



## ENGAGING SOCIAL DETERMINANTS TO MANAGE POPULATION HEALTH

A perspective on how engaging social determinants proactively in mainstream healthcare delivery can reduce costs and improve patient outcomes.



## Engaging social determinants to manage population health

The healthcare industry has reached an inflection point where affordable healthcare and traditional healthcare interventions that begin in the hospitals are not adequate. The industry is grappling with issues such as an increase in the number of chronically ill, and the aging population and their myriad of health-related challenges.

The need of the hour is to change the approach to healthcare; health consumers and the overall community must take proactive measures to prevent chronic illness, which will improve patient outcomes and reduce total costs. Healthcare delivery needs to move closer to the patients, to right where they live. This approach requires identifying Social Determinants of Health (SDoH), the conditions in which people live and the larger forces that shape their daily life. Identification and integration of SDoH with clinical data can help healthcare providers generate insights and deliver suitable interventions effectively.

*“If we want to make our patients well, that means we want to make our communities well. Moreover, that means prevention and addressing the social determinants of illness”*

**– Sir Michael Marmot,**  
*Chair of the Commission on Social Determinants  
of Health, World Health Organization*



## Social Determinants of Health (SDoH)

The World Health Organization defines SDoH as the conditions in which people are born, grow, work, live, and age and the wider set of forces and systems shaping the conditions of daily life.

Physical environment	Social	Behavior
Air quality, Water quality, House material, Neighborhood conditions, Climate conditions	Food, Transport, Housing, Finances, Utility needs, Family, Support system, Education, Profession	Diet, Exercise, Alcohol, Weight and tobacco usage, Drug influence
Source: Screening toolkits, community health databases, publicly available information	Source: Screening toolkits, community health databases	Source: Screening toolkits, Electronic Health Record (EHR)/Electronic Medical Records (EMR)

SDoH

Population health is focused on understanding the full range of fundamental upstream causes of health issues, and managing valuable or risky determinants in a specific population to prevent the onset of a medical condition.

SDoH can be effectively used to manage population health in multiple ways, like:

1. To identify and recognize SDoH and provide interventions based on the collected data. Table 1 lists certain use cases that highlight the importance of SDoH in determining the root cause.

**Table 1: SDoH, root cause, and intervention**

#	Clinical condition or information	Clinical diagnosis	SDoH data	Clinical condition + SDoH data intervention and outcomes
1	Asthma	Inhalers, allergy medication	Landlord is not permitting to install an air conditioner in the apartment. Average ambient temperature is 100 degrees Fahrenheit.	The provider referred the case to a legal organization, which found out that the landlord was in bankruptcy. Several community organizations came forward to renovate the building. The health of all the residents improved after this intervention.
2	Diabetic – blood sugar level not in control	Insulin prescription	No electricity, transportation, and money to refill	The patient had no way to buy, store, and administer insulin. The patient was part of a community welfare program for economic and employment support.
3	Regular health check up	No intervention required	Genetic predisposition towards diabetes	Lifestyle interventions and dietary changes to delay and prevent the onset of diabetes

2. To uncover patterns connecting health determinants with community-level trends at a population or hospital level. Table 2 lists certain use cases illustrating the use of trends and patterns to provide interventions.

**Table 2: Community level trends, interventions, and outcomes**

#	Trends	Interventions	Outcomes
1	Heat wave forecast which will potentially bring many people into emergency rooms	Public health agencies install air conditioners as required	Reduced emergency admissions and cost
2	Hospital and emergency admissions	Analysis of the root cause of hospitalization for a particular health condition	Hospitals can meet benchmarks and guidelines for admitting patients with a specific ailment. This root cause identification reduces costs
3	US Midwest region recently affected by polar vortex cold temperatures	Public health-related warnings and proactive measures at a homeless shelter to help sustain freezing temperatures	Reduced deaths and impact on chronically ill patients

3. To discover at-risk population and predict complications before they occur.

4. To risk-stratify patients (high, moderate or low) based on SDoH as well as clinical data and chart

how certain health determinant factors can influence treatment and disease outcomes. With timely interventions, this process can reduce the risk of a patient moving to a chronic disease state. As a majority of these interventions are

not clinical, healthcare providers will play the primary role to connect patients with community-related care providers and other welfare providers.

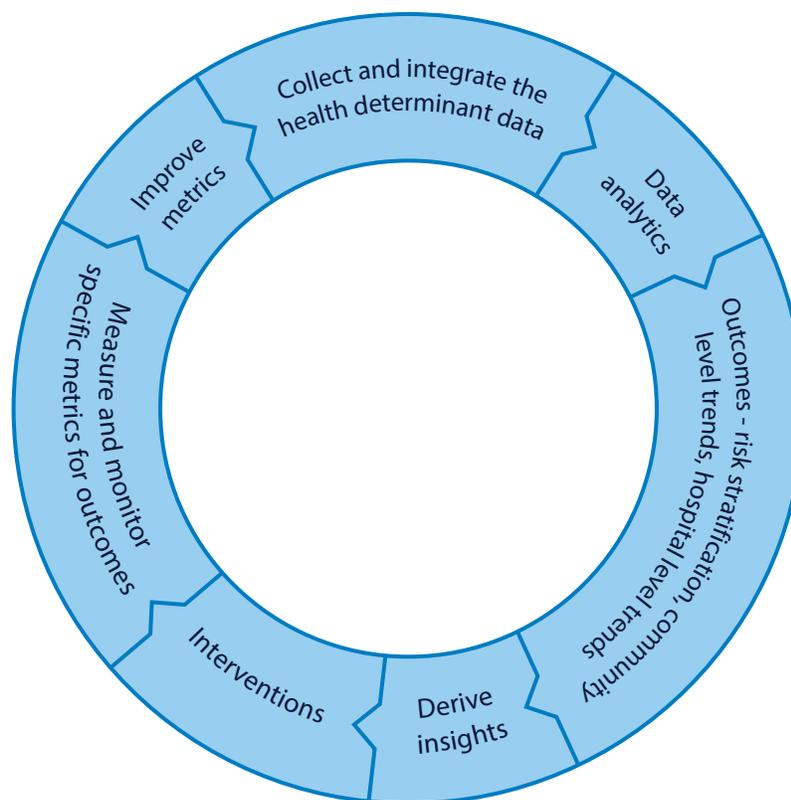
# The integrated process of population health

The possibilities of identifying meaningful insights and use cases based on SDoH and potential benefits that arise out of it are essentially limitless, provided the health ecosystem stakeholders pursue the integrated process of population health.

The logical steps in the integrated process of population health are:

1. Collect all related meaningful data from the health determinants.
2. Integrate data from all determinants with clinical information.
3. Apply advanced analytics to combine, analyze, visualize, and derive useful insights.
4. Provide appropriate interventions based on the insights to drive better patient outcomes.
5. This process is a cyclical process; we need to continuously work on all the steps and improve metrics with each cycle.

Population health management cycle



## Factors that influence the adoption of population health based on SDoH

1. Payers seek increased participation in value-based reimbursement models which focus on outcomes.
2. Hospitals in provider networks have financial incentives to meet certain quality benchmarks, focus on prevention, and manage population health. They get paid to keep patients out of the hospital.
3. Healthcare system understanding that fixing upstream issues and root causes will reduce costs and that prescription is not a solution to every healthcare problem.

# Challenges to SDoH adoption

*"50% healthcare and life sciences firms have said that the integration of multiple data sets from various sources was the biggest challenge in implementing analytics-led initiatives."*

– The Infosys Report

## 1. Data integration and interoperability

Healthcare system users leave a trail of data in every interaction with the system – be it with the provider, payer, diagnostic center, and other sources. Integrating and accessing information from fragmented data origination systems (characterized by varying data quality) and file formats is complicated and is a significant industry challenge.

## 2. Behavioral changes

Changing the behavior of physicians by encouraging them to provide interventions like connecting patients with welfare programs.

## 3. Network registries

Providers currently don't have access to a good network of community welfare providers for patient referrals.

## 4. Data privacy

There will be data privacy concerns for patients since it involves sharing their personal information.

# Technology opportunities and solutions

1. Educate providers on the importance and significance of SDoH through the current platforms they use. Electronic Health Record (EHR) providers can use their platforms to promote awareness.
2. Use social media networks like Facebook and Twitter to promote awareness and importance of sharing SDoH data at the point of care.
3. Mask data for personal identity when shared for aggregate level trend analysis.
4. Develop screening toolkits to collect social determinant data, with patient psychology in mind. Several research studies are underway in this area. Design digital solutions into screening toolkits, around the patient, with an intuitive design that requires minimal input. Infosys has developed a Blockchain platform to allow every entity in the healthcare value stream to work together in an interoperable transparent model to ease the collection of SDoH data.
5. SDoH digital solutions in the space should focus on data interoperability based on potential integrators and the different standards evolving in the health exchange market. Standards like SMART on FHIR and CDA are becoming popular as they facilitate data exchange and interoperability. These standards also present results in a simple, intuitive, and comprehensive way.
6. SDoH issues require cooperation between patients, providers, community groups, and local health providers. Cloud-based solutions can address data sharing, but data flow must be seamless.
7. Predictive analytics solutions are emerging. Many healthcare providers use off-the-shelf products, which can augment their existing EHR systems and support the analytics function. Infosys researched this area and is using the results to develop screening tools powered by artificial intelligence (AI) and automation.
8. There are several emerging community network registries. These databases provide information on human support services, which can be accessed by providers and caregivers for non-clinical interventions. NowPow and Aunt Bertha provide referral solutions and connect providers with social services.
9. Referral platforms can operate with other platforms to improve data transfer.
10. Payer companies can leverage publicly available data like census reports and combine it with their claims data. Further, payers can use AI to develop predictive modeling and holistic risk stratification models.

## A healthier future

SDoH is already a well-respected field of study. However, technology support for SDoH is still emerging and is an exciting area with significant potential. The global health community is aware of the importance of SDoH to address the rise of chronic diseases worldwide. EHR vendors have also shown keen interest to include SDoH information on their platforms.

To realize the full potential of SDoH, providers need to upgrade their IT infrastructure and improve workflow integration, analytics, and community resource referral. All stakeholders in the healthcare system have greater incentive to invest in population health technologies with a shift

toward value-based care. SDoH is an incredible opportunity to improve our population health through a combination of technology solutions and humanistic interventions.

### Authors

#### **Ellen Vanbuskirk**

*Associate Partner – Healthcare and Lifesciences*  
Ellen.Vanbuskirk@infosys.com

#### **Lakshmi Prabha M**

*Senior Consultant – Infosys Knowledge Institute*  
LakshmiPrabha\_M@infosys.com

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For more information, contact [askus@infosys.com](mailto:askus@infosys.com)



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