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CHEROKEE NATION®
Public Health
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# Causes of Mortality in Cherokee Nation

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2016 Brief Report

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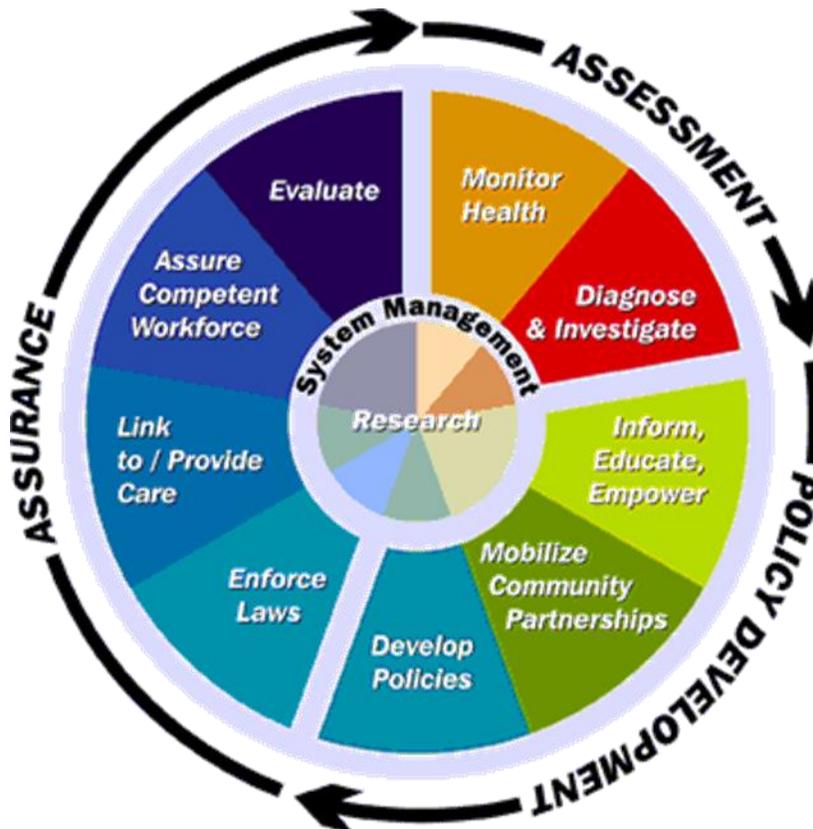
## Introduction

Cherokee Nation Public Health (CNPH) monitors and analyzes causes of death among Native Americans in the 14 counties of the Tribal Jurisdictional Service Area. Cherokee Nation Health Services (CNHS) uses these data to develop and direct our resources for both clinical care and for community health programs and interventions.

Most of the data that follow are from the Oklahoma State Department of Health (OSDH), Center for Health Statistics. The causes of mortality in the following tables and graphs are known to be underestimated. Many Native Americans are classified as “White” on death certificates. Previous studies have demonstrated that increasing the accuracy of race classification by cross-linking death certificate data with the Indian Health Service database increases the number of Native American deaths by 20-30%. The latest data that is cross-linked in this fashion is from 2009. CDC is currently working with OSDH and the Indian Health Service to cross-link mortality data through 2015. When this occurs, this report will be updated.

## Public Health

Cherokee Nation Public Health uses mortality data to perform the 10 essential services of public health:



With oversight from the CNHS Public Health Committee and the Governing Board, CNPH implements community-based programs and develops partnerships with local, state, and federal governmental agencies as well as many academic institutions and non-profit organizations to study and assess these programs. In addition, CNPH is rapidly developing the institutional capacity to monitor public health data through research and surveillance. For example, CNPH administers the Youth Risk Behavior Survey every other year to help identify the health issues facing our youth. In 2014, CNPH also oversaw all aspects of a research project in which an Adult Tobacco Survey was administered. Further, CNPH is in the planning stages for the next round of ATS data collection in early 2017. As we develop this capacity, we strengthen our people through self-determination and sovereignty as a Nation.

Public Health works on the concept that interventions in the community have a larger effect on health at less cost through changes in environment, policy, and systems. The most reliable predictor of health is socio-economic status which has many determinants: level of education, employment, income, disability, etc. The health impact pyramid further describes determinants of health and other areas for intervention.



Considering this, CNPH works with our various clinical services departments to coordinate public health programs and services with clinical services to provide our beneficiaries with increasing opportunities for health improvement and disease prevention.

## Mortality Data

The chart below describes the leading causes of death by age group in the 14 counties of the CN TJSA. Because of our source of data, these numbers cover the entirety of every county in the TJSA beyond our actual borders. As mentioned earlier, Native Americans are often listed as “White” on death certificates, so these estimates are low. However, we believe the rankings of the causes are accurate.

**Leading Causes of Death by Age Group, Native Americans in Cherokee Nation 2005-2014**

| Rank | Age Groups                        |                              |                              |                                  |                              |                                          |                                |                                 | Total                           |
|------|-----------------------------------|------------------------------|------------------------------|----------------------------------|------------------------------|------------------------------------------|--------------------------------|---------------------------------|---------------------------------|
|      | <1                                | 1-4                          | 5-17                         | 18-29                            | 30-44                        | 45-54                                    | 55-64                          | 65+                             |                                 |
| 1    | Prematurity (49)                  | Motor vehicle accidents (7)  | Motor vehicle accidents (38) | Motor vehicle accidents (109)    | Heart Disease (125)          | Heart disease (286)                      | Cancer (554)                   | Heart disease (1731)            | Heart disease (2616)            |
| 2    | Congenital Malformations (43)     | Drowning (6)                 | Suicide (9)                  | Accidental poisoning (62)        | Accidental poisoning (114)   | Cancer (221)                             | Heart disease (336)            | Cancer (1349)                   | Cancer (2252)                   |
| 3    | SIDS (33)                         | Congenital malformations (6) | Congenital malformations (6) | Suicide (61)                     | Motor vehicle accidents (86) | Accidental poisoning (88)                | Diabetes (121)                 | Lower respiratory disease (395) | Diabetes (559)                  |
| 4    | Accidental suffocation in bed (5) | Homicide (5)                 |                              | Homicide (30)                    | Suicide (76)                 | Diabetes (67)                            | Lower respiratory disease (92) | Stroke (349)                    | Lower respiratory disease (530) |
| 5    | Complications of the placenta (5) |                              |                              | Heart disease (10)               | Cancer (52)                  | Motor vehicle accidents (50)             | Stroke (47)                    | Diabetes (331)                  | Stroke (448)                    |
| 6    |                                   |                              |                              | Drowning (8)                     | Alcoholic liver disease (41) | Alcoholic liver disease (50)             | Alcoholic liver disease (46)   | Alzheimer's disease (149)       | Motor vehicle accidents (352)   |
| 7    |                                   |                              |                              | Diabetes (8)                     | Homicide (39)                | Suicide (46)                             | Accidental poisoning (37)      | Pneumonia (133)                 | Accidental poisoning (313)      |
| 8    |                                   |                              |                              | Other land vehicle accidents (8) | Diabetes (31)                | Lower respiratory disease (38)           | Motor vehicle accidents (32)   | Renal failure (113)             | Suicide (230)                   |
| 9    |                                   |                              |                              | Cancer (7)                       | Pneumonia (16)               | Chronic liver disease and cirrhosis (35) | Septicemia (30)                | Septicemia (97)                 | Pneumonia (187)                 |
| 10   |                                   |                              |                              | Septicemia (5)                   | Stroke (12)                  | Stroke (32)                              | Renal failure (28)             | Falls (61)                      | Septicemia (172)                |

Data Source: Oklahoma State Department of Health, Center for Health Statistics  
Data are not linked to correct for racial misclassification. These data are likely under-reported

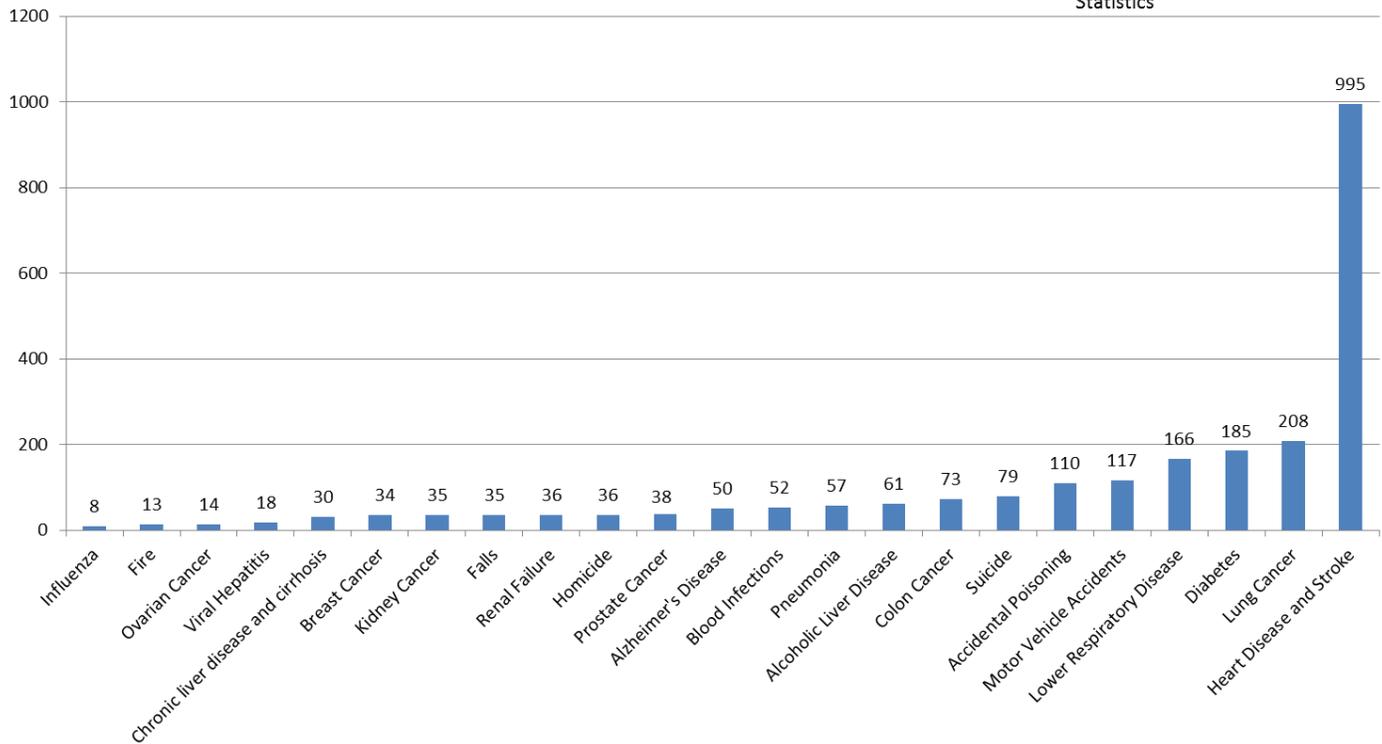
The table clearly indicates that the leading causes of death in the younger population are motor vehicle accidents, accidental poisoning (mostly drug/alcohol related), and suicide. Heart disease becomes an important cause of mortality starting when a person reaches their 30's. In our older

population, cancer and heart disease are the leading causes. These are strongly related to cigarette smoking, obesity, poor nutrition, and lack of physical activity.

Cancer is not a single disease, but is hundreds of diseases with differing causes and risk factors. In Cherokee Nation, the leading cancers are lung cancer and colon cancer. This is further depicted in the graphs below.

### Number of Deaths among Native Americans 2012-2014 14 Counties of Cherokee Nation

Source: Oklahoma State  
Department of Health,  
Center for Health  
Statistics

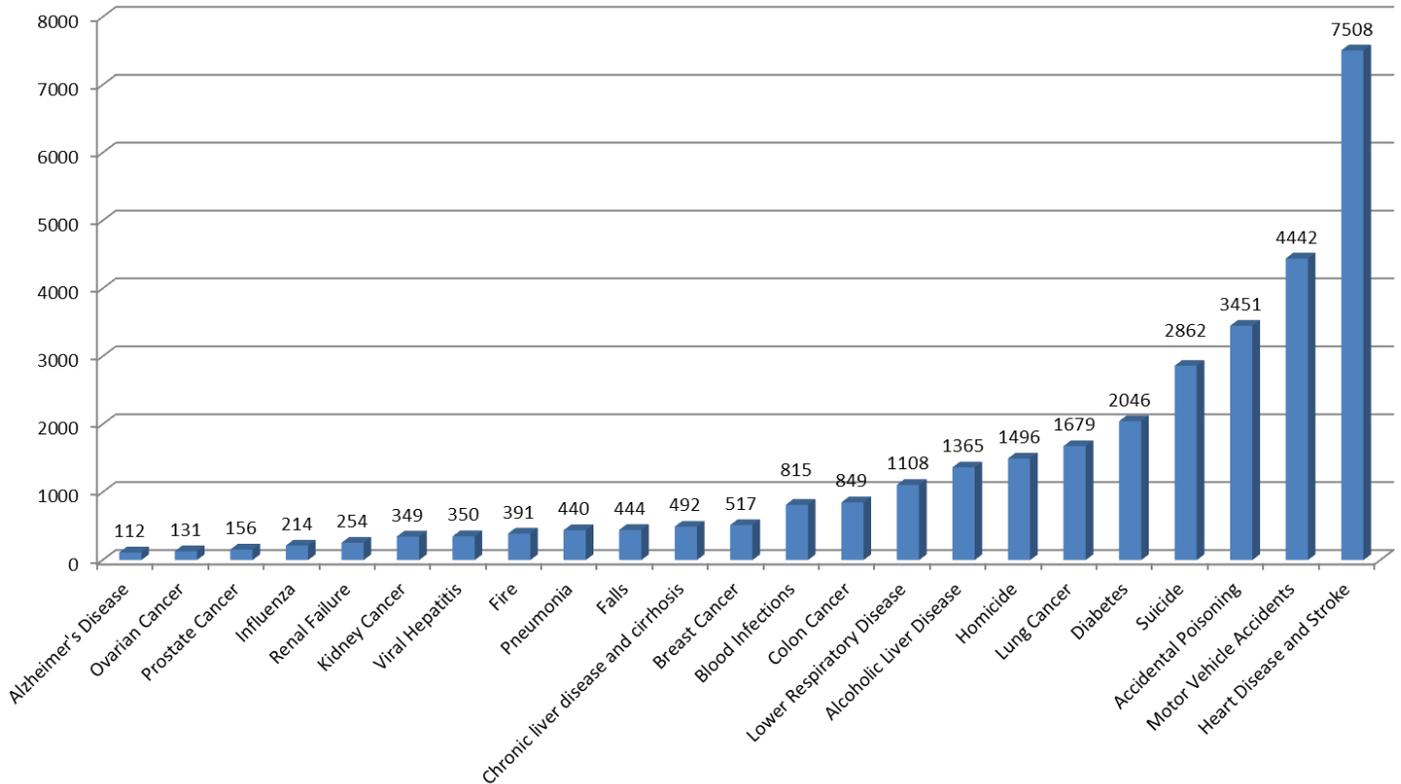


This graph covers a shorter time period than the first table. Heart disease and stroke are listed as a single category because the causes and risk factors are similar. Again, these numbers are underestimated.

An important indicator when analyzing mortality data is Years of Potential Life Lost before the age of 75 (YPLL 75). This number is determined by adding the number of years before the age of 75 that people die from a particular disease. With this we can better see how diseases impact our culture though the loss of the wisdom and knowledge of our Elders.

Source: Oklahoma State Department of Health, Center for Health Statistics

## Years of Potential Life Lost before Age 75 among Native Americans 2012-2014 14 Counties of Cherokee Nation



As depicted in the graph, heart disease and stroke continue to lead, with a total of over 7,500 years of potential life lost before the age of 75 in only a three year time period. Suicide, accidental poisoning, and motor vehicle accidents move up the list because of the relatively young age of the people who die from these causes.

### Conclusion

Cigarette smoking, lack of physical activity, and poor nutrition are important modifiable risk factors in many of the leading causes of death. However, the impact of mental health is poorly measured and described in our communities. Data on behavioral health issues are difficult to gather and interpret due to the sensitive nature and cultural barriers encountered. This problem is not unique to Cherokee Nation, but is an issue nation-wide. We strive to develop the internal capacity to measure the impact of mental health on health behaviors so we can provide more and better opportunities for Native Americans in our jurisdiction to live healthier, happier, and more productive lives.

Improving our outreach through our public health programs to increase preventive health services such as screenings for diabetes, colon cancer, breast cancer, lung cancer, and hypertension is also an important area of focus for CNPH. Our beneficiaries have excellent proximity to care, but

barriers still exist. These barriers need to be identified and overcome so our population can better access the excellent care that is available at our hospital and clinics. Our new electronic health record provides us with tremendous power to analyze large amounts of patient data. However, it is difficult to use healthcare data to describe a community as people tend to already have a disease or illness before they access our healthcare delivery system.

CNPH will continue to monitor and report these data regularly to keep the Tribal Health Committee informed of the health status of Cherokee Nation.