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CHEROKEE NATION ©

# Comprehensive Cancer Control Plan 2005-2007

**To request copies of this plan or to become a partner with the coalition, please contact:**

Cherokee Nation Cancer Programs
Comprehensive Cancer Control
1200 West 4th Street, Suite C
Tahlequah, Oklahoma 74464
(918) 458-4491

Or e-mail any of the following staff:

Kymberly Cravatt, Director: kym-cravatt@cherokee.org
Ruth Hummingbird, Project Coordinator: ruth-hummingbird@cherokee.org
Dana E. White, Public Health Advisor: dana-white@cherokee.org
Chris Stilwell, Special Assistant: chris-stilwell@cherokee.org
Donna Bush, Administrative Assistant: donna-bush@cherokee.org

The Cherokee Nation Comprehensive Cancer Control Website can be accessed at:
http://www.cherokee.org/services/health/cancer/

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**The Cherokee Nation Comprehensive Cancer Control staff would like to acknowledge the special contributions of our colleagues at each of the following agencies:**

**Cherokee Nation Health Services**
Gloria Grim, MD, Medical Director, Cherokee Nation Health Services
Lisa Perkins, MS, Director, Cherokee Nation Community Health Promotion

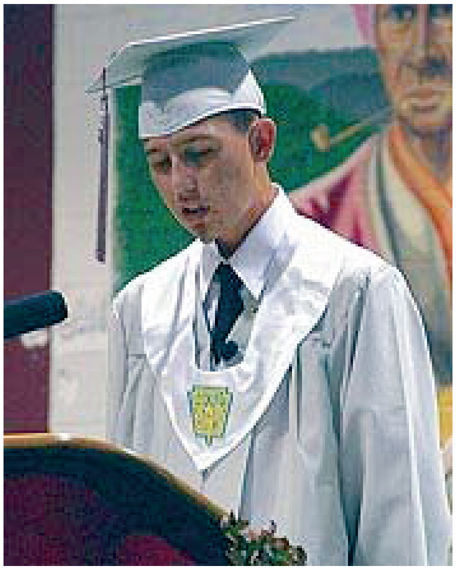
**Hastings Indian Medical Center**
Matthew Olnes, MD, PhD, Medical Officer, Hastings Indian Medical Center

**Oklahoma State Department of Health**
Janis Campbell, PhD, Surveillance Coordinator, Oklahoma State Department of Health
Charlie Jones, RN, Program Director, Oklahoma Breast and Cervical Cancer Early Detection Program
Susan Lamb, BA, Program Coordinator, Oklahoma Comprehensive Cancer Control Network
Anne Bliss, MPH, Cancer Epidemiologist, Oklahoma State Department of Health

# In Memory of Konrad Holmes

Konrad Holmes, a member of the Cherokee Nation, was diagnosed with a rare form of cancer in the fall of 2001. He was one of the most outstanding, courageous, and admired citizens in the Cherokee Nation.

Konrad enrolled at Sequoyah High School as a freshman in the fall of 2000. He was involved in school clubs such as the National Honor Society, American Indian Science and Engineering Society, American Indian Math and Science Club, as well as Student Council. His hobbies included cross-country running, track and field, arts and crafts, and listening to music. He was also a faithful member of Barber Baptist Church.



Well-respected by his peers, Konrad was avid in speaking about the disease that was overtaking his life and how he was enduring his cancer diagnosis through his faith. He wanted to make a difference in the world and found opportunities to speak to groups about his battle.

Konrad was dedicated to finishing high school, and in an emotional ceremony held September 29, 2003, Konrad graduated early from Sequoyah High School after completing all requirements needed for graduation.

On November 7, 2004, at the age of 19, Konrad lost his battle with this rare cancer. The Cherokee Nation flag at the Tribal Complex was lowered to half-staff in honor of the former Sequoyah High School student and Cherokee citizen.

A NOTE FROM THE HOLMES FAMILY:
We would like to encourage the progress in finding a cure for cancer and to ensure support for families in rural areas so they will not have to endure traveling great distances for treatment.

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# Advisory Board Members

Gloria Grim, MD
Medical Director
Office of Medical Director
Cherokee Nation Health Services
PO Box 980
Tahlequah, Oklahoma 74465
(918) 453-5479
gloria-grim@cherokee.org

Carolyn Chichester, MD
Chief Radiologist
Wilma P. Mankiller Health Center
Cherokee Nation Health Services
Route 6, Box 80
Stilwell, Oklahoma 74960
(918) 696-8800
carolyn-chichester@cherokee.org

Schuyler Steelberg, MD
Medical Director
Sam Hider Jay Health Center
Cherokee Nation Health Services
PO Box 350
Jay, Oklahoma 74346
(918) 253-4271
schuyler-steelberg@cherokee.org

Leticea Pablo, MD
Medical Director
Ga-Du-Gi Employee Clinic
Cherokee Nation Health Services
16944 West Cherokee Street
Tahlequah, Oklahoma 74464
(918) 458-6218
leticea-pablo@cherokee.org

Tom Foreman, DO
Medical Director
Cherokee Nation Primary Care Clinic
202 East Galer
Nowata, Oklahoma 74048
(918) 273-0192
tom-foreman@cherokee.org

Tracy Thompson, DO
Family Practice Physician
Cherokee Nation Primary Care Clinic
202 East Galer
Nowata, Oklahoma 74048
(918) 273-0192
tracy-thompson@cherokee.org

# Coalition Members

Amy M. Hickman-Richards, RN, BSN
Community Outreach Coordinator
Warren Cancer Research Foundation
6151 South Yale Avenue, Suite B103
Tulsa, Oklahoma 74136
(918) 494-6384
amrichards@saintfrancis.com

Ann Wheeler
Cancer Registrar
Cherokee Nation Cancer Registry
1200 West Fourth Street, Suite C
Tahlequah, Oklahoma 74464
(918) 458-4491
ann-wheeler@cherokee.org

Angela Leach, RN
Program Manager
Breast & Cervical Cancer Early Detection
1200 West Fourth Street, Suite C
Tahlequah, Oklahoma 74464
(918) 458-4491
angela-leach@cherokee.org

Anna Huckaby
Cherokee Language Training Coordinator
Cultural Resource Center
Post Office Box 948
Tahlequah, Oklahoma 74465
(918) 453-5000
anna-huckaby@cherokee.org

Anne Bliss, MPH
Epidemiologist
Oklahoma State Health Department
1000 Northeast Tenth Street
Oklahoma City, Oklahoma 73117
(405) 271-4072
anneb@health.ok.gov

Barbara Williams
Partnership Specialist
Cherokee Nation Behavioral Health
1200 West Fourth Street, Suite D
Tahlequah, Oklahoma 74464
(918) 431-4114
bwilliams@cherokee.org

Becky D. Dreadfulwater, BS
Health Educator
Cherokee Nation Cancer Programs
1200 West Fourth Street, Suite C
Tahlequah, Oklahoma 74464
(918) 458-4491
becky-dreadfulwater@cherokee.org

Caleen Bolin
Administrative Secretary
Human Resources Department
Post Office Box 948
Tahlequah, Oklahoma 74465
(918) 453-5000
caleen-bolin@cherokee.org

Carolyn McCoy
Community Specialist
Health Initiatives
American Cancer Society
5110 South Yale Avenue, Suite 101
Tulsa, Oklahoma 74135
(918) 743-6767
Carolyn.Mccoy@cancer.org

Cheryl M. Jones, RN
Program Manager
Take Charge! Program
Oklahoma State Health Department
1000 Northeast Tenth Street
Oklahoma City, Oklahoma 73117
(405) 271-4072
charliej@health.ok.gov

Chris Stilwell, BS
Special Assistant
Comprehensive Cancer Control
Cherokee Nation Cancer Programs
1200 West Fourth Street, Suite C
Tahlequah, Oklahoma 74464
(918) 458-4491
chris-stilwell@cherokee.org

Dana E. White, MPA
Public Health Advisor
Centers for Disease Control and Prevention
1200 West Fourth Street, Suite C
Tahlequah, Oklahoma 74464
(918) 458-4491
dana-white@cherokee.org

Diana Mouse
Cherokee FIRST Coordinator
Community Development
Cherokee Nation
Post Office Box 948
Tahlequah, Oklahoma 74465
(918) 453-5000
diana-mouse@cherokee.org

Donna Bush
Administrative Assistant
CCC/Cancer Registry
Cherokee Nation Cancer Programs
1200 West Fourth Street, Suite C
Tahlequah, Oklahoma 74464
(918) 458-4491
donna-bush@cherokee.org

Ella Kay Slagle
Oklahoma State Health Department
1000 Northeast Tenth Street
Oklahoma City, Oklahoma 73117

Greggory Woitte, MD
Women's Clinic
W.W. Hastings Indian Medical Center
100 South Bliss Avenue
Tahlequah, Oklahoma 74464
(918) 458-3118
gwoitte@sbcglobal.net

Hope Baluh, MD
Chair Department of Surgery
W.W. Hastings Indian Medical Center
100 South Bliss Avenue
Tahlequah, Oklahoma 74464
(918) 458-3118
hope.baluh@mail.ihs.gov

Idella Naktewa
Facilitator, American Indian Support Group
W.W. Hastings Indian Medical Center
100 South Bliss Avenue
Tahlequah, Oklahoma 74464
(918) 458-3118
idella.naktewa@mail.ihs.gov

Janis E. Campbell, PhD
Surveillance Coordinator
Chronic Disease Services
Oklahoma State Department of Health
Oklahoma City, Oklahoma 73117
(405) 271-4072 Extension # 57129
Janisc@health.ok.gov

John Farris, MD
Oklahoma Indian Health Services
Oklahoma City, Oklahoma 73117
(918) 405-3776
john.farris@mail.ihs.gov

Kymberly Cravatt, MPH, CHES
Director, Cancer Programs
Cherokee Nation Health Services
1200 West Fourth Street, Suite C
Tahlequah, Oklahoma 74464
(918) 458-4491
kym-cravatt@cherokee.org

Kevin Daugherty
GIS Specialist
Cherokee Nation Information Systems
Post Office Box 948
Tahlequah, Oklahoma 74465
(918) 453-5000
kevin-daugherty@cherokee.org

Laura Harjo
GIS Administrator
Cherokee Nation Information Systems
Post Office Box 948
Tahlequah, Oklahoma 74465
(918) 453-5000
lharjo@cherokee.org

Lisa Perkins, MS
Director, Community Health Services
Cherokee Nation Health Services
Post Office Box 948
Tahlequah, Oklahoma 74465
(918) 453-5000
lisa-perkins@cherokee.org

Mary Jo Wichers
Executive Director
Oklahoma Society of Clinical Oncology
5315 South Lewis Avenue
Tulsa, Oklahoma 74105
(918) 749-1546
Maryjo@tcmSok.org

Matthew Olnes, MD
Medicine Clinic
Hastings Indian Medical Center
100 South Bliss Avenue
Tahlequah, Oklahoma 74464
(918) 458-3100
matthewolnes@sbcglobal.net

Melissa Johnson
Partnership Program Coordinator
National Cancer Institute
Cancer Information Service
Oklahoma State Medical Association
601 NW Grand Boulevard
Oklahoma City, Oklahoma 73118
johnson@osmaonline.org

Nancy Bralic, RN, BSN
Comprehensive Cancer Control Intern
Oklahoma University
1200 West Fourth Street, Suite C
Tahlequah, Oklahoma 74464
(918) 494-6384
nancy-bralic@ouhsc.edu

Paul Mobley, MD
Clinical Director
Claremore Indian Hospital
101 South Moore Avenue
Claremore, Oklahoma 74031
(918) 342-6434
paul.mobley@mail.ihs.gov

Penny Holmes
Educator
Rocky Mountain School
Route 1 Box 646
Stilwell, OK 74960
p-h-63@yahoo.com

Rita C. Lamb
Information Coordinator
Cherokee Nation Health Services
Post Office Box 948
Tahlequah, Oklahoma 74465
(918) 453-5000
rita-lamb@cherokee.org

Robin Allen
Health & Nutrition Specialist
Cherokee Nation Early Childhood Unit
Tahlequah, Oklahoma 74465
(918) 453-5000
robin-allen@cherokee.org

Ruby Wells
American Indian Support Group
Cherokee Nation
Post Office Box 948
Tahlequah, Oklahoma 74465
(918) 453-5000
ruby-wells@cherokee.org

Ruth Hummingbird, BBA
Project Coordinator
Comprehensive Cancer Control
Cherokee Nation Cancer Programs
1200 West 4th Street, Suite C
Tahlequah, Oklahoma 74464
(918) 458-4491
ruth-hummingbird@cherokee.org

Susan Lamb, BA
Program Manager
OK Comprehensive Cancer Network
Oklahoma State Department of Health
Oklahoma City, Oklahoma 73117
(405) 271-4072 Extension # 57117
**susanl@health.ok.gov**

Susan M. Akers, RN
Choctaw Nation Health Care
Choctaw Nation Once Way
Talihina, Oklahoma 74571
1-800-349-7026 Extension # 6820
sakers@choctawnation.com

Tia Yancey, MPH, CHES
Interim Manager
Breast & Cervical Cancer Screening Network
Oklahoma State Department of Health
Oklahoma City, Oklahoma 73117
(405) 271-4072 Extension 57109
tiay@health.ok.gov

Tonya Giger
Coordinator
Cherokee Nation Diabetes Program
Post Office Box 948
Tahlequah, Oklahoma 74465
(918) 453-5000
tonya-giger@cherokee.org

SEPT. 6, 1839

## CHEROKEE NATION

**P.O. Box 948**
**Tahlequah, OK 74465-0948**
**918-456-0671**

Chad "Corntassel" Smith
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Principal Chief

Joe Grayson, Jr.
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Deputy Principal Chief

January 18, 2006

Dear Citizens of the Cherokee Nation:

There are not many of us who have not been touched by cancer in some way. In fact, cancer is the second leading cause of death among American Indians in Oklahoma. According to the emergence of new data, we here in Cherokee Nation are hit especially hard. In response to the growing burden of this disease, I would like to commend the Cherokee Nation Comprehensive Cancer Control Coalition for their efforts to put forward an integrated response which will address the many facets of the disease.

The Cherokee Nation Comprehensive Cancer Control Plan addresses measures to be taken within prevention, early detection, treatment, survivorship to reduce the incidence and mortality of cancer as well as to improve the health outcomes of those living with cancer. The planning for the plan has taken the better part of 2 years with numerous agency, local, regional, and state-wide partners participating.

The implementation of the Cherokee Nation Comprehensive Cancer Control Plan is merely a beginning. The continued collaboration of the Coalition partners as well as our own comprehensive care network is important to continue the work established as outlined in the following plan. I encourage and support the Coalition to build upon this foundation so that we may have a stronger, healthier Cherokee Nation.

Sincerely,

Chad Smith
Principal Chief

# Cherokee Nation
# Comprehensive Cancer Control
# Executive Summary

Cherokee Nation
Comprehensive Cancer Control
Executive Summary

# Executive Summary

Cherokee is a distinct culture with its own geography, language, government, history, spiritual beliefs and practices. The Cherokee Nation is the second largest tribe in the United States and occupies a 14 county region in Northeastern Oklahoma.

The Cherokee Nation Comprehensive Cancer Control (CNCCC) Project assists in the development of networks and collaboration that produce an infrastructure for a comprehensive approach to cancer within the Cherokee Nation. The Coalition Partners include local, regional, state and national representatives committed to a two-year process of identifying areas of concern, planning interventions and prioritizing greatest areas of identified need. The Cherokee Nation Comprehensive Cancer Control Plan will serve as an information resource for health care professionals and will serve as a tool for the Cherokee Nation Comprehensive Cancer Control Coalition and its respective entities. The Coalition is committed to the process of enhancing infrastructure for comprehensive cancer control in the Cherokee Nation with the ultimate goal of reducing morbidity and mortality among the Cherokee community.

The process of comprehensive cancer control for Cherokee Nation is unusual when considering the context of the role of Indian Health Service (IHS) and tribal health services due to the unique nature of the institutions. Cherokee Nation Health Services and the IHS are the primary resources for health care among American Indians residing within the Cherokee Nation. While Cherokee Nation Health Services and IHS deliver acute medical care needs and some chronic care needs, there are few resources within the current health infrastructure for the broad approach necessary for cancer control.

Based on a combination of data sources, which include the Cherokee Nation Cancer Registry, the IHS, and the Oklahoma Central Cancer Registry, the burden of cancer upon Cherokee Nation is evident. Lung cancer is the leading cancer site among American Indians residing within the Cherokee Nation boundaries. Breast Cancer is the second most frequent cancer site and the leading cancer site among women in the Cherokee Nation. Prostate cancer is the third most frequently occurring cancer followed by colorectal cancer. These cancer patterns are somewhat different than patterns documented among American Indian populations in other regions in the United States as well as within the Indian Health Service population overall.

Additionally, it is worth noting that while cervical cancer is not among the leading cancer sites in Cherokee Nation, cervical neoplasms are still of great concern. Elevated rates of cervical dysplasia among women living within Cherokee Nation are demonstrated. Therefore, while no chapter has been dedicated to cervical cancer, strategies for the control of cervical cancer and data regarding these disparities are noted in Chapter 3.

The Cherokee Nation Comprehensive Cancer Control Coalition has elected to focus on the primary prevention of cancer, affecting lifestyle behaviors such as physical activity, diet, and tobacco use among the Cherokee community. Additionally, recognizing and addressing issues related to the environment with a multi-disciplinary and multi-agency approach will enhance efforts to further reduce cancer risks.  The Coalition has also identified early detection, treatment, and palliative areas within the Cherokee Nation that can benefit from targeted strategies for improvement.

The need for advocacy and education for cancer control among Native communities is paramount.  Basic awareness of the unique cancer experience for American Indian people is necessary for the effective prevention, treatment, care, and palliative issues related to cancer.
This awareness in addition to recognition of the roles tribal health systems and IHS might serve over the cancer continuum is vital.  Additionally, the resources that are not afforded to tribal health care systems and IHS facilities for the comprehensive cancer control will continue to contribute to Native communities holding a disproportionate burden of cancer.

The Cherokee Nation is at the beginning of our discovery of the actual burden cancer is placing on our citizens.  As we continue to explore the realities of cancer within our Nation and continue to learn more about our cancer experiences, the Cherokee Nation Comprehensive Cancer Control Plan will continue to evolve.  As such, the Cherokee Nation Comprehensive Cancer Control Plan is a living document that will grow as our knowledge and awareness of cancer and its effect on our communities advance from the current foundation the Plan provides.

# Cherokee Nation
# Comprehensive Cancer Control
# Goals, Objectives and Strategies

## PREVENTION

### Physical Activity:

- Goal: Reduce the risk of cancer by increasing physical activity
  - Objective: Increase the number of events offered to adults and adolescents to participate in physical activity
    **Baseline: 12 annual events**
    **Target: 50% increase**
    **Timeline: 2 years**
    - Strategy 1: Increase number of Health Promotion opportunities on an annual basis
    - Strategy 2: Expand the Walk This Weigh media campaign
    - Strategy 3: Increase number of summer youth fitness camps
    - Strategy 4: Initiate fitness education to students within Cherokee Nation
    - Strategy 5: Develop Cherokee Nation Employee Wellness Presentation for cancer education

**CNCCC Partners:** Cherokee Nation HP/DP, Cherokee Nation Employee Wellness Program, Cherokee Nation nutrition advisors, Cherokee Nation Diabetes Program, Cherokee County Health Coalition

### Nutrition:

- Goal: Reduce the risk of cancer by encouraging healthy eating habits
  - Objective 1: Increase the number of schools in Cherokee Nation that offer healthy vending machine alternatives
    **Baseline: 0 schools**
    **Target: Four schools in Cherokee and Adair Counties**
    **Timeline: 2 years**
    - Strategy 1: Encourage community schools to serve health food alternatives
    - Strategy 2: Provide point-of-decision prompts at community nutrition sites, food distribution sites, and food establishments

**CNCCC Partners:** Cherokee Nation HP/DP, Cherokee Nation Employee Wellness Program, Cherokee Nation nutrition advisors, Cherokee Nation Diabetes Program, Cherokee County Health Coalition

### Environment:

- Goal: Reduce the risk of cancer by reducing exposure to environmental carcinogens

- Objective: In collaboration with Cherokee Nation Environmental Programs, develop a comprehensive register of potential environmental carcinogens within Tribal Jurisdictional Service Area
  **Baseline: No List**
  **Target: Completed list of potential environmental carcinogens and areas of concern within Cherokee Nation**
  **Timeline: 2 years**
  - Strategy 1: In collaboration with Cherokee Nation Environmental Programs, identify areas within Cherokee Nation with possible environmental carcinogenic exposure
  - Strategy 2: Examine cancer registry data to determine types and parity of cancer in exposed areas
  - Strategy 3: Utilize Geographical Information System (GIS) mapping to highlight specific areas of concern
  - Strategy 4: Develop targeted action to reduce environmental carcinogenic exposure

**CNCCC Partners:** Oklahoma State Health Department, Cherokee Nation Geo Data Services, Cherokee Nation Epidemiology Services, Cherokee Nation Cancer Registry and Cherokee Nation Environmental Services, Environmental Protection Agency, Centers for Disease Control and Prevention

**Tobacco:**

- Goal: Reduce the risk of cancer by reducing the number of American Indians habitually using non-ceremonial tobacco in Cherokee Nation
  - Objective 1: Reduce the number of current smokers
    **Baseline: 30% quit rate**
    **Target: 50% quit rate**
    **Timeline: 2 years**
    - Strategy 1: Conduct one smoking cessation class in six clinics and six communities
    - Strategy 2: Promote and encourage utilization of Oklahoma Tobacco Helpline
    - Strategy 3: Expand American Indian Tobacco Coalition of Oklahoma (NATCO) “Traditional Use, Not Abuse” prevention message
  - Objective 2: Increase the number of schools in Cherokee Nation with a 24/7 no smoking policy to promote tobacco use prevention among teens and adolescents
    **Baseline: 7 schools**
    **Target: 10 schools**
    **Timeline: 2 years**
    - Strategy 1: Establish SWAT (Students Working Against Tobacco) teams in each service area
    - Strategy 2: Initiate Tar Wars programs at schools located within the Cherokee Nation

- Strategy 3: Expand availability of NOT (Not On Tobacco) program to Adair and Cherokee counties

**CNCCC Partners:** Cherokee Nation HP/DP, Oklahoma Tobacco Settlement Endowment Fund, Cherokee County Tobacco Coalition, Oklahoma State Department of Health, Bill Willis Mental Health Services, Muskogee Health Department, Cherokee County Health Coalition, Cherokee Nation Employee Wellness, Hastings Indian Medical Center, Cherokee Nation Health Services, Centers for Disease Control and Prevention

## SCREENING AND EARLY DETECTION

**Lung Cancer:**

- Goal: There is no screening currently available to detect lung cancer in the early stages. Goals, objectives and strategies in Chapter 6, the Tobacco Chapter, are designed to decrease, eliminate or stop smoking among American Indians in Cherokee Nation which can greatly affect lung cancer risk.

**Breast Cancer:**

- Goal: Reduce morbidity and mortality of breast cancer by reducing late stage diagnosis of breast cancer among American Indian women living in Cherokee Nation
  - Objective 1: Increase percentage of annual mammogram screening among women ages 50-64

    **Baseline: 58.9% of women ages 50-64 with annual mammogram screening**

    **Target: 65%**

    **Timeline: 2 years**
    - Strategy 1: Utilize Cherokee Nation Breast and Cervical Cancer Early Detection Program to recruit women of ages 50-64 for annual mammography screening
    - Strategy 2: Utilize culturally appropriate education and promotion materials in community to raise awareness of mammogram screening
    - Strategy 3: Incorporate Native American Cancer Support group into outreach efforts

**CNCCC Partners:** Cherokee Nation Breast and Cervical Cancer Early Detection Program, Cherokee Nation Health Services clinical staff, Indian Health Service clinical staff, Native Support Circle, Cherokee Nation Employee Wellness, Cherokee Nation HP/DP, Cherokee Nation Community Health, National Cancer Institute Cancer Information Service, Mayo Clinic SPIRIT of EAGLES

**Prostate Cancer:**

- Goal: Reduce morbidity and mortality of prostate cancer by reducing late stage diagnosis of prostate cancer among men living in Cherokee Nation

- Objective 1: Increase percentage of screening for prostate cancer by PSA or DRE among men aged 50 and over

  **Baseline: 1,279 PSA's and 1,149 DRE's**

  **Target: 5% increase in screening**

  **Timeline: 2 years**

  - Strategy 1: Identify barriers to prostate screening for American Indian men living in Cherokee Nation
  - Strategy 2: Develop and implement a culturally appropriate risk assessment to be used by Cherokee Nation Health Services
  - Strategy 3: Monitor updates in screening guidelines and update Cherokee Nation clinical guidelines

**CNCCC Partnerships:** Cherokee Nation Cancer Registry, Cherokee Nation Health Services clinical staff, Indian Health Service clinical staff, Cherokee Nation HP/DP, Cherokee Nation Community Health, National Cancer Institute Cancer Information Service, Mayo Clinic SPIRIT of EAGLES

**Cervical Cancer:**

- Goa1: Reduce morbidity and mortality of cervical cancer by reducing late stage diagnosis of cervical cancer
  - Objective: Increase percentage of women under 30 years of age having annual pap tests and increase percentage of women 30 years of age and over in a recommended pap regimen

    **Baseline: 5,605 Pap smears**

    **Target: 10% increase in screening**

    **Timeline: 2 years**

    - Strategy 1: Increase the number of providers conducting pap tests within Cherokee Nation Health Services
    - Strategy 2: Identify barriers to obtaining pap testing
    - Strategy 3: Develop a culturally relevant and appropriate approach to raising awareness about cervical cancer

**CNCCC Partners:** Cherokee Nation Breast and Cervical Cancer Early Detection Program, Cherokee Nation Health Services clinical staff and Indian Health Service clinical staff, Cherokee Nation Behavioral Health Services, Cherokee Nation HP/DP, National Cancer Institute Cancer Information Service, Mayo Clinic SPIRIT of EAGLES

**Colorectal Cancer:**

- Goal: Reduce morbidity and mortality of colorectal cancer by reducing late stage diagnosis of colorectal cancer
  - Objective: Increase percentage of adults over the age of 50 who receive a colorectal cancer screening examination

    **Baseline: 952 FOBTs, identify number of colonoscopies**

    **Target: Target = 5% increase in screening**

    **Timeline: 2 years**

- Strategy 1: Identify barriers to colorectal screening for American Indian men living in Cherokee Nation
- Strategy 2: Develop and implement a culturally appropriate risk assessment to be used by Cherokee Nation Health Services
- Strategy 3: Develop a culturally appropriate approach to raising awareness about colorectal cancer and the importance of annual screening
- Strategy 4: Increase number of providers providing colorectal screening

**CNCCC Partners:** Indian Health Service clinical staff, Cherokee Nation Health Services clinical staff, Cherokee Nation Cancer Registry, American Cancer Society, National Cancer Institute Cancer Information Service, Mayo Clinic SPIRIT of EAGLES

## TREATMENT

### Clinical Trials:

- Goal: Reduce morbidity and mortality of cancer by assuring equal access and knowledge of on-going clinical trials for American Indians living in Cherokee Nation
  - Objective: Increase percent of Cherokee Nation population participating in clinical trials.

    **Baseline: To be determined**
    **Target: development of database of new and on-going clinical trials in Oklahoma**
    **Timeline: 2 years**

    - Strategy 1: Identify relevant ongoing clinical trial availability near Cherokee Nation Service Area
    - Strategy 2: Increase awareness of clinical trial information to Cherokee Nation Institutional Review Board and Medical Executive Committee
    - Strategy 3: Increase awareness of clinical trial information to Cherokee Nation residents

**CNCCC Partners:** Cherokee Nation Institutional Review Board, Cherokee Nation Health Services, Hastings Indian Medical Center, Claremore Indian Hospital, Investigational institutions to be later identified

### Service and Treatment:

- Goal: Reduce morbidity and mortality of cancer by reducing delay between diagnosis of cancer and initiation of treatment
  - Objective 1: Increase availability of surgical, radiation, and chemotherapy services within Cherokee Nation service area

    **Baseline: 2 contracts**
    **Target: 4 contracts**
    **Timeline: 2 years**

- Strategy 1: Increase number of service contracts with service providers in Cherokee Nation Service Area
- Strategy 2: Identify sources of revenue to pay for treatment services for uninsured Cherokee citizens with cancer treatment needs

➤ Objective 2: Develop a culturally appropriate education module for patients newly diagnosed with cancer
**Baseline: 0**
**Target: Culturally appropriate education module**
**Timeline: 2 years**

- Strategy 1: Partner with Oklahoma State Department of Health (OSDH), American Cancer Society (ACS), National Cancer Institute Cancer Information Service (NCI/CIS) to develop culturally appropriate education
- Strategy 2: Pilot module
- Strategy 3: Disseminate for use through Cherokee Nation Health Services
- Strategy 4: Develop capacity and funding for cancer patient navigation system

**CNCCC Partners:** Oklahoma State Department of Health, American Cancer Society, National Cancer Institute Cancer Information Service, Cherokee Nation Health Services, Cherokee Nation HP/DP, Claremore Indian Hospital, Hastings Indian Medical Center, Native American Support Group, Cherokee Nation Community Health

## SURVIVORSHIP

### Palliation and Support Services

➡ Goal: Partner with hospice to increase awareness of hospice services and follow-up care

➤ Objective 1: Increase awareness of hospice services and follow-up care
**Baseline: 1**
**Target: 10 presentations**
**Timeline: 2 years**

Strategy 1: Increase awareness of hospice and palliative services among cancer patients and caregivers

- Strategy 2: Increase awareness of hospice and palliative services among Cherokee Nation Health Services professionals
- Strategy 3: Advocate for expanded coverage of hospice by Centers for Medicaid and Medicare Services and private insurance companies

➤ Objective 2: Assist in infrastructure development of Support Group
**Baseline: 5 active members**
**Target: 10 active members**
**Timeline: 2 years**

    - Strategy 1: Identify sources of funding to support group activities and outreach
    - Strategy 2: Increase volunteer network for support group
    - Strategy 3: Raise awareness of support group as a resource within Cherokee Nation
- ➤ Objective 3: Conduct a comprehensive needs assessment for the development of infrastructure for caregiver support

  **Baseline: No assessment**
  **Target: Completed needs assessment**
  **Timeline: 2 years**

    - Strategy 1: Increase capacity for caregiver support group
    - Strategy 2: Identify support resources for care givers
    - Strategy 3: Develop and implement caregiver counseling through behavioral health

**CNCCC Partners:** Hospice of the Cherokees, Native American Support Group, Cherokee Nation Community Health, Cherokee Nation Health Services, National Indian Health Board, Cherokee Nation Volunteer Services, Cherokee Nation Behavioral Health, Cherokee Nation Elder Services, Cherokee Nation Diabetes Program, Cherokee Nation Clinics, Indian Health Service

## ADVOCACY

### Cancer Control Policy

➡ Goal: To reduce mortality and morbidity of cancer by advocating for legislation and policy favorable to cancer control and prevention for the Cherokee Nation population

- ➤ Objective 1: Advocate for increase in appropriations to the Indian Health Service

  **Baseline: 2 presentations**
  **Target: 50% increase in communications/presentations to the Oklahoma City Area Inter-Tribal Health Board, and the National Indian Health Board, State and Federal Agencies, State and Federal Legislators**
  **Timeline: 2 years**

    - Strategy 1: Support efforts of the Oklahoma City Area Inter-Tribal Health Board, and the National Indian Health Board to increase federal appropriations to Indian Health Service
    - Strategy 2: Support efforts of the Oklahoma City Area Inter-Tribal Health Board and the National Indian Health Board to prevent decreases in federal appropriations to Indian Health Service
    - Strategy 3: Collaborate with the Cherokee Nation Washington Office to develop advocacy efforts in support of increased appropriations for the Indian Health Service

- Objective 2: Advocate for legislation and increase in appropriations for federal health agencies supporting cancer control and prevention efforts in American Indians communities

  **Baseline: To be developed**

  **Target: Published incidence, survival, morbidity and mortality rates in Cherokee Nation, for years 1997-2004**

  **Target: 2 years**

  - Strategy 1: Collaborate with partners to identify cancer disparities in Cherokee Nation and Oklahoma
  - Strategy 2: Increase awareness of cancer disparities in Cherokee Nation and Oklahoma
  - Strategy 3: Provide statistical data to demonstrate cancer burden in Cherokee Nation and Oklahoma
  - Strategy 4: Collaborate with Cherokee Nation Washington Office to develop advocacy efforts in support of increased appropriates for cancer control for American Indians

- Objective 3: Advocate for increased and expanded Medicare, Medicaid, and private insurance coverage for quality of life services, including prevention, palliation, follow-up, and counseling services

  **Baseline: To be developed**

  **Target: Expansion of current coverage**

  **Timeline: 2 years**

  - Strategy 1: Identify current efforts of expanded coverage for palliative and caregiver services
  - Strategy 2: Support efforts of palliative care interest groups to expand coverage of insurance groups for counseling services for cancer patients and caregivers

**CNCCC Partners:** National Indian Health Board, Oklahoma State Health Department, Oklahoma City Area Indian Health Board, Cherokee Nation Washington Office, Cherokee Nation Health Services Legislative Officer, Cherokee Nation Health Services, Oklahoma Society of Clinical Oncology, Cherokee Nation Cancer Registry, Cherokee Nation Epidemiology Services, Native American Support Group

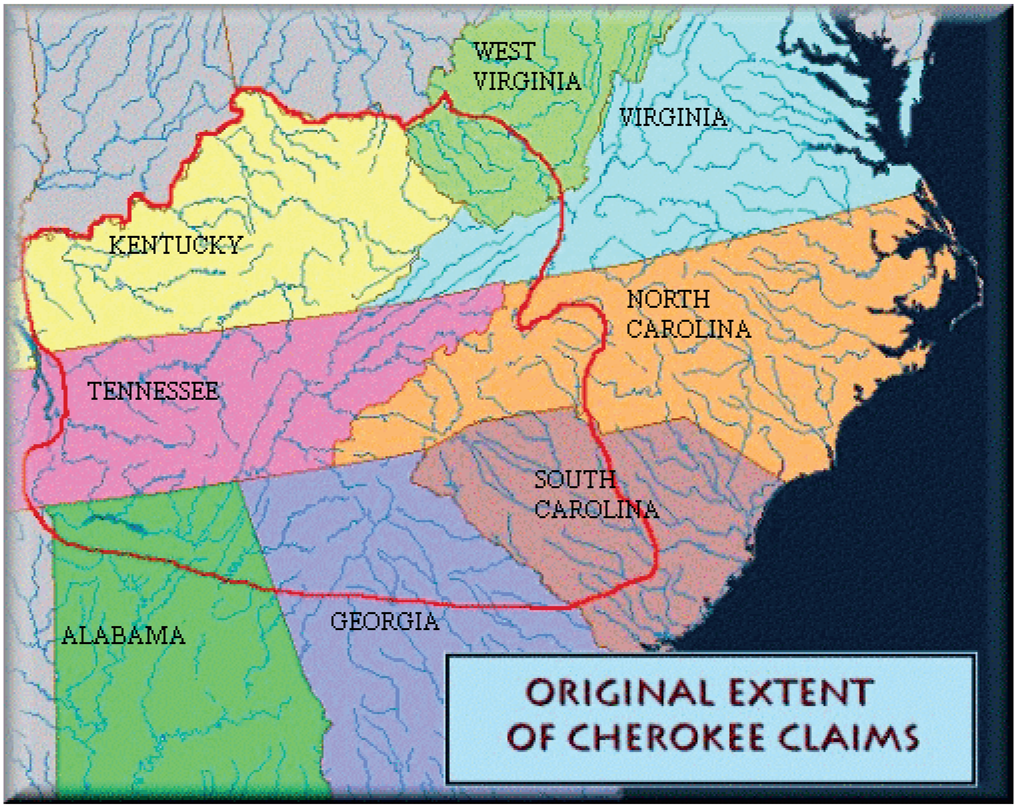
# Chapter 1
# The Cherokee Nation

# THE CHEROKEE NATION

## History of Cherokee Nation

Before European contact, the Cherokee occupied 126 million acres of land, an area that today includes parts of eight states (Figure 1): Tennessee, Kentucky, Georgia, Alabama, South Carolina, North Carolina, Virginia and West Virginia.

**Figure 1**



The Cherokee Nation was the second tribe to make a treaty with the colonial British government in 1721. Through nine more treaties, half of the land base inhabited by the Cherokee was ceded to the British.

The United States was the successor in interest to the colonial treaties, taking over the British obligations to the Cherokee. The United States entered into 12 more treaties with the Cherokee Nation. The land base was diminished by 1819. Thousands of Cherokees were forced to move further west into Indian Territory.

In 1838 and 1839, 7,000 federal troops were sent to remove the 17,000 Cherokees living in the southeastern United States. This forced removal from the ancestral homeland became known as the Trail of Tears. On the journey westward to Indian Territory, 4,000 Cherokees lost their lives to disease and exposure.

### Culture

Cherokee is a distinct culture with its own geography, language, social organization, spiritual beliefs and practices. There are seven Cherokee clans including: Bird, Paint, Wild Potato, Wolf, Blue, Deer, and Long Hair. Cherokee is a matrilineal society. Historically, Cherokee women were the heads of families and households and were economically powerful. The Cherokee language is not only spoken, but also written using a special syllabary with 86 letters developed by Sequoyah. Today, the Cherokee language continues to be spoken fluently across generations. Many Cherokees continue to engage in traditional Cherokee practices including stomp dances and prayer ceremonies.

### Cherokee Nation Today

The Cherokee Nation lies amid the foothills of the Ozark Mountains and the streams of the Illinois and Arkansas Rivers, inhabiting a tribal jurisdictional service area (TJSA) that encompasses 14 counties. The boundaries of the Cherokee Nation stretch from Tulsa east to Arkansas, and from the Kansas State line south to Interstate-40. With over 250,000 tribal members, the Cherokee Nation is the largest non-reservation tribe in the United States. One of three federally-recognized bands of Cherokee Indians, the Cherokee Nation has a tribal jurisdictional service area that covers approximately 7,000 square miles in northeastern Oklahoma.

In 1990, the Cherokee Nation became one of six tribes to enter into a self-governance agreement with the federal government. This historic agreement, signed by Chief Wilma P. Mankiller, authorized the tribe to assume responsibility for Bureau of Indian Affairs funds that had previously been spent on its behalf by the agency, area, and central office levels.

Governance of the Cherokee Nation is achieved by a three branch system which includes: the Executive Branch, represented by the Office of the Chief; Legislative Branch, represented by a 15 member-Tribal Council; and the Judicial Branch, represented by the Cherokee Nation District Court.

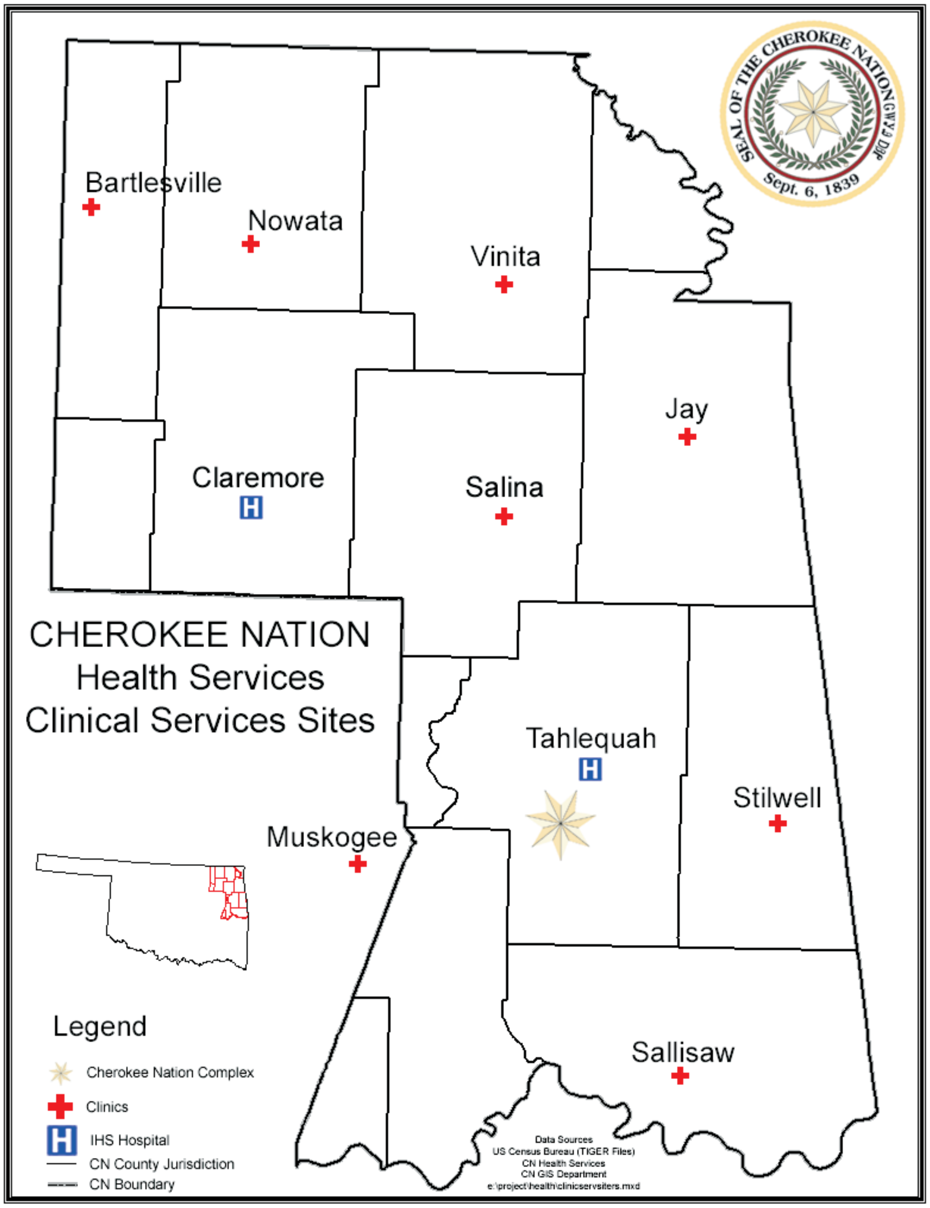
Today, the mission of the Cherokee Nation is to encourage its citizens to strive and maintain an enriching cultural identity, economic self-reliance, and a strong government by practicing Ga-Du-Gi, which is working together as individuals, families and communities for this and future generations.

### Cherokee Nation Health Services (CNHS)

CNHS is dedicated to working with communities, families and individuals to promote and improve health. Cherokee people will achieve an optimal level of health resulting in healthy communities, for this and future generations. Eligibility for Cherokee Nation Health Services is based on membership of any federally recognized tribe.

As authorized by Public Law 101-638, Cherokee Nation Health Services operates a wide scope of outpatient services through eight clinics, an inpatient adolescent treatment facility, and emergency medical services to meet and address the health needs of Cherokee citizens. In addition, CNHS operates several programs in both the Claremore Indian Hospital and Hastings Indian Medical Center. Services offered there include behavioral health, community health, diabetes management, dental, podiatry, audiology, optometry, laboratory, pharmacy, and radiology, as well as primary care. Cherokee Nation clinics are located in Nowata, Salina, Jay, Stilwell, Muskogee, Bartlesville, Vinita, and Sallisaw (see Figure 2).

**<u>Figure 2</u>** **Cherokee Nation Clinics and Indian Health Service Hospitals**



Data Sources
US Census Bureau (TIGER Files)
CN Health Services
CN GIS Department
e:\project\health\clinicservsiters.mxd

Behavioral Health

The Cherokee Nation Behavioral Health Services Program provides a variety of assessment and therapeutic services for individuals and families. The program was designed to provide a comprehensive and professional program that prevents, reduces and treats American Indians suffering from the effects of mental illness and related issues. Counseling is also available for persons who have substance abuse and chemical dependency.

Cancer Programs

The Cherokee Nation Cancer Programs consists of three cancer programs under one umbrella. These programs include a cancer registry, a breast and cervical cancer early detection program, and a comprehensive cancer control program which are listed below.

1. ***Cherokee Nation Breast and Cervical Cancer Early Detection Program* -** The Cherokee Nation Breast and Cervical Cancer Early Detection Program (CNBCCEDP) began receiving funding in 1994 through a cooperative agreement from the Centers for Disease Control and Prevention (CDC). CNBCCEDP provides breast and cervical cancer screening and early detection services, health education, outreach, and intensive tracking and follow-up through detailed nurse case management. The program works in collaboration with Cherokee Nation Clinics and Indian Health Service Hospitals to provide screening and early detection services throughout and around the Cherokee Nation Tribal Jurisdictional Service Area.

   CNBCCEDP is a CDC sponsored program authorized by the Breast and Cervical Cancer Mortality Prevention Act of 1990 (PL 101-354).

   - *Oklahoma Breast and Cervical Cancer Treatment Program* **–** Oklahoma Cares is a partnership of the Cherokee Nation, Kaw Nation, Oklahoma State Department of Health, the Oklahoma Health Care Authority and the Oklahoma Department of Human Services. The program provides treatment for breast and cervical cancerous and pre-cancerous conditions to eligible women.

     To qualify a woman must:
     - Be screened under the Breast and Cervical Cancer Early Detection Program
     - Have an abnormal screening result requiring further diagnosis and/or treatment
     - Have a qualifying low income and not otherwise eligible for Medicaid
     - Have no other insurance covering breast and cervical cancer diagnosis or treatment
     - Be under the age of 65

2. ***Cherokee Nation Cancer Registry*** - In 1997, with the support and funding of the National Cancer Institute, the Cherokee Nation developed an infrastructure for collecting cancer data. The target population for this registry includes all

American Indians residing in the 14-county Cherokee Nation tribal jurisdictional service area (CNTJSA).

The ultimate goal is to collect quality surveillance data that will meet or exceed the standards of the National Cancer Institute's (NCI) Surveillance, Epidemiology and End Results (SEER) program. Activities include case finding, patient follow-up, data processing, data reporting and quality assurance.

- *Memorandums of Agreements* - The registry has initiated Memorandums of Agreement with other hospitals within the 14-county jurisdiction and the Oklahoma Central Cancer Registry. Additionally, because many patients travel outside of Cherokee Nation and the State of Oklahoma for cancer care, the registry is currently seeks to establish agreements with surrounding hospitals outside of Cherokee Nation and State of Oklahoma. Similarly, agreements with other tribal organizations are currently underway.

3. ***Comprehensive Cancer Control Program* -** In July 2003, with the support and funding from the Centers for Disease Control and Prevention (CDC), the Cherokee Nation Cancer Programs received a planning grant to develop an infrastructure that would help identify existing gaps in cancer care for American Indians residing in the Cherokee Nation tribal jurisdictional service area (CNTJSA). A comprehensive examination of cancer in the Cherokee Nation has helped to guide our understanding of what patterns are developing, why the patterns are developing and what we can do to address the cancer needs in Cherokee Nation. Goals, objectives, strategies, resources, and partners were all identified to assist in the implementation of this plan.

### Contract Health Services (CHS)

Contract health services are funded from the Indian Health Service (IHS) to provide specialty care that may not be available within Cherokee Nation Health Services or IHS. Contract health funds are managed and accounted for in a system that is separate from regular operational costs. Three different entities are currently responsible for administration of contract health care in and around the Cherokee tribal jurisdictional service area; Cherokee Nation, Muscogee (Creek) Nation and the IHS. When eligible patients require specialty care not directly available from the clinics or hospitals where they receive basic services, referrals are made outside the network of the facilities. The Contract Health Services budget is extremely limited and is only funded at 25% of its need. Cherokee Nation Health Services contracts with over 250 specialty care physicians and/or facilities for a variety of health care services.

### Community Health

Preventive health services are provided throughout Cherokee Nation communities through Community Health Nursing (CHN) and Community Health Representatives (CHR). These resources are located in each Cherokee Nation clinic and CHNs and CHRs travel throughout the service area to provide community based health education.

### Diabetes Program

The Cherokee Nation Diabetes Program strives to provide patients living with diabetes the skills and resources to control their disease. The program staffs health care providers, nurses, dieticians, and certified diabetes educators in each Cherokee Nation clinic to deliver a multi-disciplinary approach to controlling diabetes.

### Emergency Medical Services (EMS)

Cherokee Nation Health Services operates an emergency medical service (EMS) unit which is state licensed and accredited by the Commission on Accreditation of Ambulance Services (CAAS). EMS is staffed with critical care paramedics and offers training courses for First Responders, Emergency Medical Technicians, First Aid, Cardio Pulmonary Resuscitation (CPR), and advanced medical life support (AMLS).

### Health Promotion Disease Prevention Program (HP/DP)

The Cherokee Nation Health Promotion Disease Prevention Program offers a wide variety of programs for the prevention of chronic disease. HP/DP offers smoking cessation, tobacco use prevention, WINGS activity club community events, obesity screening, nutritional activities and school health promotion. In 2005, HP/DP received funds from the Centers for Disease Control and Prevention to implement the Steps to a Healthier US.

### Indian Health Service

The Indian Health Service (IHS) operates two hospitals within the Cherokee Nation, Hastings Indian Medical Center (HIMC) and Claremore Indian Hospital (CIH). Eligibility for IHS is based on membership of any federally-recognized tribe.

- Hastings Indian Medical Center, located in Tahlequah, OK, employs over 600 clinical and support professionals for services ranging from primary care, obstetrics, audiology, behavioral health, dental, general surgery, physical therapy, orthopedics and radiology. HIMC has a user population of 115,000 and logs 14,000 inpatient days annually. Nearly 200,000 outpatient visits are handled annually. The facility is accredited by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO).

- Claremore Indian Hospital (CIH), located 20 miles north of Tulsa, is a comprehensive care facility with services ranging from primary care, obstetrics, dental, community health, general surgery, pediatrics and radiology. CIH is a JCAHO accredited facility which logs nearly 90,000 outpatient visits per year, has a user population of 65,000 and has 53 inpatient beds.

# Chapter 2

# The Cherokee Nation
Comprehensive Cancer Control Project

Chapter 2
The Cherokee Nation
Comprehensive Cancer Control Project

### What is Comprehensive Cancer Control?

According to the Centers for Disease Control and Prevention (CDC), viewed at the following link: http://www.cdc.gov/cancer/ncccp/index.htm, Comprehensive Cancer Control (CCC) is "a collaborative process through which a community and its partners pool resources to promote cancer prevention, improve cancer detection, increase access to health and social services, and reduce the burden of cancer."

### Why is Comprehensive Cancer Control Important to Cherokee Nation?

National statistics show that mortality rates for cancer are higher for American Indians than those of other races in the United States. Current statistics indicate an increasing incidence in the American Indian population. With this new emerging pattern, mortality rates are also increasing. A comprehensive examination of cancer in the Cherokee Nation tribal jurisdictional service area (CNTJSA) will guide our understanding of what patterns are developing, why the patterns are developing, and what we can do to address the cancer needs in Cherokee Nation.

### Our Mission

The Cherokee Nation Comprehensive Cancer Control (CNCCC) Program will seek to:

- Research and implement evidence based strategies and best practices that will reduce the cancer mortality rate of the American Indians who reside in the Cherokee Nation,
- Develop, maintain, evaluate and renew programs, resources, and interventions that will assure the Nation's capacity to diminish the cancer burden,
- Expand the knowledge base in medical, clinical, hospital and community settings regarding cancer issues among Cherokee Nation citizens in order to promote prevention, decrease mortality, and increase quality of life for Cherokee people.

### Our Comprehensive Cancer Control Goals

To assist in addressing the cancer needs in Cherokee Nation through prevention and early detection, and to insure cancer patients receive:

- Quality care when accessing treatment,
- Improved access to clinical trials,
- Patient advocates and navigators,
- Palliation assistance through hospice and other community health care programs.

### How We Got Started

The Cherokee Nation Cancer Programs (CNCP) was awarded a Comprehensive Cancer Control (CCC) project grant from CDC in July 2003. The purpose of the project is to assess, identify and address the gaps and barriers involving cancer disparities in the CNTJSA for the American Indian population.

The comprehensive approach is to evaluate all programs that address prevention, early detection, treatment, quality care, palliation and end of life issues for the cancer patient and his/her family.

According to the Centers for Disease Control and Prevention (CDC), an emphasis is placed on administration, basic and applied research, evaluation, health education, program development, public policy, surveillance, clinical services and health communications.

### Who are Our Partners?

Collaborative partners and committee members in the planning project, as well as those who will be implementing the strategies, include clinical and program directors, physicians, state health department personnel, nutrition specialists, community leaders, oncologists, epidemiologists, educators, tumor registrars, GIS data specialists, coordinators, survivors, and radiologists.

### Methods Used

The CCC committee members have assessed the cancer burden in the CNTJSA by reviewing epidemiological data, Oklahoma Central Cancer Registry (OCCR) data, Indian Health Services (IHS) data, American Cancer Society (ACS) data, and the Cherokee Nation Cancer Registry (CNCR) data. Initial evaluation of services that are currently in place, patterns of care, achievements that have been made, and identified gaps that need to be filled have been completed. Once all materials were reviewed, the stakeholders jointly set priorities for action in a systematic way. The partnership worked together to mobilize support that would implement joint priorities identified. Lastly, the partnership put in place an evaluation system to monitor progress of the planning and implementation process and to reassess priorities periodically. This will be an on-going process that will become institutionalized within the CNTJSA.

To begin the process a committee was formed which included parties employed within the Cherokee Nation and those in other organizations outside of Cherokee Nation. The purpose of the committee was to develop a working plan that would address the cancer burden within the Cherokee Nation, without duplicating efforts.

The committee chose to have monthly meetings, and workgroups presented data around their specific assignments. The following workgroups were identified and assigned the following tasks:

1. Data group – to collect cancer cases, map registry data, and design a website for CCC and Cancer Registry.
2. Resource group – to research questions by cancer site, develop material on these sites, and identify available programs.
3. Needs assessment group (whole committee) – to identify gaps in prevention, early detection, treatment, quality of care, palliation and end of life issues pertaining to each cancer site presented.
4. Evaluation group – to evaluate workgroup performance, identify measures of effectiveness, and keep members on track.
5. Outreach group – to identify ways of providing services beyond the current services available, develop a resource manual, and identify partnerships that will be reciprocally beneficial.

6. Survivorship group – to identify survivorship issues, identify survivor groups in CNTJSA, and attend survivor meetings to gain input and insight on evolving issues.

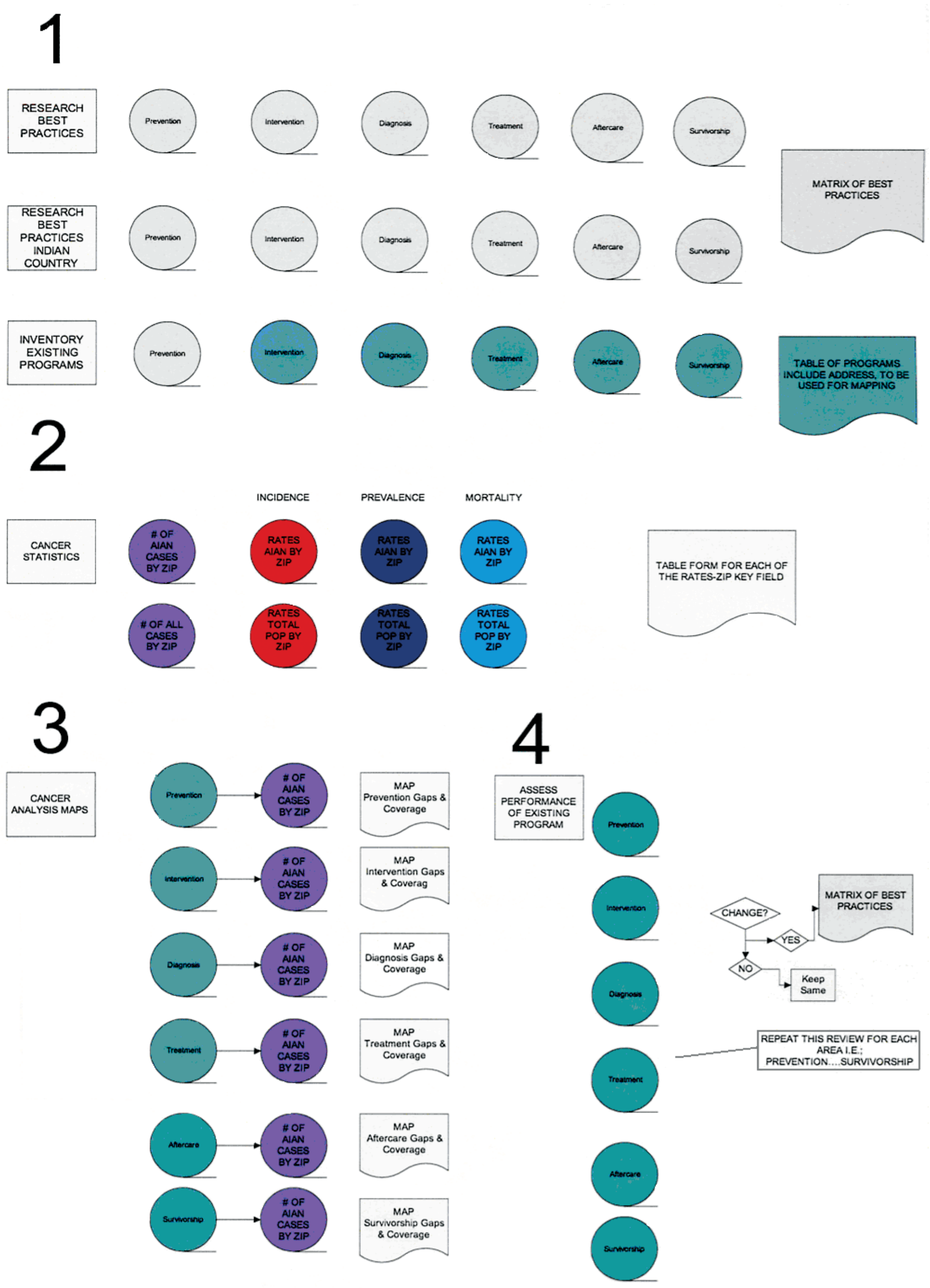
The primary cancer sites for the CNTJSA were identified from registry data and presentations were given on the sites, which highlighted the burden of cancer in Cherokee Nation. Physicians who care for these patients also gave presentations on the standard of care at the clinics and IHS facilities.

Current programs were identified, processes and procedures were outlined, and gaps were assessed in the current programs. Standards of care, best practices, clinical trials and evidence-based strategies in the US were reviewed and discussed.

Once all information was gathered in each specific area, objectives were outlined, gaps were noted, and barriers were discussed. Strategies were then identified and prioritized in a systematic way to address all the gaps and/or barriers where feasible. This entailed developing specific, measurable, attainable, relative and time-phased (SMART) objectives where appropriate. Baseline measures for each objective and/or strategy were identified, time intervals for measurement were set, and feasible dates for completion were decided upon. Where appropriate, identification of responsibility for implementation was made and ongoing partnership recruitment will continue in order to obtain needed resources.

A flow chart which documents the process (Figure 3) has been instrumental in helping the committee to review data. It will also be used on a continuous basis to disseminate data, identify duplication of efforts, update existing programs, identify gaps in service, develop needed programs, and identify best practices for implementation.

**Figure 3** **FLOW CHART FOR DATA DISSEMINATION**



## The Evaluation Process

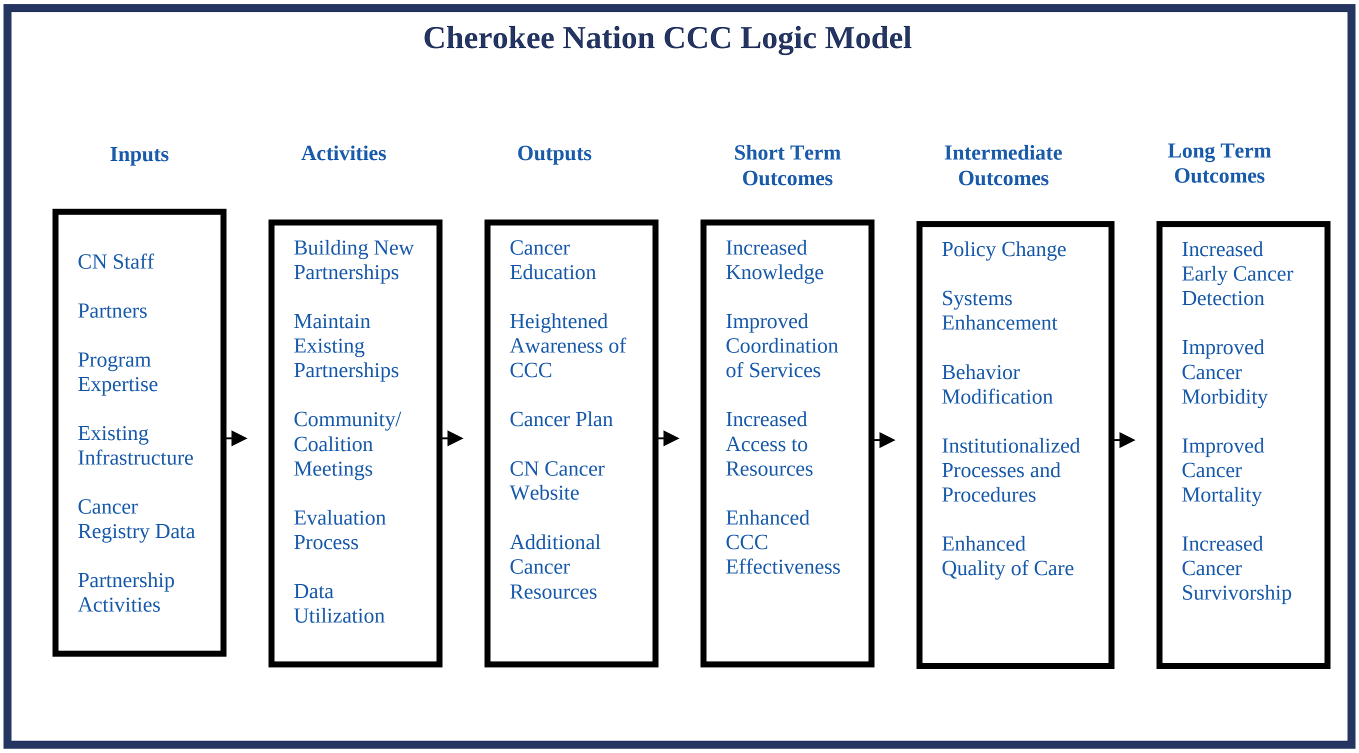
A systematic evaluation process has been developed for the Cherokee Nation Comprehensive Cancer Control (CNCCC) program to track progress in achieving identified cancer-related goals and objectives. Baseline measures as well as long- and short-term outcomes have been identified for this process. In some instances, there are no baseline measures; however there are plans to develop them during the implementation process.

In addition to evaluating the short- and long-term results of the objectives and components of the plan, this evaluation seeks to examine processes and procedures used in development of the program. The evaluation will be an evolving and continuous process with timelines to help achieve the CNCCC ultimate goal of reducing the cancer burden in the CNTJSA.

Stakeholders were encouraged to participate in evolution of the evaluation process, which helps give the plan broad representation. Flexibility is also designed into the evaluation process in order to adapt to the changing needs of any particular part of the plan.

The CNCCC Logic Model in Figure 4 will be used throughout the evaluation process to examine, enhance and develop programs, activities, outputs and outcomes that will ultimately help in reaching the CNCCC goals and objectives.

**Figure 4**



# Chapter 3

# The Burden of Cancer in Cherokee Nation

# AMERICAN INDIAN HEALTH

**"A misconception exists today that our Indian health care is free. It is not. It has been paid for by the blood and tears of our ancestors and by the land our people were forced to give away." – *Dr. Brenda Stone (Cherokee)***

Despite the passage of the Snyder Act (42 Stat. 208) in 1921, which provided for the "relief and distress and conservation of health of Indians, the health status of Indians remained poor. High rates of infant mortality as well as excessive deaths due to infectious diseases such as diarrhea, pneumonia, and tuberculosis contributed greatly to the poor health status of American Indians (1)."

To address the poor health status of the American Indians, the Indian Health Service (IHS) was established in 1955. This agency, created as a result of the trust responsibility and the government-to-government relationship established in numerous treaties and federal acts, is charged with providing health care to eligible American Indians throughout Indian Country. In general, Indian health services are provided to persons of Indian descent. Descent is usually documented in the form of a Certificate Degree of Indian Blood (CDIB).

According to the most recent data, American Indians continue to have a lower life expectancy than other racial groups by six years and continue to suffer an unequal burden of disease (2). Additionally, Indian Health Service spends an average of $1,914 per patient. This amount is approximately 1/3 of the amount spent on the health care of federal prisoners and is less than 40% of the per capita health-care expenditures of the general US populations (3).

### Access to Care

The chronic lack of funding experienced by the Indian Health Service presents numerous barriers to citizens in American Indian communities, including Cherokee Nation. The lack of resources for Indian Health Service prohibits access to specialty services such as oncology. These services are necessarily contracted out through private providers through a mechanism known as Contract Health Services (CHS). CHS in Cherokee Nation operates on only 25% of its need which results in rationing of services.

Travel to receive health services is often a barrier for individuals to receive more comprehensive care services. If a service is not available at the nearest tribal facility, travel to the nearest metropolitan area often presents barriers including taking time off from work, reliable transportation, and comfort.

### Misclassification of Race

The accuracy of data related to cancer and other health conditions is compromised by the misclassification of race within vital records and surveillance systems. Racial misclassification of American Indians has been documented across the country, including Oklahoma.

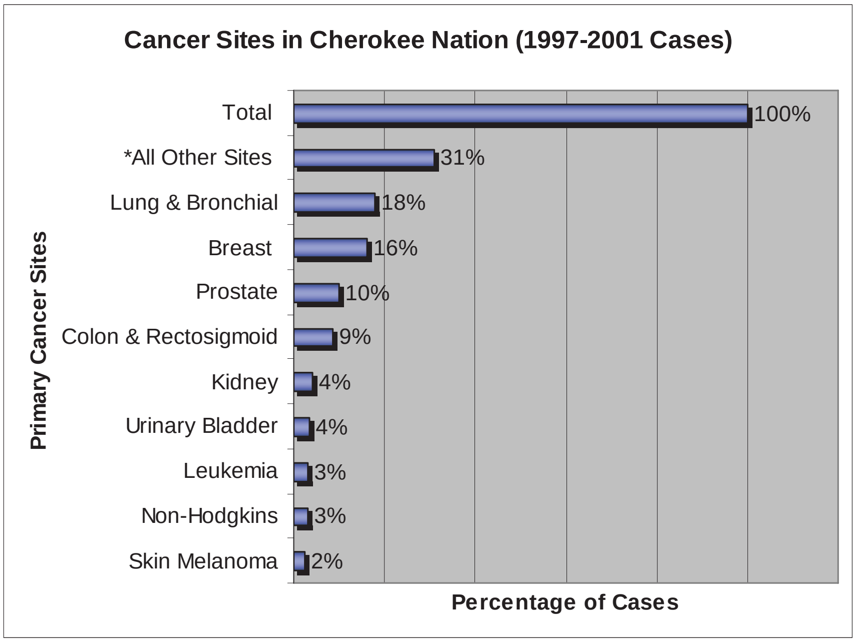
Misclassification of a race among American Indians can result in the phenomenon known as being "born Indian, dying White." In a linkage of Oklahoma vital records with the national Indian Health Service patient register, the rate of misclassification on death certificates for 1990-2001 was approximately 33 percent (4).

As a result of a similar link, cancer incidence in Oklahoma increased 48.1 percent for American Indians for the years 1997-2000 (5).

### Cherokee Nation Cancer Burden

Figure 5 shows all cancers diagnosed in the CNTJSA for the years 1997 – 2001. According to the chart, lung and bronchial cancer is the number one cancer site in the American Indian population for this service area, with approximately 18 percent of all cases diagnosed. Breast cancer is the second leading cancer site in this area with approximately 16 percent of all cancer cases. Prostate cancer is third, with approximately 10 percent of the cancers identified, and colon cancer is the fourth leading cancer site with approximately 9 percent of all cancers diagnosed in the Cherokee Nation.

**Figure 5**



**Information received from the Cherokee Nation Cancer Registry October 2004**
*** Numbers of cases for each site do not reflect more than 3% of the total cases.**

In the chapters to follow, more detailed information will be given regarding the burden of cancer for the four primary cancer sites (lung and bronchus, breast, prostate and colon) in the Cherokee Nation. This information will be listed in each site chapter.

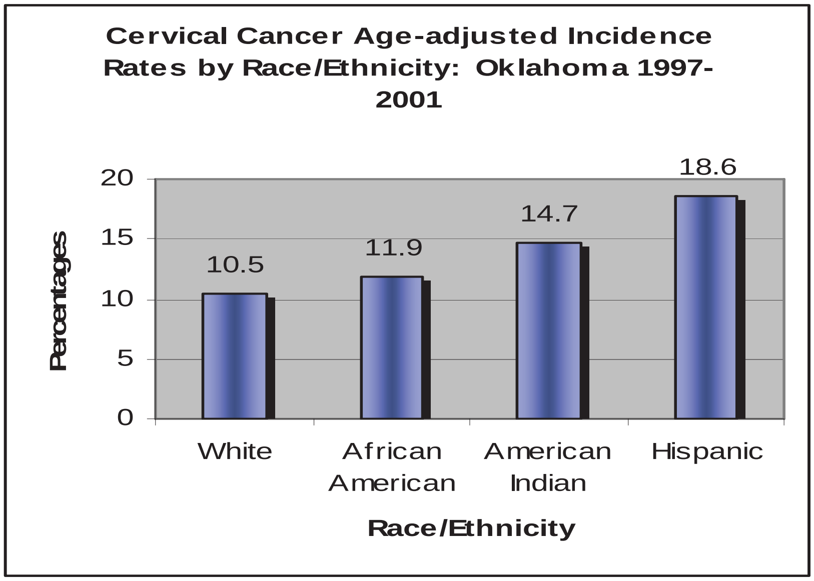
One cancer site that is of some concern and was not highlighted in any of the following chapters is cervical cancer. Although cervical cancer is not high among the leading cancers, there is a high incidence of cervical dysplasia. Therefore, some mention of this cancer is warranted.

Additionally, Adair County, located entirely within the Cherokee Nation boundaries has one of the highest cervical cancer mortality rates within the United States (6). This burden is not reflected within available local data at present. However, the effort to prevent and detect cervical cancer in the earliest stages among women in Cherokee Nation is a top health priority.

Cervical Cancer

Oklahoma is ranked 14th highest in the US on age-adjusted mortality rates for cervical cancer. According to the Chronic Disease Service in Oklahoma, disparities do exist among racial groups in Oklahoma regarding this cancer. American Indian women have higher rates of cervical cancer compared to white and African American women, as evidenced in Figure 6.

**Figure 6**



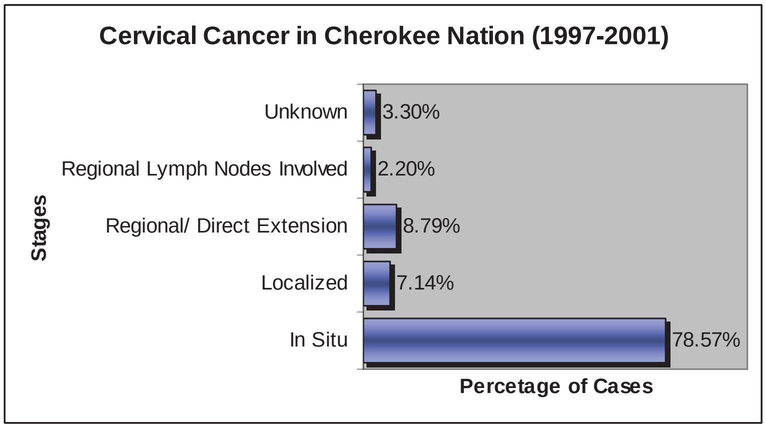
***Rates are 1/100,000 women, age-adjusted to 2000 US standard population;**
****American Indian rates use IHS linked data;**
*****Hispanic of any race**

Smoking helps to stimulate many cancers and influences the local immune responses in the cervix, preventing adequate defenses against HPV infection. HPV is perhaps the most common sexually transmitted disease. It is estimated that over 60 percent of sexually active women younger than 35 have been exposed to HPV (7). There are hundreds of subtypes which are separated into high and low risk groups; the high risk group being those that can cause cervical cancer. Another important risk factor is beginning sexual activity within one year of starting menses, which increases the lifetime risk of cervical cancer 26-fold, as opposed to beginning sexual activity after age 23 (7).

While cervical cancer is not among the leading cancer sites, Figure 7 demonstrates that a majority of cervical cancers in the Cherokee Nation are caught during the premalignant phase (In Situ). In Situ cancers of the cervix are not required to be collected within the

Cherokee Nation Cancer Registry, but because of the high proportion of cervical dysplasia with the female population, CNCR has previously monitored cervical in-situ cases.

**Figure 7**

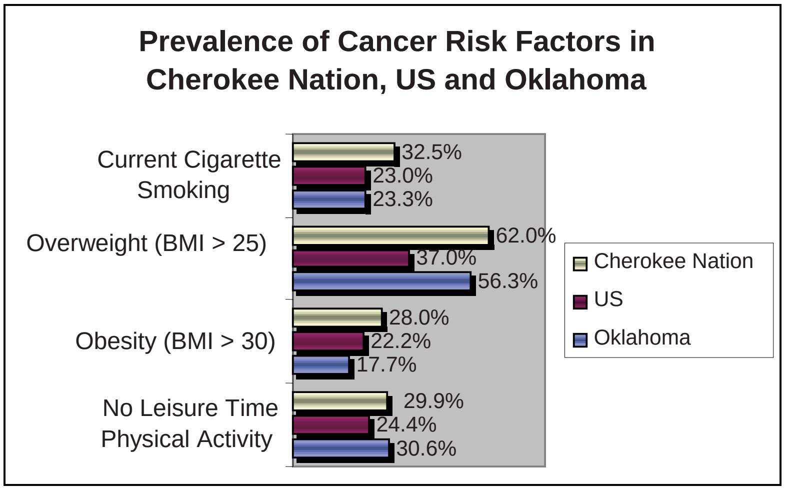


**Data obtained from the Cherokee Nation Cancer Registry (2004)**

### Prevalence of Cancer Risk Factors

Tobacco use and obesity are among the highest risk factors for cancer and according to Figure 8, American Indians in Cherokee Nation participate in more cancer risk behaviors than Oklahoma and the overall US population.

**Figure 8**

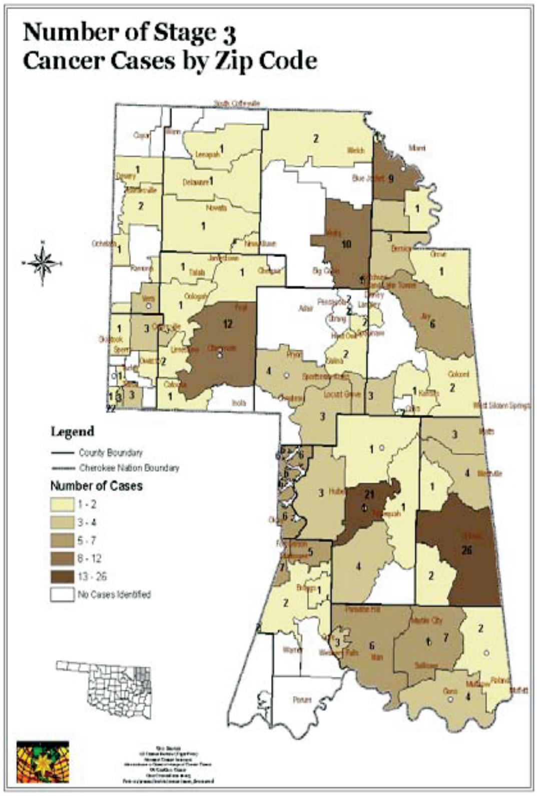


Data obtained from the REACH 2010 Native American Behavioral Risk Factor Survey (NABRFS) 2000 and the Behavioral Risk Factor Surveillance Survey (BRFSS) 2002.

### Geographical Imaging System (GIS)

The map in Figure 9 is an example of the GIS mapping that will be done in the CNTJSA to identify areas where cancer occurrence is prominent. This system will also be useful in program planning to identify areas where programs are needed the most, in order to allocate limited and essential resources. GIS mapping will also be used to identify areas where high occupational hazards and environmental hazards for cancer causing agents may be present.

**Figure 9** **Example of GIS Mapping in Cherokee Nation**



### US and Oklahoma Incidence Rates by Site

Table 1 illustrates age-adjusted incidence rates for Oklahoma, Cherokee Nation and the US. As noted in the table, lung and bronchial cancer is the most incident cancer within the Cherokee Nation. Although incidence appears to be lower, there is not a significant difference. Breast cancer is the second most incident cancer with a slightly higher rate within Cherokee Nation than in Oklahoma.

Other sites in Cherokee Nation which are higher than Oklahoma incidence are kidney and renal pelvis, urinary bladder, as well as ill defined and unknown sites. Notably, rates of kidney and renal pelvis cancers are higher than both the Oklahoma and the United States overall populations.

**Table 1**

**Age-Adjusted Incidence Rates by Site for Oklahoma, US and Cherokee Nation (1997-2001)**

| Site | Oklahoma Age-Adjusted Rates (1997-2001) | US Age-Adjusted Rates (1997-2001) | Cherokee Nation Age-Adjusted Rates (1997-2001) |
|---|---|---|---|
| Lung and Bronchus | 81.8 | 69.2 | 77.2 |
| Breast | 70.3 | 72.5 | 72.7 |
| Prostate Gland | 60.8 | 72.5 | 60.6 |
| Colon, Excluding Rectum | 40.1 | 41.4 | 34.7 |
| Urinary Bladder | 18.0 | 22.1 | 19.8 |
| Rectum and Recto Sigmoid | 13.5 | 15.2 | 13.5 |
| Ill defined & Unknown Sites | 12.9 | 12.5 | 15.7 |
| Kidney and Renal Pelvis | 11.8 | 12.1 | 18.8 |
| Melanomas of the Skin | 10.6 | 15.1 | 10.8 |
| All Sites | 449.2 | 478.6 | 443.7 |

*** Rates per 100,000 Age-Adjusted to 2000 US Population**

Chapter 4

# Chapter 4

Physical Activity and Nutrition

# Physical Activity and Nutrition

# PHYSICAL ACTIVITY AND NUTRITION

***"Together, (physical inactivity and unhealthy eating) are responsible for at least 400,000 deaths each year (8)."***

Evidence suggests that about one-third of the cancer deaths that occur in the US each year are due to poor nutrition and physical inactivity factors, including obesity. For many Americans, dietary choices and physical activity are the most important modifiable determinants of cancer risk.

Evidence also indicates that although inherited genes do influence cancer risk, heredity alone explains only a fraction of all cancers. Variation in cancer risk among populations and among individuals is due to factors that are not inherited. Behavioral factors such as cigarette smoking, certain dietary patterns, and physical inactivity can substantially increase one's risk of developing cancer. These factors modify the risk of cancer at all stages of its development. The introduction of a healthy diet and regular physical activity, at any time, can promote health and impact cancer risk.

Physical inactivity and a poor diet contribute to the risk of other diseases as well. CDC states that physical inactivity and unhealthy eating contributes to obesity, cancer, cardiovascular disease, and diabetes (8). People who are overweight are at an increased risk for heart disease, high blood pressure, diabetes, arthritis-related disabilities, and some cancers.

## Overweight and Obesity in the United States

The American Cancer Society indicates current patterns of overweight and obesity in the US could account for 14 percent of all cancer deaths in men and 20 percent of those in women (9). Overweight and obesity are defined by the common measure of body mass index (BMI). BMI is a measure which factors in the ratio of a person's weight in kilograms and his or her height in meters. Individuals with a BMI greater than or equal to 25 are considered overweight and individuals with a BMI of 30 or more are considered obese.

Researchers predict that the epidemic growth in rates of obesity and overweight will cause cancer rates to soar 50 percent worldwide by 2020. Their conclusions are partly based on findings that simply being overweight and inactive produces hormonal and metabolic changes that create favorable conditions for cancer to develop.

A study by the American Cancer Society showed that stomach (in men), liver, pancreatic, prostate, non-Hodgkin lymphoma, multiple myeloma, cervical, and ovarian cancer is linked widely to unhealthy body weight (9). The same report also "substantiates previous studies linking overweight and obesity to cancers of the colon and rectum, breast (in postmenopausal women), uterus, kidney, esophagus, and gallbladder."

According to the National Cancer Institute, international scientists suggest the same correlation; that as overweight and obesity trends increase and physical activity decreases the risk of developing many cancers rise (6). Obesity and being overweight are caused largely by diet and physical inactivity, which necessitates the promotion of a healthy lifestyle as a vital approach in the prevention of cancer and other diseases.

## Physical Activity and Nutrition among American Indians

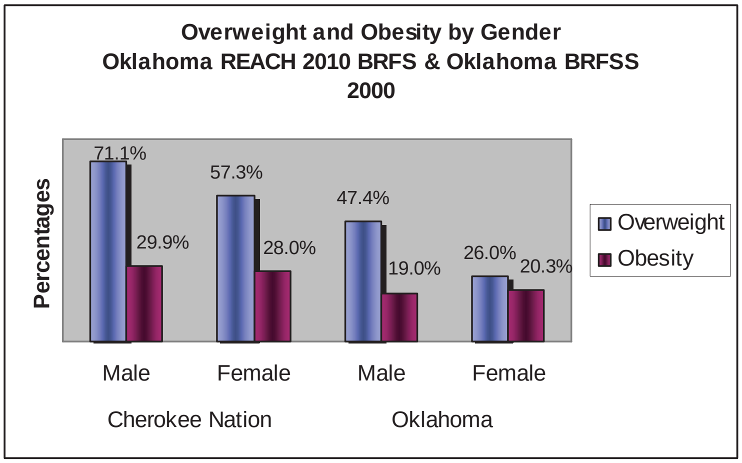
Data obtained from the Native American Behavioral Risk Factor Survey (NABRFS), which was designed to examine the habits of American Indians (AI) living in Oklahoma, showed there were higher rates of obesity, high blood pressure, diabetes, heart disease and stroke in the rural American Indian female population when compared to the urban AI female and the general female population living in Oklahoma. According to Dr. Janis Campbell, Principal Investigator for the Oklahoma State Department of Health's Chronic Disease Service, current cigarette smoking, being overweight, high cholesterol, and gestational diabetes were higher for the rural AI females than for Oklahoma female in general, but lower than the urban AI female population (10).

## Physical Activity and Nutrition in Oklahoma

The following information was collected from the Behavioral Risk Factor Surveillance System (BRFSS) from the State of Oklahoma. BRFSS is a telephone surveillance system that collects self-reported health information from monthly telephone interviews.

Figure 10 shows the percentages of overweight and obesity among American Indians in the Cherokee Nation and the Oklahoma population by gender. Nearly three quarters of Cherokee males and over half of Cherokee females are overweight. Of these, nearly one-third are considered obese. Both male and female in Cherokee Nation have much higher proportions of overweight and obesity than the general Oklahoma population.

**Figure 10**



Not surprisingly, American Indians living in the Cherokee Nation have high rates of chronic disease and associated risk factors, such as diabetes, hypertension, and high cholesterol, compared to the Oklahoma population.

Diabetes rates in the Cherokee Nation are slightly higher than those of the overall Oklahoma population (7.8% vs. 5.5%, respectively). Hypertension and high cholesterol occurs 30 percent more frequently in the Cherokee Nation than in the general Oklahoma population.

The CDC also reports that nearly half of American youth, ages 12 to 21, are not vigorously active on a regular basis; participation in all types of physical activity declines as age or grade in school increases. Although there are state mandates for physical education, there is no time requirement at any grade level. Physical education exists in 98 percent of elementary schools, 85 percent of middle schools, and 65 percent of high schools.

### Physical Activity and Nutrition in Cherokee Nation

Physical education grants have assisted schools with innovative approaches to health and physical activities that will equip students with the knowledge to be healthy and physically active. Several public schools within the Cherokee Nation have applied and received these grant monies. These schools include Greasy School in Stilwell, Vinita Public Schools in Vinita, and Skelly Public School and Watts Public School in Watts, Oklahoma.

Healthy Nation, a program of the Cherokee Nation Health Promotion/Disease Prevention (HP/DP) office, has been providing services through area schools and other wellness sites since 1992. The elderly, adults, and children within the communities have taken an active part in programs that are offered through this department. Activities offered by Healthy Nation include the following:

- Sponsorship of the WINGS Running Club
- Organization of Health Fairs
- Cultural Education/Activities
- Sponsorship of the annual Summer Youth Fitness Camp
- Smoking Cessation

HP/DP was awarded a grant from the US Department of Health and Human Services to support President George W. Bush’s initiative to help Americans live longer healthier lives through the Steps to a Healthier US. The purpose of the program is to implement prevention techniques that will reduce the burden of diabetes, overweight, obesity, and asthma by addressing such risk factors as physical inactivity, poor nutrition and tobacco use.

### Nutritional Value of Fruits and Vegetables

According to the American Journal of Clinical Nutrition, people whose diet is rich in fruits and vegetables (five to nine servings a day) have a lower risk of getting cancers of the lung, mouth, pharynx, esophagus, stomach, colon, and rectum. They are also less likely to get cancers of the breast, pancreas, ovaries, larynx, and bladder. There is no specific fruit or vegetable responsible for reducing cancer risk; instead, research shows that it is the regular consumption of a variety of fruits and vegetables that reduce risk (11).

An expert report, *Food, Nutrition and the Prevention of Cancer: a Global Perspective*, reviewed over 4,500 world-wide research studies and has found that if people increase their fruit and vegetable consumption to at least five servings a day, cancer rates could be reduced by more than 20 percent.

A new survey from the American Institute for Cancer Research (AICR) shows that 72 percent of Americans still eat meals with a high proportion of meat, poultry, fish and dairy foods and not enough vegetables, fruits, whole grains and beans.

### Social Influences

Studies of American eating habits reveal that almost a quarter of the calorie consumption comes from nutrient poor selections, better known as "junk food." If one-fourth of calories consumed are from junk food, a plan for weight reduction should emphasize eating differently, not just eating less, as many nutrition experts advise for weight loss. Individuals with a healthy weight, should still eat less junk food to prevent weight gain and chronic diseases, like cancer.

In a recent study that surveyed 4,700 people, soft drinks were the number one source of calories. They accounted for 7.1 percent of the calories the people in this study consumed. In total, the categories of soft drinks, desserts, and alcoholic beverages made up 23.8 percent of total calorie intake, salty snacks and fruit-flavored drinks added another five percent of calories. Since all of these foods are relatively concentrated in calories, even low consumption can increase daily calorie totals.

Another study revealed that people who eat a lot of junk food suffer nutritionally. This study looked at the impact of salty snack foods like potato chips, corn chips, crackers, pretzels and cheese curls. Those who ate the most of these high-fat salty snack foods had diets high in saturated fat, and low in fruits and vegetables. These people scored poorly for dietary healthfulness (12).

### AICR Diet and Health Guidelines for Cancer Prevention

According to a report published by the American Institute for Cancer Research (AICR), the Mayo Clinic Cancer Center researchers successfully tested recommendations from an expert report from AICR called Food, Nutrition and the Prevention of Cancer: a global perspective. Researchers wanted to see how following AICR’s guidelines affected cancer risk. For 13 years researchers from the Mayo Clinic tracked the diet, lifestyle, and disease rates for 29,564 women who were 55 to 69 years old at the start of the study. The results suggest that following guidelines involving physical activity, weight management and diet had greater effect than concentrating on any one guideline. The recommendations of the AICR report can be summarized in six practical guidelines. These simple action steps represent the best advice science currently offers for lowering your cancer risk and include the following:

- Choose a diet rich in a variety of plant-based foods.
- Eat plenty of vegetables and fruits.
- Maintain a healthy weight and be physically active.
- Drink alcohol only in moderation, if at all.

- Select foods low in fat and salt.
- Prepare and store food safely.

Knowing that obesity is a risk factor for other cancers, and that it has been associated with metabolic abnormalities that increase pancreatic cancer risk, researchers set out to determine if obesity is also a risk factor for pancreatic cancer.

In the largest study of its kind, researchers from Harvard University analyzed data from two general health studies involving over 150,000 men and women who were tracked for up to 20 years. Body Mass Index (BMI) and the level of physical activity of the 350 participants who developed pancreatic cancer were compared with those without the disease to identify risk factors that could be addressed through lifestyle changes. The researchers found that obese individuals had the highest pancreatic cancer risk — almost two times that of average-weight participants. An increased risk was also observed for people who are slightly overweight, suggesting that weight control may aid in cancer prevention.

The Cherokee Nation Comprehensive Cancer Control goals for physical activity and nutrition area as follows:

**Physical Activity:**

➨ Goal: Reduce the risk of cancer by increasing physical activity

  ➢ Objective: Increase the number of events offered to adults and adolescents to participate in physical activity
  **Baseline: 12 annual events**
  **Target: 50% increase**
  **Timeline: 2 years**
  - Strategy 1: Increase number of Health Promotion opportunities on an annual basis
  - Strategy 2: Expand the Walk This Weigh media campaign
  - Strategy 3: Increase number of summer youth fitness camps
  - Strategy 4: Initiate fitness education to students within Cherokee Nation
  - Strategy 5: Develop Cherokee Nation Employee Wellness Presentation for cancer education

**CNCCC Partners:** Cherokee Nation HP/DP, Cherokee Nation Employee Wellness Program, Cherokee Nation nutrition advisors, Cherokee Nation Diabetes Program, Cherokee County Health Coalition

**Nutrition:**

➨ Goal: Reduce the risk of cancer by encouraging healthy eating habits

  ➢ Objective 1: Increase the number of schools in Cherokee Nation that offer healthy vending machine alternatives
  **Baseline: 0 schools**
  **Target: Four schools in Cherokee and Adair Counties**

**Timeline: 2 years**

- Strategy 1: Encourage community schools to serve health food alternatives
- Strategy 2: Provide point-of-decision prompts at community nutrition sites, food distribution sites, and food establishments

**CNCCC Partners:** Cherokee Nation HP/DP, Cherokee Nation Employee Wellness Program, Cherokee Nation nutrition advisors, Cherokee Nation Diabetes Program, Cherokee County Health Coalition

# Chapter 5

# The Environment

# ENVIRONMENTAL ISSUES

***"Poor environmental quality is estimated to be directly responsible for approximately 25 percent of all preventable ill health in the world (13)."***

Environmental quality is a worldwide concern, with numerous infectious diseases, pesticide use and chemical waste hazards. Social and physical environments are major contributors to health in the population of a community. The physical environment includes air, water, and soil. The social environment includes housing, transportation, industry, agriculture, urban development and transportation.

Major efforts made at the national, state, local and tribal level to clean up and manage waste sites and sewage, purify drinking water, control air pollutants, and ensure the foods we eat are safe, have helped to decrease the human diseases caused by environmental contaminants. Further research is necessary in order to evaluate the effects of exposure to these hazardous materials on human health (13).

There has been much evidence to support the claim that environmental issues play a major role in cancer formation. Estimates of site-specific cancer rates have been known to differ dramatically, depending on the part of the country one lives. This is evidenced when migration occurs from one country another and similar cancer characteristics are found between the two countries (14).

Areas of environmental concern in the US include outdoor air quality, water quality, toxic waste, healthy homes and communities, infrastructure and surveillance, and global environmental health (13).

Geographical Information Systems have become very popular in the last decade for identifying areas where hazardous waste spills have occurred. This information can then be compared with cancer registry data to identify unusual patterns or to identify cancer clusters that may be associated with environmental issues. Other uses for this system are to identify areas where programs are needed in order to make better use of limited resources.

## Cherokee Nation Environmental Services

The Cherokee Nation's Office of Environmental Services is a member of the Inter-Tribal Environmental Council (ITEC), which is an organization that was developed by Cherokee Nation to protect the health of tribal citizens, natural resources of tribes, and the environment as it is related to air, land and water. This organization provides support, technical assistance, program development and training to member tribes.

The Cherokee Nation has been recognized for their leadership in environmental services and is the recipient of an award from the Environmental Protection Agency (EPA) in recognition of their efforts to develop and administer a lead based paint training and certificate program.

Members of the Cherokee Nation are also involved with the American Indian Issues Subcommittee, who are charged with identifying issues and concerns specific to American Indians who reside within the boundaries of the Tar Creek superfund site, which is the #1 superfund site in the United States. They are tasked with identifying needed federal assistance to resolve issues and concerns identified by the subcommittee and to propose legislative, administrative, and/or congressional actions needed to assist tribal organizations in resolving their unique concerns.

### Sequoyah Fuels

In 1970, Sequoyah Fuels Corporation (SFC) began their operation to produce uranium hexafluoride from yellow cake (a uranium oxide), a substance used in the production of fuel rods for nuclear reactors. "The plant also produced the prime ingredient for the dense and slightly radioactive uranium metal that is used to make armor-piercing bullets and shells (15)." The operation of this facility was located on acreage on the outskirts of Gore, Oklahoma, a rural town located in Sequoyah County.

During the time of production, several nuclear accidents occurred and in 1986 an accident involving an over-loaded cylinder took place which ruptured and released toxic substances into the air. Once mixed with moisture, the substance turned into a highly corrosive and toxic acid. One worker lost his life because of the accident and 31 others were exposed to this hazardous and corrosive substance that is known to cause kidney damage. Some of the workers showed signs of kidney problems, although none appeared to have long-term kidney damage.

The factory continued to operate and in 1987, when all the uranium hexafluoride had been depleted from the yellow cake, a second process began which converted the hexafluoride to uranium tetrafluoride, a more stable form of uranium.

From 1970 to 1992, while the industry was under operation, chemical contamination of the soil began and included arsenic, copper, uranium and other toxic substances. Water was also contaminated in the area. "There is surface, subsurface, and groundwater contamination from uranium and thorium throughout the site, and uranium, thorium, and radium in raffinate sludge ponds. There is also chemical contamination of arsenic, molybdenum, and copper in the soils (16)."

In 1993, current owners of SFC proceeded to disband the corporation and sought a license from the Nuclear Regulatory Commission (NRC) to close the plant. After careful analysis of the different areas where existing residue was found from the conversion process, it was determined that radiological contaminants left over from some areas were identified as being above NRC regulations for decommissioning and owners of SFC were requested to correct these deficiencies before termination of the plant could begin. SFC proposed an "on-site disposal cell." Since that time, environmental reviews and meetings between interested parties such as the Environmental Protection Agency, Cherokee Nation, the Army Corps of Engineers, and others has been an on-going process in order to find a solution for the problem (17).

According to a story reported in The Shawnee News-Star, the owners of the company want to clean up the area by draining the ponds that are filled with radioactive sludge, dig up all contaminated soil, and tear down buildings and equipment used in the plant. Their plans are to build a 10-acre, 60-foot tall container that would be sturdy enough to hold all the waste without releasing any toxic substances. Their plans are also to put clay beneath this container and once the waste materials are inside they plan to put a plastic liner on top along with 10-feet of earth covering the plastic. Planting vegetation in the earth on top would absorb any rainwater and keep the container from filling and spilling out (18).

Further investigation into current strategies for clean up of the site is underway. A multi-disciplinary, multi-agency team has been assembled to investigate cancer concerns in the area. Research is also being planned to check cancer data in the area and identify any cancer causing agents that may exist at the site.

### Methamphetamine Labs

There has been a growing alarm about methamphetamine labs in Northeastern Oklahoma and the hazards these labs may cause the community. Therefore, environmental staff, law enforcement, and emergency personnel have been trained in hazardous waste to evaluate the impact of these labs.

Methamphetamine is a powerfully addictive stimulant and can be easily produced with makeshift laboratories. Cherokee Nation is largely a rural area, and therefore many makeshift labs are hidden in the surrounding hills, countryside and sometimes rural neighborhoods. Persons in and around methamphetamine labs can be acutely exposed to hazardous substances used in production of this dangerous narcotic. Substances used are corrosive, explosive, flammable and toxic, but there is not enough evidence at this time to support a relationship between methamphetamines and cancer.

### Tar Creek

Concern for cancer-causing agents in the Tar Creek area has been voiced from the community, and an investigation into this area was completed. The Tar Creek area is located in the northeastern corner of Oklahoma, in Ottawa County, and has a population of 19,556 people. In the early 1900’s to early 1970’s this site was a zinc and lead mining site that produced metal ore. The location of this mining site was also the location of natural springs, requiring the mining company to pump large volumes of water from the ground. The process of pumping and draining water from this site continued until the mines ceased producing the ore. Because water was no longer being pumped from the mines, the mines began to fill up with water from the springs. Sulfide minerals, which had been exposed to air, oxidized and dissolved when mixed with the spring water, creating acid mine water. In 1979, the mines began to overflow and several mine holes filled and overflowed to the surface and into Tar Creek (19). Many animals and livestock were exposed to this acid mine water, causing huge sores on the hooves and legs of these animals.

Huge piles of mine tailings (chat) were left over after the mining companies pulled out; these piles contained lead and other heavy metals which were left in residential areas and later used in driveways and roads. “Approximately 1,600 residential yards with unsafe concentration levels of lead have been identified…five public water supply wells on the site are impacted with acid mine water (20).” Other creeks in the area were also contaminated with this acid mine water.

The Governor of the State of Oklahoma established the Tar Creek Task Force in 1980 to investigate the acid mine drainage into Tar Creek. Again in 1981 and in 1983, the Governor recommended Tar Creek be placed on the National Priorities List. Since that time, the Environmental Protection Agency (EPA) has provided funding to the US Army Corps of Engineers to perform an acid mine drainage study of Beaver Creek, a runoff from Tar Creek, and to provide recommendations for a treatment system design.

Cleanup of lead-contaminated soils from over 2,000 residential yards and high access areas of the mining area has significantly reduced exposure to the harmful effects of lead. The lead contaminated soils and chat piles were major sources of exposure to people living in the area and children are the most sensitive to lead exposures. This exposure can affect the immune, blood, and nervous system, as well as the kidneys. The harmful effects include decreased mental ability, learning difficulties, premature births and reduced growth in children. Many of the children in this area showed learning difficulties in the schools and, when tested, showed higher than normal levels of lead in their system.

The EPA’s Baseline Human Health Risk Assessment Report concluded that lead was identified as the only site-related chemical concern and that oral ingestion was identified as the only significant exposure (21). Although the cancer-causing agent cadmium was identified as a site-related contaminant, the concentration was not high enough to present a risk to human health. Therefore, there is currently no known evidence of an increased cancer risk in this area, although research is on-going.

### Agriculture and Farming

Agriculture and farming in Cherokee Nation has been a great concern to communities that house these industries. Chicken, dairy and swine farms, along with vegetation farms, create runoff after rain, which contains nitrogen compounds and phosphorous, along with other chemicals thought to be cancerous. Runoff from these nutrients and chemicals drain into the creeks, streams and lakes, polluting our water supply.

Although some measures have been taken to safeguard our drinking water, more needs to be done. Phosphorous causes a considerable amount of algae growth which reduces oxygen levels and kills aquatic life. Although nitrogen makes up approximately 78 percent of our atmosphere, nitrogen absorbed by the body can cause many health concerns, such as breathing problems for young children who regularly play outdoors. “Bio-available nitrogen” can also lower oxygen in water and suffocate aquatic life.

A report from the Tahlequah Daily Press dated July 13, 2005, relayed a message from a recent Associated Press release, which stated, “The State Department of Agriculture is preparing to conduct soil tests at 15 Oklahoma farms in the Illinois River watershed to determine the effects of poultry litter…" According to Senate Bill 1170, testing soil for potassium, phosphorus and nitrogen is required of these farms. Farm owners are required to take samples of their soil and send them for testing. The report went on to say the State Department of Agriculture would be testing "for arsenic, copper, zinc, several different bacteria as well as estrogen-related hormones." Collaboration with the State Department of Agriculture into the developments of this testing will be initiated and recommendations will be considered once testing is complete.

The Canadian Network of Toxicology noted that although there are some chemical agents in fertilizer and pesticides that are cancer-causing. The population that is more susceptible to these agents are those who work in the farming industry and are in contact with these chemicals on a consistent basis. According to the report, there is more benefit from ingesting the fruits and vegetables which help fight against cancer, than there is risk from "pesticide residues associated with increased intake of fruits and vegetable (22)."

Further research into the risks associated with the surrounding water pollutants such as poultry waste runoff, as well as runoff from pesticide use on vegetation will be an ongoing challenge as these commodities are a necessity for human life. Cost benefit analysis and ways to safeguard the water supply are areas where research appears to be most needed.

The Cherokee Nation Comprehensive Cancer Control goals for the environment are as follows:

**Environment:**

- Goal: Reduce the risk of cancer by reducing exposure to environmental carcinogens
    - Objective: In collaboration with Cherokee Nation Environmental Programs, develop a comprehensive register of potential environmental carcinogens within Tribal Jurisdictional Service Area

      **Baseline: No List**

      **Target: Completed list of potential environmental carcinogens and areas of concern within Cherokee Nation**

      **Timeline: 2 years**

        - Strategy 1: In collaboration with Cherokee Nation Environmental Programs, identify areas within Cherokee Nation with possible environmental carcinogenic exposure
        - Strategy 2: Examine cancer registry data to determine types and parity of cancer in exposed areas
        - Strategy 3: Utilize Geographical Information System (GIS) mapping to highlight specific areas of concern
        - Strategy 4: Develop targeted action to reduce environmental carcinogenic exposure

**CNCCC Partners:** Oklahoma State Health Department, Cherokee Nation Geo Data Services, Cherokee Nation Epidemiology Services, Cherokee Nation Cancer Registry and

Cherokee Nation Environmental Services, Environmental Protection Agency, Centers for Disease Control and Prevention

# Chapter 6

# Tobacco

# TOBACCO USE

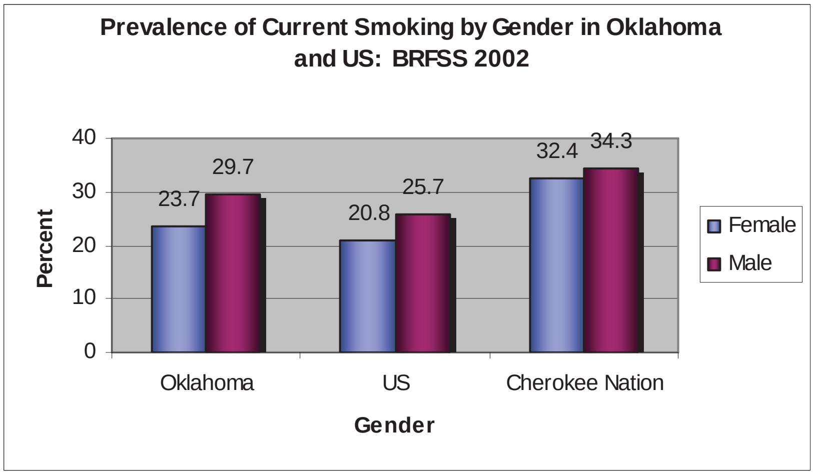
***"Tobacco use is the leading cause of preventable death in the United States. The majority of daily smokers (82%) began smoking before 18 years of age, and more than 3,000 young persons begin smoking each day (23)."***

It is a known fact that tobacco use is the major cause of morbidity and mortality, including cancer. The five-year survival rate for lung and bronchial cancer is 15 percent, all stages included. Tobacco use is also associated with other cancers, such as esophageal, cervical, urinary bladder, and kidney. It is also associated with other health problems like cardiovascular disease and respiratory problems. "Smoking harms nearly every major organ of the body, often in profound ways, causing many diseases and significantly diminishing the health of smokers in general (24)."

## Current Smoking Patterns

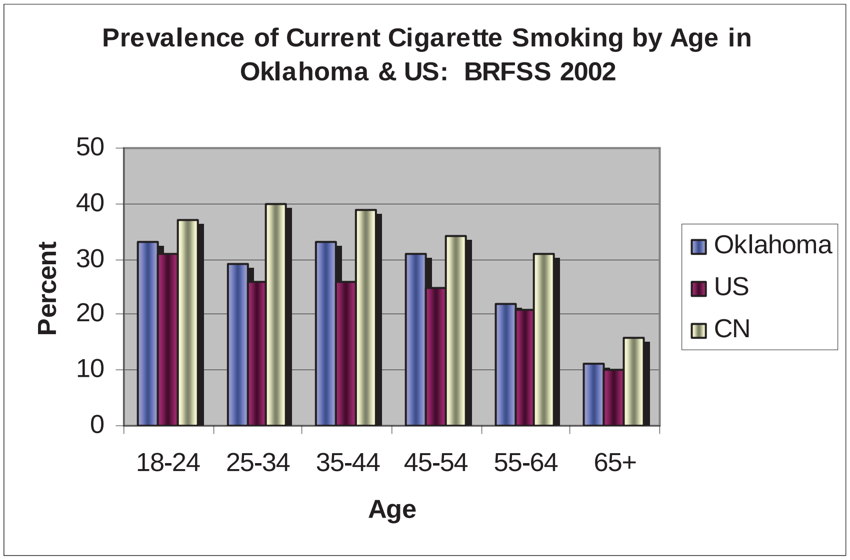
Figure 11 shows the prevalence of current smoking by gender in the Cherokee Nation compared to the Oklahoma and the US populations. In this figure, American Indian males and females both have markedly higher smoking rates than the Oklahoma and US populations. Oklahoma was also ranked 9th worst for lung cancer of all the United States.

**Figure 11**



Cherokee Nation has a higher smoking rate than the US and Oklahoma rates for all ages, according to the chart in Figure 12. It also shows that smokers come in all age groups, with the largest percentage of smokers in the Cherokee Nation being in the age group 35-44. The percentage of smokers in Cherokee Nation decreases beginning at age 55, however remain consistently higher than both US and Oklahoma populations.

**Figure 12**



**Secondhand Smoke in Cherokee Nation**

Second hand smoke is also a concern to many who desire smoke free facilities. It is a known fact that second hand smoke causes cancer. There are regulations in most workplaces where smoking inside the buildings is not allowed, but entrances to buildings are still worrisome for many.

**The Oklahoma Tobacco Settlement Endowment Trust Fund**

Several resources have been identified in the State of Oklahoma which are very useful tools for prevention within the Cherokee Nation. Identification and utilization of these tools will help to reduce cancer disparities in the Cherokee Nation.

A Master Settlement Agreement (MSA) was negotiated between the State of Oklahoma and the four largest tobacco companies. According to the agreement, Oklahoma is to receive "approximately $2 billion over the first 25 years of the settlement (25)." A portion of this money is placed into an endowment fund annually that is used for research, tobacco use prevention and cessation programs. Several of these programs reach all of Oklahoma, while others are targeted in the higher risk areas of the state. The following programs are resources that will be utilized by Cherokee Nation citizens:

- The statewide "quitline" provides information, self-help materials and behavior counseling over the phone for all Oklahomans.
- A statewide media campaign targeting teens, with proven prevention messages that counter pro-tobacco marketing for all Oklahomans. This will leverage a 1:1 match from the American Legacy Foundation.
- Communities of Excellence Grant recipients: Bill Willis Community Mental Health Center (Cherokee County) and Muskogee Health Department (Muskogee County). This is a comprehensive tobacco control program to reduce tobacco use.
- The Oklahoma Tobacco Help Line (1-866-PITCH-EM), a free and effective service that provides professional cessation counseling and coaching by phone to all Oklahomans.

**Resources within the Cherokee Nation**

Cherokee Nation designates funds from tribal revenue to provide cancer treatment for Cherokee Nation citizens. A percentage of the Cherokee Nation tobacco tax money goes to Health Services, while an annual appropriation goes directly to Contact Health Services for cancer treatment.

The Cherokee Nation Health Promotion/Disease Prevention has provided leadership in prevention efforts in tobacco use. Smoking cessation classes have been implemented throughout the Cherokee Nation. Prevention efforts have begun in schools located within the Cherokee Nation to discourage students from smoking. The program offers a variety of activities including walking, running, basket making, and Cherokee marbles as alternatives to tobacco use (26).

The Cherokee Nation Comprehensive Cancer Control goals for tobacco are as follows:

**Tobacco:**

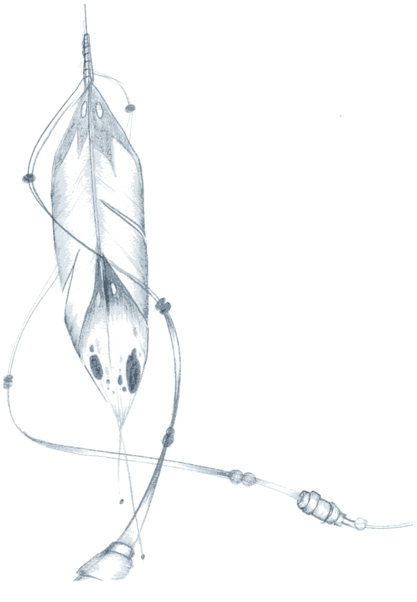
- Goal: Reduce the risk of cancer by reducing the number of American Indians habitually using non-ceremonial tobacco in Cherokee Nation
    - Objective 1: Reduce the number of current smokers
      **Baseline: 30% quit rate**
      **Target: 50% quit rate**
      **Timeline: 2 years**
        - Strategy 1: Conduct one smoking cessation class in six clinics and six communities
        - Strategy 2: Promote and encourage utilization of Oklahoma Tobacco Helpline
        - Strategy 3: Expand American Indian Tobacco Coalition of Oklahoma (NATCO) "Traditional Use, Not Abuse" prevention message
    - Objective 2: Increase the number of schools in Cherokee Nation with a 24/7 no smoking policy to promote tobacco use prevention among teens and adolescents
      **Baseline: 7 schools**
      **Target: 10 schools**
      **Timeline: 2 years**
        - Strategy 1: Establish SWAT (Students Working Against Tobacco) teams in each service area
        - Strategy 2: Initiate Tar Wars programs at schools located within the Cherokee Nation
        - Strategy 3: Expand availability of NOT (Not On Tobacco) program to Adair and Cherokee counties

**CNCCC Partners:** Cherokee Nation HP/DP, Oklahoma Tobacco Settlement Endowment Fund, Cherokee County Tobacco Coalition, Oklahoma State Department of Health, Bill Willis Mental Health Services, Muskogee Health Department, Cherokee

County Health Coalition, Cherokee Nation Employee Wellness, Hastings Indian Medical Center, Cherokee Nation Health Services, Centers for Disease Control and Prevention

# Chapter 7

# Lung Cancer



# LUNG CANCER

***"Cancer is the second most common cause of death for American Indians and Alaska Native people, accounting for one out of every six deaths. Of the fatal cancers, by far the most common is lung cancer..........Lung cancer rates have been steadily increasing for American Indians and Alaska Natives since the 1960s (27).”***

Lung cancer is the number one cancer site in the Cherokee Nation. This type of cancer is most often diagnosed at the later stages, when very little treatment options are available. Because no effective screening strategies are currently available, primary prevention, through a reduction in tobacco smoking, remains the most effective strategy to control this globally dominant malignancy (28).

## Lung Cancer in the United States

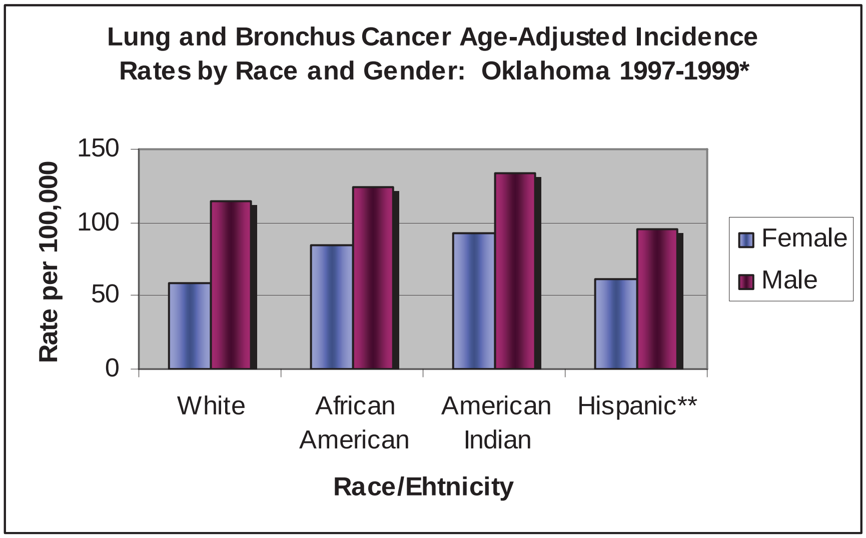
Lung cancer was once thought to be a rare disease until the twentieth century, when more cases were identified. It is now one of the most reported malignant neoplasm in men and women in the United States, with women being diagnosed almost as frequently as men. Cancer of the lung and bronchus has the highest mortality rate for both men and women in the United States, with more than 150,000 deaths reported in 2003. It is the second most common form of cancer in both men and women in the United States (29).

***Healthy People 2010 Goal:*** *Reduce the Lung Cancer Death Rate*
***Target:*** *44.9 deaths per 100,000 population*
***Baseline****: 57.6 lung cancer deaths per 100,000 population occurred in 1998 (age adjusted to the year 2000 standard population)*
***Target setting method****: 22 percent improvement*
***Data source****: National Vital Statistics System (NVSS), CDC, NCHS*

## Lung Cancer in Oklahoma

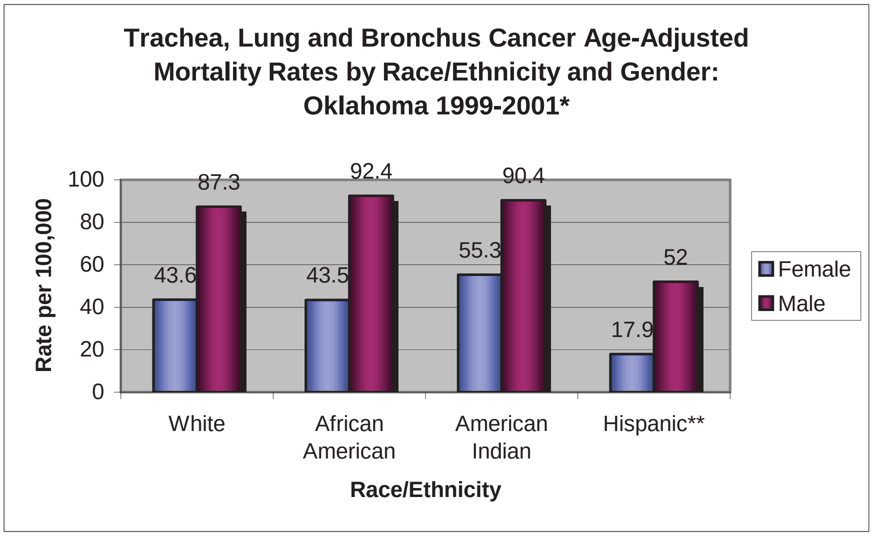
According to data collected from the Oklahoma Central Cancer Registry (OCCR), Oklahoma’s age-adjusted lung cancer incidence rate is 1.2 times higher than the national rate. The registry also shows that American Indians, both male and female, are more likely to be diagnosed with lung and bronchial cancer than other racial or ethnic groups in Oklahoma (Figure 13). The highest rate of mortality for those diagnosed with lung and bronchial cancer were American Indian females, while American Indian males ranked second highest (Figure 14).

**Figure 13**



**Rate per 100,000**
**Age-adjusted to 2000 US Population**
***IHS linkage completed for 1997-1999**
****Hispanic can be of any race; Hispanic surname used**

**Figure 14**



**Rate per 100,000**
**Age-adjusted to 2000 US Population**
***IHS linkage completed for 1997-1999**
****Hispanic can be of any race; Hispanic surname used**

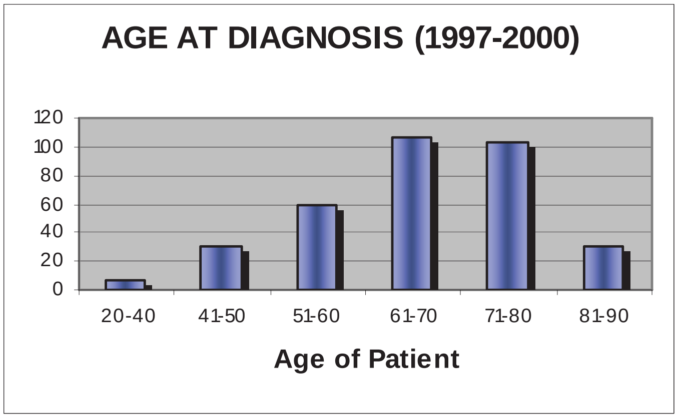
Last year in Oklahoma there were 2,400 deaths from this disease, and there were over 14,000 Oklahomans diagnosed with lung cancer from 1997-2001 (30).

**Lung Cancer Burden in Cherokee Nation**
Lung cancer is the number one cancer site in the Cherokee Nation, and has the highest mortality rate among all cancers diagnosed in the tribal jurisdictional service area.

Figure 15 shows the majority of lung and bronchial cancers diagnosed in American Indians living in Cherokee Nation are found in patients diagnosed between the ages of 60 and 80 years of age.

**Figure 15**

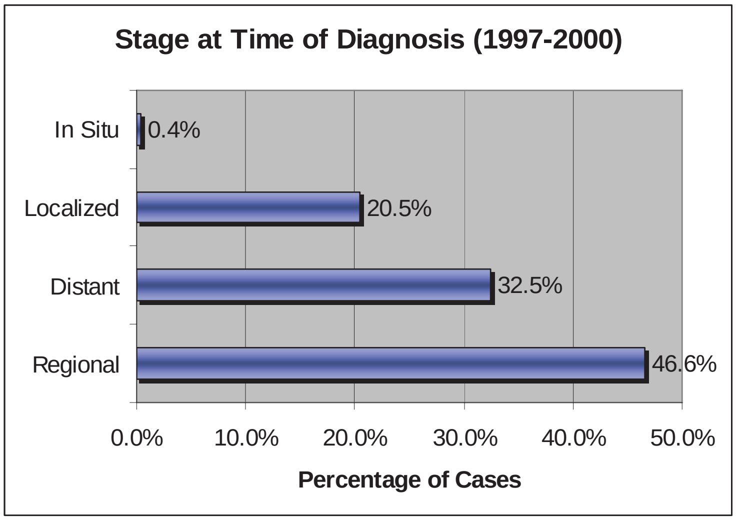
**Cherokee Nation Lung and Bronchial Cancers (1997-2000)**



**Data obtained from Cherokee Nation Cancer Registry, January 2005**

Figure 16 indicates American Indians living in the Cherokee Nation are less likely to be diagnosed at the early stages of lung cancer.

**Figure 16** **Cherokee Nation Lung and Bronchial Cancers (1997-2000)**



**Data obtained from Cherokee Nation Cancer Registry, January 2005**

**Figure 17** **Cherokee Nation and Oklahoma State Lung Cancer Data (1997-2000)**

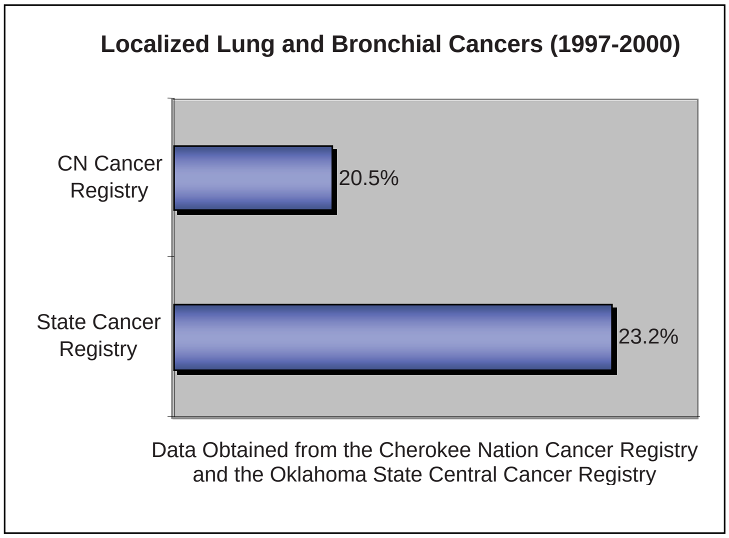


Figure 17 compares localized lung and bronchial cancers in the Cherokee Nation with those of Oklahoma. According to the chart, American Indians in the Cherokee Nation are less likely to be diagnosed at the local stages. Survival rates are poorer for those cancers not diagnosed in local stages. Approximately 79 percent of American Indians residing in Cherokee Nation are diagnosed at the regional or later stages.

### Risk Factors

Lung cancers can be attributable to carcinogens found in smoking tobacco; therefore smokers have the highest risks associated with lung cancer. Other risk factors include second hand smoke, radiation exposure, occupational exposure to asbestos and other environmental cancer causing agents, as well as a family history of lung cancer.

### Primary Prevention

The most important preventive measures for lung cancer is to never smoke or to quit smoking. It has been reported that after 10 years of refraining from smoking, a person’s risk of lung cancer is decreased anywhere from 30 to 50 percent compared to a current smoker (27). It is also important to avoid significant exposure to regular environmental tobacco smoke, also known as second hand smoke.

### Screening for Lung Cancer

Because lung cancer has a high incidence and mortality rate, it would be an ideal disease for which to screen. This is particularly important because the prognosis for lung cancer correlates inversely with disease stage. The five-year survival rate for patients with stage I non-small cell lung cancer is 50 percent with treatment, while the five-year survival rate for all stages of lung cancer combined is only 15 percent (29). There is considerable research interest in identifying a screening test for lung cancer. Several screening modalities have been evaluated in large-scale trials, including chest radiograph, sputum cytology, and helical chest computer assisted tomography scan (CT). To date, none of these screening methods have been shown to have any mortality benefit, even in high-risk populations such as elderly smokers (31). Therefore, there are no recommended screening tests for carcinoma of the lung and bronchus at the present time.

**Diagnostic Procedures**

The initial diagnostic workup to evaluate for carcinoma of the lung and bronchus includes a detailed history and physical exam, chest radiograph, and serum chemistries. Tests to exclude other diagnostic possibilities include skin PPD test, sputum gram stain, and culture for organisms. Further diagnostic information can be obtained from a CT of the chest with intravenous contrast. Each of these diagnostic modalities can be performed within the CN healthcare system.

Once a diagnosis of lung cancer is strongly suspected by initial testing, it is essential to confirm the diagnosis with a pathological specimen. As a general rule, it is advisable to use the least invasive procedure to obtain a biopsy specimen. Depending on the clinical situation, possible secondary diagnostic procedures include bronchoscopy with broncho-alveolar washings for cytology, thoracentesis, bronchoscopy with needle-guided biopsy, and CT-guided needle biopsy.

After a tissue diagnosis of lung cancer is confirmed the patient undergoes a staging evaluation to determine their course of treatment. Disease staging allows one to determine the degree of tumor spread, which is a key factor in whether the patient receives surgery initially, versus chemotherapy or radiation. Initial staging studies include CT of the brain, chest, abdomen, and pelvis, as well as pulmonary function testing. Further staging studies may include positron emission tomography (PET) scan, combined CT/PET scanning, radio nucleotide bone scan, and mediastinoscopy.

**Lung Cancer Treatment**

Management of lung cancer depends on the stage of disease and the type of disease. Small cell lung cancer is a rapidly spreading tumor that is not cured by surgical resection, but can be treated with chemotherapy and radiation. The other forms of lung cancer can be referred to as non-small cell lung cancer, as their management is similar. In early stage non-small cell lung cancer that has not spread beyond lymph nodes near the tumor (stage IIIA or less), the optimal treatment is surgical resection. If the earliest stage of non-small cell lung cancer (stage IA) is treated with surgery, the five-year survival rate can be as high as 67 percent. Recent studies suggest that the use of chemotherapy after surgery for early stage disease can further improve outcomes. More advanced disease (stages IIIB and higher) is treated with chemotherapy and/or radiation therapy without surgery (32, 33).

Tumors that have spread to distant sites (stage IV) have a poor prognosis, with a one-year survival of 20 percent, and a five-year survival of one percent (33). Because the prognosis is so poor in stage IV disease, it is often treated with palliative care alone.

**Diagnostic Procedures in Cherokee Nation**

Initial diagnostic workup, to evaluate for carcinoma of the lung and bronchus, can be performed within the CN healthcare system. Tests to exclude other diagnostic possibilities can be done as well, such as skin PPD test, sputum gram stain, and culture for organisms.

Once lung cancer is suspected, and depending on the clinical situation of the patient, a secondary diagnostic procedure will usually be performed by the CN health care team. This secondary procedure is called a bronchoscopy with broncho-alveolar washings for cytology examination and thoracentesis. Needle biopsy procedures for lung cancer testing will be referred through Contract Health.

Once a diagnosis of cancer is confirmed, cancer staging will be performed to determine the degree of spread and what treatment options may be administered. Initial staging studies can be performed at Hastings Indian Medical Center, which include CT of the brain, chest, abdomen, and pelvis, as well as pulmonary function testing.

Other possible studies that are referred to CHS for referral outside the Cherokee Nation include positron emission tomography (PET) scan, combined CT/PET scanning, radio nucleotide bone scan, and mediastinoscopy.

### Treatment in Cherokee Nation

Lung cancer patients within Cherokee Nation Health Services are referred through CHS to thoracic surgery, oncology, and radiation therapy. Proceeds from a fuel tax levied by the Cherokee Nation are used to fund CHS referrals related to the diagnosis and treatment of malignancies, including lung cancer. CHS referrals can be approved on a recurring basis for patients to receive continuing treatment for three months at a time.

### Lung Cancer Goals, Objectives and Strategies

As previously mentioned, there are no screening methods currently available to detect lung cancer in the early stages. Goals, objectives and strategies for prevention are designed to decrease, eliminate, or stop smoking among American Indians in Cherokee Nation. Once a diagnosis of lung cancer has been made the goal is always a cure. However, in patients diagnosed in later stages the goal is to improve the quality of life through palliation and survivorship strategies.

The Cherokee Nation Comprehensive Cancer Control goals for lung cancer are as follows:

### Lung Cancer:

➡ Goal: There is no screening currently available to detect lung cancer in the early stages. Goals, objectives and strategies in Chapter 6, the Tobacco Chapter, are designed to decrease, eliminate or stop smoking among American Indians in Cherokee Nation which can greatly affect lung cancer risk.

# Chapter 8

# Breast Cancer

# BREAST CANCER

***"The 5-year breast cancer survival rate for American Indian women is lower than that of other ethnic and racial groups in the U.S. (34)."***

Breast cancer is the second leading cancer site in the Cherokee Nation among the American Indian women living in this area. This type of cancer is most always caught at later stages in this population group. Very few cases are diagnosed at the local stages and no cases have been diagnosed at the earliest stage.

## Breast Cancer in the United States

Breast cancer is the most frequently occurring cancer among females, and is the second leading cause of mortality for women in the United States. It is estimated that in the United States there will be more than 215,000 new cases of breast cancer in 2004. The lifetime probability of a woman having breast cancer is 1 in 6, and the probability of developing invasive disease is approximately 1 in 9 (35, 36). Moreover, it is estimated that 1 in 30 will die of the disease.

The overall mortality rate from breast cancer remained relatively unchanged prior to 1989, but since then mortality has declined steadily at a rate of approximately 2 percent per year (36). Much of this decline has occurred in white women younger than 55 years of age, and some ethnic groups such as African American women have had less than a 2 percent decline in annual mortality rate (35).

***Healthy People 2010 Goal:*** *Reduce the breast cancer death rate*
***Target:*** *22.3 deaths per 100,000 females*
***Baseline:*** *27.9 breast cancer deaths per 100,000 females occurred in 1998 (age adjusted to the year 2000 standard population)*
***Target setting method:*** *20 percent improvement*
***Data source:*** *National Vital Statistics System (NVSS), CDC, NCHS*

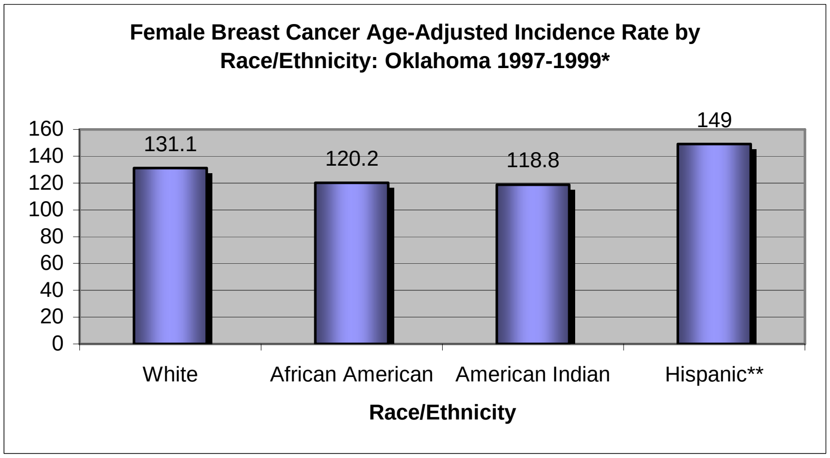
## Breast Cancer in Oklahoma

The following information is surveillance data obtained from the Oklahoma Central Cancer Registry (OCCR). Other information was obtained from the Behavioral Risk Factor Surveillance System (BRFSS), a state-based, self-reported telephone surveillance system.

According to the OCCR, breast cancer cases that are diagnosed at the early stages have a 97 percent chance of living for at least five years, but 27.3 percent of female breast cancers diagnosed in Oklahoma are diagnosed at a regional or distant stage.

Figure 18 shows that Hispanic and White women are diagnosed with breast cancer more often than African American and American Indian women.

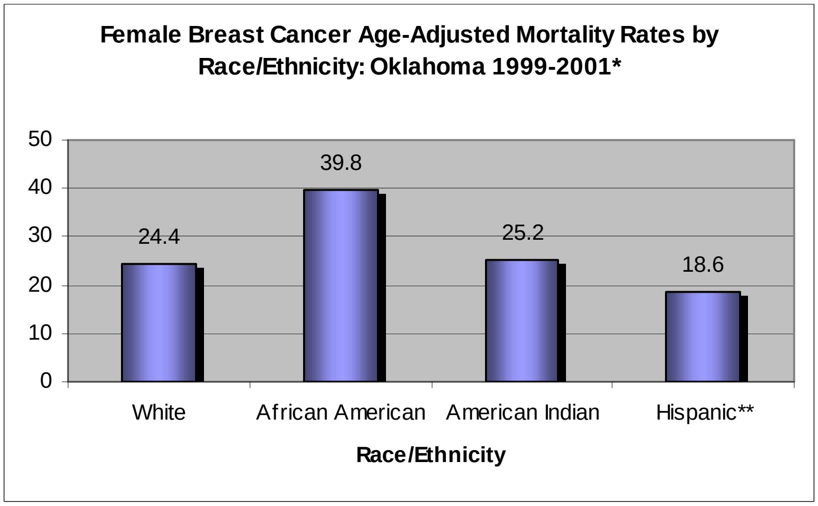
**Figure 18**



**Rate per 100,000**
**Age-adjusted to 2000 US Population**
***IHS linkage completed for 1997-1999**
****Hispanic can be of any race; Hispanic surname used**

Figure 19 indicates American Indians have the second highest breast cancer mortality rate in Oklahoma.

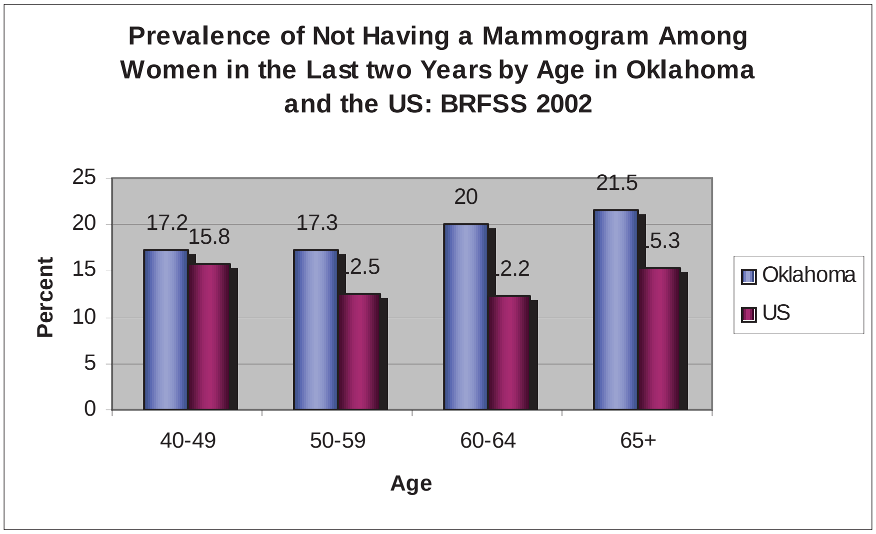
**Figure 19**



**Rate per 100,000, Age-adjusted to 2000 US Population**
***IHS linkage completed for 1997-1999**
****Hispanic can be of any race; Hispanic surname used**

Oklahoma BRFSS data, Figure 20, indicates women in Oklahoma, aged 40 and older, are more likely to have **not** had a mammogram in the past two years compared to other women in the US (37).

**Figure 20**



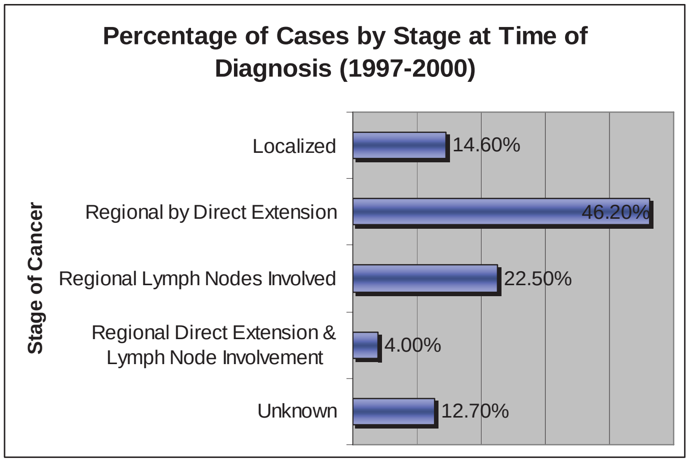
**Rate per 100,000, Age-adjusted to 2000 US Population**
***IHS linkage completed for 1997-1999**
****Hispanic can be of any race; Hispanic surname used**

## Breast Cancer Burden in Cherokee Nation

In the CNTJSA, breast cancer is the second most common form of malignancy in American Indians, but is the number one form of malignancy in women, with approximately 250 cases diagnosed between 1997 and 2000. Men also develop breast cancer. Approximately one percent of breast cancers occur in men in the Cherokee Nation which is comparable to the United States population (29).

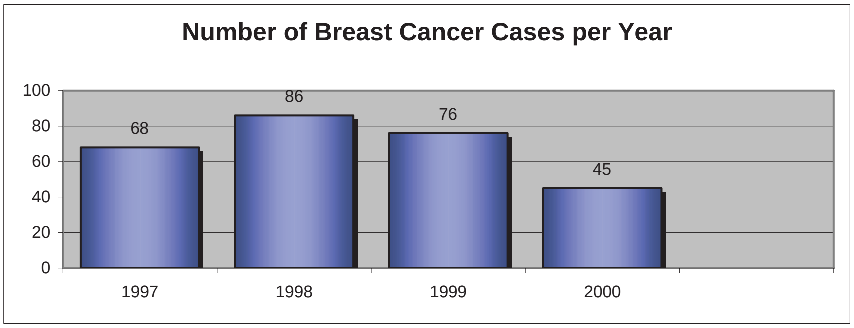
Seventy-three percent of breast cancer cases are diagnosed at regional and distant stages. According to the data in Figure 21, there are no breast cancers diagnosed at the earliest stage (in-situ) in Cherokee Nation.

**Figure 21**



**Information obtained from the Cherokee Nation Cancer Registry (2004)**

**Figure 22**



**Data obtained from the Cherokee Nation Cancer Registry, 2004**

Figure 22 indicates that most breast cancers in the Cherokee Nation were diagnosed in 1998, accounting for 23.0 percent of all breast cancer cases. In the years following, the number of cases began to drop, with year 2000 showing almost half the number of those diagnosed in 1998.

## Risk Factors for Breast Cancer

Some risk factors for breast cancer can be controlled such as diet. Non-controllable risk factors include sex and age, which are the primary risk factors. Therefore, all women are at risk for breast cancer and the risk increases with the following categorical factors: *(i)* those which influence the hormonal or reproductive status of the patient, (*ii*) dietary and environmental factors, (*iii*) demographic factors, (*iv*) benign breast conditions, and (*v*) genetic and hereditary factors.

Hormonal or Reproductive Factor

- Gender – women are at a higher risk of getting breast cancer then men
- Childbearing history –never having given birth or delayed childbearing
- Menstrual periods – having had early menstrual periods, before the age of 12, and women who have gone through menopause after the age of 50
- Not breastfeeding (breast feeding has a protective effect)
- Use of hormone replacement therapy, such as estrogen and progesterone
- Obesity (likely due to increased levels of circulating estrogens)

Dietary and Environmental Factors

- High fat diet, moderate alcohol intake
- Exposure to ionizing radiation

Demographic Factors

- Age – risk increases with age, typically beginning at age 45
- Personal history – previous history of breast cancer increases the risk of recurring or new breast cancers
- Race – some races have a slightly greater risk of getting breast cancer
- Higher socioeconomic status – associated with an increased risk of breast cancer

Benign Breast Conditions

- Density in breast tissue – breast tissue that shows density in a mammogram

- Proliferative lesions such as lobular or ductal atypia, papillomas, or fibroadenomas

Genetic and Hereditary Factors

- Family history – having a blood relative diagnosed with breast cancer at a young age, which doubles if the blood relative is a mother, sister, or daughter
- Genetic risk factors – mutations in genes, the most common being BRCA1 and BRCA2

### Primary Prevention

For women at average risk for breast cancer, there are a few lifestyle changes that may reduce the risk of developing the disease. Decreasing alcohol and dietary fat intake may slightly reduce the risk of breast cancer, and decreasing body mass index may also have a protective effect (38). Taking an aspirin daily was very recently shown in one observational study to be associated with a decreased risk of breast cancer (39). However, this study is preliminary, and will need to be repeated with more patients before taking a daily aspirin to reduce breast cancer risk can be recommended.

### Screening

There are three screening methods for breast cancer in widespread use: breast self examination (BSE), clinical breast examination (CBE) and mammography. BSE consists of conducting periodic self exams at home. CBE is performed by a health care provider in a clinical setting. BSE and CBE have not been shown to decrease breast cancer mortality. However, these methods are still considered useful in screening for the disease.

Regular mammogram screenings are associated with a reduced risk of mortality from breast cancer, especially for women who have been diagnosed with invasive disease. The overall breast cancer mortality has decreased since 1989 and is in part attributed to the widespread use of mammography (35). CBE and BSE instruction occurs at all health centers and clinics within the Cherokee Nation, and mammography is performed at the Wilma P. Mankiller Clinic in Stillwell, the AMO Clinic in Salina, and at the Claremore Indian Hospital in Claremore.

**BSE and yearly CBE with mammogram screenings are recommended by most national guidelines for all women aged 40 and older who are at average risk for breast cancer.**

In women with a family history of breast cancer, there are no national consensus guidelines on screening. Expert opinion and common practice are to teach BSE, as well as to start annual CBE and mammography beginning when the patient is five years before their youngest relative was diagnosed with breast cancer.

In patients with hereditary breast cancer syndromes, national consensus guidelines recommend monthly BSE beginning at age 18, a CBE every three to six months, beginning at age 25, and an annual mammogram beginning at age 25 (40).

## Diagnostic Procedures

Once a breast cancer is suspected, the diagnostic workup may include any of the following diagnostic studies:

Spot Compression Mammogram – a specialized X-ray of the breast to detect any irregular density or masses that may exist on mammogram.
Stereotactic Needle Biopsy- a specialized needle biopsy performed under mammogram guidance to biopsy where suspicious calcifications are seen.

Fine Needle Aspiration (FNA) – a fine needle is inserted through the surface into the possible mass or suspicious tissue, and fluid or cells are removed for cytological examination.

Needle Core Biopsy – a wide needle is used to remove portions of the mass or suspicious tissue for histological examination (incision biopsy).

Chest X-ray – an x-ray of the chest to detect any irregular density or nodular lesions

Excisional Biopsy – the removal of the entire mass, lump or nodule, which is then examined for histology by a pathologist.

Estrogen Receptor Assay (ERA) – a laboratory test conducted on breast cancer tissue to determine how it responds to endocrine therapy or removal of ovaries. ERA negative tumors will not respond to hormone therapy.

Progesterone Receptor Assay (PRA) – a laboratory test conducted on breast cancer tissue to determine how it responds to endocrine therapy or removal of ovaries. PRA increases the reliability of ERA results. Positive PRA tumors will respond more effectively to hormone therapy.

## Breast Cancer Staging

Once a diagnosis of breast cancer is confirmed, it is critical to determine the pathologic stage of the tumor as quickly as possible in order to determine if the tumor is operable. Breast cancer staging involves determining the tumor size, how locally advanced the cancer is, whether there are distant metastases, as well as to define the structure of the cells in the tumor mass (histology).

Staging of all breast cancer patients should include a history and physical exam, chest x-ray, complete blood count, serum chemistries, and liver function tests. If all of the above are normal and the patient has clinical stage 0-II disease, then completion of staging can occur with surgical treatment. In patients with findings consistent with advanced disease further studies may include imaging studies to evaluate for distant metastasis. These studies may also include computer assisted tomography (CT) scanning, magnetic resonance imaging (MRI), positron emission tomography (PET) scan, or bone scan. CT scanning can be performed at Hastings Indian Medical Center and at Claremore Indian

Hospital. MRI and PET procedures are referred outside of Cherokee Nation Health Services by contract health.

## Breast Cancer Treatment

There are many factors that play a role in deciding which kind of treatment is best for a patient with breast cancer. Therapy may include any combination of surgery, radiotherapy, chemotherapy, and hormone therapy. According to Cherokee Nation Cancer Registry data, if breast cancer is caught at an early stage, mastectomy or conservative resection of the tumor, followed by radiotherapy, is the most common treatment for most patients in the Cherokee Nation.
The following factors influence the course of treatment, as well as the outcome:

- Stage of cancer at time of diagnosis
- Type of cancer and characteristics of cells
- Levels of estrogen-receptor and progesterone receptor in the tissue mass
- Menopausal status of the patient
- Age of patient
- Patient health
- Newly diagnosed or recurring cancer
- Patient preference

## Treatment Options by Stage:

There are many treatment options available, depending on the stage of cancer at the time of diagnosis, which include the following:

Stage I – tumor confined to breast tissue – removal of mass (lumpectomy), or partial resection followed by radiotherapy. Hormonal therapy may be given.

Stage II – tumor has invaded surrounding tissue by direct extension – excisional biopsy (removal) of tumor, which may include axillary node dissection and radiation to the breast. Chemotherapy and hormonal therapy are usually prescribed.

Stage III – tumor present in regional lymph nodes – mastectomy (removal of breast) is usually performed with both pre-operative or post-operative radiation and chemotherapy. Endocrine therapy is administered.

Stage IV – tumor present in regional lymph nodes and has spread to surrounding tissue - biopsy is usually performed, followed by radiotherapy to primary site, or mastectomy. Hormonal therapy may be administered, along with chemotherapy (41).

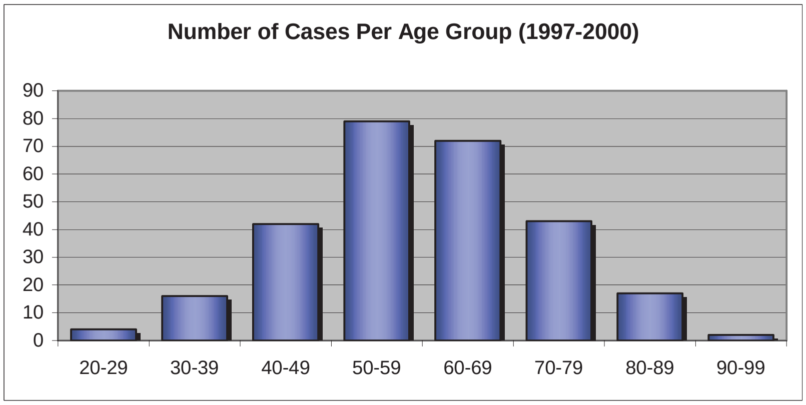
## Hormonal Therapy

The current standard of care in hormonal therapy for breast cancer is tamoxifen given for five years to all women with estrogen receptor positive tumors that are stages I-II (41). A new class of drugs called aromatase inhibitors may soon change the current standard of care; however, aromatase inhibitors block the production of estrogen in tissues outside of the ovaries. Recent studies have shown an improved survival benefit in women who receive the aromatase inhibitor, letrozole, after five years of tamoxifen therapy (42), and another study showed improved survival when women were switched from tamoxifen to an aromatase inhibitor after 2-3 years (43).

## Types of Breast Cancer

Ductal carcinoma is the most common type of breast cancer in the United States, and also the most common form of breast cancer in the Cherokee Nation. Ductal carcinoma comprises 56 percent of all breast cancer cases in the CNTJSA. Intraductal, non-invasive adenocarcinoma is second, at eight percent; while lobular adenocarcinoma is third at five percent.

**Figure 23**



**Data obtained from the Cherokee Nation Cancer Registry, October 2004**

Most patients diagnosed with this cancer in the Cherokee Nation are between the ages of 50 to 69 years old, as noted in Figure 23. Since the collection of registry data from 1997 through 2000, 54 percent of the breast cancer cases in Cherokee Nation were either diagnosed and/or treated within the Cherokee Nation. These patients usually presented at one of the clinics, or either one of the two IHS facilities.

The current reach of the health care facilities in the Cherokee Nation does not encompass the wide scope of services needed to facilitate some treatment options required by breast cancer patients. Therefore, many of the patients are referred to oncology and radiology services outside the Cherokee Nation healthcare system. Forty-one percent of these patients are treated outside of the Cherokee Nation.

**Table 2**

**Cherokee Nation Breast Cancer Patients**
**Stage at time of Diagnosis**

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Localized | 2 | 18 | 13 | 6 |
| Regional by Direct Extension | 43 | 34 | 32 | 18 |
| Regional Lymph Nodes Involved | 12 | 23 | 17 | 10 |
| Regional Direct extension & Lymph Nodes Involved | 6 | 1 | 3 | 1 |
| Unknown | 4 | 10 | 11 | 10 |
| Total Cases | 67 | 86 | 76 | 45 |
| Regional or Distant | 97% | 79% | 82% | 86% |

As shown in Table 2, the majority of breast cancer cases are diagnosed beyond the localized stages (stages 0-1). In 1997 nearly three percent of all cases were diagnosed at the local stage, while 97 percent were diagnosed at the regional or distant stages. Further data are needed to assess long-term trends in breast cancer incidence and mortality in American Indian patients in the Cherokee Nation.

## Diagnostic Procedures in Cherokee Nation

Among the diagnostic studies listed above, most can be performed within the IHS facilities, including both Hastings Indian Medical Center (HIMC) and Claremore Indian Hospital (CIH). Stereotactic needle biopsy requires a CHS referral to an outside facility. Assays for estrogen and progesterone receptors are performed at an outside facility on tissue obtained from a biopsy or surgical specimen obtained by a surgeon at HIMC or CIH. Diagnostic mammograms and ultrasounds can be performed at the Wilma P. Mankiller Health Center and the AMO Salina Health Center.

## Treatment Procedures in Cherokee Nation

Treatment of breast cancer within the IHS system includes the initial surgical management of tumors including: excisional biopsy, lumpectomy, mastectomy, and lymph node dissection. These techniques are the current standard of care in the initial management of breast cancer. Procedures involving sentinel node mapping are performed at outside institutions by CHS referral. Chemotherapy and radiation therapy are performed at outside institutions through CHS referral, typically to hospitals and practices in Tahlequah, Muskogee, and Tulsa.

Tamoxifen is also available free of charge through the outpatient pharmacy at HIMC for hormonal therapy for breast cancer.

The Cherokee Nation Comprehensive Cancer Control goals for breast cancer are as follows:

**Breast Cancer:**

- Goal: Reduce morbidity and mortality of breast cancer by reducing late stage diagnosis of breast cancer among American Indian women living in Cherokee Nation
  - Objective 1: Increase percentage of annual mammogram screening among women ages 50-64

    **Baseline: 58.9% of women ages 50-64 with annual mammogram screening**

    **Target: 65%**

    **Timeline: 2 years**

    - Strategy 1: Utilize Cherokee Nation Breast and Cervical Cancer Early Detection Program to recruit women of ages 50-64 for annual mammography screening
    - Strategy 2: Utilize culturally appropriate education and promotion materials in community to raise awareness of mammogram screening
    - Strategy 3: Incorporate Native American Cancer Support group into outreach efforts

**CNCCC Partners:** Cherokee Nation Breast and Cervical Cancer Early Detection Program, Cherokee Nation Health Services clinical staff, Indian Health Service clinical staff, Native Support Circle, Cherokee Nation Employee Wellness, Cherokee Nation HP/DP, Cherokee Nation Community Health, National Cancer Institute Cancer Information Service, Mayo Clinic SPIRIT of EAGLES

Chapter 9

# Chapter 9

Prostate Cancer

# Prostate Cancer

# PROSTATE CANCER

***"Prostate cancer is the most common cancer among men and by the age 75, approximately 50% to 75% of men will have prostate cancer (44)."***

Prostate cancer is the third leading cancer site in the Cherokee Nation among American Indian men. There are no early warning signs for this type of cancer and is most often diagnosed at the regional stage, with only two percent diagnosed at the localized stage. Most of these patients are hesitant to seek treatment and those who do usually are treated outside of the CNTJSA. The majority of these patients are diagnosed between the ages of 65 and 74 years.

## Prostate Cancer in the US

Prostate cancer is a malignant neoplasm arising from the epithelium of the prostate gland. In the United States, prostate cancer is quite common, with an estimated 230,000 new cases diagnosed in 2004. Prostate cancer is a common malignancy, with an estimated lifetime incidence of one in six. The lifetime incidence for men developing clinically significant tumors is approximately one in thirty (44).

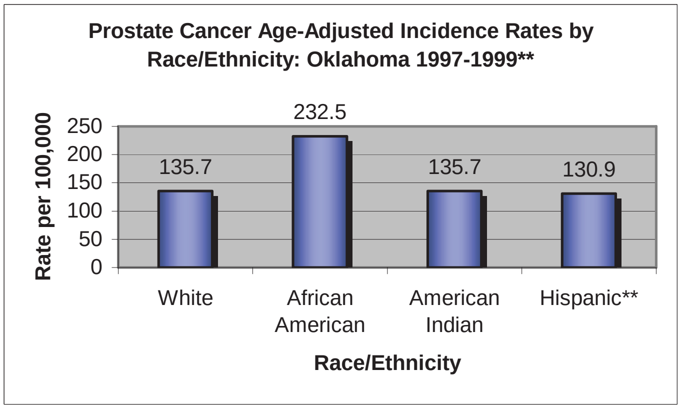
Prostate cancer is the second leading cause of cancer mortality among men in the United States, with approximately 30,000 deaths in 2004. The overall mortality rate for prostate cancer has declined steadily since 1993 (44). The trends for prostate cancer mortality in the CNTJSA are not currently known.

***Healthy People 2010 Goal:*** *Reduce the prostate cancer death rate*
***Target:*** *28.8 deaths per 100,000 males*
***Baseline:*** *32.0 prostate deaths per 100,000 males occurred in 1998 (age adjusted to the year 2000 standard population)*
***Target setting method:*** *10 percent improvement*
***Data source:*** *National Vital Statistics System (NVSS), CDC, NCHS*

## Prostate Cancer in Oklahoma

The following information is surveillance data obtained from the Oklahoma Central Cancer registry. As shown in Figure 24, American Indian men have prostate cancer rates equal to those of the white male race in Oklahoma.

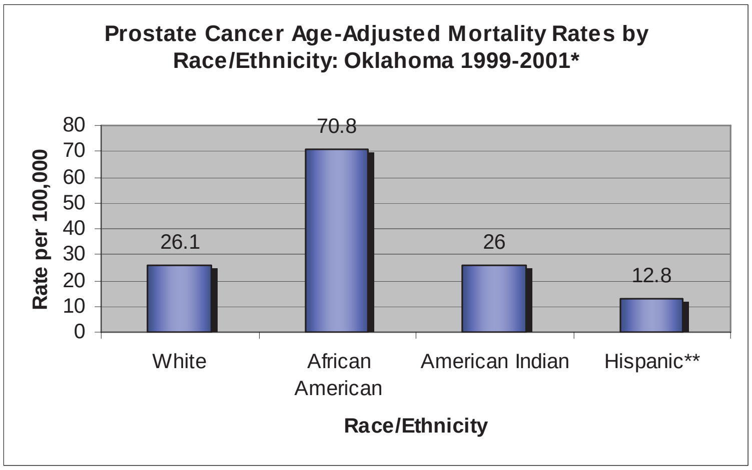
**Figure 24** **Oklahoma Central Cancer Registry Data (1997-1999)**



Mortality rates are also similar to those of the white race, as shown in Figure 25.

**Figure 25**

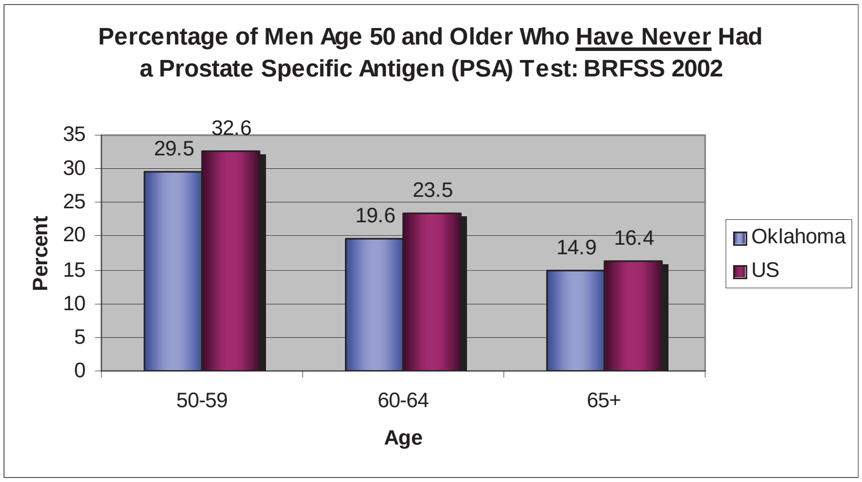
**Oklahoma Central Cancer Registry Data (1999-2001)**



The chart in Figure 26 demonstrates Behavioral Risk Factor Surveillance data (BRFSS) and shows the US population ranks higher than that of Oklahoma when it comes to the numbers who **have not** had PSA screenings. Men in Oklahoma are more likely to have had a PSA screening than all US men in general.

**Figure 26**

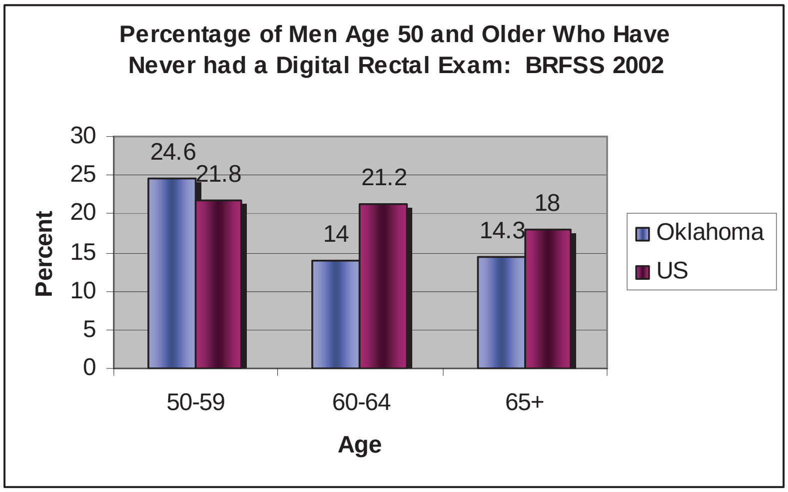
**Oklahoma State Department of Health BRFSS Data (2002)**



In Figure 27, Oklahoma men are less likely to have a digital rectal exam (DRE) between the ages of 50-59 than US men in general, but this drops significantly at age 60, where Oklahoma men are more likely than US men in general to have this procedure done.

**Figure 27**

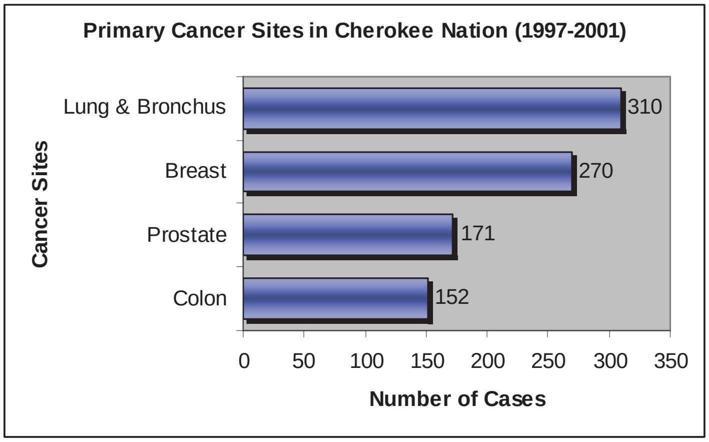
**Oklahoma State Department of Health BRFSS Data (2002)**



## Prostate Cancer Burden in the Cherokee Nation

In contrast to the high incidence of prostate cancer in the United States, it is the third most common malignancy diagnosed in the CNTJSA, see Figure 28.

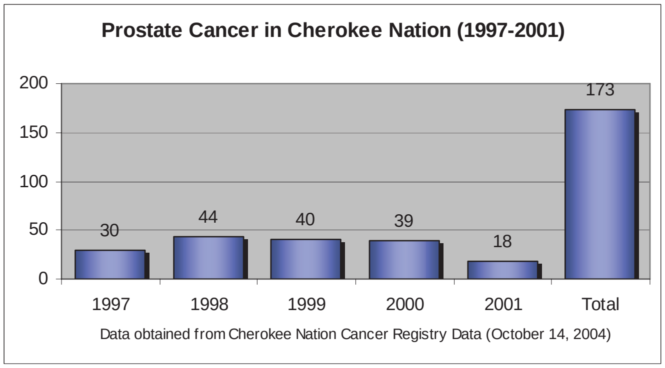
**Figure 28**



**Data obtained from Cherokee Nation Cancer Registry (2004)**

The number of prostate cancer cases reported to the Cherokee Nation Cancer Registry per year was fairly uniform from 1997 to 2000, and fewer cases were reported in 2001 (Figure 29).

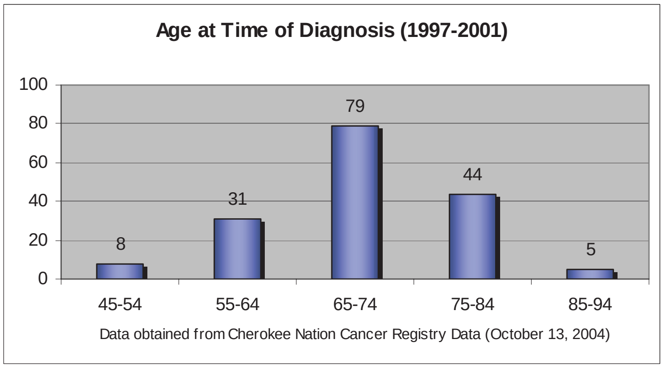
**Figure 29**



Data obtained from Cherokee Nation Cancer Registry Data (October 14, 2004)

The age at time of diagnosis is represented in Figure 30 and shows the majority of cases are diagnosed at the age of 65 or older, consistent with national norms (44).

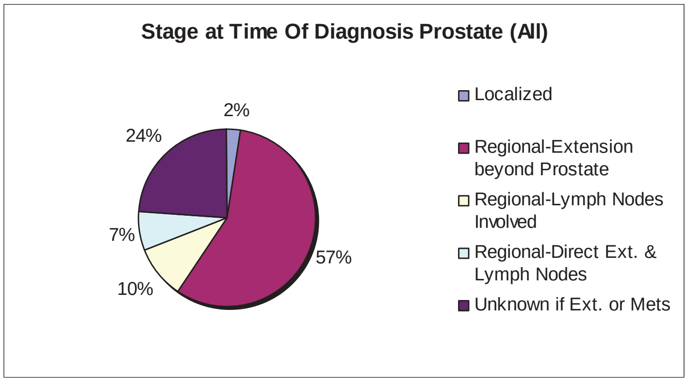
**Figure 30**



Data obtained from Cherokee Nation Cancer Registry Data (October 13, 2004)

Figure 31 demonstrates the stage of disease at the time of diagnosis. The majority of prostate cancer cases diagnosed in the CNTJSA show tumor have spread past the prostate capsule (TNM stage T3) or beyond. This is in contrast to the national norm, as most cases of prostate cancer are diagnosed before the tumor spreads beyond the prostate gland (stages T0-T2).

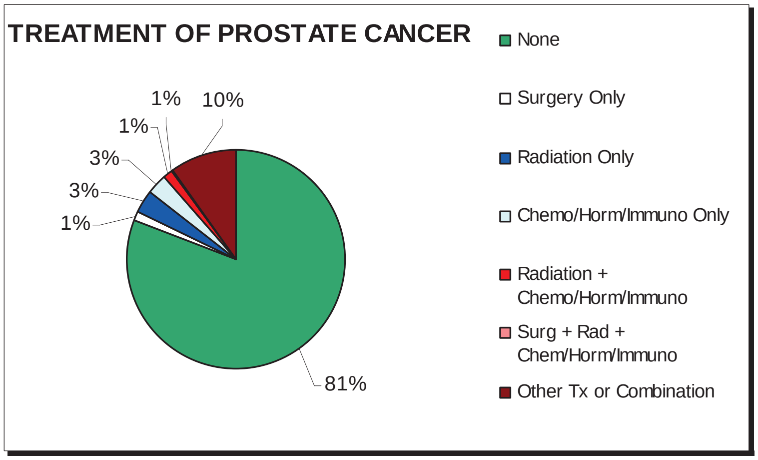
**Figure 31**



**Data obtained from the Cherokee Nation Cancer Registry, 2004**

The majority of patients with prostate cancer diagnosed between 1997 and 2001 did not seek treatment for their disease, despite the fact that most cases were at stage T3 or greater. Among those that did seek treatment, the majority of them underwent combination therapy appropriate for their stage of disease (Figure 32).

**Figure 32**



**Data obtained from the Cherokee Nation Cancer Registry, 2004**

The previous data presented, although preliminary, suggest that prostate cancer in the CNTJSA is being diagnosed less frequently than in the general population at large. They also suggest that patients are presenting with clinically significant disease and are being diagnosed at later stages than in the general population. Moreover, most patients are not undergoing treatment for prostate cancer. These disparities are notable, and paint a bleak picture for prostate cancer in the Cherokee Nation. Further research is greatly needed to evaluate these disparities and identify ways to correct them. Further data are also needed to assess long-term trends in prostate cancer incidence and mortality in the CNTJSA.

### Risk Factors and Prevention of Prostate Cancer

There are few identified risk factors for prostate cancer. The most prominent risk factor is age. Among ethnic groups that have been studied in the United States, African Americans have the highest risk of developing prostate cancer. Although there are limited data on prostate cancer risk in American Indians, the available data suggest that their risk is comparable to that of Caucasians (44). This is demonstrated in rates of prostate cancer in Oklahoma. Family history is a risk factor for prostate cancer, with first-degree relatives having the greatest risk.

### Prostate Cancer Screening

There are two prostate cancer screening tools in widespread use in the United States today, PSA and DRE. Protein Specific Antigen (PSA) is a protein secreted by the prostate gland that is detected in the serum. It is produced in low levels by the normal prostate, and at increased levels in both prostate cancer and in benign prostatic hypertrophy (BPH), a benign condition of diffuse prostate enlargement. The normal range for PSA is 0-4 ng/dL, and the risk of prostate cancer is 25-fold in men with a PSA greater than 10 ng/dL. PSA is falsely elevated in patients with BPH and inflammation of the prostate gland. The false positive rate has been estimated to be between 30-50 percent in men with BPH, and the false negative rate (occurrence of prostate cancer in men with a normal PSA) is approximately 15 percent (45).

The DRE is a physical exam technique in which a healthcare provider manually palpates the prostate gland for tumors. This method may allow for the detection of lesions that are in the posterior peripheral areas of the prostate gland, and is not considered to be a highly sensitive diagnostic test. However, it is fairly specific, as 25-50 percent of men with an abnormal DRE will have prostate cancer.

Although both DRE and PSA testing have shortcomings, they are currently the only screening methods available to detect prostate cancer, and the incidence and mortality from this disease have declined since the mid-1990s when these screening tests came into widespread use. **There is controversy among the national guidelines on when and how often to screen men for prostate cancer, but the most rigorous approach adapted by both the American Cancer Society and the American Urological Society recommend annual DRE and PSA testing beginning at age 50, and to continue until the patient's life expectancy is less than ten years. Men with a first-degree relative with prostate cancer or African American ethnicity should be screened beginning at age 45 (44).**

### Diagnosis of Prostate Cancer

Patients who are found to have an abnormal screening PSA or DRE are further evaluated with a trans-rectal ultrasound and biopsy. This procedure involves ultrasound imaging using a rectal probe, and a specialized ultrasound-guided biopsy needle, which samples 6-12 cores of the prostate gland. If the biopsy confirms the presence of a tumor, then ancillary studies such as CT of the abdomen and pelvis, MRI, and bone scan may be warranted.

## Treatment of Prostate Cancer

Over the past two decades there have been significant advances in prostate cancer treatment, which have translated to improved survival rates over the past ten years. Treatment options range from watchful waiting without therapy, to radical prostatectomy, which involves surgical removal of the prostate, seminal vesicles, and surrounding lymph nodes and tissues. Other treatment options include radiation therapy, which can be administered by external beam, or by implanting radioactive “seeds” into the diseased prostate. Chemotherapy may also be administered, and can include combinations of standard chemotherapy drugs, or anti-hormonal agents, which have fewer side effects.

Follow-up care is important after any cancer treatment. Regular checkups are needed to insure that the cancer has not recurred, as well as to provide support and counseling the cancer survivor and family may need. Also of vital importance is support groups and community awareness, as well as programs tailored to the cancer survivor (See Chapter 12, Survivorship).

## Diagnostic Procedures in Cherokee Nation

DRE and PSA testing are readily available at all hospitals, clinics, and health centers in the Cherokee Nation. Most patients who are found to have an abnormal screening PSA or DRE are referred for further evaluation with a trans-rectal ultrasound and biopsy. This procedure is performed by a urologist that the patient was referred to by contract health services. Compliance with these screening guidelines is approximately 50 percent among all patients in the United States, and only 30 percent among patients without health insurance (44). Compliance rates in the Cherokee Nation have not been studied, but they are unlikely to be higher than the national rates.

## Treatment in Cherokee Nation

Once a biopsy confirms the presence of a tumor, then ancillary studies such as CT of the abdomen and pelvis, MRI, and bone scan may be warranted. Among these studies, the CT can be performed at Hastings Indian Medical Center and Claremore Indian Hospital. The other aforementioned studies are performed at non-IHS facilities by CHS referral.

Other treatment options, such as radiation therapy and chemotherapy are done through CHS referral to non-IHS facility providers.

77 percent of all prostate cancer in the Cherokee Nation occurs in men aged 65 and older. There is much controversy over the types of treatment options available. Clinical trials may be an option that many have not investigated. These trials are conducted to answer questions about new treatment and may benefit the patient. Many people worry about clinical trials because they do not have the facts about these important trials.

The Cherokee Nation Comprehensive Cancer Control goals for prostate cancer are as follows:

**Prostate Cancer:**

- Goal: Reduce morbidity and mortality of prostate cancer by reducing late stage diagnosis of prostate cancer among men living in Cherokee Nation
  - Objective 1: Increase percentage of screening for prostate cancer by PSA or DRE among men aged 50 and over
    **Baseline: 1,279 PSA's and 1,149 DRE's**
    **Target: 5% increase in screening**
    **Timeline: 2 years**
    - Strategy 1: Identify barriers to prostate screening for American Indian men living in Cherokee Nation
    - Strategy 2: Develop and implement a culturally appropriate risk assessment to be used by Cherokee Nation Health Services
    - Strategy 3: Monitor updates in screening guidelines and update Cherokee Nation clinical guidelines

**CNCCC Partnerships:** Cherokee Nation Cancer Registry, Cherokee Nation Health Services clinical staff, Indian Health Service clinical staff, Cherokee Nation HP/DP, Cherokee Nation Community Health, National Cancer Institute Cancer Information Service, Mayo Clinic SPIRIT of EAGLES

# Chapter 10

# Colorectal Cancer

# COLORECTAL CANCER

***"Having a first-degree relative with colorectal cancer approximately doubles the risk, and the risk increases with the proportion of relatives affected, particularly if they are diagnosed at an early age (46)."***

## Colorectal Cancer in the United States

Colorectal cancer (CRC) is the second leading cause of cancer death in the US and is one of the most commonly diagnosed cancers. It is the third most common cancer in men and in women. "An estimated 56,290 deaths due to colon cancer are expected to occur in 2005, accounting for about 10 percent of cancer deaths this year in the United States (47)."

It is believed that CRC is caused by a complex interaction of inherited susceptibility and environmental factors. Within the large intestine, genetic changes alter the growth of normal cells to form polyps (adenomas). Adenomas are common, are found in approximately 25 percent of people by age 50, and the prevalence increases with age. Seventy to ninety percent of CRC is believed to arise from these adenomatous polyps (48). Overall, about 10.5 percent will progress to CRC; however, as many as 50 percent of large adenomas (over 2 centimeters) will progress to cancer. The average time between the development of a polyp and its progression to CRC is 10-15 years (49).

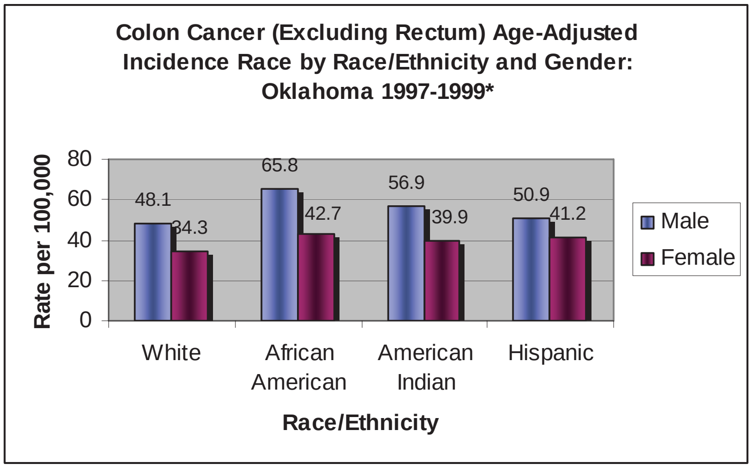
***Healthy People 2010 Goal****: Decrease the incidence of colon cancer*
***Target:*** *13.9 deaths per 100,000 population*
***Baseline:*** *21.2 colorectal deaths per 100,000 population occurred in 1998 (age adjusted to the year 2000 standard population)*
***Target setting method:*** *34 percent improvement*
***Data source:*** *National Vital Statistics System (NVSS), CDC, NCHS*

## Colon Cancer in Oklahoma

According to the American Cancer Society, CRC is the third most common cancer in men and women of Oklahoma. The estimate for new cases diagnosed in Oklahoma in 2005 is 2,070. The estimated deaths in 2004 from colorectal cancer in Oklahoma were 800. Incidence rates declined by three percent per year during 1998–2000. Research suggests these declines may be in part due to increased screening and polyp removal, which prevents progression of polyps to invasive cancers. Mortality rates have also declined over the past 15 years at an average rate of 1.7 percent per year. This reflects the decreasing incidence rates from the mid-1980's to the mid-1990's, as well as improvements in survival.

According to data from the Oklahoma Central Cancer Registry, Figure 33 indicates the age-adjusted incidence rates of colon cancer for men are second highest in the American Indian population in Oklahoma, while American Indian female are the third highest racial group in Oklahoma to be diagnosed with this cancer.

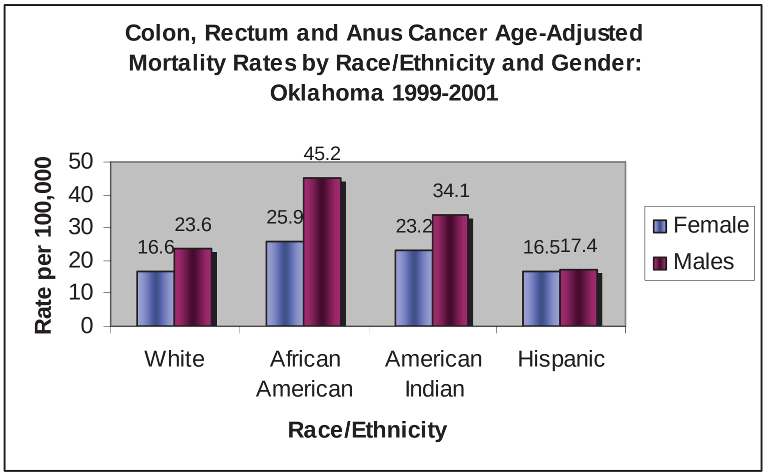
**Figure 33**



**Rate per 100,000, Age-adjusted to 2000 US Population**
***IHS linkage completed for 1997-1999**
****Hispanic can be of any race; Hispanic surname used**

Figure 34 indicates American Indian male have the second highest mortality rates for colon, rectum, and anal cancers of the Oklahoma population, and American Indian female have the second highest mortality rate among the female population in Oklahoma.

**Figure 34**



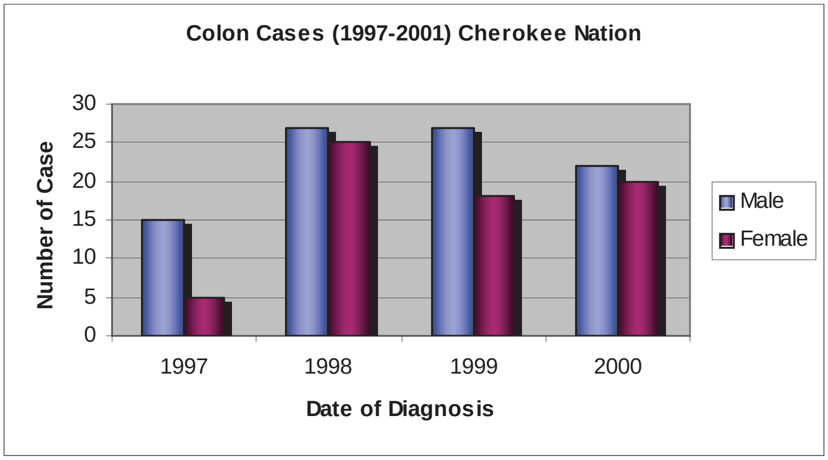
**Rate per 100,000, Age-adjusted to 2000 US Population**
***IHS linkage completed for 1997-1999**
****Hispanic can be of any race; Hispanic surname used**

## Colorectal Cancer Burden in Cherokee Nation

CRC is the fourth leading cancer site in CNTJSA for American Indian men and women. As mentioned earlier, there are no early warning signs for this type of cancer and it is most often diagnosed in the later stages, with only 1 percent of in-situ cases (early stage) being diagnosed in Cherokee Nation. Most of these cases are diagnosed and/or treated outside the CNTJSA.

According to Figure 35, for every year these cases were collected there were more men diagnosed with this cancer than there were female.

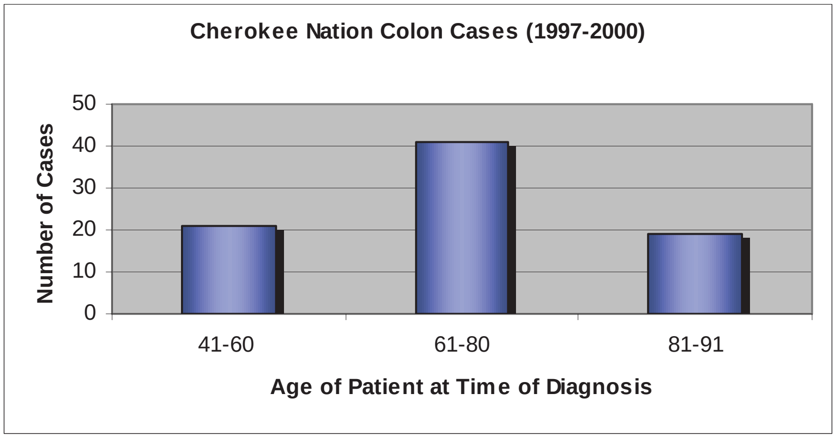
**Figure 35**



**Data obtained from the Cherokee Nation Cancer Registry, October 2003**

According to Figure 36, the majority of colon cancer patients are diagnosed between the ages of 61 and 80 years of age in the Cherokee Nation.

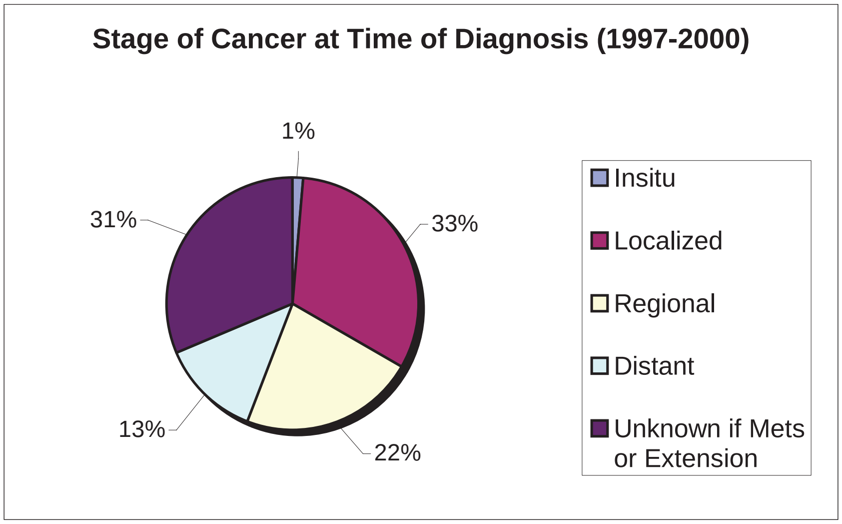
**Figure 36**



**Data obtained from the Cherokee Nation Cancer Registry, October 2003**

What appears to be really significant in these cases is the numbers that are diagnosed in the later stages. There are several early screening options available for this cancer, but according to Figure 37, only 1 percent of these cases are diagnosed at the earliest stage (In situ), while 33 percent are diagnosed at the local stages and 22 percent at the regional stages. Nearly one-third of these cases did not indicate a stage at the time of diagnosis and may have been identified at later stages. These patients may not have sought treatment for their cancer and therefore staging was not performed.

**Figure 37**



**Data obtained from the Cherokee Nation Cancer Registry, October 2003**

Barriers may have existed to cause the patient to ignore treatment as well. Of all the patients diagnosed with CRC in Cherokee Nation, 57 percent of the patients did not undergo treatment. Of those who did seek treatment, many received it outside of the CNTJSA.

### Diagnostic Procedures

In the early stages of colorectal cancer there are typically no symptoms. Therefore, the American Cancer Society (ACS) recommends screening average-risk asymptomatic people for colorectal cancer to begin at the age of 50. According to the ACS guidelines, men and women should follow one of the examination schedules below:

- A fecal occult blood test (FOBT) every year
- A flexible sigmoidoscopy (FSIG) every five years
- Annual fecal occult blood test and flexible sigmoidoscopy every five years
- A double-contrast barium enema every five years
- A colonoscopy every ten years

Since these guidelines were last updated by the ACS, studies demonstrating the superiority of colonoscopy over FSIG were published (50, 51). These studies demonstrated that 66 percent of men with advanced neoplasia and only 35 percent of women with advanced lesions would have their disease identified by FSIG alone. Therefore, a screening strategy that includes colonoscopy every ten years is the most effective way to identify early-stage colorectal cancer (50, 51).

Table 3 lists the types of diagnostic studies and tests that are performed for detecting colon cancer.

**Table 3** **Diagnostic Tests and Studies for Colon Cancer**

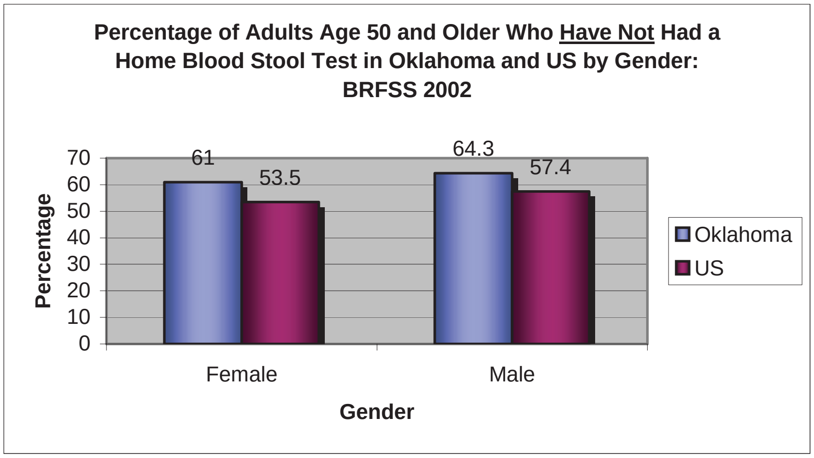
| **Diagnostic Studies- Laboratory Tests** | **Diagnostic Studies – Imaging** |
|---|---|
| • Fecal occult blood test (FOBT)<br>• Liver Function Tests (LFT)<br>• Carcinoembryonic Antigen (CEA) | • Barium Enema<br>• Small Bowel Series<br>• Chest X-ray<br>• Imaging, Abdomen/pelvis<br>• Imaging, Liver/Spleen<br>• Imaging, Brain<br>• Imaging, Bone |
| **Diagnostic Studies – Tumor Markers** | **Diagnostic Studies – Procedures** |
| • CEA<br>• Ca19<br>• Ca195 | • Flexible sigmoidoscopy<br>• Colonoscopy<br>• Digital Rectal Exam<br>• (DRE)<br>• Cystoscopy |

After initial testing has been performed, such as the laboratory tests and tumor marker tests, those with abnormal findings may have other procedures done, such as imaging studies, and/or endoscopies.

## Screening in Oklahoma

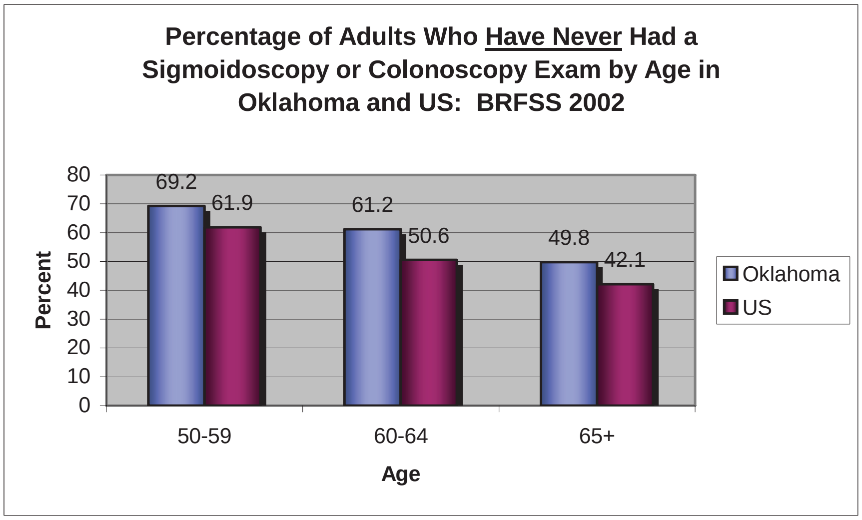
According to BRFSS data obtained from the Oklahoma State Health Department, males of all ages are more likely than females to be diagnosed with cancer of the colon. Additionally, in the BRFSS data shown in Figure 38, more than 60 percent of Oklahoma men and women ages 50 and older, have **never** had a home blood stool test. This is higher than the US population, where approximately 55 percent of those, both men and women over age 50, have never had a home blood stool test.

**Figure 38**



Of further interest is the percentage of Oklahoma adults who have **never** had a sigmoidoscopy or colonoscopy exam by age 50. Figure 39 shows that Oklahomans ranked higher than the US in the number of people who have **never** had either of these procedures performed.

**Figure 39**



## Risk Factors

Certain risk factors may increase the chance of developing colorectal cancer. Age is the primary risk factor, with more than 90 percent of cases diagnosed in individuals over the age of 50. A family history of colorectal cancer, polyps, or an inflammatory bowel disease increases the risk of getting colon cancer. Preventable lifestyle risks include smoking, alcohol consumption, obesity, physical inactivity, and high-fat/low fiber diet. Recent studies have also suggested that estrogen (with or without progesterone) replacement therapy and non-steroidal anti-inflammatory drugs, such as aspirin, may reduce colorectal cancer risk (52).

## Primary Prevention

Primary prevention of colorectal cancer requires adopting behaviors that favor lowering the risk of colorectal cancer. Certain risk factors are not modifiable (age, family history and personal history) while other factors can be modified (weight, diet, and physical activity).

There is good evidence to support the fact that a sedentary life style, a diet rich in red meats, and a low consumption of leafy, green vegetables can increase the risk of colon cancer in men and women. Therefore, prevention is feasible and obtainable for those who have modifiable risk factors, and early diagnostic procedures are available for those who have risk factors that are not modifiable (53).

## Treatment

Treatment options vary depending on the stage of the cancer at the time of diagnosis, although surgery has the highest cure rates for this type of cancer. There is no standard therapy for patients with widespread metastasis. Chemotherapy is used for adjuvant therapy and with recurrence or metastatic colon cancer. The most common type of chemotherapy used is agent 5-Fluorouracil (5-FU) combined with Leucovorin (LV). Radiation can be used as preoperative and/or postoperative treatment for rectal cancer. The optimal sequence of surgery, radiation and chemotherapy is not known, and is the subject of many ongoing clinical trials.

Listed below are the different stages of the disease, along with treatment options available for each stage.

**Stage 0** – Tumor has not invaded any surrounding tissue, carcinoma in a polyp or adenoma, non invasive. Most colorectal cancers appear to arise in polyps. Treatment includes local tumor destruction, which may include cryosurgery, fulguration, laser surgery or electrocautery.

**Stage I** – Tumor is localized and invasion is confined to colon. Treatment includes local excision and may include endoscopic snare, excisional laser surgery, or polypectomy.

**Stage II** – Tumor has invaded surrounding tissue by direct extension only, extension through abdominal wall to other organs. Treatment may include wedge resection, segmental resection or partial resection of a colonic flexure. Postoperative radiation therapy may be useful as well.

**Stage III** – Tumor is present in regional lymph nodes of primary site only. Treatment includes adjuvant chemotherapy and surgery. Postoperative radiation therapy may be useful as well.

**Stage IV** – Tumor is present and has invaded through adjacent tissue to surrounding organs by direct extension and lymph nodes are involved. Treatment may involve palliative chemotherapy, radiation, or surgery to relieve obstruction. There is no proven curative therapy for stage IV disease.

**Barriers to Treatment**

HIMC currently maintains a waiting list for colonoscopies, as well as a waiting list for routine screening procedures. Many other barriers exist for the American Indians in Cherokee Nation that include the following:

- cultural barriers
- transportation issues
- insufficient resource
- insurance issues
- socio-economic status
- childcare issues

### Colorectal Cancer Screening in the Cherokee Nation

Because colorectal cancer usually progresses slowly from asymptomatic polyps it is, for the most part, a preventable disease if screening practices are implemented. Average-risk people should, at a minimum, be screened yearly after the age of 50 with a DRE. In addition, patients should be screened with a colonoscopy every ten years beginning at the age of 50. Patients who do not undergo colonoscopy should receive a FSIG or double-contrast barium enema every five years, in accordance with the American Cancer Society screening guidelines. Each of these procedures is available at HIMC, as well as Claremore IHS Hospital through the department of surgery. Resources such as physician staffing and operating time are limited, so the waiting list for average-risk patients is long.

### Colorectal Cancer Diagnosis in the Cherokee Nation

Patients with colorectal cancer may have advanced disease causing obstructive symptoms or gastrointestinal bleeding. With patients in whom the disease is diagnosed early, cancer is typically found by positive DRE or FOBT, or through routine endoscopic screening. Colonoscopy with biopsy is the gold-standard test to confirm a suspected diagnosis of colon cancer. Patients in whom the diagnosis is suspected are referred to general surgery for colonoscopy. The lag time from referral to the procedure being done is considerably shorter than it is for routine screening referrals, and when the situation warrants, patients are admitted to HIMC and the colonoscopy will be performed within 24 to 48 hours.

### Colorectal Cancer Treatment in the Cherokee Nation

Management of colorectal cancer depends on the stage of disease at the time of diagnosis. The primary means of treatment is surgical resection of the tumor, surrounding lymph nodes, and occasionally, wedge resections of liver lesions. Whenever feasible, surgery is performed on patients with stages 0-III colon cancer. Cherokee Nation patients can be referred to HIMC and Claremore Indian Hospital for surgical management. Patients with stage II to stage III colorectal cancer will usually be treated with chemotherapy along with surgery; this can be administered before or after the surgery. Patients with rectal cancer are often treated with radiation therapy either before or after surgery. Patients with stage IV colorectal cancer benefit from palliative surgery for obstructive symptoms, and are treated with chemotherapy and/or radiation therapy. All referrals for chemotherapy and radiation therapy are made by CHS referrals to outside providers in the surrounding areas.

The Cherokee Nation Comprehensive Cancer Control goals for colorectal cancer are as follows:

**<u>Colorectal Cancer:</u>**

- Goal: Reduce morbidity and mortality of colorectal cancer by reducing late stage diagnosis of colorectal cancer
  - Objective: Increase percentage of adults over the age of 50 who receive a colorectal cancer screening examination
    **Baseline: 952 FOBTs, identify number of colonoscopies**
    **Target: Target = 5% increase in screening**

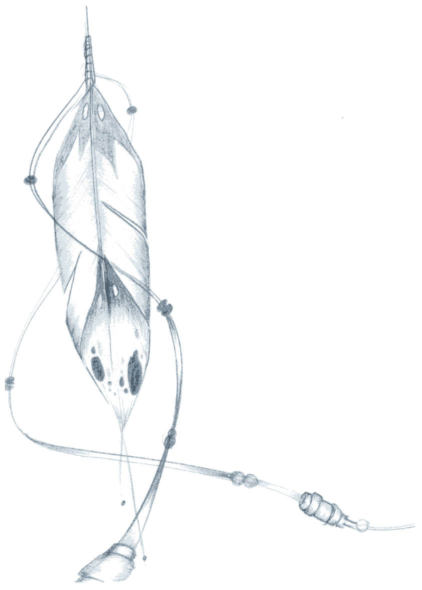
**Timeline: 2 years**

- Strategy 1: Identify barriers to colorectal screening for American Indian men living in Cherokee Nation
- Strategy 2: Develop and implement a culturally appropriate risk assessment to be used by Cherokee Nation Health Services
- Strategy 3: Develop a culturally appropriate approach to raising awareness about colorectal cancer and the importance of annual screening
- Strategy 4: Increase number of providers providing colorectal screening

**CNCCC Partners:** Indian Health Service clinical staff, Cherokee Nation Health Services clinical staff, Cherokee Nation Cancer Registry, American Cancer Society, National Cancer Institute Cancer Information Service, Mayo Clinic SPIRIT of EAGLES

# Chapter 11

# Clinical Trials



# Clinical Trials

In general, clinical trials are often misunderstood. A common misconception is that those who do not receive the typical standard of care for cancer treatment are not getting the best treatment possible. In fact, patients in clinical trials often have access to the newest, most effective treatments. More education on the local and national availability, benefits, and eligibility criteria need to be made available to the public. Physicians need to keep abreast of the latest clinical trials being conducted in their area so they can relay this information back to the patient.

## What is a clinical trial?

A clinical trial is a research study among human volunteers to answer specific health questions. Clinical trials comprise research that is designed and evaluated carefully to provide reliable information about interventions for preventing, detecting, or treating cancer or maybe for improving quality of life for patients who already have the disease (54). There are various types of clinical trials, which differ with respect to their stated goals.

## Different Types of Clinical Trials

There are several different trials that are available for the patient and include the following:

1. Prevention trials designed to identify interventions that can prevent cancer
2. Prevention trials designed to stop the development of a second cancer in people who have had cancer
3. Early detection trials to identify methods to detect cancer early in its development
4. Treatment trials to identify interventions that are effective in reversing, stopping, or slowing the growth of cancer
5. Quality-of-life trials to identify strategies to improve the quality of patients' lives during and after treatment
6. Symptom management trials to identify interventions that alleviate the symptoms of both cancer and its treatment

The objective of a clinical trial is to determine the effectiveness of an intervention in achieving its stated goal. People who participate may benefit personally but there is no guarantee of direct therapeutic benefit. In which case there may be a negative effect. If it were a guarantee, the study would not have to be conducted. In fact, the balance between the desirable effects and the negative effects actually determine whether an intervention tested in a clinical trial will be useful in preventing or treating cancer.

## Importance of Clinical Trials

To seek advances in medical knowledge through clinical trials is very important to the study of any disease. It is especially true for cancer, in which case both morbidity and mortality is very high (55). Clinical trials provide a valid scientific method of combining data from participating centers to help identify interventions more quickly. Physicians use such published information to offer their patients state-of-the-art therapies, which they hope can produce the same outcome achieved in the original studies.

## Eligibility to Join Clinical Trials

A clinical trial participant should have specific characteristics that are shared with the other trial participants so the information can be combined. Some of the elements that determine eligibility are age, gender, stage of disease, laboratory test results, and cancer risk status. Eligibility criteria identify specific personal characteristics that a potential participant must possess to qualify for participation (56).

## Phases of Clinical Trials

- Phase I - Researchers test an experimental drug or treatment in a small group of people (20-80) for the first time to evaluate its safety, determine a safe dosage range, and identify side effects.
- Phase II - The experimental study drug or treatment is given to a larger group of people (100-300) to see if it is effective and to further evaluate its safety.
- Phase III - The experimental study drug or treatment is given to large groups of people (1,000-3,000) to confirm its effectiveness, monitor side effects, compare it to commonly used treatments, and collect information that will allow the experimental drug or treatment to be used safely.
- Phase IV - Post marketing studies delineate additional information, including the drug's risk benefits and optimal use.

## Why Should Minorities and Women Participate In Clinical Trials

In the past, most of the drug testing and clinical trials have been done on white men. This means that some groups, such as African Americans, Hispanic Americans, American Indians, Asian Americans, and women, have not always been included in tests done with drugs. Some drugs are known to work differently on other races, and the Food and Drug Administration encourages people from many different groups to participate in clinical trials (57).

## What are the Benefits and Risks of Participating in a Clinical Trial?

<u>Benefits:</u> Clinical trials that are well designed and executed are the best approach for eligible participants to:

- Play an active role in their health care.
- Gain access to new research treatments before they are widely available
- Get expert medical care at top health care facilities during the trial
- Help others by contributing to the clinical trial research (58).

<u>Risks:</u>

- May be unpleasant, serious or even life-threatening side effects to experimental treatments.
- The treatment may not be effective to the participant.
- The protocol may require more of the participant's time and attention, including more trips to the study site, more treatments, hospital stays or even complex dosage requirements.

### Can a Participant Leave a Clinical Trial After it has begun?

Yes. A participant can leave a clinical trial at any time. The person should let the researchers know he or she is leaving and give them a reason why they are choosing to leave the trial.

### Clinical Trials in the Cherokee Nation

Currently there are no clinical trials in the CNTJSA. There are clinical trials in the Oklahoma City and Tulsa area. Therefore, most residents of the Cherokee Nation are not informed about these clinical trials. For most people living in the CNTJSA, Oklahoma City and Tulsa are long distances to travel, especially when most trials require the patient to be present regularly for participation.

The Cherokee Nation Comprehensive Cancer Control goals for clinical trials are as follows:

**Clinical Trials:**

- Goal: Reduce morbidity and mortality of cancer by assuring equal access and knowledge of on-going clinical trials for American Indians living in Cherokee Nation
  - Objective: Increase percent of Cherokee Nation population participating in clinical trials.

    **Baseline: To be determined**

    **Target: development of database of new and on-going clinical trials in Oklahoma**

    **Timeline: 2 years**

    - Strategy 1: Identify relevant ongoing clinical trial availability near Cherokee Nation Service Area
    - Strategy 2: Increase awareness of clinical trial information to Cherokee Nation Institutional Review Board and Medical Executive Committee
    - Strategy 3: Increase awareness of clinical trial information to Cherokee Nation residents

**CNCCC Partners:** Cherokee Nation Institutional Review Board, Cherokee Nation Health Services, Hastings Indian Medical Center, Claremore Indian Hospital, Investigational institutions to be later identified

# Chapter 12

# Survivorship

# SURVIVORSHIP

**“The number of Americans diagnosed with cancer each year is expected to double in the next 50 years, from 1.3 million to 2.6 million (59).”**

“Cancer is the second leading cause of death among adults in the United States and affects an estimated one in three individuals, either through their own diagnosis or that of a loved one (60)”.

In the next few decades, “baby boomers”, those who were born in the 1950’s and 1960’s, will soon be reaching an age when many people are diagnosed with cancer. This will dramatically increase the incidence of cancer in the United States. Public education announcements recommending screening for age appropriate individuals will also increase the number of people getting screened for early diagnosis. This will steadily increase the number of those diagnosed with cancer, as well as the number of people needing treatment and care. “The number of Americans diagnosed with cancer each year is expected to double in the next 50 years, from 1.3 million to 2.6 million (57).”

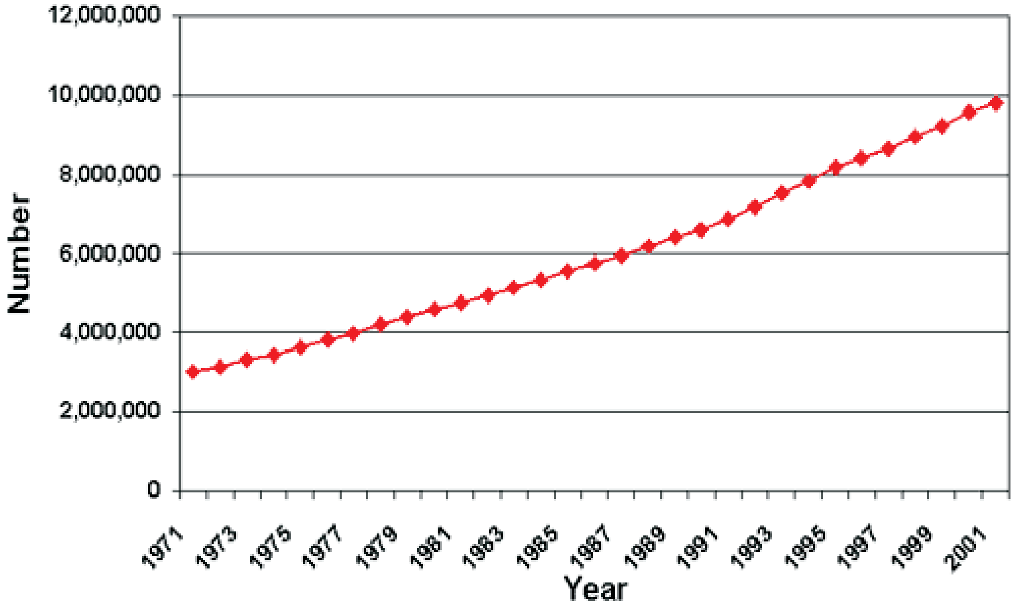
In previous years, a diagnosis of cancer was considered a fatal disease. Recent medical advances have played a vital role in detecting and treating cancers at earlier stages, and with the onset of improved screening, early diagnosis and treatment have increased the number of those surviving cancer.

Inadequate public education regarding cancer is still prevalent from previous years when cancer was known to be a killer. This is a misconception that can only be changed by educating the public, the patient, family members, caregivers, and those in the health care system.

In a recent report from the Centers for Disease Control and Prevention (CDC), it was noted, “For all cancers combined, the number of survivors in the United States has increased steadily during the last three decades (57)”. It was also noted in the report, information obtained from the National Cancer Institutes SEER website showed that in 1971 there was approximately 3.0 million persons living with cancer and in 2001 the number had grown to 9.8 million persons. This is a tremendous growth of cancer survivors in the last three decades.

Figure 40 illustrates the increase in the survivor group over the last three decades. Health care systems and insurance companies will not be equipped in the future to deal with the growing survivor population unless plans are designed and implemented in the very near future to account for the needs of the growing cancer survivors and the aging baby boomers for the next half-century. Enough medical care systems are needed to meet the future needs of this population.

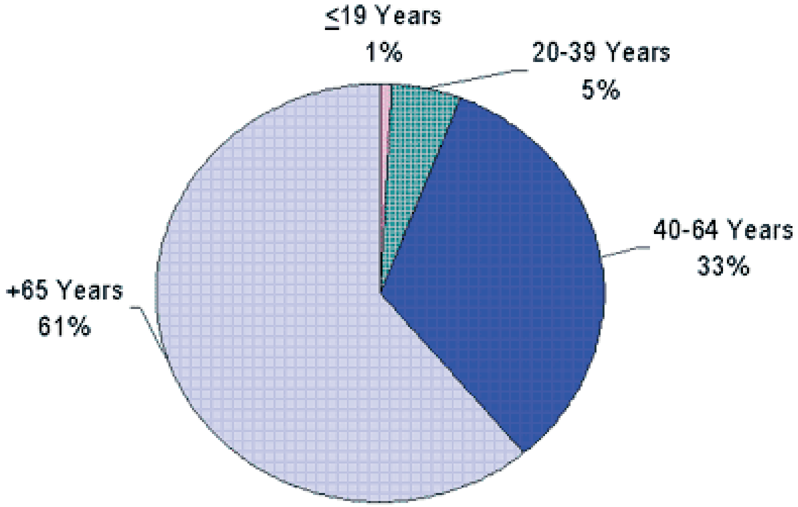
**Figure 40** **Increase in Survivor Population (1971-2001)**



**[1]Data Source: November 2003 Submission: Populations from January 2001 were based on the average of the July 2000 and July 2001 population estimates from the US Bureau of Census. Complete prevalence is estimated using the completeness index method (Capocaccia et. al. 1997, Merrill et. al. 2000). US Estimated Prevalence counts were estimated by applying US populations to SEER 9 Limited Duration Prevalence proportions**.

Figure 41 illustrates the estimated number of persons, by age, in the United States diagnosed with cancer and who are still alive. The diagram shows the largest number of cancer survivors to be over the age of 65.

**Figure 41** **Estimated Number of Persons Alive in the US Diagnosed with Cancer By "Current Age*, Invasive/1st Primary Cases Only (N=9.8 Million)**



[1]Data Source: November 2003 Submission: Populations from January 2001 were based on the average of the July 2000 and July 2001 population estimates from the US Bureau of Census. Complete prevalence is estimated using the completeness index method (Capocaccia et. al. 1997, Merrill et. al. 2000). US Estimated Prevalence counts were estimated by applying US populations to SEER 9 Limited Duration Prevalence proportions.

## Survival Rates in the United States

Table 4 shows the five, ten, fifteen and twenty-year relative survival rates for different cancer sites in the United States. Although these numbers are very useful information, survival from one patient to another with the same type of cancer is dependent on the stage of the disease at the time of diagnosis and does not reflect a definite time interval for survival. Survival rates could change as increased research and clinical trials help to discover new ways to diagnose and treat cancer patients.

### Table 4

### Period Estimates of Relative Survival Rates, By Cancer Site

| | Relative Survival Rate, Percent (Standard Errors not shown) | | | |
|---|---|---|---|---|
| **Cancer Site** | **5 years** | **10 years** | **15 years** | **20 years** |
| Oral cavity and pharynx | 56.7 | 44.2 | 37.5 | 33.0 |
| Esophagus | 14.2 | 7.9 | 7.7 | 5.4 |
| Stomach | 23.8 | 19.4 | 19.0 | 14.9 |
| Colon | 61.7 | 55.4 | 53.9 | 52.3 |
| Rectum | 62.6 | 55.2 | 51.8 | 49.2 |
| Liver/intrahepatic bile duct | 7.5 | 5.8 | 6.3 | 7.6 |
| Pancreas | 4.0 | 3.0 | 2.7 | 2.7 |
| Larynx | 68.8 | 56.7 | 45.8 | 37.8 |
| Lung and bronchus | 15.0 | 10.6 | 8.1 | 6.5 |
| Melanoma | 89.0 | 86.7 | 83.5 | 82.8 |
| Breast | 86.4 | 78.3 | 71.3 | 65.0 |
| Cervix uteri | 70.5 | 64.1 | 62.8 | 60.0 |
| Corpus uteri and uterus, NOS | 84.3 | 83.2 | 80.8 | 79.2 |
| Ovary | 55.0 | 49.3 | 49.9 | 49.6 |
| Prostate | 98.8 | 95.2 | 87.1 | 81.1 |
| Testis | 94.7 | 94.0 | 91.1 | 88.2 |
| Urinary bladder | 82.1 | 76.2 | 70.3 | 67.9 |
| Kidney and renal pelvis | 61.8 | 54.4 | 49.8 | 47.3 |
| Brain and other nervous system | 32.0 | 29.2 | 27.6 | 26.1 |
| Thyroid | 96.0 | 95.8 | 94.0 | 95.4 |
| Hodgkin's lymphoma | 85.1 | 79.8 | 73.8 | 67.1 |
| Non-Hodgkin's lymphoma | 57.8 | 46.3 | 38.3 | 34.3 |
| Multiple myeloma | 29.5 | 12.7 | 7.0 | 4.8 |
| Leukemia | 42.5 | 32.4 | 29.7 | 26.2 |

NOS = not otherwise specified

Adapted from: Brunner H, Lancet 2002; 360:1131-1135, Table 4. Rates derived from SEER 1973-1998 database, both sexes, all racial/ethnic groups

## Survival Rates in the US Population

Lung Cancer - Survival rates vary greatly, depending on the stage at the time of diagnosis. This cancer is usually diagnosed in the later stages and since there are no screening tests available to diagnose this disease at the early stages, the five year survival rate is poor. Making the patient as comfortable as possible through palliative care is about the only option health care providers can give.

Breast Cancer – Over the last several years incidence rates have become stable for breast cancer cases and mortality rates have decreased. This is likely due to increased mammography screening in which breast cancer can be discovered before it becomes invasive.

According to former Secretary of Health and Human Services Tommy Thompson, in an article published by the North American Association of Central Cancer Registries' Washington Report, "Breast cancer survivors make up the largest group of cancer survivors (22%)" (58).

When detected at an early stage, treatment can eliminate the cancer and give the patient a longer survival period; although there is a chance that the cancer can recur. With the use of conventional forms of treatment the median survival of patients with metastatic breast cancer is greater than two years, but some live from 10 to 20 years.

Prostate Cancer – Although early screening has helped to increase the number of survivors today there is no sure evidence early screening reduces death rates in prostate cancer. The majority of cancer survivors are ages 65 and older, with 17 percent of them being prostate cancer survivors.

Colon Cancer – Colon cancer survivors in the United States today make up approximately 11 percent of the cancer survivors and colon cancer is the second deadliest cancer in the US. Colon cancer is a preventable disease when caught in the early stages, with approximately 95 to 100 percent survival rates. Unfortunately, many people are too embarrassed to get tested for this cancer and it can go undetected until a person reaches the later stages of this cancer, when survival rates quickly diminish.

***Healthy People 2010 Objective**:*
*Increase the proportion of cancer survivors who are living five years or longer after diagnosis*
***Target:** 70%*
***Baseline:** 59% of persons with invasive cancer of any type were living five years or longer after diagnosis in 1989-95*
***Target setting method:** 19% improvement*
***Data source:** Surveillance, Epidemiology and End Result (SEER), NIH, NCI*

Positive strides have been made in reducing mortality rates for those diagnosed with cancer. The current number of cancer survivors, along with the increasing number of newly diagnosed cases, continues to expand the amount of people requiring specialized care, treatment, insurance coverage, pain management, and other quality of care issue.

## Who is considered a Cancer Survivor?

The term “survivor” has a dissimilar meaning for many people. It is not a medical term, but is a word developed by cancer advocates, and can have many different meanings. Some use the word to refer to anyone who has been diagnosed with cancer. For example, someone living with cancer may be considered a “survivor”. Some people use the term when referring to a person who has completed cancer treatment, and still others are called a cancer survivor if they have lived several years past a diagnosis of cancer.

According to the ACS, it is believed that each individual has the right to define his or her own experience with cancer. Therefore, a cancer survivor is considered to be anyone who defines him or herself in this way, from the very time of diagnosis through the whole spectrum of the cancer cycle.

For comprehensive cancer care, the ultimate goal is to get the patient and family back, mentally and physically, as near to a pre-cancerous diagnosis as possible, and therefore “survivorship” should include anyone who is still living and has been diagnosed with cancer sometime in their life. This includes any friend or family members who are experiencing the effects of cancer along with the patient.

## Experiences of a Cancer Survivor

Those diagnosed with cancer have many life changes which may require many adjustments. Although many cancer survivors indicate a renewed sense of direction in their lives and have rearranged their priorities, others find the new challenges difficult.

A report from the President’s Cancer Panel, entitled “Living Beyond Cancer: Finding a New Balance” detailed the many experiences and issues facing cancer survivors today. The following issues were included in their report: psychological, psychosocial, employment, insurance, financial and legal. These topics are discussed in the following paragraphs.

The feeling of belonging in society may change for those who have survived cancer. Disfigurement, amputation, or hair loss from cancer treatment can make a survivor feel vulnerable and unacceptable to society, leading them to retreat and isolate themselves. Other feelings may include sexual frustrations, reproduction problems, sensory changes, chronic pain and fatigue.

Fear of recurrence and dying, feelings of depression, low self-esteem and anger are commonly experienced by cancer survivors. Some survivors may become more spiritual, more caring of other cancer survivors, and/or become activists for survivorship. Additionally, family members have issues such as the possibility of an increased risk in getting cancer, taking care of themselves, the toll of the passing of a loved one and the resulting changes in the family structure.

**Barriers**

Many financial barriers may exist for the cancer survivor. These barriers can include job termination due to cancer diagnosis, loss of insurance, or increased debt due to treatment. Many patients may avoid treatment if they are unable to afford it and are often considered a risk in securing loans.

Insurance companies may not pay for follow-up care for the survivor, or for anything that is considered experimental treatment. Premiums may not be affordable for those who have lost their jobs and want to keep their insurance. Once diagnosed with cancer, it may become impossible to gain any life and/or disability insurance. Medicare and Medicaid may not be available due to eligibility criteria, leaving them without affordable coverage.

Legal issues can arise for the cancer survivor. These issues can be related to employee discrimination, confidentiality issues, malpractice, and will drafting.

**Support Groups**

Support groups are helpful to the cancer patients and their families. These groups are resources for the patient and consist of people to whom the patient can relate. Sharing their experiences helps the patients and families to learn what to expect. Some cancer patients get very active in their support groups and some even go further and become advocates for survivors.

Empowering patients through education can aid in becoming active participants in their health care. Helping them make informed decisions before and after treatment will contribute to a successful recovery process.

**Home Health**

Home Health facilities are resources for those who need home care while they are recovering from their cancer treatment. Staff visit the patients' homes to help with daily medical care and other needs such as administration of pain medication during recovery. Most insurance companies are accepted for home health care, as well as Medicare and Medicaid.

**Hospice Programs**

Hospice programs offer services to patients who have a terminal illness, where the goals of treatment are pain management and symptom control, with a limited life expectancy as diagnosed by the patient's physician. Hospice patients do not have to be aware of their condition and must reside within the service area. Financial coverage is available through the Hospice Medicare (Part A) Benefit, Medicaid and many private insurance companies. Through this program, physical, emotional, and spiritual care is provided to these people by a specially trained team of hospice professionals, which include the following:

- Medical Director
- Skilled Nursing
- Registered Nurse and Licensed Practical Nurse, on-call 24 hours

- Medical Social Worker
- Bereavement/Clergy
- Certified Home Health Aide
- Trained Volunteers

The team's focus is on palliative care and pain management. Care is provided for the patient in the home, or in a home-like setting. Many hospice patients are residents of nursing homes, retirement communities and other residential care facilities.

The hospice program also provides the following benefits:

- Pain and symptom management
- Respite care
- Caregiver support
- Medical supplies
- Durable medical equipment
- Prescription medication (related to terminal illness)

The Cherokee Nation operates Hospice of the Cherokee located in Tahlequah, Oklahoma and services residents within a 50-mile radius.

**Patient Navigators**

Patient navigators are essential for a patient who has been newly diagnosed with cancer. As described in earlier sections, the Indian health care system can be very complex. Therefore, it is important for navigators, social workers, or volunteers to be available for the patient at the critical point of diagnosis and throughout their cancer experience.

**Follow-up Care**

Follow-up care is important for the survivor after treatment. This kind of care helps to detect any recurring cancers or other primaries that may exist. Many times, the primary care provider, is the person who will see the patient for this care. These health care providers should be informed about the late effects of cancer treatment, which include pain, lymphedema, cognitive dysfunction, sexual dysfunction, and a host of other complications due to treatment.

The Cherokee Nation Comprehensive Cancer Control goals for survivorship are as follows:

**<u>Palliation and Support Services</u>**

➡ Goal: Partner with hospice to increase awareness of hospice services and follow-up care

- ➤ Objective 1: Increase awareness of hospice services and follow-up care
  **Baseline: 1**
  **Target: 10 presentations**
  **Timeline: 2 years**

Strategy 1: Increase awareness of hospice and palliative services among cancer patients and caregivers

- Strategy 2: Increase awareness of hospice and palliative services among Cherokee Nation Health Services professionals
- Strategy 3: Advocate for expanded coverage of hospice by Centers for Medicaid and Medicare Services and private insurance companies

➤ Objective 2: Assist in infrastructure development of Support Group
**Baseline: 5 active members**
**Target: 10 active members**
**Timeline: 2 years**

- Strategy 1: Identify sources of funding to support group activities and outreach
- Strategy 2: Increase volunteer network for support group
- Strategy 3: Raise awareness of support group as a resource within Cherokee Nation

➤ Objective 3: Conduct a comprehensive needs assessment for the development of infrastructure for caregiver support
**Baseline: No assessment**
**Target: Completed needs assessment**
**Timeline: 2 years**

- Strategy 1: Increase capacity for caregiver support group
- Strategy 2: Identify support resources for care givers
- Strategy 3: Develop and implement caregiver counseling through behavioral health

**CNCCC Partners:** Hospice of the Cherokees, Native American Support Group, Cherokee Nation Community Health, Cherokee Nation Health Services, National Indian Health Board, Cherokee Nation Volunteer Services, Cherokee Nation Behavioral Health, Cherokee Nation Elder Services, Cherokee Nation Diabetes Program, Cherokee Nation Clinics, Indian Health Service

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# GLOSSARY

**Abnormalities** – A variation from a normal structure or function of the mind or body.

**Adenomas** – A benign tumor made of epithelial cell, usually arranged like a gland.

**Adequate** – Sufficient in quality or quantity to meet a need.

**Asbestos** – A fibrous incombustible form or magnesium and calcium silicate used to make insulation.

**Benign** – Not recurrent or progressive; nonmalignant.

**Biopsy** – The removal of a sample of tissue from a living person for laboratory examination.

**Bronchoscopy** – Examination of the bronchi through a bronchoscope.

**Cancer Cluster** – The occurrence of a rare type of cancer in a small geographical area in much greater numbers than would be expected through chance alone.

**Carcinogens** – Any substance or agent that produces cancer or increases the risk of developing cancer.

**Carcinoma** – A new growth or malignant tumor that occurs in the epithelial tissue and may infiltrate local tissues or produce metastases.

**Cholangiocarcinoma** – Carcinoma of the bile ducts.

**Collaborate** – To work with another person or group in order to achieve something.

**Cytology** – The science that deals with the formation, structure, and function of cells.

**Cytopathologists** – Person who studies cellular changes in disease.

**Diagnosis** – The identifying of an illness or disorder in a patient through an interview, physical exam, and medical tests and other procedures.

**Disparity** – Dissimilarity or incongruity; not keeping with what is correct, proper, or logical; inappropriate.

**Ectocervix** – The portion of the canal of the uterine cervix that is lined with squamous epithelium.

**Electrocautery** – Cauterization using a variety of electrical modalities to create thermal energy

**Endocervica**l – The lining of the canal of the cervix uteri.

**Epidemiology** – The study of the distribution and determinants of health related states or events in specified populations, and the application of this study to control health problems.

**Epithelium** – The layer of cells forming the epidermis of the skin and the surface layer of the skin and the surface layer of mucous and serous membranes.

**Etiology** – The study of the causes of disease.

**Hepatocellular** – Concerning the cells of the liver.

**Heterogeneous** – Of unlike natures; composed of unlike substances; the opposite of homogeneous.

**Histology** – The study of microscopic structure of tissue.

**Hydronephrosis** – Stretching of the renal pelvis as a result of obstruction to urinary outflow.

**Immunosuppression** – Prevention of the activation of immune responses.

**Implementation** – To put something into effect or action.

**Jaundice** – A condition marked by yellow staining of the body tissues and fluids, as a result of excessive levels of bilirubin in the bloodstream.

**Lymph edema** – An abnormal accumulation of tissue fluid in the interstitial spaces.

**Malignant** – Growing worse; resisting treatment, said of cancerous growths.

**Mammogram** – X-Ray of the breast.

**Maturation** – The process of becoming mature, or more developed.

**Mediastinoscopy** – Endoscopic examination of the mediastinum.

**Mesothelioma** – A malignant tumor derived from the mesothelial cells of the pleura, peritoneum, or pericardium.

**Metastases** – Movement of bacteria or body cells from one part of the body to another.

**Multiple Myeloma** – A malignant disease characterized by the infiltration of bone and bone marrow by neoplastic plasma cells.

**Non–Hodgkin's Lymphoma** – A group of malignant tumors.

**Oncology** – The branch of medicine dealing with tumors.

**Oropharynx** – The central part of the pharynx lying between the soft palate and the upper portion of the epiglottis.

**Palliation** – To ease or reduce effect or intensity, especially of a disease; to allay temporarily, as pain without curing.

**Palpate** – Examine medically through touching, to examine a part of the body using gentle pressure of the fingers to detect abnormal masses.

**Pathology** – The study of the nature and cause of a disease; which involve changes in structure and function.

**Polyps** – A tumor with a pedicle; commonly found in vascular organs such as the nose, uterus, colon, and rectum.

**Prevalence** – The state of being frequent or widespread.

**Progesterone** – A steroid hormone, obtained from the corpus luteum and placenta.

**Prognosis** – Prediction of the course and end of a disease, and the estimate of chance for recovery.

**Prominent** – noticeable, distinguished, eminent, or well-known.

**Protocol** – The detailed plan of a scientific experiment, medical trial, or other piece of research.

**Psychosocial** – Related to both psychological and social factors.

**Serum** – Liquid part of blood, the fluid that separates from clotted blood, similar to plasma but without clotting agents.

**Sigmoidoscopy** – A tubular speculum for examination of the sigmoid colon and the rectum.

**Sputum** – Mucus expelled from the lung by coughing.

**Symptomatic** – Of the nature of or concerning a symptom.

**Thoracentesis** – Surgical puncture of the chest wall for removal or installation of fluids; usually done by using a large-bore needle.

# ACRONYMS

| | |
|---|---|
| ACS…….. | American Cancer Society |
| AI……….. | American Indian |
| AIRC……. | American Institute for Cancer Research |
| AMO…….. | A Cherokee word that stands for Salt Water |
| BPH…….. | Benign Prostatic Hypertrophy |
| BRFSS…. | Behavioral Risk Factor Surveillance System |
| BSE…….. | Breast Self Examination |
| CBE…….. | Clinical Breast Examination |
| CCC…….. | Comprehensive Cancer Control |
| CDC…….. | Centers of Disease Control and Prevention |
| CDIB…….. | Certified Degree of Indian Blood |
| CHS…….. | Contract Health Services |
| CIH……… | Claremore Indian Hospital |
| CN………. | Cherokee Nation |
| CNCCC…. | Cherokee Nation Comprehensive Cancer Control |
| CNCP…… | Cherokee Nation Cancer Programs |
| CNTJSA… | Cherokee Nation Tribal Jurisdictional Service Area |
| CRC…….. | Colorectal Cancer |
| CT………. | Computed Tomography |
| DRE…….. | Digital Rectal Exam |
| EMS…….. | Emergency Medical Services |
| EPA…….. | Environmental Protection Agency |
| ERA…….. | Estrogen Receptor Assay |
| FDA…….. | Federal Drug Administration |
| FOBT……. | Fecal Occult Blood Test |
| FSIG……. | Flexible Sigmoidoscopy |
| GIS……… | Geographical Imaging System |
| HIMC……. | Hastings Indian Medical Center |
| HP/DP….. | Health Promotion/Disease Prevention |
| HPV…….. | Human Papilloma Virus |
| IARC……. | Internal Agency for Research of Cancer |
| IHS……… | Indian Health Services |
| ITEC……. | Inter-Tribal Environmental Council |
| JCAHO…. | Joint Commission on Accreditation of Health Care Organizations |

| | |
|---|---|
| LPN…….. | Licensed Practical Nurse |
| MRI……… | Magnetic Resonance Imaging |
| MSA…….. | Master Settlement Agreement |
| NA……… | Native American |
| NAACCR.. | North American Association of Central Cancer Registrars |
| NABRFS.. | Native American Behavioral Risk Factor Survey |
| NCI………. | National Cancer Institute |
| NRC…….. | Nuclear Regulatory Commission |
| OCCR…… | Oklahoma Central Cancer Registry |
| PET…….. | Positron Emission Tomography |
| PRA…….. | Progesterone Receptor Assay |
| PSA…….. | Protein Specific Antigen |
| RN………. | Registered Nurse |
| SFC…….. | Sequoyah Fuels Corporation |
| SMART…. | Specific, Measurable, Attainable, Relative, Time-phased |
| TNM…….. | Tumor, Nodes, Metastasis |

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Epidemiologist

Cheryl M. Jones, RN
Program Manager
Take Charge Program

Janis E. Campbell, PhD
Surveillance Coordinator

Susan Lamb, BA
Program Manager
OK Comprehensive Cancer Network

Tia Yancey, MPH, CHES
Interim Manager
Breast & Cervical Cancer Screening

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Melissa Johnson
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Matthew Olnes, MD
Department of Medicine

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