A Conceptual and Analytical Framework for Identifying and Addressing the Social Determinants of Health in Medicaid Populations

Ellen Breslin, Anissa Lambertino, Dennis Heaphy, Tony Dreyfus
An HMA webinar in partnership with the Disability Policy Consortium

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AGENDA

• Welcome
• Key Messages
• A Roadmap for Medicaid Programs
• Conceptual Framework
  • Medicaid Populations
  • Health Disparity Measures
  • Methods of Analysis
• Questions and Answers
• Contact Us
Welcome federal and state officials, health plans, ACOs, behavioral health organizations, providers, community organizations, social services agencies, foundations, and trade associations!

- The social determinants of health (SDOH) are key to addressing health disparities and achieving the goals of payment and delivery system reform.

- We will present a roadmap for Medicaid programs to examine the relationship between SDOH and health disparities and costs.

- We will advance an analytical framework including a set of measures and statistical methods to examine the importance of SDOH to health disparities and costs.
REVIEWING THE SOCIAL DETERMINANTS OF HEALTH: HEALTHY PEOPLE 2020

+ Domain 1. Economic Stability
+ Domain 2. Education
+ Domain 3. Health and Health Care
+ Domain 4. Neighborhood and Built Environment
+ Domain 5. Social and Community Context
"Although 95% of healthcare is devoted to direct medical services, roughly 50% of preventable deaths are attributable to non-medical indicators, such as social circumstances, environmental factors, and individual behaviors."

Source: Using Medicaid Resources to Pay for Health-Related Supportive Services: Early Lessons. CHCS Brief, December 2015.

We need a population-based examination of health disparities to advance the development of interventions, and payment mechanisms.

+ The SDOH are REAL, and affect the lives of millions of people covered under Medicaid, and contribute to poor health outcomes.

+ Poor health outcomes and health disparities in Medicaid population have big COST implications for Medicaid programs.

+ The development of INTERVENTIONS should leverage both data and best practices from community-based and social services organizations, health plans and providers.
## SETTING FORTH A ROADMAP FOR MEDICAID

<table>
<thead>
<tr>
<th>Step 1 Framework</th>
<th>Step 2 Analytical Plan</th>
<th>Step 3 Analytical File</th>
<th>Step 4 Statistical Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bring together a multidisciplinary team to establish a conceptual framework, informed by interviews with thought leaders, consumers, and providers</td>
<td>Create an analytical plan that represents your plan for analysis based on the data that you have (with consideration of timeline and budget)</td>
<td>Build a data set to support the analytical plan; prepare an analytic file to define the populations and to measure health disparities and costs</td>
<td>Conduct the analyses using a variety of statistical methods to examine which SDOH matter most to health and cost outcomes</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 5 Results</th>
<th>Step 6 Populations</th>
<th>Step 7 Interventions</th>
<th>Step 8 Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpret the results</td>
<td>Identify the populations and set goals for improving health outcomes</td>
<td>Design interventions and strategies to improve health outcomes</td>
<td>Develop the payment mechanism(s) to support the goals and the interventions</td>
</tr>
</tbody>
</table>
Many choices are involved in the selection of Medicaid populations, measures and methods. There is a sea of data. The analysis is very detailed. A careful process of decision making is required.

### Medicaid Populations
You can use a range of medical and social risk factors to define Medicaid populations

- Poverty
- Homelessness
- Disability
- Behavioral health conditions
- Prior history of incarceration

### Health Disparity Measures
You need a comprehensive set of measures to examine health disparities for Medicaid populations

- Health: Mortality, morbidity, disability
- Health care access and use
- Health care quality
- Costs may also be added

### Methods of Analysis
You can use three common methods to examine health disparities for each Medicaid population

- Univariate
- Bivariate
- Regression
IDENTIFYING THE KEY DATA SOURCES

The Medicaid data is foundational to an examination of Medicaid populations.

The data can be used to create a data set based on your plans for analysis.

Collaboration between Medicaid and public health and other sister agencies is essential.

A combination of qualitative and quantitative data will inform the development of a robust data set.

+ Medicaid eligibility files
+ Medicaid claims
+ Other sources:
  + Cash assistance
  + Children protection services
  + Correctional data
  + Other public sources
  + Private sources
  + Interviews with thought leaders, consumers, providers
  + Literature
The key data sources will be used to create a useful set of variables for the data set.

Income data, for example, can be used to separate income groups using Federal Poverty Level (FPL). Medicaid populations with incomes < 50% FPL, 50-100% FPL, 100% FPL +.

Housing status, for example, can be used to identify people who are homeless.
SDOH FACTORS THAT CAN BE USED TO CREATE MEDICAID POPULATIONS

We want to select population groups for analysis so that we can identify groups that are experiencing big health disparities and to help to develop the right interventions. The nature of health disparities and possible interventions will vary from group to group. Groups may vary from state to state too.

Children – Medicaid population examples based on medical and social risk factors

- Race and ethnicity
- Disability
- Housing status (Homelessness)
- Parents with a BH diagnosis
- Income (Poverty)
- Care and custody of state
- Parents with a prior history of incarceration

Adult – Medicaid population examples based on medical and social risk factors

- Race and ethnicity
- Disability
- Housing status (Homelessness)
- Behavioral Health Diagnosis
- Income (Poverty)
- Prior History of Incarceration
We can examine health disparities among Medicaid populations by income. How do health disparities compare? Which populations are most in need of interventions?

- Under 50% FPL
- 50-100% FPL
- Over 100% FPL
Health disparities should be measured in a comprehensive fashion. We need a 360-degree view of health disparities to develop the right interventions.
### MEASURING HEALTH DISPARITIES IN MEDICAID POPULATION GROUPS

<table>
<thead>
<tr>
<th>Medicaid Population =&gt; Adults Who Are Homeless</th>
<th>Medicaid Population =&gt; Adults by Income Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Disparity Categories</td>
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</tr>
<tr>
<td>Health</td>
<td>Health</td>
</tr>
<tr>
<td>Mortality</td>
<td>Mortality</td>
</tr>
<tr>
<td>Morbidity</td>
<td>Morbidity</td>
</tr>
<tr>
<td>Disability</td>
<td>Disability</td>
</tr>
<tr>
<td>Health care access and use</td>
<td>Health care access and use</td>
</tr>
<tr>
<td>Health care quality</td>
<td>Health care quality</td>
</tr>
<tr>
<td>Health care costs</td>
<td>Health care costs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>&lt; 50% FPL</th>
<th>50-100% FPL</th>
<th>Over 100% FPL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality</td>
<td></td>
<td></td>
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<tr>
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</table>

Medicaid data can be used to examine health disparity measures.

The data set should be built to include variables that capture outcomes, such as mortality, morbidity and disability and other measures.

**Ex: Morbidity Measures.**

- Type 2 diabetes
- Asthma
- HIV
- Hypertension
- Many other measures
What methods can be used to examine Medicaid populations and their health disparities?
To examine health disparities in Medicaid populations, different types of statistical analyses are needed. Simple examples using variables such as homeless status and diagnosis of Type 2 diabetes.

**Univariate = 1**
Examine one variable at a time, such as:

+ Number of people who are homeless
+ Prevalence of Type 2 diabetes

**Bivariate = 2**
Examine the relationship between two variables, such as:

+ Number of people who are homeless who have Type 2 diabetes
+ Prevalence of Type 2 diabetes in people who are homeless

**Regression = Many**
Examine the relationship between many variables at a time, such as:

+ The statistical relationship between having Type 2 diabetes and many SDOH
Let’s look at the most basic statistics about the overall population.

We want to understand the characteristics of the population.

Look at one variable at a time:

- Number of people who are homeless
- Percentage of the population that people who are homeless represent
- Number of people who have died (mortality rate)
- Percentage of the population with Type 2 Diabetes (prevalence)

<table>
<thead>
<tr>
<th>Variables</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homeless</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 2 Diabetes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Median</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
<td></td>
<td></td>
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</table>

- Average cost per person
For this example, let’s examine the association between homelessness and Type 2 diabetes (2 variables).

<table>
<thead>
<tr>
<th>Social or Medical Risk Factors</th>
<th>Type 2 Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes With Type 2</td>
</tr>
<tr>
<td>Housing status</td>
<td></td>
</tr>
<tr>
<td>Adults who are homeless (yes)</td>
<td>a</td>
</tr>
<tr>
<td>Adults who are not homeless (no)</td>
<td>c</td>
</tr>
</tbody>
</table>

Odds Ratio (OR) to determine if there is an association between housing status and Type 2 diabetes.

\[
OR = \frac{a \times d}{b \times c}
\]

- OR > 1 means a positive association
- OR = 1 means no association
- OR < 1 means a negative association
With regression analysis, you will need different strategies for different goals. Compare two different goals and strategies below.

**Goal:**
To obtain a good homeless-diabetes estimate using the fewest variables, with the greatest explanatory power.

**Strategy:**
Use few variables with strong explanatory power.

**Goal:**
To obtain a good predictive model.

**Strategy:**
Use more variables to determine which factors are most important.
ACKNOWLEDGING THAT THERE ARE MANY MODELING ISSUES AND CHALLENGES!

After much whittling down, this is my most parsimonious model.
Ex: Let’s examine associations of Type 2 diabetes and cost with SDOH factors.

<table>
<thead>
<tr>
<th>Social or Medical Risk Factors</th>
<th>Type 2 Diabetes</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Logistic Regression</td>
<td>Linear Regression</td>
</tr>
<tr>
<td>Homeless Status</td>
<td>a</td>
<td>v</td>
</tr>
<tr>
<td>Disability</td>
<td>b</td>
<td>w</td>
</tr>
<tr>
<td>Age</td>
<td>c</td>
<td>x</td>
</tr>
<tr>
<td>Gender</td>
<td>d</td>
<td>y</td>
</tr>
<tr>
<td>Additional factors</td>
<td>e</td>
<td>z</td>
</tr>
</tbody>
</table>

By using regression analysis, we can find out how important each SDOH factor is to the outcome of interest. The results of the regressions, or coefficients, are represented by the letters on the table.

- One outcome variable, for example, diabetes or cost, can be predicted from a set of social or medical risk factors.
- Which factors among the social or medical risk factors are the stronger predictors of the outcomes?
DON’T LET THE PERFECT BE THE ENEMY OF THE GOOD

THERE’S NO SUCH THING AS A PERFECT MODEL

DATA WE DIDN’T CAPTURE
- BY DESIGN
- HIDDEN FACTORS

DATA WE CAN’T CAPTURE
- NO MEASURES AVAILABLE
- LIMITS OF EXISTING MEASURES

DATA WE WON’T CAPTURE
- AVAILABILITY AND DISTRIBUTION OF RESOURCES
- ETHICAL CONSTRAINTS
- CHANGES IN MEASURES OVER TIME
- CONFLICTING EVIDENCE

DATA THAT IS INCONSISTENT

Sketches by Jacqui Tran
jacquetrans.com
@jacquetrans
SUMMING UP AND TAKING QUESTIONS

- Medicaid Populations
- Health Disparity Measures
- Methods of Analysis
IN THE END … IT IS ALL ABOUT THE PEOPLE SERVED BY MEDICAID PROGRAMS
PRESENTATION INFORMATION

Case Study: Medicaid and Social Determinants of Health: Adjusting Payment and Measuring Health Outcomes

See the recent action brief prepared by the presenters.

HMA can bring its expertise and experience to develop and implement a roadmap for examining health disparities and costs in the Medicaid populations that is right for your organization.

See the recent action brief prepared by the presenters.


CONTACT INFORMATION

Presenters:

Ellen Breslin, MPP, HMA
ebreslin@healthmanagement.com

Anissa Lambertino, PhD, HMA
alambertino@healthmanagement.com

Dennis Heaphy, MPH
Disability Policy Consortium
dheaphy@dpcma.org

Tony Dreyfus, MCP
Independent consultant
tdreyfus-omega@comcast.net

www.healthmanagement.com