Indian Health Service Office of Clinical and Preventive Services

Social Determinants of Health (SDOH): How the Contexts in Which We Live Impact Health

Jana Towne, RN, Nurse Consultant
Division of Diabetes Treatment and Prevention
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Poll

The Social Determinants of Health of my community help to guide the services and care processes offered by my organization

1. Not at all
2. A little
3. Quite a bit
4. A great deal
5. What are the Social Determinants of Health?
Social Determinants of Health (SDOH)

The conditions in the environment where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks. (Healthy People 2030)

The conditions in which people are born, grow up, live, work and age. These conditions influence a person’s opportunity to be healthy, his/her risk of illness and life expectancy. Social inequities in health – the unfair and avoidable differences in health status across groups in society – are those that result from the uneven distribution of social determinants. (World Health Organization)
The Social Determinants of Health (SDOH)

- Income and financial resources
- Educational attainment and access
- Employment and job security
- Food/Nutrition security
- Housing
- Neighborhood and built environment
- Transportation
- Early childhood development
- Social cohesion and belonging
- Health care access and quality
- Health Literacy
Frameworks

Figure 1.1 A Model of the Determinants of Health


Social Determinants of Health

- Education Access and Quality
- Health Care Access and Quality
- Economic Stability
- Neighborhood and Built Environment
- Social and Community Context

Indian Health Service
Division of Diabetes Treatment and Prevention
## Social Determinants of Health

<table>
<thead>
<tr>
<th>Economic Stability</th>
<th>Neighborhood and Physical Environment</th>
<th>Education</th>
<th>Food</th>
<th>Community and Social Context</th>
<th>Health Care System</th>
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<tbody>
<tr>
<td>Employment</td>
<td>Housing, Transportation, Safety, Parks, Playgrounds, Walkability, Zip code / geography</td>
<td>Literacy, Language, Early childhood education, Vocational training, Higher education</td>
<td>Hunger, Access to healthy options</td>
<td>Social integration, Support systems, Community engagement, Discrimination, Stress</td>
<td>Health coverage, Provider availability, Provider linguistic and cultural competency, Quality of care</td>
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<td>Income</td>
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<td>Support</td>
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### Health Outcomes

- Mortality
- Morbidity
- Life Expectancy
- Health Care Expenditures
- Health Status
- Functional Limitations
Indian Health Service

**Mission:** to raise the physical, mental, social, and spiritual health of American Indians and Alaska Natives to the highest level

**Vision:** healthy communities and quality health care systems through strong partnerships and culturally responsive practices
“Early childhood experiences, social inequality and social exclusion, security of access to food and water, stress, and the availability of and access to employment are among the social characteristics that have been shown to affect health outcomes for individuals and communities worldwide” (Carroll, et al., 2022).
### Mortality Disparity Rates

<table>
<thead>
<tr>
<th>Mortality Disparity Rates</th>
<th>AI/AN Rate 2009-2011</th>
<th>U.S. All Races Rate – 2010</th>
<th>Ratio: AI/AN to U.S. All Races</th>
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<tbody>
<tr>
<td>All Causes*</td>
<td>999.1</td>
<td>747.0</td>
<td>1.3</td>
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<tr>
<td>Diseases of the heart (Heart Disease)</td>
<td>194.7</td>
<td>179.1</td>
<td>1.1</td>
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<tr>
<td>Accidents (unintentional injuries Including MVA)</td>
<td>93.7</td>
<td>38.0</td>
<td>2.5</td>
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<tr>
<td>Diabetes mellitus (diabetes)</td>
<td>66.0</td>
<td>20.8</td>
<td>3.2</td>
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<tr>
<td>Alcohol Induced</td>
<td>50.5</td>
<td>7.6</td>
<td>6.6</td>
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<tr>
<td>Chronic liver disease and cirrhosis</td>
<td>42.9</td>
<td>9.4</td>
<td>4.6</td>
</tr>
<tr>
<td>Drug Induced</td>
<td>23.4</td>
<td>12.9</td>
<td>1.8</td>
</tr>
<tr>
<td>Nephritis, nephrotic syndrome (kidney disease)</td>
<td>22.4</td>
<td>15.3</td>
<td>1.5</td>
</tr>
<tr>
<td>Intention self-harm (suicide)</td>
<td>20.1</td>
<td>12.1</td>
<td>1.7</td>
</tr>
</tbody>
</table>

How Do SDOH Impact Health and Diabetes?

- Direct Impacts
- Longer Term Impacts
  - Physiologic Impacts
  - Stress Response
- Epigenetics
Direct Impacts—Food/Nutrition Insecurity

- **Definition**
  - Lacking “access to enough food for an active, healthy life for all household members. (USDA, 2016)

- **Prevalence**
  - Higher diabetes prevalence in food insecure households
  - Higher food insecurity prevalence amongst Medicaid-enrolled individuals with diabetes - 32%; 44% amongst insulin-dependent individuals with eye or kidney complications:
    - Diabetes Care 2021; 35: 193–195
Direct Impacts—Food/Nutrition Insecurity

- Increased risk of hyperglycemia, poor glucose control, and hypercholesterolemia
  - Diabetes Care 2012; 35(2): 233-8
  - Diabetes Care 2013; 36: 3093–3099
- More hypoglycemia episodes
  - Archives of Internal Medicine 2011; 171(13): 1204-6
- Reliance on less expensive, energy-dense foods
  - Cureus. 2021; 13(3): e13841
Direct Impacts—Economic Security

• Housing Insecurity
  – Influences diabetes management and care processes: less likely to have a physicians visit, A1c check, and eye exam
  • BMC Health Serv Res 2022; 13;22(1):61
Direct Impacts—Education

• Education
  – Health Literacy associated with lower HbA1c and better diabetes knowledge
    • J Gen Intern Med 2019; 34:1007–1017
  – Educational attainment associated with better glycemic control
Stress Response

Chronic Stress

• Overwhelming and unresolved stress
• H-P-A axis dysregulation occurs
  – Glucocorticoid (GC) negative feedback loop becomes dysfunctional
    → GC Receptor (GR) resistance → stress hormones and immune system mediator response → compromised immune system and organ and tissue damage over time.
  
• Future Science OA 2015; 1(3): FSO23.
Chronic stress

Hypothalamus (CRH)

Mind-body medicine

Hypothalamus

Pituitary (ACTH)

Adrenal cortex

Medulla

Amygdala

Glucocorticoids

Chronic stress

Detrimental metabolic and immunological effects

Exacerbation of chronic condition: hypertension, obesity, diabetes, anxiety, and suppression of reproduction function

Epigenetics: Early Experiences Can Have Lifelong Consequences

Toxic Stress

• “...can occur when a child experiences strong, frequent, and/or prolonged adversity—such as physical or emotional abuse, chronic neglect, caregiver substance abuse or mental illness, exposure to violence, and/or the accumulated burdens of family economic hardship—without adequate adult support. (Center on the Developing Child, 2014, Toxic Stress Response)
Some of the pathways that mediate exposure to early adversity and adult outcomes.

Childhood psychosocial adversity
- Care environment mediates stress
  - Prenatal maternal stress, depression
  - Postnatal caregiver unavailability/absence (mental illness, substance abuse, death)
  - Depriving environments (eg institutional care)
  - Child abuse or neglect

Sensitive period effects
Specific to developmental functions/domains
- 6–12 months HPA axis (SHRP)
- 15 months Language
- 24 months Attachment, IQ

Biological change
- Genetic endowment
  - Genetic variants alter susceptibility to adversity
    - eg 5-HTTLPR, BDNF, FKBP5, MAOA polymorphisms
- DNA methylation
  - (eg GR promoter, IGF-2 antisense AVP)
- Telomere shortening
- Developmental trajectory
  - Biological change is embedded in behaviour (e.g. substance use, exercise, diet, stress management)

Epigenetic changes
- Reduced volume of key regions
- Neurotransmitter changes
- Altered functional activity, tract connectivity

Adult outcomes
- Increased risk of:
  - Cognitive deficits
  - Disease
  - Psychopathology
  - Social problems (unemployment, incarceration)

Charles A Nelson et al. BMJ 2020;371:bmj.m3048
Chronic stressor (child abuse, trauma, early life stressor)

Overstimulation

HPA activation ➞ Sympathetic/parasympathetic imbalance

Paraventricular nucleus in hypothalamus

CRF

Corticotrophin cells

ACTH

Adrenal glands

Cortisol

Hippocampus

Amygdala

Pre-frontal cortex

(Perception of threat)

(Emotional instability)

(Cognitive dysfunction)

High cortisol level (++)

- Blood
- Urine
- Saliva

Decreased feedback regulation
Historical Impacts

• Neighborhood, As-built and Ambient Environments
  • Where we live—geographically remote locations impact access to food, water, utilities, services
  • Pollution—affected water sources, particulate matter from dust, smoke
  • Transportation limitations
  • Ability to own land
  • Lack of housing
  • Access to broadband—emerging SDOH with impacts for telehealth, virtual education, commerce, access to information

• Access to Health Care
  • Limited; funding challenges

• Social Cohesion/Belonging
  • Removal from family, community, and cultural practices integral to who we are as Native People

• Education
  • Boarding schools
  • Limited educational opportunities

• Food/Nutrition Security
  • Removal from traditional agriculture, hunting and gathering lands
  • Remote locations impact food availability and nutritional quality
  • Commodity foods

• Economic stability
  • Ability to work and provide for families historically restricted
  • Segregation policies impacted education and employment opportunities
Social Determinants of Health
Social Determinants of Health

Topsoil

Subsoil

Parent Material

Bedrock

The People: Family, Identity, Community
Social Determinants of Health

- Historical Events, Policies & Trauma
- The People: Family, Identity, Community

Topsoil

Subsoil

Parent Material

Bedrock
The People: Family, Identity, Community

Historical Events, Policies & Trauma

Disruption in family, parenting, community & cultural practices; poverty; lack of opportunity & economic mobility; discrimination; violence

Social Determinants of Health
Social Determinants of Health

Topsoil
- Intergenerational Trauma: neglect, abuse, unhealthy/harmful coping strategies

Subsoil
- Disruption in family, parenting, community & cultural practices; poverty; lack of opportunity & economic mobility; discrimination; violence

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Historical Events, Policies & Trauma

Disruption in family, parenting, community & cultural practices; poverty; lack of opportunity & economic mobility; discrimination; violence

Intergenerational Trauma: neglect, abuse, unhealthy/harmful coping strategies

Social Determinants of Health

Depression, Anxiety, Diabetes, Obesity, Heart Disease, Cancer, Depression, Anxiety

Anxiety, Diabetes, Obesity, Heart Disease, Cancer

Social Determinants of Health

Topsoil

Subsoil

Parent Material

Bedrock

The People: Family, Identity, Community
Transdisciplinary model of stress: Integrating contextual, historical, habitual, and acute stress processes

Path A: Chronic stress effects on the brain and body

Daily Stressors

Acute Stress Processes

- Psychological Responses
  - Cognitive: Appraisals, unconscious processes, perseverative cognitions
  - Affective: Emotion, motivation, coping/regulation

Anticipation, reactivity, recovery, habituation

Multi-system Physiological Responses

Allostatic Load
- Systemic & Cellular Brain Architecture

Path B: Neural & peripheral effects on stress responses

Health Behaviors

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Source: https://www.stress-management.online/
Indian Health Service

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HHS Social Determinants Of Health Working Group

- HHS Working Group: 130+ members
  - 9 OpDivs (ACF, ACL, AHRQ, CDC, CMS, HRSA, IHS, NIH, SAMHSA)
  - 7 StaffDivs (ASFR, ASPE, ASPR, IOS, IEA, OASH, OCR, ONC)
  - Co-chaired by CMS OMH and ASPE
- **Charge:** Develop a strategic plan to make health outcomes more equitable through better integrating health and human services, with a particular focus on individuals and populations at high risk for adverse outcomes in government health and human service programs.
HHS Social Determinants Of Health Working Group

- HHS SDOH Action Plan
  - Released to HHS agencies on 3/31/2022
  - Journal of the American Medical Association (JAMA) Health Forum article: [JAMA Health Forum – Health Policy, Health Care Reform, Health Affairs | JAMA Health Forum | JAMA Network](https://www.jamahealthforum.com)
Note: Adapted from Castrucci B, Auerbach J. Meeting Individual Social Needs Falls Short of Addressing Social Determinants of Health. Health Affairs Blog. January 16, 2019
• The HHS strategic approach to SDOH will drive progress through the coordinated strategies and activities to better integrate health and human services and to advance public health initiatives involving cross-sector partnerships and community engagement to address specific SDOH drivers.
Next Steps

- HHS is ensuring that the actions we take will address key drivers of disparities in health outcomes among underserved and marginalized populations. Measuring and monitoring progress will be essential for HHS to assess what actions are working and what new actions may be needed to address SDOH to advance health equity. Examples of initial actions HHS will take to advance the 3 goals include:

  - Establish interoperability standards to enhance collection of SDOH data and facilitate referrals between health and human service providers
  - Use data to assess where program beneficiaries or communities are facing SDOH challenges and to develop strategies to help mitigate these challenges
  - Advance research to identify evidence-based interventions that address SDOH
  - Expand community health worker services to address SDOH including those exacerbated by COVID-19
  - Expand the Community Health Aide Program nationwide to increase health care access for American Indian and Alaska Native populations in rural and underserved areas
  - Partner with other federal departments to enhance access to safe and affordable housing, increase access to transportation, and increase access to healthy food and nutrition assistance
  - Develop best practices and partner with stakeholders to braid funding sources for state and local governments and community-based organizations to address social needs and drivers of health outcomes
HHS Social Determinants Of Health Working Group

• HHS SDOH Action Plan Implementation Phase:
  ◦ 4 Affinity Groups
    1. Measurement and Data Collection
    2. Social Care and Referral and SDOH Interoperability
    3. Community and Peer Health Workers
    4. Health and Social Services Collaboration

• White House SDOH Interagency Policy Council (IPC) Convened January 2022
• Report is the first of its kind since the National Commission on Diabetes released “The Long-Range Plan to Combat Diabetes” in 1975

• Evidence-based recommendations to address:
  – (1) diabetes prevention and control in the general population;
  – (2) diabetes prevention in populations who are at high risk of developing type 2 diabetes; and
  – (3) treatment of diabetes and its complications.
IHS SDOH Planning

• Development of a proposed strategy
  • SDOH “Mapping”
  • Identifying Key Drivers
  • Understand Data & Information System Needs
  • Develop Model Framework for IHS
  • Strategy Proposal Development
  • Key Stakeholder Engagement
## SDOH “Mapping”

### Division of Behavioral Health (DBH)
- Alcohol and Substance Abuse Program (ASAP)
- Domestic Violence Prevention
- Forensic Healthcare
- Indian Children’s Program
- Mental Health
- Native Youth
- Substance Abuse and Suicide Prevention Program (SASP)
- Suicide Prevention Program
- Tele-Education
- Telebehavioral Health Center of Excellence (TBHCE)
- Youth Regional Treatment Centers (YRTC)

### Division of Clinical and Community Services (DCCS)
- Community Health Representative
- Health Education
- Health Promotion/Disease Prevention
- Maternal Child Health

### Division of Diabetes Treatment and Prevention (DDTP)
- SDPI
- DDTP
- TRAIL

### Division of Oral Health (DOH)
- IHS Oral Health Literacy Initiative
- Alternative Workforce Initiative

### Office of Quality
- Patient Safety

### Economic Stability
- Alcohol and Substance Abuse Program (ASAP)
- Native Youth
- Suicide Prevention
- Youth Regional Treatment Centers (YRTC)

### Social & Community Context
- Forensic Healthcare
- Native Youth
- Suicide Prevention Program
- Youth Regional Treatment Centers (YRTC)
- Zero Suicide

### Education Access and Quality
- Community Health Aide Program (CHAP)
- Domestic Violence Prevention
- Forensic Healthcare
- Native Youth
- Substance Abuse and Suicide Prevention Program (SASP)
- Suicide Prevention Program
- Tele-Education
- Telebehavioral Health Center of Excellence (TBHCE)
- Youth Regional Treatment Centers (YRTC)

### Neighborhood and As-Built Environment
- Alcohol and Substance Abuse Program (ASAP)
- Domestic Violence Prevention
- Forensic Healthcare
- Indian Children’s Program
- Mental Health
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**Indian Health Service**  
Division of Diabetes Treatment and Prevention
Understanding the Drivers

The Indian Health Service has a structured approach to meaningfully identify and address Social Determinants of Health (SDOH)-related needs of American Indians and Alaska Native people and communities.

- **Increasesystem readiness**
  - Data Infrastructure
    - Data Collection and Retention Capability
    - Data Analytics
    - Data Reporting Infrastructure
  - Screening Infrastructure and Processes
    - Screening Tool and Process
    - EHR Integration and Functionality
    - Clinical System Engagement and Feedback
  - Closed Loop Referral System
    - Bi-directional Information Sharing (Community Information Exchange)
    - Care Coordination
  - Strategy Development
    - MCHIP Impact Assessment (Initiatives, Projects, and Programs)
    - Communication Campaign (EODH and Impact to MCHIP and wellness of AI/AN people)
- **Increase Awareness**
  - Staff awareness
  - Patient awareness
  - Community awareness
- **Hire Decent Collaboration**
  - In-System (HHS)
    - Agency (Within HHS and Cross-sector)
    - Tribal Partners (Disposal Level)
    - State
    - Communities (including local tribes, programs, community-based organizations)
  - Out-of-System (Tribal Partners)

**Notes:**
- Improve health outcomes
- Improve patient experience
- Build community relations
- Minimize costs and in the long term sustain community health enhancements

**Potential Metrics/Data:**
- Number of individuals served
- Number of individuals connected to community resources
- Number of individuals involved in social needs assistance
- Health outcomes with social needs assistance
- SDOH outcomes associated with social needs assistance
- Patient feedback from social needs activities
Intersections

- Trauma-informed care
- Food Insecurity Workgroup
- Maternal Health Initiative
- Electronic Health Record
- Primary Care Redesign
- Geriatric Care
Háw’aa/ Gunalchééesh/Thank you