinants of health. This creates an immediate need for collaborations and value-based alliances between all the stakeholders i.e., life sciences companies, payers, providers, patient advocacy groups, organizations with expertise in data and analytics, and community-based organizations to systematically create a healthcare ecosystem inclined toward care integration focusing on holistic health to address physical, social, and mental needs of individuals and communities taking advantage of new models of payments tied to quality care and value-based outcomes.

About the Authors

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Sonika has more than 9 years of experience in the clinical domain. She specializes in US healthcare, revenue cycle management and building analytical logics for Drugs & Biologics. Due to her varied exposure and experience in clinical space, payer and provider analytics, she is well acquainted with the knowledge and expertise required to assess the impact of Social determinants of health on life sciences and healthcare sector

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