Impact of Historical Trauma and ACEs on Health Disparities

Our Nations, Our Journeys
Indigenous Public Health Forum
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University of North Dakota School of Medicine & Health Sciences
Pine Ridge Reservation
Kyle, S.D.
Traditional View of Public Health
IHS Areas

- Albuquerque
- Portland
- Billings
- California Phoenix
- Oklahoma
- Nashville
- Navajo
- Tucson
- Alaska
- Great Plains
- Bemidji

Map showing the regions covered by IHS Areas.
American Indians and Alaska Natives as a Share of the Total Population, by State, 2009-2011

Total: 2.5 million = 1% of U.S. Population

Legend:
- Less than 1% (36 states)
- 1-3% (8 states)
- More than 3% (7 states)

American Indian and Alaska Native includes people of Hispanic origin.
SOURCE: KCMU analysis of 2009 - 2011 ACS.
Historical Context

1492
Historical Context

1790
You will do well to try to inoculate the Indians by means of Blanket, as well as to try every other method that can serve to exterminate this execrable Race. I should be very glad your scheme for hunting them down by Dogs could take effect; but instead of too great a distance to think of that at present.
You will do well to try to inoculate the Indians by means of Blanketts, as well as to try every other method that can serve to Extirpate this Execrable Race. I should be very glad your Scheme for hunting them Down by Dogs could take effect…
Historical Context

1830
Historical Context
Dakota War of 1862

VALUE OF AN INDIAN SCALP

Minnesota Paid Its Pioneers a **Bounty** for Every **Redskin** Killed

It is not generally known in latter day Minnesota history that the state treasury once paid out cash as bounties for Sioux Indian scalps, just as this and many other states are now paying for wolf scalps. State Treasurer Koerner yesterday, in looking over the 1863 report of State Treasurer Charles Schaff, discovered the following item among the disbursements of that year:

J. C. Davis, Sioux scalp..........$25

This item occurs in the list of disbursements, amounting in all to $7,870.06, under the head “ Suppressing Indian War.” The $25 paid to J. C. Davis for
VALUE OF AN INDIAN SCALP

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AI/AN Population by County

Source: U.S. Census Bureau, 2010 Census Redistricting Data (Public Law 94-171) Summary File, Table P1.
AI/AN Population Decline and Recovery, 1492 – 2010
Inter-Generational Basis for Chronic Disease Disparities Among American Indians and Alaska Natives
Inter-Generational Basis for Chronic Disease Disparities Among American Indians and Alaska Natives

Historical Trauma

Boarding School Experiences
- Abuse (physical, sexual)
- Neglect
- Abandonment
- Forced Removal
- Loss of culture & language
- Forced Christianity
- Lost traditional parenting & family structure

Genocide

Gestational Stressors

Birth

Chronic Disease Disparities
Historical trauma is the collective emotional wounding across generations that results from massive cataclysmic events – Historically Traumatic Events (HTE)*

- The trauma is held personally and transmitted over generations. Thus, even family members who have not directly experienced the trauma can feel the effects of the event generations later
Epigenetics

Epigenetics refers to the study of changes in the regulation of gene activity and expression that are not dependent on DNA sequence.
Inter-Generational Basis for Chronic Disease Disparities Among American Indians and Alaska Natives

Historical Trauma

Genocide

Boarding School Experiences
• Abuse (physical, sexual)
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Gestational Stressors

Birth

Childhood Stressors

WIC

FDPIR

Chronic Disease Disparities

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Inter-Generational Basis for Chronic Disease Disparities Among American Indians and Alaska Natives

Historical Trauma

Gestational Stressors

Birth

Childhood Stressors

Chronic Disease Disparities

Boarding School Experiences
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Adverse Childhood Experiences
- Abuse (physical, sexual)
- Neglect
- Substance Abuse in home
- Mental Health Dx in home
- Witnessing violence
- Divorce
- Food insecurity
- Family member in prison

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ACE Study Pyramid

- Adverse Childhood Experiences
- Social, Emotional, & Cognitive Impairment
- Adoption of Health-risk Behaviors
- Disease, Disability, and Social Problems
- Early Death
- Death

Whole Life Perspective

Conception

Scientific Gaps
Impact of ACEs on Health

ACES can have lasting effects on:

- Health (obesity, diabetes, depression, suicide attempts, STDs, heart disease, cancer, stroke, COPD, broken bones)
- Behaviors (smoking, alcoholism, drug use)
- Life Potential (graduation rates, academic achievement, lost time from work)

ACEs have been found to have a graded dose-response relationship with 40+ outcomes to date.

*This pattern holds for the 40+ outcomes, but the exact risk values vary depending on the outcome.*
Inter-Generational Basis for Chronic Disease Disparities Among American Indians and Alaska Natives

**Historical Trauma**
- Genocide

**Gestational Stressors**
- Boarding School Experiences
  - Abuse (physical, sexual)
  - Neglect
  - Abandonment
  - Forced Removal
  - Loss of culture & language
  - Forced Christianity
  - Lost traditional parenting & family structure

**Childhood Stressors**
- Adverse Childhood Experiences
  - Alcoholism & SA
  - Suicide rates / death rates
  - Poverty / Poor nutrition
  - Racism / Toxic Stress
  - Role models
    - Few positive
    - Many negative
  - Parenting

**Adulthood Stressors**
- Adverse Adulthood Experiences
  - Alcoholism & SA
  - Suicide rates / death rates
  - Poverty / Poor nutrition
  - Racism / Toxic Stress
  - Role models
    - Few positive
    - Many negative
  - Parenting

**Birth**
- WIC

**Chronic Disease Disparities**
- FDPIR
Inter-Generational Basis for Chronic Disease Disparities Among American Indians and Alaska Natives

Historical Trauma

Gestational Stressors
- Birth
- WIC

Childhood Stressors
- FDPIR

Adulthood Stressors

Chronic Disease Disparities

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Next generation
AI/AN Health Disparities

Average age at death in ND (2005 – 2010):

75.7 Years in the White Population

54.7 Years in the AI Population
AI/AN Health Disparities

Average age at death in SD: 81 v 54
AI/AN Health Disparities
State Suicide Mortality rates by Race, 1990-2002

<table>
<thead>
<tr>
<th>State</th>
<th>Race</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Dakota</td>
<td>White</td>
<td>11.3</td>
</tr>
<tr>
<td>American Indian</td>
<td></td>
<td>26.0</td>
</tr>
<tr>
<td>South Dakota</td>
<td>White</td>
<td>12.8</td>
</tr>
<tr>
<td>American Indian</td>
<td></td>
<td>27.0</td>
</tr>
</tbody>
</table>

Underlying mortality data provided by NCHS (www.cdc.gov/nchs). Rates are per 100,000 and age-adjusted to the 2000 US Std Population (19 age groups, Census P25-1130) standard.
MEDICINE WHEEL

MENTAL

PHYSICAL

SPIRITUAL

EMOTIONAL
MEDICINE WHEEL & Traditional Values

WISDOM

COURAGE

FORTITUDE

GENEROSITY

UP—HONOR

WITHIN—HUMILITY

DOWN—RESPECT
Medicine Wheel Assessment
Interpersonal Relationships

Surface Interactions

• Professional Relationships, Acquaintances, etc.
Medicine Wheel Assessment
Interpersonal Relationships
Medicine Wheel Assessment
Interpersonal Relationships

Core Interactions—Encompass all Four Directions—Family, Close Friends
Medicine Wheel Assessment
Family Relationships

MENTAL

PHYSICAL

SPIRITUAL

EMOTIONAL
Medicine Wheel Assessment
Family Relationships

MENTAL

PHYSICAL

SPIRITUAL

EMOTIONAL
Medicine Wheel Assessment
Family Relationships

MENTAL

PHYSICAL

SPIRITUAL

EMOTIONAL
Medicine Wheel Assessment
Family Relationships

MENTAL

PHYSICAL

SPIRITUAL

EMOTIONAL
Medicine Wheel Assessment
Family Relationships

MENTAL

PHYSICAL

SPIRITUAL

EMOTIONAL
Medicine Wheel Assessment
Family Relationships

MENTAL

PHYSICAL

EMOTIONAL

SPIRITUAL

Connectedness to both ancestry and to future generations (7th Generation)
Crime in Indian Country

- Domestic and sexual violence in Indian country at epidemic rates
- 1 in 3 Native women will be raped in her lifetime
- Native women experiencing the highest rates of violence when compared to ANY other racial/ethnic group in the U.S.
- One study reported that approximately 80% of perpetrators offending against Native women are non-Indian
Child Abuse

Any willful act or threatened act that results in any physical, mental, or sexual injury or harm that causes or is likely to cause the child’s physical, mental, or emotional (or spiritual) health to be significantly impaired.
Long Term Health Effects of Child Abuse

Significant Risk For:

- Smoking
- Severe Obesity
- Physical Inactivity
- Depression
- Suicide Attempt
- Alcoholism
- Illicit Drug Use
- Injected Drug Use
- 50+ Sexual Partners
- Sexually Transmitted Infections
Long Term Health Effects of Child Abuse

- 103% more likely to smoke
- 43% more likely to become suicidal
- 103% more likely to develop alcohol addiction
- 192% more likely to develop a drug addiction
South Dakota Health Survey

The survey included questions on:

- Basic information, including age, sex, race;
- Self-reported health status, including chronic diseases, depression, and other health issues;
- Mental Health Screening;
- Access to services, including cost, distance, and other access issues; and
- Adverse Childhood Experiences.
South Dakota Health Survey
### DEMOGRAPHIC CHARACTERISTICS FOR AI AND NON-AI RESPONDENTS

<table>
<thead>
<tr>
<th></th>
<th>American Indian (n = 516)</th>
<th>Non-American Indian (n = 7078)</th>
<th>Total (n = 7593)</th>
<th>p value</th>
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</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
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<tr>
<td>18–34</td>
<td>36.63%</td>
<td>29.69%</td>
<td>30.34%</td>
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<tr>
<td>35–64</td>
<td>57.62%</td>
<td>49.94%</td>
<td>50.65%</td>
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<tr>
<td>65 and older</td>
<td>5.75%</td>
<td>20.37%</td>
<td>19.01%</td>
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<tr>
<td><strong>Gender</strong></td>
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<tr>
<td>Male</td>
<td>37.16%</td>
<td>43.08%</td>
<td>42.53%</td>
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<tr>
<td>Female</td>
<td>62.84%</td>
<td>56.92%</td>
<td>57.47%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AI</td>
<td>Non-AI</td>
<td>Total</td>
<td>p-value</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------</td>
<td>----------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td><strong>Employment status</strong></td>
<td></td>
<td></td>
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<tr>
<td>Not employed</td>
<td>31.60%</td>
<td>7.58%</td>
<td>9.64%</td>
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</tr>
<tr>
<td>Employed part time</td>
<td>11.91%</td>
<td>19.63%</td>
<td>18.97%</td>
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</tr>
<tr>
<td>Employed full time</td>
<td>49.59%</td>
<td>54.47%</td>
<td>54.05%</td>
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<tr>
<td>Retired</td>
<td>6.89%</td>
<td>18.31%</td>
<td>17.34%</td>
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<td><strong>Income (%FPL)</strong></td>
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<td>&lt;.0001</td>
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<tr>
<td>&lt;50% FPL</td>
<td>38.90%</td>
<td>12.73%</td>
<td>15.17%</td>
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</tr>
<tr>
<td>50–138% FPL</td>
<td>22.48%</td>
<td>10.18%</td>
<td>11.33%</td>
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<tr>
<td>138–250% FPL</td>
<td>17.29%</td>
<td>22.46%</td>
<td>21.98%</td>
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<tr>
<td>250–400% FPL</td>
<td>11.13%</td>
<td>28.75%</td>
<td>27.11%</td>
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<tr>
<td>&gt;400% FPL</td>
<td>10.20%</td>
<td>25.88%</td>
<td>24.42%</td>
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</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
<td>&lt;.0001</td>
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<tr>
<td>Less than high school</td>
<td>9.95%</td>
<td>3.23%</td>
<td>3.85%</td>
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<tr>
<td>High school diploma or GED</td>
<td>39.29%</td>
<td>32.40%</td>
<td>33.05%</td>
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<tr>
<td>Vocational or 2-yr. degree</td>
<td>24.86%</td>
<td>23.87%</td>
<td>23.96%</td>
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</tr>
<tr>
<td>4-year college degree</td>
<td>22.47%</td>
<td>25.69%</td>
<td>25.39%</td>
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<tr>
<td>Advanced or graduate degree</td>
<td>3.44%</td>
<td>14.81%</td>
<td>13.75%</td>
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<tr>
<td>Adverse Childhood Experiences Domains</td>
<td>American Indian (n = 516)</td>
<td>Non-American Indian (n = 7078)</td>
<td>Significance</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>---------------------------</td>
<td>--------------------------------</td>
<td>--------------</td>
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<tr>
<td><strong>Abuse</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Emotional Abuse</td>
<td>30.10%</td>
<td>17.41%</td>
<td>.0008*</td>
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<tr>
<td>Physical Abuse</td>
<td>24.51%</td>
<td>12.31%</td>
<td>.0002*</td>
<td></td>
</tr>
<tr>
<td>Sexual Abuse</td>
<td>15.53%</td>
<td>9.60%</td>
<td>.0263*</td>
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</tr>
<tr>
<td><strong>Neglect</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Emotional Neglect</td>
<td>25.87%</td>
<td>14.00%</td>
<td>.0005*</td>
<td></td>
</tr>
<tr>
<td>Physical Neglect</td>
<td>15.89%</td>
<td>2.78%</td>
<td>&lt;.0001*</td>
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<tr>
<td><strong>Household Dysfunction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother Treated Violently</td>
<td>23.76%</td>
<td>5.31%</td>
<td>&lt;.0001*</td>
<td></td>
</tr>
<tr>
<td>Household Substance Abuse</td>
<td>50.04%</td>
<td>21.49%</td>
<td>&lt;.0001*</td>
<td></td>
</tr>
<tr>
<td>Household Mental Illness</td>
<td>24.36%</td>
<td>13.89%</td>
<td>.0032*</td>
<td></td>
</tr>
<tr>
<td>Parental Separation or Divorce</td>
<td>39.34%</td>
<td>20.17%</td>
<td>&lt;.0001*</td>
<td></td>
</tr>
<tr>
<td>Incarcerated Household Member</td>
<td>22.57%</td>
<td>3.73%</td>
<td>&lt;.0001*</td>
<td></td>
</tr>
</tbody>
</table>
Prevalence: Mental Health Screens

Participants who screened positive for a condition using standardized mental health screening tools:

- Depression
- Anxiety
- Post Traumatic Stress Disorder (PTSD)

Statewide:

- Depression: 6%
- Anxiety: 8%
- PTSD: 10%

Urban:

- Depression: 6%
- Anxiety: 8%
- PTSD: 8%

Rural:

- Depression: 6%
- Anxiety: 8%
- PTSD: 8%

Isolated:

- Depression: 6%
- Anxiety: 8%
- PTSD: 8%

Reservation:

- Depression: 6%
- Anxiety: 8%
- PTSD: 10%
STATEWIDE PREVALENCE OF MENTAL HEALTH CONDITIONS, ALCOHOL MISUSE, AND SMOKING STATUS BY AMERICAN INDIAN RACE/ETHNICITY COMPARED WITH NON-AMERICAN INDIAN RESPONDENTS

<table>
<thead>
<tr>
<th>Condition</th>
<th>American Indian (n = 516)</th>
<th>Non-American Indian (n = 7078)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posttraumatic stress disorder (PC-PTSD)</td>
<td>13.2%</td>
<td>5.3%</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Current Smoker</td>
<td>35.2%</td>
<td>15.1%</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Depression (PHQ-2)</td>
<td>9.5%</td>
<td>5.1%</td>
<td>.07</td>
</tr>
<tr>
<td>Severe Alcohol Misuse (AUDIT-C 9+)</td>
<td>3.3%</td>
<td>2.4%</td>
<td>.46</td>
</tr>
<tr>
<td>Alcohol Misuse (AUDIT-C)</td>
<td>40.2%</td>
<td>42.6%</td>
<td>.63</td>
</tr>
<tr>
<td>Anxiety (GAD-2)</td>
<td>8.1%</td>
<td>7.4%</td>
<td>.80</td>
</tr>
</tbody>
</table>
Self-Rated Health Status

Self-assessment of general health status

- Excellent
- Very Good
- Good
- Fair or Poor

Statewide
Urban
Rural
Isolated
Reservation
# AI ACE Disparities in South Dakota

<table>
<thead>
<tr>
<th>Number of ACEs (Score)</th>
<th>AI</th>
<th>Non-AI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>16.84%</td>
<td>50.02%</td>
<td>&lt;.0001*</td>
</tr>
<tr>
<td>1</td>
<td>21.59%</td>
<td>23.02%</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>16.20%</td>
<td>9.60%</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>12.99%</td>
<td>6.09%</td>
<td></td>
</tr>
<tr>
<td>4–5</td>
<td>13.10%</td>
<td>7.38%</td>
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</tr>
<tr>
<td>≥6</td>
<td>19.28%</td>
<td>3.89%</td>
<td></td>
</tr>
</tbody>
</table>

Note
*statistically significant
## Significant Challenges

<table>
<thead>
<tr>
<th>Social Determinants</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poverty</td>
<td>Health Disparities</td>
</tr>
<tr>
<td>Trauma</td>
<td>Education Inequality</td>
</tr>
<tr>
<td>Politics</td>
<td>Generational Poverty</td>
</tr>
<tr>
<td>Inattention/Neglect</td>
<td>Ongoing Racism</td>
</tr>
<tr>
<td>Racism</td>
<td>Worsening Inequity</td>
</tr>
<tr>
<td>Inequity</td>
<td>Suffering and Death</td>
</tr>
</tbody>
</table>
Significant Challenges

Social Determinants
- Poverty
- Trauma
- Politics
- Inattention/Neglect
- Racism
- Inequity

Outcomes
- Health Disparities
- Education Inequality
- Generational Poverty
- Ongoing Racism
- Worsening Inequity
- Suffering and Death

Need to address equity in a comprehensive manner—medical, behavioral, public health...
Research and Programming Needs

• Improve understanding of Historical Trauma
Research and Programming Needs

• Improve understanding of Historical Trauma

• How do we prevent ACEs?
  – Home visiting, parenting skills, community engagement
Research and Programming Needs

• Improve understanding of Historical Trauma
• How do we prevent ACEs?
  – Home visiting, parenting skills, community engagement
• How do we mitigate the impact of HT and ACEs?
Research and Programming Needs

• Improve understanding of Historical Trauma
• How do we prevent ACEs?
  – Home visiting, parenting skills, community engagement
• How do we mitigate the impact of HT and ACEs?
• Develop a Diverse Workforce
Research and Programming Needs

• Improve understanding of Historical Trauma
• How do we prevent ACEs?
  – Home visiting, parenting skills, community engagement
• How do we mitigate the impact of HT and ACEs?
• Develop a Diverse Workforce
• UND INMED & MPH Program
• PhD in Indigenous Health
Public Health Programming in a Cultural Context

Assess the effectiveness of new approaches to health promotion and disease prevention
Next Steps

Indigenous Health PhD

Build competencies in:

– Research Methods
– Evaluation Frameworks
– Policy Development and Analysis
– Leadership
Indigenous Health PhD

- 60 Credits, post-Masters
- 3-Years, full-time
- 42 credits—coursework
- 6 credits—Indigenous Health Seminar Series
- 12 credits—Dissertation / Portfolio
  - Dissertation—“Academic Track”
  - Portfolio—“Applied Track”
    - Community Health Assessment, Grant Proposal, Published Manuscript, Strategic Plan, Policy Brief, etc.
Indigenous Health PhD

- Principles of Indigenous Health—1 & 2
- Applied Biostatistics
- Applied Epidemiology
- Quantitative Methods
- Qualitative Methods
- Mixed Methods
- CBPR & Tribally-Driven Research Frameworks
- Indigenous Research Methods
- American Indian Health Policy—1 & 2
- Public Health Program Evaluation
- Indigenous Evaluation Frameworks
- Indigenous Leadership
Indigenous Health PhD

• Principles of Indigenous Health—1 & 2
• Applied Biostatistics
• Applied Epidemiology
  • Quantitative Methods
  • Qualitative Methods
  • Mixed Methods
• CBPR & Tribally-Driven Research Frameworks
• Indigenous Research Methods
• American Indian Health Policy—1 & 2
• Public Health Program Evaluation
• Indigenous Evaluation Frameworks
• Indigenous Leadership
Indigenous Health PhD

- Principles of Indigenous Health—1 & 2
- Applied Biostatistics
- Applied Epidemiology
- Quantitative Methods
- Qualitative Methods
- Mixed Methods
- CBPR & Tribally-Driven Research Frameworks
- Indigenous Research Methods
- American Indian Health Policy—1 & 2
- Public Health Program Evaluation
- Indigenous Evaluation Frameworks
- Indigenous Leadership
Indigenous Health PhD

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MEDICINE WHEEL &
Determinants of Public Health

EDUCATIONAL

ENVIRONMENTAL

CULTURAL & HISTORICAL

SOCIAL
MEDICINE WHEEL & Evaluation of Public Health

PLAN

IMPLEMENT ENVISION

EVALUATE
MEDICINE WHEEL &
Evaluation of Public Health

PLAN

IMPLEMENT

ENVISION

EVALUATE

Mission Driven
MEDICINE WHEEL &
Evaluation of Public Health

Envision
Implement
Evaluate

Mission Driven
Implementation
Science & Art

Plan
MEDICINE WHEEL &
Evaluation of Public Health

IMPLEMENT
Collection Data

PLAN
Mission Driven

ENVISION
Science & Art

EVALUATE
MEDICINE WHEEL & Evaluation of Public Health

PLAN

Mission Driven

IMPLEMENT

Implementation
Science & Art

Collect Data

ENVISION

Revise & Improve

EVALUATE

Revise & Improve
A child is sacred. And when that child comes into the home, the family must welcome it. And if the child is happy and feels the want, he will come into this world very, very strong. And not to know this is to know nothing.
Donald Warne

donald.warne@med.und.edu