How to Quantify the Impact of SDOH

January 22, 2020
Agenda

• Welcome and Introductions
  • Claudia Ellison, Director of Programs, eHealth Initiative

• Presenters
  • Ben Isgur, Health Research Institute Leader, PwC
  • Sam Burns, Emerging Technology, Director, PwC
  • Chris Culak, Vice President, Chief of Strategy and Development, VNA Meals on Wheels
  • Chezev Matthew, Data Scientist, PwC
Today’s Speakers

Ben Isgur
Health Research Institute Leader, PwC

Sam Burns
Emerging Technology, Director, PwC

Chris Culak
Vice President, Chief of Strategy and Development, VNA Meals on Wheels

Chezev Matthew
Data Scientist, PwC
Housekeeping

• All participants are muted

• Use the **Q&A** box to ask a question related to the presentation

• Use the chat box is for *technical difficulties* and other questions / comments

Presentation slides are in the eHI resource Center [https://www.ehidc.org/resources](https://www.ehidc.org/resources)
eHI’s Mission

To serve as the industry leader in convening executives and multi-stakeholder groups to identify best practices that transform healthcare through the use of technology and innovation.
## Current Areas of Focus

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<th>Understanding FHIR / APIs / Da Vinci</th>
<th>Protection vs. Access</th>
<th>Non-traditional data sources</th>
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<td>Policy</td>
<td>HIPAA Part 2</td>
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<td>Info Blocking</td>
<td>Medical Device Security</td>
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- **Value Based Care**
- **Interoperability**
- **Privacy & Security**
- **Analytics & SDOH**
eHealth Resource Center

Thousands of Resources

- Best Practices
- Reports
- Surveys
- Policy Briefings
- Comment Letters
Who does eHI work with?

In 2019 eHI worked with

• 1,400+ Payers & Providers
• 3,000+ Stakeholders

How do we reach stakeholders?

• Webinars
• Roundtables
• Task Forces / Work Groups
• Conferences
• Meetings
• HIMSS
eHI Events and Meetings
(https://www.ehidc.org/events)

• Working with Government to Advance SDOH
  Tuesday, February 4, 2020 | 8:30 am - 5:00 pm
  Barbara Jordan Conference Center, 1330 G Street NW, Washington, DC, 20005

• eHI VIP Networking Reception at HIMSS
  Tuesday, March 10, 2020 | 5:30 – 7:00 pm
  OCCC, EF Overlook
We thank PwC for their support
Identifying and quantifying the impact of social determinants of health
Agenda

- Key findings from PwC’s report – **The urgency of addressing social determinants of health**
  - How to lead in social determinants of health: Five steps for bold action

- A deeper dive – Applying technology and data analytics to tackle social determinants of health

- Case study – Quantifying the health impact and ROI of Meals on Wheels – how Visiting Nurse Association (VNA) of Texas applied technology to quantify their program’s impact

For more on PwC’s new report “Action required: The urgency of addressing social determinants of health,” download the report at [http://pwc.com/sdoh](http://pwc.com/sdoh)
Today’s presenters

**Speakers**

**Ben Isgur**
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**Case study**
Key findings from PwC’s report – The urgency of addressing social determinants of health
The urgency of addressing social determinants of health

Key learnings

• PwC’s Health Research Institute (HRI) identified five key components for social determinants of health (SDOH) intervention

• The report describes key components that organisations should consider for social determinants of health interventions based on global case studies

• Many organisations have piloted or implemented a project to address the myriad of factors, but do not have a sustainable, long-term approach

Key research and data included

• Interviews from April to July 2019 with health industry executives, community organisations and government-funded health/social programs

• Findings from PwC’s 2019 Global Social Determinants of Health Consumer Survey of roughly 8,000 consumers across Australia, China, Germany, India, Japan, UAE, the UK and the US

• Government data sources, journal articles and conference proceedings related to social determinants of health

http://pwc.com/sdoh
Nowhere is the looming threat to public health clearer than in the growing rate of people considered overweight or obese

Since 2014, there has been a more than 10 percentage point increase in the share of the population in OECD countries deemed overweight or obese.

The epidemic of obesity isn't just a matter of optics. It makes people more prone to chronic health problems including diabetes, cardiovascular diseases and cancers.¹

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¹ Note: Obese and overweight measurement is an average of OECD countries where data was available.

Source: PwC Health Research Institute analysis of OECD Health Statistics, 2017
This limited progress is cause for concern because clinical care, while vital, is responsible for only 20% of a person’s health.

### Social determinants of health components

- Hunger
- Access to care
- Language literacy
- Housing
- Transportation
- Education
- Income and jobs
- Isolation
- Environment and safety

### Relative impact of key categories of health determinants

<table>
<thead>
<tr>
<th>Category</th>
<th>Impact</th>
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<tbody>
<tr>
<td>Social &amp; Economic</td>
<td>40%</td>
</tr>
<tr>
<td>Health Behaviors</td>
<td>30%</td>
</tr>
<tr>
<td>Clinical Care</td>
<td>20%</td>
</tr>
<tr>
<td>Physical Environment</td>
<td>10%</td>
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Improving our collective mind state may be key – Consumers say they are struggling mentally and, quite literally, losing sleep over it

Not getting enough sleep is the number one barrier to adopting a healthy lifestyle

Which, if any, of the following challenges do you face in your daily life that impact your ability to adopt a healthy lifestyle (e.g., diet, exercise)?

- Not getting enough sleep at night (i.e., 7-9 hours) - 35%
- Too much time spent using technology (e.g., mobile phones, social media) - 26%
- Lack of motivation to become healthier - 22%
- Affordability of a healthy lifestyle (e.g., healthy food, gym membership) - 20%
- Lack of time to become healthier - 20%
- Experience with mental health concerns (e.g., depression, anxiety) - 19%

19% of respondents to HRI’s 2019 global consumer survey who classified themselves as in poor or very poor health said mental health concerns such as depression kept them from a healthier lifestyle.

Source: PwC Health Research Institute global consumer survey, June 2019
How to lead in social determinants of health – Five steps for bold action
Five steps can help health systems finally deliver a meaningful impact on the social determinants of health

1. Traditionally, social determinants of health have been outside the purview of the health system. But ownership and responsibility are clear when true costs are understood.

2. Coalition partners should adopt a common framework to clear obstacles and fast-track efforts to work together.

3. Data and analytics can guide plans by finding targets, predicting impacts, and demonstrating ROI.

4. Social determinants of health programs must be grounded in the reality of how people live and work.

5. Partners must use evidence to fine-tune and grow social determinants of health efforts and to keep partners accountable.
## Change must start now for those who want to be leaders in SDOH

<table>
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<tr>
<th>Recommendations</th>
<th>Key actions</th>
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| 01 Find a convener to bridge the gaps between SDOH partners | • Identify a trusted organization from the community, the private sector or a government agency to be the convener  
• Identify organizations that may be at risk for health outcomes to help fund social determinant efforts (build in incentives for all) |
| 02 Be clear and remove confusion early on | • Develop a framework with all participants and receive input from all levels of the organization – revisit/revise periodically  
• Prioritize interventions, instead of trying to do everything at once |
| 03 Use technology as an accelerator by pairing it with process enablers | • Leverage consumer data and consumer segmentation to better identify the target population.  
• If the analytic technology or staff is not available within the organization, consider partnering externally to build credibility quickly |
| 04 Find your ‘voice of the community’ and empower consumers to make change | • Tailor the intervention with the community in mind  
• Deploy social listening campaigns to better understand the needs and desires of communities |
| 05 Take action with the budgets you have | • Develop a list of cost reduction opportunities and assess against fit with social determinant of health strategy  
• Train staff in skills that are cross-functional and can be provided to multiple organization types (e.g., analytics) |
A deeper dive – Applying technology and data analytics to tackle social determinants of health
PwC’s digital twins – Accelerating an era of personalized health

Modern mandate

Individuals no longer identify as averages, they demand personalized recommendations and contextually relevant interactions.

Likewise, organizations demand demonstrated value and quantifiable results.

Our vision

Seeing the whole person

Enabling and sustaining positive change requires the combination of health and behavioral insight

Our team

Our purpose-built teams span multiple disciplines and includes biomedical engineers, data scientists, product developers, experience designers, and industry veterans.

- Moonshot focus
- 7 PhDs
- 18 Scientists
- 5 years of dev
- $10MM invested
Digital twin

A crystal ball for health and behavior, delivered via a unified platform

Accurately forecast health and lifestyle impact
… via a scientifically-validated, mechanistic model that represents human physiology at a systems level

Predict how consumers will behave
… using likely preferences, behavioral motivators, and barriers to healthy living that can be assigned individually

Help organizations make the most of their resources
… by testing the behavioral response and resulting health impact of myriad potential plans, all before real-world implementation
Embrace a powerful new way of understanding health

Win with a clearer view into the future.
The digital twin provides a compass to help you shape your own destiny.

Recognize why health changes
Learn how the body responds to an environment, lifestyle and medical interventions. By becoming more engaged in the conversion, you’ll find more options to be explored, health opportunities to be maximized and costs to be reduced.

Learn a lot from a little
Don’t have a lot to go on in terms of medical history? Not a problem. Receive a “best first guess” for detailed consumer insights, even when primary source data isn’t available.

Go where you’re needed
Planning for the future? With proactive population forecasting, discern where your efforts and abilities are needed most, right now.

Personalize wellness programs
Predict behaviour of high-risk consumers to create a wellness program fit to their needs, including more informed and productive interactions with coaches.
Explore: Hyper target key populations

Define synthetic populations
Explore customized populations micro-targeted by zip code, demographics, health conditions, and known preferences.

Focus on what really matters
Improve the health of targeted populations by focusing on the components of segmentation and the insights into individual motivators, preferences, and social determinants.

Solve holistically
Factor in possible influences on a person or population’s health to provide recommendations and help your consumers become their best selves.
Predict: See financial and health impacts over time

View current and future impacts in a single dashboard

Use digital twins – system dynamics algorithms engineered to mirror the physiology of the human body – to simulate a population’s health and understand the costs of care down to the individual level.

Prioritize and enable the right interventions

Quantify future health disparities and significant drivers to better predict future health impact and ROI on non-clinical interventions.

Reduce the burden of poor health

Prioritize you investments in order to reduce the human and economic burden of short- and long-term illness.
Intervene: Customize care plans with confidence

Understand how your actions affect the future
Realize what today’s decisions mean for tomorrow’s health through predictive health analysis.

Drive action to forge meaningful change
Produce powerful insights and create effective treatment plans through customized simulation health modeling. Individualized diet, sleep, and exercise regimens focus on the actual needs of the consumer to achieve results.

Manage population health in a more efficient manner
Determine the smallest changes possible form your current lifestyle that will have the most profound, positive impact on your health and allow you to reach your goals. By starting small, the likelihood of sustained change and overall health improvement greatly increases.
Case study – Quantifying the health impact and ROI of meals on wheels
Who we are

The Visiting Nurse Association of Texas

Our mission

The mission of VNA is to help seniors age with dignity and independence at home.

VNA offers Meals on Wheels in Dallas County as well as palliative and hospice care in 14 north Texas counties.

On average each day, VNA provides more than 4,500 meals via Meals on Wheels to hungry homebound seniors and disabled adults.

Responsible business leadership

Driven by our purpose and values, we are making an impact in our communities and delivering business value by helping create a more equitable society.

Bodylogical®

A validated, scientific breakthrough in computational modeling of an individual human body that creates a “digital twin” to accurately simulate health predictions to help combat chronic disease.
What challenge did we face?
“What does it all mean? What’s the impact?”

- What impact does this have on the community at large?
- How do I quantify the real-world effect of Meals on Wheels?
- How do you differentiate and signal the value created by your organization?

Our mission – Analyze the MoW program to determine impact, quantify ROI, and ground donation discussions in data.
How did we quantify impact?
Creating a community of digital twins

Fusing science & analytics to create a “digital twin”
PwC’s patent-pending model unlocks science to manage health and understand costs

- Transformed academic and medical science into math model
- Replicated physiological systems and associated interactions
- Validated with numerous data sets
- Published results in peer-reviewed journal (PLOS ONE) and at various scientific conferences since 2016
How did we quantify impact?
Combining data for rich insights

Modeling VNA’s clientele
Our team was able to model the impact of the Meals on Wheels program through a combination of different data sets: VNA, public, and research.
Each meal provides a ~61% ROI to the Dallas community.
Shifts indicate health improvement

MOW positively impacts biomarkers which propagate health improvements across chronic conditions

- **Blood Sugar**: Reduction in uncontrolled diabetes
- **Blood Pressure**: Transition of people out of hypertension to normal/ pre-hypertensive

Most of malnutrition in Dallas is from sarcopenic obesity rather than being underweight, which reflected 98% of the 28% of the MOW malnourished population
MoW impact on Dallas health

- Hospital Readmissions: 15%
- Cardiovascular: 11%
- Dementia: 13%
- SNF Utilization: 10%
- Loneliness: 24%
- Malnourishment: 82%
- Hypertension: 17%
What did we discover?

MoW reduces healthcare costs by 7% in Dallas, saving an estimated $11.3M annually in health costs across the ecosystem.
How are we engaging donors?
Delivering a powerful message, backed by data
How are we engaging donors?
Introducing data need not sacrifice your client’s powerful, personal message

Independence and dignity start with a single meal

Meet Debora, 74, the proud grandmother of three. She loves dogs, mystery novels, and a good laugh.

Debora not only depends on VNA to get the nutrition she needs; she cherishes the personal visits and connection with our volunteers.

See the impact your donation has on VNA clients*:

- 18% reduction in congestive heart failure
- 17% reduction in hypertension
- 13% reduction in heart attack risk
- 13% reduction in risk of dementia
- Decreased loneliness (with plenty of good laughs)
How can you make data work?
Collecting and analyzing data uncovers new insights, which can guide your donor strategy

Five years...or 27 months?
Closer analysis of existing data revealed VNA had been communicating a longer average length of service to donors

Do you have a primary care physician?
VNA is now asking MOW Clients how they access health care, and using that data to identify natural partners and connect clients to care

This initiative not only determined the value of a meal, it was a catalyst to review our current data and discover new insights
How can you make data work?
What opportunities does your organization have to evaluate & explore the power of data?

1. **Start with a list of questions you would like answered**
   How many of your clients have a physician? Who is their provider? What percentage of your clients is that organization responsible for?

2. **Start small...you’ll be encouraged by what you find**
   Even a few, basic questions can help you to learn more about your population and their needs

3. **Start backing discussions with data**
   Using real-world data helps validate your organization’s messaging and elevate the demonstrated impact in conversations with donors, partners, staff, and volunteers alike
Thank you
We thank PwC for their support