



Comprehensive Cancer Control Plan



GWY.º DBP
CHEROKEE NATION®
Health Services

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Acknowledgements

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Thank you to the Cherokee Nation Communications Department, Randy Gibson and Dan Mink, for the creation of the front cover and to the Cherokee Heritage Center, for allowing us to use the following art work:

- Shakers used at religious Stomp Dances...unknown artist
- Stick ball sticks and Basket....unknown artist
- Tear Dress by Tonia Weavel
- Pot in the Fire Pit Pottery by Jane Osti
- Cover Page - Picture of Sequoyah (Cherokee Chief and creator of the Cherokee Syllabary), Cherokee National Female Seminary – Cherokee Nation Archives

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Chad "Corntassel" Smith
Principal Chief
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Joe Grayson, Jr.
Deputy Principal Chief

Dear Citizens,

Cancer has touched each and every one of us in many ways. You can probably name a friend, a church member, or a co-worker who has battled this disease. It may have hit you closer than you expected, like a relative, yourself, or your child.

Cancer is the collective name of a number of malignant processes in the body and is the second leading cause of death in Oklahoma. This disease takes a tremendous toll on families and communities through health care costs, travel costs to treatment, and time off of work.

The Cherokee Nation Comprehensive Cancer Control Plan, a revision of the plan produced in 2005, was generated by a Coalition of individuals and organizations to provide information and goals about policy, prevention, screening and early detection, treatment, and quality of life in order to reduce the morbidity and mortality of cancer in the Cherokee Nation. It is our hope that this plan will be used widely throughout the Cherokee Nation, as our first plan was, and individuals will help execute the different strategies identified in the plan throughout their communities and families. We also hope that this plan will help guide individuals in understanding cancer and help in eliminating this disease in our communities.

Our health is one of the most important investments we can make for our future and with shared commitment to help preserve our health and battle this disease we can be on the brink of an incredible breakthrough. With our commitment through research, support services, medical care, early detection programs, and education, we can continue to make a difference in the Cherokee Nation.

Sincerely,

A handwritten signature in black ink that reads "Melissa Gower".

Melissa Gower

Group Leader

Health Services Group



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Dear Cherokee Nation Citizens,

The Cherokee Nation Comprehensive Cancer Control Coalition is a collaborative effort between the Cherokee Nation and numerous other partnerships at local, regional and national levels. Along with our coalition partners, the first Cherokee Nation Comprehensive Cancer Control Plan (CNCCCP) took shape and was released in 2005. The plan has now evolved into a second plan created (again) in collaboration with our partners. This plan builds upon the foundation of the first plan and includes strategies to address the need for:

- ✓ Promoting a healthier lifestyle through physical activity and good nutrition,
- ✓ Addressing risk factors such as tobacco use, obesity, environmental pollutants, and hereditary factors,
- ✓ Encouraging age appropriate screenings to enhance early detection of cancer,
- ✓ Identifying treatment options and access for those diagnosed with cancer,
- ✓ Advocating for an increased quality of life for cancer survivors and caregivers.

Since the inception and implementation of the CNCCCP, more than five years ago, some notable successes and milestones have been reached. While we commend the efforts of everyone involved, this work is not yet finished. We encourage others to join us in combating the devastating effects of this disease upon our families and communities.

As we advance into the next phase of the CNCCCP, I strongly encourage and support the efforts of those implementing the plan. The goals of the CNCCCP incorporate and strengthen the Cherokee concept of Gadugi, or communities working together for a common cause.

Sincerely,

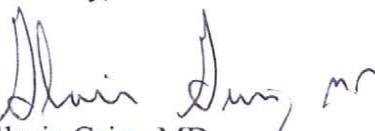

Gloria Grim, MD
Medical Director
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Executive Summary

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. Since 2003, coalition members and partners have come together to discuss the burden of cancer in Cherokee Nation. Coalition members and partners include local, regional, state and national representatives committed to identifying areas of cancer concern, planning interventions, prioritizing greatest areas of identified need, and then implementing identified strategies and/or providing needed resources. This is the second edition of the Cherokee Nation Comprehensive Cancer Control Plan and will serve, like the first, as an information resource for health care professionals and community members, as well 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, which includes 8 clinics and 1 hospital, as well as one IHS hospital, is the primary resource 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.

Cherokee Nation has been working to expand specialty health care for patients with chronic care needs by outsourcing. These efforts will continue, while funding becomes available for these services.

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.

The Cherokee Nation Comprehensive Cancer Control Coalition has elected to focus on the primary prevention of cancer, or those with high mortality rates, 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 has enhanced efforts to further reduce cancer risks through policy change. The Coalition previously identified prevention, screening and early detection, treatment, and survivorship as areas within the Cherokee Nation that has benefited from targeted strategies for improvement.

Although efforts in advocacy and education; outlined in the first plan, have been implemented in the past several years for cancer concerns, the continued need for advocacy and education is still paramount among Native communities. Basic awareness of the unique cancer experience for American Indian people is still 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 were not previously afforded to tribal health care systems and IHS facilities for the comprehensive cancer control contributed to Native communities holding a disproportionate burden of cancer. Future endeavors for engaging patients in specialty care programs, as well as other oncology needs, will be more feasible with the new Health Care Reform and will be paramount in reducing cancer mortality in Cherokee Nation.

In 2003, The Cherokee Nation discovered what the actual burden of cancer is placing on our citizens and as we continue to explore the realities of cancer within our Nation, services available, and continue to learn more about our cancer experiences, the Cherokee Nation Comprehensive Cancer Control Plan will continue to evolve as needed; remaining 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.

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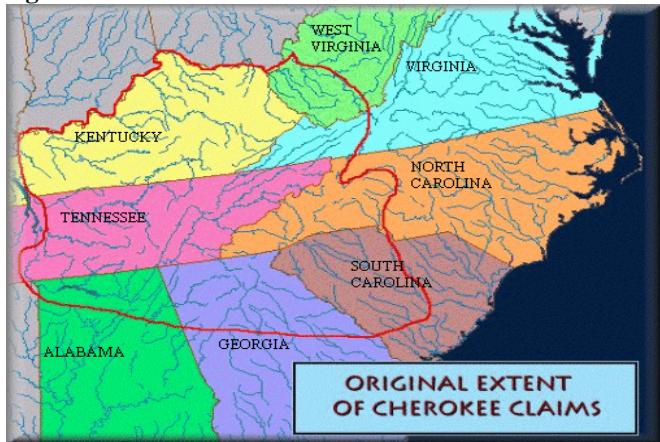
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 Susan G. Komen for the Cure
 Strategic Health Concepts
 Tahlequah Chamber of Commerce
 The Leukemia & Lymphoma Society
University of Oklahoma Health Sciences Center
 Warren Cancer Research Foundation

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.

There are about 310 Indian reservations in the United States, meaning not all of the country's 550-plus recognized tribes have a reservation – some tribes have more than one reservation, some share reservations, while others have none. The Cherokee Nation is not a reservation. In 1838 there was a land patent with the Cherokees that let them obtain land in Indian Territory, it was given to them in a fee simple title, which means they owned the land outright. According to the History and Cultural Curriculum Specialist at the Cherokee Nation, "All Five Civilized Tribes originally held their land in Indian Territory in a fee simple title, which is why the Cherokee Nation, as well as other tribes in Oklahoma, do not have reservations."

In 1838 and 1839, 7,000 federal troops were sent to remove the 17,000 Cherokees living in the southeastern United States. Thousands of Cherokees were forced to move further west into Indian Territory. 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.

Cherokee's Survival in Indian Territory

The Cherokee Nation existed prior to the formation of the United States and the State of Oklahoma, and was first acknowledged in the world community of governments in 1721 by its first treaty with Great Britain. The Cherokee Nation has long been recognized as a progressive, culturally-rich, well-educated, and economically strong nation.

Following the forced removal of the Cherokee Nation citizens from its eastern homelands to the Indian Territory in the 1830's, the citizens once again established a vibrant nation and rebuilt a democratic form of government, with churches, schools, newspapers and businesses.

Unfortunately, the Dawes Commission and forced allotment of lands attempted to eliminate the Cherokee Nation as a sovereign government in the early 1900's.

For several decades, the Cherokee Nation experienced a relationship with the United States that was best described as "bureaucratic imperialism," with the President of the United States even appointing the Chief of the Cherokee Nation. In 1976, the Cherokee Nation once again overcame such oppression and elected a Principal Chief, approved a superseding Constitution, and prevailed in numerous judicial decisions, recognizing the Constitutional Government of the Cherokee Nation.

Today, the Cherokee Nation spans over 7,000 square miles in northeastern Oklahoma containing all or part of fourteen Oklahoma counties. The Cherokee Nation functions as a tripartite government with Executive, Legislative, and Judicial branches, with its capitol located in Tahlequah. With over 291,000 citizens, the Cherokee Nation is the second largest Tribal nation in the United States. Additionally, the Cherokee Nation employs over 7,500 individuals, making it the largest employer in north eastern Oklahoma.

The Cherokee Nation is a government, cultural entity, a social service agency, and a regional development organization with a vision to achieve 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. The Cherokee Nation strives to reach this vision through a Declaration of Designed Purpose (100 year plan) which calls for the following Tribal Initiatives: Jobs (Creation of new jobs and training for individual capacity building), Community (Building healthy communities), and Language (Promote Cherokee Language and Preserve our Culture).

Cherokee Nation Health Services

Vision Statement

The Cherokee people will achieve an optimal level of health resulting in healthy communities for this and future generations.

Mission Statement

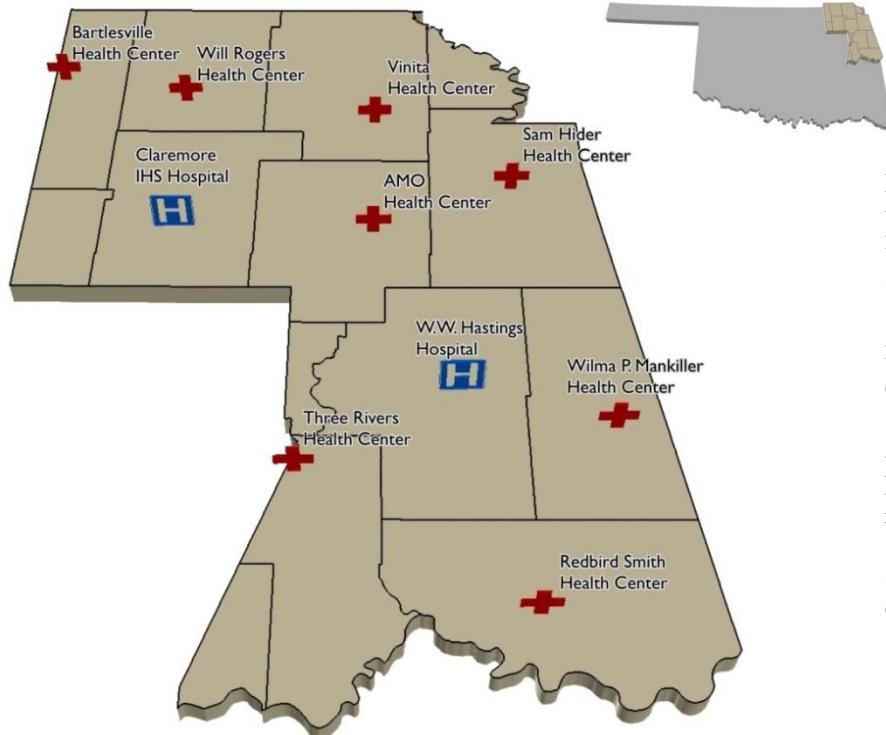
We are dedicated to working with our communities, families, and individuals to promote and improve their health.

Services

The Cherokee Nation Tribal Jurisdictional Service Area (CNTJSA) includes a network of one Cherokee Nation W.W. Hastings Hospital, six Cherokee Nation Health Centers, two Cherokee Nation satellite clinics, one employee clinic, the Jack Brown Center - which is a twenty-four bed co-educational facility for chemical dependency treatment accredited by the Commission for Accreditation of Rehabilitation Facilities (CARF), and one Claremore Indian Hospital which is run by the Indian Health Services. (See figure 2).

Cherokee Nation Hospital, Health Centers, Clinics, and Indian Health Service Hospital

Figure 2



Additionally, Cherokee Nation Health Services includes an elder care, an accredited paramedic service, public health nursing, and other community based health services such as a health promotion and disease prevention program, a behavioral health services, a diabetes program, and cancer programs.

Cherokee Nation Health Services (CNHS) is the first tribal healthcare system nationwide and the first in Oklahoma to receive the Det Norske Veritas Healthcare Accreditation, known for its focus on the quality of patient care throughout an entire health care system. It serves more than 130,000 eligible patients, which is based on enrollment in any federally recognized tribe. In 2009, CNHS provided over 630,000 patient visits and employed over 1,700 employees.

Behavioral Health

The Cherokee Nation Behavioral Health Services 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 Health Centers, Cherokee Nation W.W. Hastings Hospital, and Claremore Indian Hospital to provide screening and early detection services throughout and around the CNTJSA.

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, and must 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 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.

The registry works closely with the Oklahoma State Department of Health Cancer Registry to assure all cancer data is collected, especially for those patients who seek treatment outside of the Cherokee Nation contract area.

3. Comprehensive Cancer Control Program (CCCP) - In July 2003, with the support and funding from the 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 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. In 2005 a cancer plan was developed that included goals, objectives, strategies, resources, and partners that would assist in the plans implementation. Since that time, strategies have been implemented by CCC staff, numerous partners, and coalition members. Several successes have taken place since that time, and while some barriers have been encountered, new avenues have been identified to address or go around most barriers. The CCC plan was again funded in 2007 and the

second phase of the CCC plan has taken shape with the revision and update of the plan, becoming the second Cherokee Nation Comprehensive Cancer Control Plan.

Success of the previous plan is due to the dedication of the many organizations, coalition members, and partners who have worked tirelessly to accomplish goals they have set out to conquer. Most of the people involved in the first plan are also involved in the second plan and the CCCP staff is always looking for more partners in order to keep a strong infrastructure.

Contract Health Services (CHS)

Contract Health Services are funded through the Indian Health Service (IHS) to provide specialty care that may not be available within the Cherokee Nation Health Services or IHS. CHS funds are managed and accounted for in a system that is separate from regular operational costs. Within the CNTJSA, three different entities are currently responsible for the administration of contract health care: Cherokee Nation, Muscogee (Creek) Nation and the IHS. When eligible patients require specialty care not directly available from the health centers or hospitals where they receive basic services, referrals are made outside the network of the facilities. The CHS 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), Public Health Nursing (PHN), and Community Health Representatives (CHR's). These resources are located in each Cherokee Nation Health Center and CHN's, PHN's, and CHR's travel throughout the service area to provide community based health education and services.

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 Health Centers to deliver a multi-disciplinary approach to controlling diabetes.

Emergency Medical Services (EMS)

Cherokee Nation Health Services operates an 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, physical activity through gym enrollment,

obesity screening, nutritional activities and school health promotion. In 2004, HP/DP received funds from the Centers for Disease Control and Prevention to implement the Steps to a Healthier US.

Indian Health Service

The IHS operates one hospital within the Cherokee Nation; the Claremore Indian Hospital, located 20 miles north of Tulsa. Claremore Indian Hospital is a comprehensive care facility with services ranging from primary care, obstetrics, dental, community health, general surgery, pediatrics and radiology. Claremore Indian Hospital is a Joint Commission Helping Health Care Organization Helping People accredited facility which logs nearly 90,000 outpatient visits per year, has a user population of 65,000 and has 53 inpatient beds.

Comprehensive Cancer Control Program

What is Comprehensive Cancer Control?

According to the CDC, “Comprehensive cancer control is a collaborative process through which a community and its partners pool resources to 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 living in certain areas, than those of other races in the United States. Current statistics indicate an increasing incidence of cancer in the American Indian population. With this new emerging pattern, mortality rates are also increasing. A comprehensive examination of cancer in the 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.



Jane Osti Pottery

Our Mission

The Cherokee Nation Comprehensive Cancer Control Program (CNCCCCP) 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 partnerships, 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, education and early detection, and to insure cancer patients receive:

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

According to the CDC, an emphasis is placed on administration, basic and applied research, evaluation, health education, program development, public policy, surveillance, clinical services, resources, and health communications.

Funding Agencies, Stakeholders, and Partners

In 2007, the CNCCCP received funding to implement the identified strategies for the CCC plan from the CDC. Since that time other funding has included the Prevent Cancer Foundation grants to address colon cancer prevention guidance, Community Network Programs for implementing beneficial cancer interventions for disparate counties, Community Action for a Renewed Environment to address environmental concerns in the Cherokee Nation boundaries, Cherokee Nation Contract Health funding increases to meet cancer treatment needs, University of Oklahoma Medical Center for cancer treatment and education, Oklahoma State Department of Health and Oklahoma State University Health Sciences Center for colon cancer screening, and hospitals and health centers within the Cherokee Nation. In 2010, the program also received funding from the CDC for implementing policy action steps identified in the CCC plan to promote policy change in the Cherokee Nation regarding cancer. Since that time these stakeholders and partners have worked closely with CCC coalition members and staff to identify and implement strategies, avoiding duplication of efforts, and utilizing all resources that are available to meet the cancer needs in the Cherokee Nation.

Who Are Our Coalition Members?

Our coalition members consist of collaborative partners and stakeholders who are interested in helping to reduce the cancer burden in the Cherokee Nation. These are the people that have been committed to planning and implementing the strategies identified that will meet the gaps in cancer services in the Cherokee Nation and include clinical staff, program directors and managers, physicians, state health department personnel, nutrition specialists, community leaders, nurses, social workers, oncologists, researchers, universities, epidemiologists, educators, tumor registrars, coordinators, survivors, and national organizations.

Cancer Disparities in Cherokee Nation

Many cancer disparities have been identified in the Cherokee Nation since planning for the CNCCCP began in 2003. Cancer has historically been a difficult subject to address in the Cherokee Nation. Customary beliefs were that talking about cancer is an invitation of cancer into the family or individual. In the last seven years the CNCCCP has worked diligently to educate our community on cancer issues regarding prevention, early detection, treatment, and quality of life. Through the use of cancer registry data, the program has found cancer to be a major concern in the Cherokee Nation, as many American Indians living in this area are diagnosed at later stages in the disease process for many cancers. Some of the barriers to

prevention and early diagnosis of cancer in rural areas include low socioeconomic status, lack of access and lack of cancer awareness. Many of these barriers are currently being addressed, such as low colon cancer screening rates, lack of dental work prior to cancer treatment, high smoking rates, lack of physical activity, and poor nutrition. The current economic climate, as well as increasing unemployment, plays a major role in the low socioeconomic standard in this area, as well as much of Oklahoma.

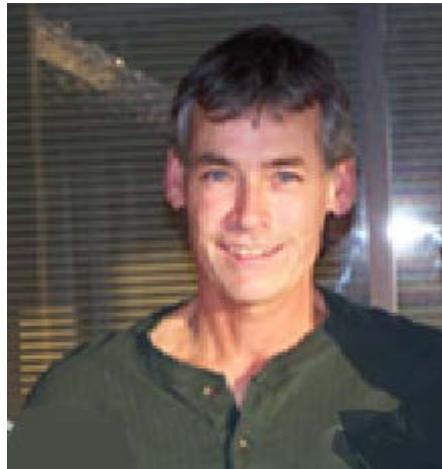
Recently, cancer incidence in the Cherokee Nation has emerged as a higher priority than in the past and the improvements in cancer registry data has identified the depth of cancer disparities in the American Indian population in Cherokee Nation. The registry collaborates with the Indian Health Service and the Oklahoma Central Cancer Registry, to improve timeliness and completeness of cancer data. Merging registry data with the state has improved surveillance, which has revealed an increase in cancer incidence and mortality for American Indians, increasing rates by almost 48% in those living in Oklahoma.

Danny Walker

As an iron worker Danny Walker faced all sorts of dangers and harsh conditions. In his line of work taking one wrong step could get you seriously injured or even killed. But when you work several hundred feet off the ground every day your self confidence turns into a sense of being invincible.

It all began in January 2004 when Danny, who was 45 at the time, started getting infections in his lymph nodes, which would not clear up with antibiotics. In July Danny had been complaining about his arm hurting after falling into a fork lift. He had worked through pain before so this was nothing new to him, but by October the pain got so bad that he finally went to the Hastings Indian Hospital. Staff there referred

him to an orthopedic doctor who requested he get an MRI done. Instead of giving the doctors a clearer picture of why his arm was hurting, the MRI revealed that he had hot spots on the scans, and were knots on his neck.



The family was eventually referred to an Ears, Nose and Throat doctor and he underwent several surgeries. A tumor was removed from his nasal area and a biopsy was done on his lymph nodes. The biopsies revealed Danny had Nasopharyngeal Carcinoma, Stage IV, which is a rare form of cancer in the United States. He was then placed on chemotherapy and radiation therapy.

After learning about his cancer, at first his biggest fear wasn't facing the cancer but telling his mother. He was so afraid to tell her that he had his sister do it for him. His mother remembers that her first reaction was shock, then disbelief, and finally denial, "the doctor must be wrong," she said. Next, Danny had to tell his son Daniel, which was the hardest thing he had to do. Daniel was strong throughout the whole ordeal, and so was his wife. As a family they leaned on each other for strength and Danny stayed busy trying to keep his mind off his disease.

Danny was a very friendly person and he knew no strangers. There were always friends, family, and kids at his house swimming in the pool and he always seemed happy, even though he was in pain. One of the things he hated the most about his cancer was being reminded of it constantly, but he knew his friends and family needed occasional reassurance that he was doing okay, so he always greeted them with smiles and an update on his condition, so they didn't have to ask; he was always thoughtful and caring of others feelings.

Unfortunately, on June 14, 2010 Danny lost his battle with cancer. Cancer made an impact on how Danny looked at life before he died, and was noted as once saying, *"It makes the little things not so important and at the same time it makes them a whole lot more important."*

One of the most important things his family would like to tell everyone is when something doesn't feel right take that first step and get it checked out early. Cancer not only changes the life of the person diagnosed, but it also affects the life of the entire family.

Summary of Success

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 people are at the heart of this culture. With this in mind, the Cherokee Nation Comprehensive Cancer Control Coalition strives to reduce the burden of cancer through education, outreach and partnerships.

Throughout the coalition's existence, there have been a multitude of successes. The efforts of the coalition have raised a focused awareness of the importance of preventing cancer through lifestyle behavioral choices, such as increasing physical activity and reducing commercial tobacco use, as well as understanding environmental concerns. Additionally, the coalition has focused on the need to improve the quality of life for those facing cancer, both for the patient and their caregivers. Many of the activities include:

- Increasing participation in fitness programs such as the Wings Program, "Eat Better Move More/Walking Running 101" and youth fitness activities
- Partnering with Cherokee Nation Environmental Services to identify and rid the environment of cancer causing pollutants
- Increasing active SWAT (Students Working Against Tobacco) groups from 9 teams to 24 teams
- Increasing, dramatically, the number of calls to the Oklahoma Tobacco Helpline, and also increasing the number of commercial tobacco users attempting to quit
- Partnering with Head Start to increase the number of Smoke-Free homes, improving the overall health of the children in the home
- Increasing the number of Cherokee Nation women receiving mammograms by 547. Additionally, those receiving PAP exams increased by nearly 1,000
- Partnering with Oklahoma State University and the University of Oklahoma to provide colorectal cancer screening. This, along with the support of Cherokee Nation W.W. Hastings Hospital administrator, reduced the screening wait list from four years to two years
- Partnering with Oklahoma Area Health Education Center, in support of survivorship workshops being held, using the LiveStrong program
- Placing a priority on increasing awareness of local and national resources to assist cancer patients and their families

Just as personal and patient education is vital to prevention and improving the quality of life, the coalition endeavored to provide health care professionals serving the citizens of Cherokee Nation with culturally appropriate educational opportunities. A basic awareness of the unique cancer experience for American Indian people is necessary for the effective prevention, treatment, and quality of life 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 and includes:

- Bi-annual summits coordinated with nationally recognized speakers to educate clinical staff, advocates, survivors and others on cancer issues and the latest updates.
- Cherokee Nation taking over the Indian Health Service Hospital, W. W. Hastings Hospital, as well as new management being put in place, and an increase in services.

- Culturally appropriate health education materials being developed
- Ongoing discussions that provide the opportunity to increase Cherokee Nation citizens' access to clinical trials. This population plays a critical role in helping researchers understand best treatment options and ways to improve cancer outcomes for American Indians.

Finally, the need for advocacy and policies for cancer control among American Indian communities is essential. The resources that are not afforded to tribal health care systems and IHS facilities for the comprehensive treatment of cancer control will continue to contribute to American Indian communities holding a disproportionate burden of cancer. Advocacy and/or policy issues addressed, or those that are currently being addressed by the Cherokee Nation include:

- Passing a "No Smoking" policy on tribal grounds
- Passing a "No Smoking in Public Parks" ordinance
- Developing and presenting on national presentations to discuss cancer disparities, as well as strategies and outcomes, in the Cherokee Nation
- Having a fundamental voice with the American Indian Alaska Native Advisory group to identify concerns for tribal organizations regarding cancer issues in Indian Country that can be discussed with the National C-Change Partners
- Working with the National Policy and Practice Summit to identify policy issues
- Ongoing work that is occurring with the Dialogue for Action Colorectal Cancer Prevention with the Prevent Cancer Foundation to discuss ways of addressing cancer disparities for states and tribes
- Declaring March as Colon Cancer Awareness month for those living in Cherokee Nation and Tahlequah from the Chief of the Cherokee Nation and the Mayor of Tahlequah, who have both signed proclamations

While Cherokee Nation and the Comprehensive Cancer Coalition are still in the discovery stage of understanding the actual burden cancer is placing on our citizens, we have made some essential progress. As we continue to explore the realities of cancer and the cancer experience, the Cherokee Nation Comprehensive Cancer Plan will continue to evolve and grow as our knowledge and awareness increases.

Jeanette Washington

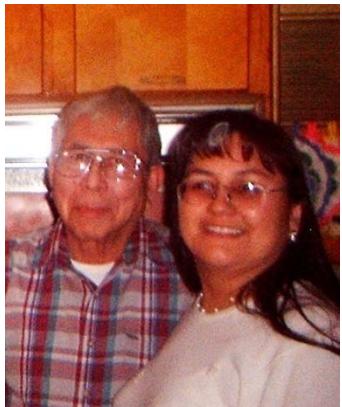
Jeanette didn't realize that she was going to be giving her family some news at Christmas, news which would change their lives forever. She had experience with colon cancer when her dad, William Hummingbird, was diagnosed with the disease.

Because there are no early warning signs for colon cancer her dad did not know he had cancer and the cancer was found while he was having surgery on his gallbladder. Her dad was in his late seventies when he was diagnosed, so having cancer at her age was nothing she, or any of her family, would suspect.



Jeanette routinely visited her doctor and was once even told that it was time for her to have a colonoscopy and she was put on a waiting list; which lasted four years! She never told her doctor about her father having colon cancer. She didn't know that this was putting her at a higher risk for getting this disease. If the doctor had known about her dad he would have probably urged her to get screened much earlier than at the age of 50, or maybe had the surgery department put her at the top of the waiting list for this procedure.

Jeanette told her sister that she had been on the waiting list for several years, which is when her sister urged her to talk with her doctor again and let him know about their dad having colon cancer. Her sister knew all about this disease and had already got her screening done, and had several polyps removed.



Jeanette & her Father

Jeanette did tell her doctor and was put at the top of the list. She finally had a colonoscopy done in the first part of December 2008. While in the recovery room she remembers the surgeon coming in and telling her she had colon cancer, and the stage was unknown at that time. It would take two more weeks to get the biopsy results back from the pathologist.

Jeanette remembers getting the results back a week before Christmas, and was worried about how she was going to break the news to her family; she had stage I colon cancer. At that time only her husband knew what she was going through.

They both decided they would tell the kids on Christmas Day, right after they opened their gifts. After unwrapping of the presents, she told her three grown children what was happening and that she was going to be okay. They all cried together and cherished their time together much more after that moment.

On January 3rd, 2008 Jeanette had her surgery done. "When they did the surgery they not only cut out two feet of my colon, but 36 lymph nodes as well. If I hadn't talked with my sister and then told my doctor I was still waiting for an appointment to have the procedure done I could have been a statistic instead of a survivor," said Jeanette, who works in Records Administration for the Co-Partner Program (JOM), at the Cherokee Nation Education Department. "I have been a colon cancer survivor for three years now and I am proof that early detection is the key to survival; but you also need to be persistent, take charge of your health, and help your doctor make decisions with you. I knew I needed a colonoscopy, but just wasn't very persistent."

"I had checkups every 6 months after that and polyps were found in each case. My last check up was in March 2011 and no polyps were found. I don't have to go back for three years. I owe all of my strength and courage to my Lord and savior. He is who took all my fears away and I knew everything was going to be okay," she said.

American Indian Health

The U.S. recognizes Tribal governments as sovereign nations and enjoys a unique government-to-government relationship with Tribal governments. This relationship is grounded in numerous treaties, statutes, court decisions, and executive orders. Because of this government-to-government relationship, Tribal citizens have a unique legal and political status which is based on Tribal citizenship rather than a racial category.

"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)

In 1921, the United States enacted the Snyder Act (Public Law 67-85), which provides the general authority for the federal government to expend funds for the provision of health care. Despite the passage of the Snyder Act, the health status of American 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).

In 1955, to address the poor health status of American Indians, the Indian Health Service (IHS) was established. The agency, within the Department of Health and Human Services, is charged with the federal government's obligation to provide health services to American Indians and Alaska Natives. Currently, the IHS provides health services to approximately 1.9 million American Indians and Alaska Natives belonging to over 557 federally recognized Tribes in 35 states. Criteria for determining eligibility for health services is found in the IHS Manual at Section 2.1.2, as well as the Code of Federal Regulations (CFR) at 42 C.F.R. § 136.12 et seq..

Services are provided through facilities of the IHS, facilities operated by a Tribe or Tribal organization authorized by Title I or III of the Indian Self Determination and Education Assistance Act (P.L. 93-638), and Urban Indian programs authorized under Title V of the Indian Health Care Improvement Act (P.L. 94-437). Collectively, the facilities comprise what is known as the I/T/U.

Although funding for the Indian Health Service increased over the past few years, every single aspect of the IHS has been severely underfunded, resulting in a disproportionately lower health status for American Indians and Alaska Natives than the rest of the U.S. population, evidenced by a life expectancy six years less than the rest of the U.S. population (2). The lower health status is primarily attributable to disproportionately high rates of chronic diseases that could be greatly reduced if sufficient funding was available to provide adequate health services for American Indians and Alaska Natives.

In 2003, the per capita personal health care expenditures for IHS population totaled \$1,914 while the per capita amount for the total U.S. population totaled \$5,085. Within the IHS system, funds are distributed inequitably. The Oklahoma City Area receives only \$976 per capita, which is the lowest funded area in the system and represents only 44% of the actual need according to the Federal Disparity Index.

Health Care Reform

Shortfalls in funding for IHS has been a topic of concern for most American Indians in the United States; especially due to the lack of specialty care at IHS and tribally operated facilities; primarily due to the lack of appropriate federal funding and challenges in accessing third party payment sources. Many tribal government officials, as well as Cherokee Nation officials, have been actively engaged in health care reform discussions, and have worked with the federal Executive Branch and Congress to increase health coverage for American Indians and to re-authorize the Indian Health Care Improvement Act, which was originally passed in 1976. In March 2009, the Act was amended and became permanent, authorizing “new and expanded programs and services,” and including such provisions as access to long term care, youth suicide prevention efforts, diabetes monitoring and dialysis services, health care facility construction programs, and cost recovery from third party payers.

One aspect of health care reform that remains controversial is the mandate for most Americans to maintain acceptable health coverage or be penalized for not having such coverage. However, citizens of federally recognized tribes are exempt from this provision, although eligibility to access care through the Indian health system is not considered insurance. Also, the new Health Care Reform Act will benefit the IHS, as well as the Cherokee Nation Health Services due to the anticipated increase in American Indians acquiring health coverage and increased collections from third party payment sources, which will increase the level of resources to provide services within the Indian health system. These increased resources will provide opportunities to increase specialty care services such as cancer care, as well as other health care needs of American Indians within the Cherokee Nation (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 IHS prohibits access to specialty services such as oncology. These services are necessarily contracted out to private providers through a mechanism known as Contract Health Services (CHS). CHS in Cherokee Nation operates at 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, child care, and comfort.

Electronic Health Records

Waiting for charts to be updated and sent to the appropriate department is yesterday’s news as the Electronic Health Record (EHR) enables speedy information transfer for quicker medical attention. This system is a broad scale health information exchange, which enables clinicians to store personal health information. This process helps to better manage health information on patients and their family, such as medical history on allergies, surgeries, medicines, billing, tests and other important data. This tool is an internet based health system that connects to other health care providers. The EHR increases safety for the patient through evidence based decision support and quality management and is being implemented in the Cherokee Nation health network that consists of 8 ambulatory health centers, 2 hospitals, and 1 urgent care clinic.

Misclassification of Race

Misclassification of race comes from comparing the use of census population data, death certificates, current population surveys and other areas of information. It has been shown that between data and surveys, American Indian race is often not reported accurately. Studies have found that racial misclassification contributes to lower death rates and lower cancer incidence rates among the American Indian population. When these rates were adjusted by comparing the census population data, current population surveys, death certificates and other data, it showed American Indian population death rates were significantly higher than originally thought. The data used from vital records and surveillance systems were not accurate because of misclassification of American Indians, and Oklahoma is included in this scenario. Because Oklahoma is one of several states with a very high number of American Indians living within its boundaries, race misclassification has caused data quality to be compromised, skewing the data and making it almost impossible to use in describing rates in regards to race. This data is very important for statistics and surveys to figure out where the burden of cancer, or any other health complications, lies within our nation.

Cancer Incidence increased by 48.1% in American Indians due to racial misclassification.

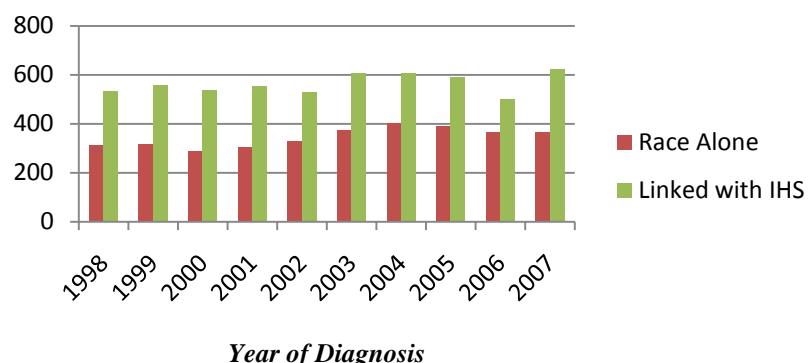
increased 48.1% for American Indians for the years 1997-2000 (5), decreasing cancer rates for other populations.

In a linkage of Oklahoma vital records, with the national Indian Health Service patient register, the rate of misclassification on death certificates from 1990-2001 was approximately 33% (4). As a result of a similar link, cancer incidence in Oklahoma

The graph below (Figure 3) demonstrates the difference in rates when race alone is used to identify American Indians in cancer registry data or a combination of race and the IHS linked variable. The increase in cases averaged approximately 67% each year when the linked variable was used in combination with the race variable. The chart shows misclassification of race has not changed, although it has been identified as a problem for the past decade. Possible reasons for this failure could be death certificates are not being corrected when a patient dies, hospital admitting departments are still complacently adding race when a patient is admitted and not taking the time to ensure this vital information is correct, or those filling out birth certificates are not taking the time to get the information correct when someone is born.

Figure 3.

**Comparing Cancer Incidence Rates
for American Indians in Oklahoma (1998-2007)**

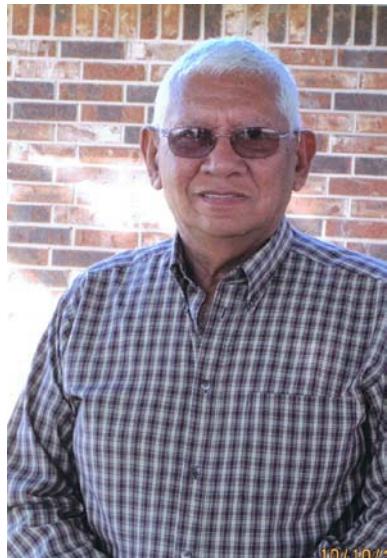


Sources: Oklahoma Central
Cancer Registry-Oklahoma
State Department of Health
Epidemiologist Anne Bliss
power point presentation for
Cherokee Nation 3rd Bi-annual
Summit

Richard Acorn

There are many reasons to look forward to January. Some people look forward to the Super Bowl, while others are looking to start a new year with a fresh approach and a new outlook on life.

January 1997 was definitely the beginning of a new chapter in the life of Richard Acorn. Blood work done during a regular doctor's appointment came back with mixed results. "Something showed up that was not normal for me. The doctor stated that according to the report, there is something going on that needs to be checked out. We will need to find the problem and fix it," Acorn said. Upon further testing, it was revealed that Richard had Colon Cancer.



Although, to most folks, this kind of news can be devastating, Acorn remembers that his emotions were calm. He told himself that he did not have cancer and refused to accept this diagnosis, knowing that God was in control.

"I don't remember what stage cancer the doctor said I had, but whatever stage it was, it needed quick attention. So my surgery was set up within days after my diagnosis and it was a success.

There is one thing that I know for sure; if the doctors had not found the cancer when they did, I would not be here today!" added Acorn. After the surgery Richard started weekly chemotherapy treatments for a whole year with some very good results. "With all the side effects that do occur with chemo, I had none," recalls Acorn. "Being strong willed and having faith helped me through this situation."

Richard has been cancer free since he started his treatments back in 1997. He still works everyday for Cherokee Nation, as a school security officer with Sequoyah Schools. He enjoys hunting and fishing, which keeps him active, and stated this is also part of the doctor's orders in order to help him recover.

"The way I feel about life after cancer and treatments is to just enjoy life to the fullest, and thank God every day; he is the one that has control of life," added Acorn. Early detection is the key. This expression can literally save your life, but because we hear it so much we have almost taken it for granted. Just talk to any cancer survivor and they will tell you it's more than just an expression, it's the key to surviving and being victorious over cancer.

Prevention – Risk Reduction

Physical inactivity and a poor diet contribute to the risk of many types of diseases. People who are overweight are also at an increased risk for heart disease, high blood pressure, diabetes, arthritis-related disabilities, and some cancers.

According to a cohort study of US adults on excess body weight from the American Cancer Society, "Increased body weight was associated with increased death rates for all cancers combined and for cancers at multiple specific sites (6)."

"American Indians and Alaska Natives continue to have the poorest survival from all cancers combined than any other racial group."

statistics; "Oklahoma ranks 45th in the nation in the overall health of its citizens," and "Oklahoma's death rates have been increasing since 1990 (9)."

Evidence suggests that about one-third of the cancer deaths that occur in the U.S. 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.

Overweight and Obesity in the United States

According to the American Cancer Society's Global Cancer Facts and Figures (2007), there were 7.5 million people who died from cancer due to obesity. Current patterns of overweight and obesity in the U.S. could account for 14% of all cancer deaths in men and 20% of those in women.



Shakers used at Religious Stomp Dances

Oklahoma ranks 47th for cancer deaths in the United States and socioeconomic status can play a major role. Physical activity is lower in those who have not graduated high school and diabetes is more prevalent in those with lower income levels (7). "American Indians and Alaska Natives continue to have the poorest survival from all cancers combined than any other racial group (8)." Other staggering

Researchers predict that the epidemic growth in rates of obesity and overweight will cause cancer rates to soar 50% 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 (2003) showed that stomach (in men), liver, pancreatic, prostate, Non-Hodgkin's Lymphoma, Multiple Myeloma, cervical, and ovarian cancer is linked widely to unhealthy body weight. 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 (6)."

According to the National Cancer Institute (2005), international scientists suggests the same correlation; that as overweight and obesity trends increase and physical activity decreases the risk of developing many cancers rise. 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.

Michelle Obama Targeting Childhood Obesity

Michelle Obama, wife of president Obama, has made it her mission to decrease the number of children in the United States who are overweight and obese. The first lady has put together a task force that is to focus extensively on all federal nutrition programs and come up with a "long-term action plan." Her new campaign, called "Let's Move," addresses four areas:

- Educating parents on the benefits of nutrition and physical activity
- Ensuring quality foods are in schools
- Making healthy foods affordable and accessible
- Focusing on physical education

It is her mission to lead a national public awareness campaign to solve the childhood obesity rate within a generation so that children can grow up at a healthy weight.

According to the report, President Obama is proposing a \$10 billion budget increase, \$1 billion a year for 10 years, to help provide nutritious lunches for qualifying children, reauthorizing the Child Nutrition Act, in an attempt of reducing the already \$150 billion a year for obesity related illnesses (10).

Social Influences and Public Awareness

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 disease, 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% of the calories the people in this study consumed. In total, the categories of soft drinks, desserts, and alcoholic beverages' made up 238% of total calorie intake. Salty snacks and fruit-flavored drinks added another 5% 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 (11).

There are six simple steps which represent the best advice science currently offers for lowering your cancer risk:

- 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 physical inactivity plays a major role in obesity, along with unhealthy food intake, are all major reasons for watching your diet and getting plenty of exercise, which can help you keep your weight in control.

Overweight and Obesity in Cherokee Nation

According to the 2005, 2006 Steps Behavioral Risk Factor Surveillance System and the 2007 Steps Youth Risk Behavior Survey, from the Oklahoma State Department of Health, 73.2% of the American Indians residing in the Cherokee Nation are overweight and 48.6% are obese, compared to 26.9% of those of other races who are obese. 20.7% of American Indian high school students in the Cherokee Nation are overweight compared to 16.8% of white students. Also, only 42.6% of American Indians engage in at least 30 minutes of moderate activity per day.



Stickball Sticks & Basket

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. Thirteen public schools have been awarded grants for projects in 2010 that will promote physical activity, improve nutrition and prevent tobacco abuse. This initiative also supports some of the Healthy People 2010 objectives related to school age kids.

Through this initiative there will be an increase in the number of schools providing health education on nutrition, physical activity and tobacco use; decreasing physical inactivity, increasing the intake of nutritional foods and reducing tobacco use. Policy system changes will be necessary for these improvements to be made.

The Healthy Nation Camp, a project sponsored by the Cherokee Nation Healthy Nations Program, began in 1989, after the Cherokee Nation recognized the need for physical education

targeting youth. This camp has been a valuable tool in teaching the importance of nutrition, physical activity, and tobacco cessation and has grown in the past several years.

Other physical activity and nutrition opportunities are available in supporting a healthier lifestyle change that can be found in physical activity brochures and other educational materials that are available to promote awareness regarding benefits of being physically active and having a good nutritional intake. Chronic disease screenings are also available at designated areas within the Cherokee Nation health services system.

Tobacco Abuse in Oklahoma

According to the Oklahoma State Department of Health website, “The adult smoking rate in Oklahoma dropped from 28.7% in 2001 to 24.7% in 2008. During the same time period, the proportion of former smokers in Oklahoma increased from 22.1% to 24.7%.” All Oklahomans had a role to play in this success, and much of it was due to the Oklahoma Tobacco Settlement Funds, smoking bans in Oklahoma workplaces, increases in state tobacco taxes, and the “Tobacco Stops with Me” campaign (12).

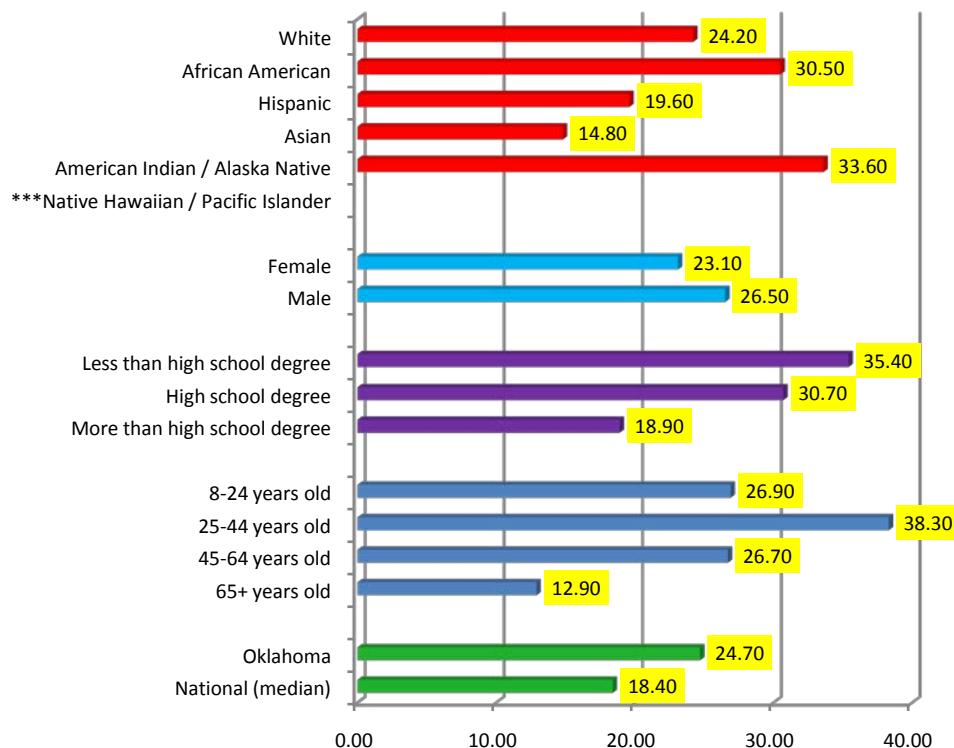
Cherokee Nation Health Promotion/Disease Prevention (HP/DP) program, a tobacco, physical activity and nutrition program; also a partner of the Cherokee Nation Comprehensive Cancer Control Program (CNCCCCP) coalition, has been targeting prevention efforts, such as increased tobacco cessation classes in the health centers and hospitals in the Cherokee Nation Tribal Jurisdiction Service Area (CNTJSA), and Students Working Against Tobacco (SWAT) teams at community schools. Billboards have also been placed in popular places targeting teens and 24/7 smoking bans have been enacted in many of the schools.

Programs like the Communities Putting Prevention to Work Program (CPPWP) and the Strategic Health Alliance work with schools and businesses, and all work together to combat this problem. These programs are helping to reduce the risk of chronic diseases in the Cherokee Nation by addressing poor nutrition, physical inactivity, and tobacco abuse; which also plays a major role in chronic diseases such as cardiovascular disease and cancer. These programs also work closely with the CNCCCCP in an effort to reduce the risk of duplication, as well as maximize limited resources.

According to the University of Oklahoma's Peggy and Charles Stephenson Oklahoma Cancer Center, lung cancer is the number one cause of death in Oklahoma and Oklahomans are also more likely to smoke than the general U.S. population. American Indians are more likely to be diagnosed with lung and bronchial cancer, more than any other racial or ethnic group in Oklahoma (13). The CDC, *United States Cancer Statistics: 1999-2006 Incidence and Mortality Web-based Report*, reports that Oklahoma ranked fourth, along with several other states as having the highest incident rates of lung and bronchial cancers per 100,000, age-adjusted to the 2000 U.S. standard population. This is more than likely due to the large number of smokers in the state of Oklahoma. Behavioral Risk Factor Surveillance System (BRFSS) data obtained by CDC, located in Figure 4 on the following page, show Oklahoma ranks higher than the national average in adult smokers and the highest numbers of smokers are in the age range of 24 to 44 years. It also shows that the majority of smokers in Oklahoma do not have a high school education, are male, and most smokers are American Indians. Also according to CDC, among youth ages 12 – 17 years of age, 13.3% smoke in Oklahoma, while the national average is

10.1%. Among adults ages 35+, over 6,200 died as a result of tobacco use per year, on average, during 2000-2004. That makes Oklahoma 47th among the states, 50th being the worst (14).

Figure 4 Current Smoking Among Adults by Demographic Characteristics



*** Data not shown because sample size is less than 50 people.

Source BRFSS, 2007-2008

There are new smoking bans in the state of Oklahoma, such as smoke free workplaces, restaurants, and bars. There are also quit lines and according to the BRFSS data, 4.4% of smokers in Oklahoma called the quit line, while the national average was 2.8%. But there is clearly much work yet to be done to get our population healthy, as smoking is related to several chronic diseases, as well as many types of cancer.

The CNCCCP also addresses tobacco issues in regards to prevention activities, such as dental programs identifying tobacco users (smokers and smokeless) and encouraging them to quit smoking and providing information on cessation classes and quit lines. Other dental policies that are being pushed are with survivorship issues; patients are currently not being advised to get dental care before treatment begins and this lack of dental care before treatment can rapidly increase dental problems and nutrition. After treatment, there are no policies in place to give cancer patients precedence over other patients. Quality of life experienced by the cancer patient diminishes quickly once eating becomes a problem, and nutritional intake is compromised.

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 is 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.

As noted in the previous Comprehensive Cancer Control Plan, the Tar Creek area located in Northeastern Oklahoma was a major concern when the plan first began. Chat piles from mining were left behind and included lead, zinc and other chemicals that caused learning disabilities in children, along with some forms of cancer. Since that time, residents living in the area have been bought out by the government and the land there is unfit to live. Living in this area would mean genocide to the persons residing in this area. Talk of clean up in this barren area would be an incredibly monumental task and therefore it would only be appropriate for these Native American lands to be replaced with land that is fitting for habitat.

Prevention – Risk Reduction Goals, Objectives and Strategies

Education

Goal A: Reduce the risk of cancer through outreach and education at the local, regional, tribal and national levels.

Objective 1: By September 30, 2015 provide education and information regarding comprehensive cancer risk reduction

Strategies:

- Cancer Program Educators will coordinate with other Cherokee Nation programs and community entities such as schools and civic groups.
- Develop an infrastructure within CN that is supportive of prevention and education through increased partnerships for resource sharing.
- Identify sources of funding through grants.

Baseline: Twenty–three (23) presentations annually.

Target: Thirty (30) presentations annually.

Partners: Cherokee Nation Behavioral Health, Cherokee Nation Healthy Nations Programs, Cherokee Nation W.W. Hastings Hospital, Cherokee Nation Community Health Coordinators, SWAT Teams, Cancer Survivors

Objective 2: By September 30, 2012 produce multi-media education resources designed for cancer education and prevention.

Strategies:

- Maintain monthly newsletters through Cherokee Phoenix.
- Update Cherokee Nation Cancer Programs website on a monthly basis.
- Distribute multi-media materials to be placed in Health Centers and Hospitals throughout the Cherokee Nation.

Baseline: Twelve (12) newsletters annually.

Target: Twelve (12) newsletters annually.

Partners: Cherokee Nation Behavioral Health, Cherokee Nation Healthy Nations Program, Cherokee Nation W.W. Hastings Hospital, Cherokee Nation Phoenix

Objective 3: By September 30, 2012 develop one culturally specific cancer health education event.

Strategies:

- Determine material for translation.
- Develop material for translation.
- Translate material into Cherokee.
- Use Cultural sensitivity in the development of the material.
- Distribute materials.

Baseline: Zero (0) events.

Target: One (1) event.

Partners: Cherokee Nation Communications, Cherokee Nation Healthy Nations Department

Objective 4: By May 2011, and annually, collect up to date cancer data information for the American Indian population in the Cherokee Nation Tribal Jurisdiction Service Area.

Strategies:

- Train cancer registrar in cancer registry data collection.
- Continue partnerships with Oklahoma State Department of Health and Cherokee Nation Cancer Registry to assure collection of information on all cancer patients is quality data.
- Collect screening rates through RPMS

Baseline: Completed annually.

Target: Completed annually.

Partners: Cherokee Nation Cancer Registry, Oklahoma State Department of Health

Objective 5: By June 30, 2012 develop a culturally appropriate multi-media communication for cancer prevention.

Strategies:

- Identify survivors who are willing to tell their survivor story to be aired in the Cherokee Nation Health Services Clinics and Hospitals.
- Work with communications to develop multi-media communication for prevention using survivors and others who can help educate on prevention.

Baseline: Zero (0) events.

Target: One (1) event.

Partners: Cherokee Nation Community Health Coordinators, Cherokee Nation Communications, Cherokee Nation Healthy Nations Communications Coordinator

Physical Activity

Goal B: Reduce the risk of cancer by increasing physical activity.

Objective 1: By September 30, 2012 maintain the number of events offered to adults and adolescents to participate in physical activity.

Strategies:

- Continue to offer physical activity events (such as WINGS runs, traditional games)
- Continue to work with a variety of media outlets (newsletters, radio) to advertise events.

Baseline: Twenty-four (24) events annually.

Target: Twenty-four (24) events annually.

Partners: Cherokee Nation Healthy Nations Program

Objective 2: By September 30, 2011 increase number of youth attending summer fitness camps.

Strategies:

- Work with previous partners to help maintain annual camps.

- Use school outreach program (i.e. the "anti-tobacco tour") to inform youth of camp opportunities.
- Offer summer camp activities that are culturally specific for American Indians.

Baseline: One hundred and forty (140) youth annually.

Target: One hundred and fifty (150) youth annually.

Partners: Cherokee Nation Healthy Nations Program, Cherokee Nation Behavioral Health Services, Cancer Survivors, SWAT teams

Objective 3: By September 30, 2011 CCC will have presented Cherokee Nation employees with wellness information for increased physical activity.

Strategies:

- Work with established programs to include information about the relationship between physical activity and cancer.
- In support of Cherokee Nation's mission statement to promote healthy people, offer opportunities for employees to attend wellness presentations.

Baseline: Three (3) presentations annually.

Target: Nine (9) presentations annually.

Partners: Cherokee Nation Behavioral Health, Cherokee Nation Healthy Nations Program, Cherokee Nation W.W. Hastings Hospital, Cherokee Nation Community Health Coordinators

Nutrition

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

Objective 1: By September 30, 2011 there will be an increased number of community gardens in schools and communities.

Strategies:

- Increase the number of grants given to schools to develop community gardens.

Baseline: Five (5) grants provided annually.

Target: Seven (7) grants provided annually.

Partners: Cherokee Nation Behavioral Health, Cherokee Nation Healthy Nations Program, Cherokee Nation Community Health Coordinators, Cherokee Nation Outreach Coordinators, Communities Putting Prevention to Work Program, Cherokee Nation Strategic Health Alliance

Objective 2: By September 30, 2011 implement healthy cooking classes.

Strategies:

- Collaborate with Cherokee Nation Programs and Dieticians to include cooking techniques consistent with cancer risk reduction.
- Encourage, through events, media/advertisements, wellness education, Cherokee Nation communities to develop classes to teach healthy cooking techniques.

- Explore opportunities to collaborate with the Centers for Disease Control and Prevention (CDC) funded Traditional Foods Programs.

Baseline: Zero (0) cooking classes provided annually.

Target: Nine (9) cooking classes provided annually.

Partners: Cherokee Nation Healthy Nations Program, Cherokee Nation Diabetes Program, Cherokee Nation Communities

Objective 3: By September 30, 2011, increase the number of Farmer's Markets within Cherokee Nation Tribal Jurisdiction Service Area through funding or technical assistance.

Strategies:

- Work with HPDP program to encourage expansion of Farmer's Markets throughout Cherokee Nation Tribal Jurisdiction Service Area.
- Work with HPDP program to advertise Farmer's Markets throughout Cherokee Nation Tribal Jurisdiction Service Area.

Baseline: Number of Farmers Markets in Cherokee Nation is (14) - 7 funded and 7 were provided technical assistance.

Target: Increase by 1 annually.

Partners: Cherokee Nation Healthy Nations Program, Cherokee Nation Business, Cherokee County Health Coalition, Communities Putting Prevention to Work Program, Strategic Health Alliance

Objective 4: By September 30, 2012, increase the number of schools in Cherokee Nation Tribal Jurisdiction Service Area that offer healthy vending machine alternatives.

Strategies:

- Encourage schools within the Cherokee Nation Tribal Jurisdiction Service Area to serve healthier food choices.

Baseline: Number of healthy snacks in 105 vending machines (pretzels = 57, Fruit and Vegetables = 10, Granola Bars = 25, Nuts & Trail Mix = 15, Low Fat Cookies and baked goods = 17)

Target: Increase healthy snacks by 10%.

Partners: Cherokee Nation Healthy Nations Program, Schools in 14 county area, Communities Putting Prevention to Work Program

Tobacco

Goal D: Reduce the risk of cancer by reducing the number of American Indians habitually using non-ceremonial tobacco in Cherokee Nation Tribal Jurisdiction Service Area.

Objective 1: By September 30, 2011 continue to provide comprehensive cessation services in the fourteen (14) counties of the Cherokee Nation Tribal Jurisdiction Service Area.

Strategies:

- Maintain an adequate number of trained Cessation Coordinators to serve the Cherokee Nation Tribal Jurisdiction Service Area.

- Work with a variety of media outlets (newsletters, radio) to advertise cessation programs.
- Implement at least two classes annually in each of the fourteen (14) counties of the Cherokee Nation Tribal Jurisdiction Service Area, increasing to 3 classes for larger populated counties.

Baseline: Thirty-six (36) Cessation Classes annually

Target: Thirty-six classes (36) annually, with at least one Cessation Coordinator in each county of the Cherokee Nation Tribal Jurisdiction Service Area.

Partners: Cherokee Nation Healthy Nations Program, Cherokee Nation Hastings Hospital and Clinics

Objective 2: By September 30, 2012 implement an Electronic Record System equipped with a provider reminder system for tobacco use in the Cherokee Nation Health Services system.

Strategies:

- Identify health centers and hospitals currently with electronic record system where direct providers will be prompted to ask patients about their commercial tobacco use behaviors.
- Work with HPDP to achieve success of the tobacco cessation goals.
- Work with Clinical Application Coordinators to assure health providers are trained in how to use reminder system.

Baseline: Five (5) clinics and (1) hospital has implemented Electronic Records System.

Target: Increase to a total of nine (9) clinics and (1) hospital implementing Electronic Records System.

Partners: Cherokee Nation Clinical Informatics, Cherokee Nation Hospital and Clinics

Objective 3: By September 30, 2012 increase knowledge and awareness in schools among students regarding tobacco use by holding annual cancer education events each year.

Strategies:

- Work with school SWAT teams presence in Cherokee Nation Tribal Jurisdiction Service Area.
- Maintain at least 26 SWAT teams within Cherokee Nation Tribal Jurisdiction Service Area.
- Increase Knowledge and awareness using the Strategic Alliance of Health (Policy, Systems, and Environmental Change) in schools/counties.
- Partner with Cherokee Nation and community programs to hold a SWAT Adult and Youth leadership Advocacy Training.

Baseline: Fourteen (14) events annually.

Target: Maintain fourteen (14) events annually.

Partners: Cherokee Nation Behavioral Health, Cherokee Nation Healthy Nations Program, Cherokee Nation SWAT

Objective 4: By September 30, 2012 there will be an increased number of calls to the Oklahoma statewide telephone quit line from individuals living in Cherokee Nation Tribal Jurisdiction Service Area.

Strategies:

- Identify the number of calls to the Oklahoma Tobacco Helpline for 2012 for those living in the Cherokee Nation Tribal Jurisdiction Service Area for baseline development.
- Distribute Oklahoma Tobacco Helpline materials through Cherokee Nation Media and evaluate outcomes.
- Monitor Oklahoma Tobacco Helpline referrals.

Baseline: One thousand one hundred and seventy nine (1,179) calls in Cherokee Nation Tribal Jurisdiction Service Area in 2011.

Target: Increase by thirty percent (30%).

Partners: Cherokee Nation Behavioral Health, Cherokee Nation Healthy Nations Program, Cherokee Nation W.W. Hastings Hospital

Objective 5: By September 30, 2011 a developed partnership will be in place to facilitate Tobacco education and training through an annual conference.

Strategies:

- Partner with other tribes and State of Oklahoma in the development of the annual 7th Generation Tobacco Conference.

Baseline: Nine (7) partnerships in place.

Target: Maintain (7) partnerships

Partners: Cherokee Nation Healthy Nations Program, Muscogee Creek Nation, Chickasaw Nation, Osage Nation, Oklahoma City Area Intertribal Health Board, University of Oklahoma, Oklahoma State Department of Health

Environmental

Goal E: Identify exposures to environmental carcinogens and advocate for reduction of exposures within Cherokee Nation Tribal Jurisdiction Service Area.

Objective 1: By June 30, 2015, in collaboration with Cherokee Nation Environmental programs develop a GIS mapping system that will identify areas of environmental carcinogens, overlaid with cancer registry data.

Strategies:

- Identify areas in Cherokee Nation Tribal Jurisdiction Service Area where cancer causing chemicals may exist.
- Identify the areas of cancer disbursement within Cherokee Nation Tribal Jurisdiction Service Area.
- Provide increased awareness and knowledge of cancer causing agents.

Baseline: Mapped data on radon in Cherokee Nation Tribal Jurisdiction Service Area.

Target: Mapped data on radon and cancer in Cherokee Nation Tribal Jurisdiction Service Area.

Partners: Cherokee Nation Cancer Registry, Cherokee Nation Environmental Health Program, Cherokee Nation GEO Data Service

Objective 2: By June 30, 2015 there will be an increased number of homes owned and/or operated by Cherokee Nation Housing Authority with clean indoor air policies.

Strategies:

- Develop a tracking system for identifying baseline measures for homes.
- Promote the existing campaign to educate about the impact of second hand smoke exposure.
- Work with Cherokee Nation housing program to improve implementation of the smoke free tribal housing policies.

Baseline: Number of homes in Cherokee Nation with clean indoor air policies = 0
Number of homes to be impacted = 943 Rental Units, 674 minors and 1220 adults

Target: Increase 100% by June 2015

Partners: Cherokee Nation Healthy Nations Program

Ruby Wells



Ruby Wells is a Cherokee woman, wife, mother, chair of the Native American Circle of Hope support group and is also a nine (9) year survivor of breast cancer. Ruby was first diagnosed with a very aggressive type of breast cancer in October 2001. Since then, she has conquered one of life's biggest and scariest journeys. She has committed to helping others through the same experiences she has gone through and to stay true to her beliefs that her parents taught her. Those beliefs are what helped her make it through her journey, along with the love and support of family and friends.

Ruby first felt a hard lump in her right breast while doing a breast self-exam. Then she felt her left breast to compare and realized they were both different. She made an appointment with the doctor and at the appointment he measured the size of the lump, which Ruby recalls was three (3) centimeters large, or just under the size of a golf ball.

The doctor then sent her to have a mammogram and an ultrasound done on her right breast.

On a Wednesday, Ruby got the results back on her mammogram and her doctor sent her to a surgeon on the following day. At that time, the surgeon did a needle biopsy of the lump to see if it was cancer. The surgeon also re-measured the lump and the measurement showed five (5) centimeters.

After a long weekend, Ruby called the doctor the following Monday morning to explain to him some changes she was feeling. The next day, Tuesday, she had an appointment with the doctor to discuss those changes, but the doctor told Ruby she had the results of her biopsy. Ruby was then informed by the doctor that she had Stage III, Intraductal Carcinoma. Ruby's life changed in a matter of minutes. Things were possibly going to be changed forever.

Two days later Ruby had a mastectomy of her right breast. The size of the tumor had grown even larger in the few days since it was last measured. Ruby followed up after the surgery with eight months of radiation and chemotherapy treatments.

Ruby relied on the memories, guidance and voice from her late mother; her father's wisdom and knowledge; and the love and support from her husband, children, sisters, close friends and co-workers (her next family) when she went through her surgery and treatments.

"I don't dwell on myself having had cancer; I focus on celebrating my new life and being mentally strong and positive. Still, the day I was diagnosed was the day I was qualified to share what I know," she states from an excerpt from her writings. Ruby has done just that since her ordeal with cancer began. She has been an inspiration to others who have been newly diagnosed with cancer and gives them hope for survival.



Screening & Early Detection

Screening and early detection has been a big issue in the Cherokee Nation. Much of the American Indian population lives in rural areas and there are several barriers that have been identified, which include:

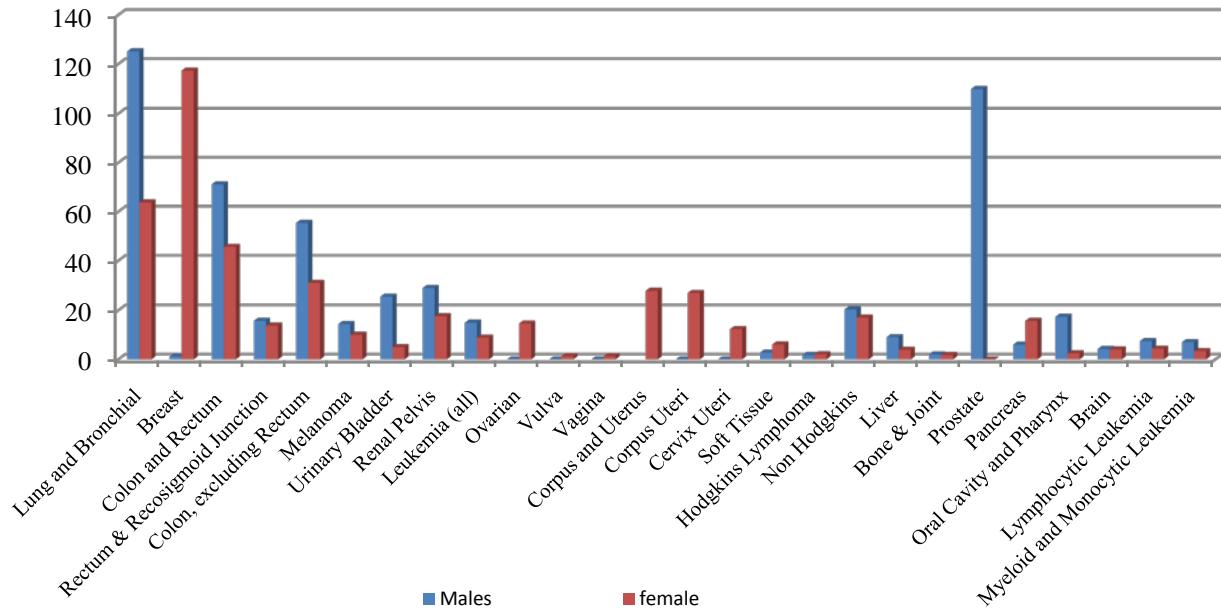
- Other health problems usually take front seat to screening
- Beliefs that you don't talk about cancer or you will get it
- Only one income in the family and therefore no time for screening
- No transportation
- No child care available
- Lack of communication due to language barriers

Low socioeconomic standards also play a major role in lack of screening and early detection as well. Many of these barriers are being addressed through this comprehensive cancer control plan.

Cherokee Nation Cancer Burden

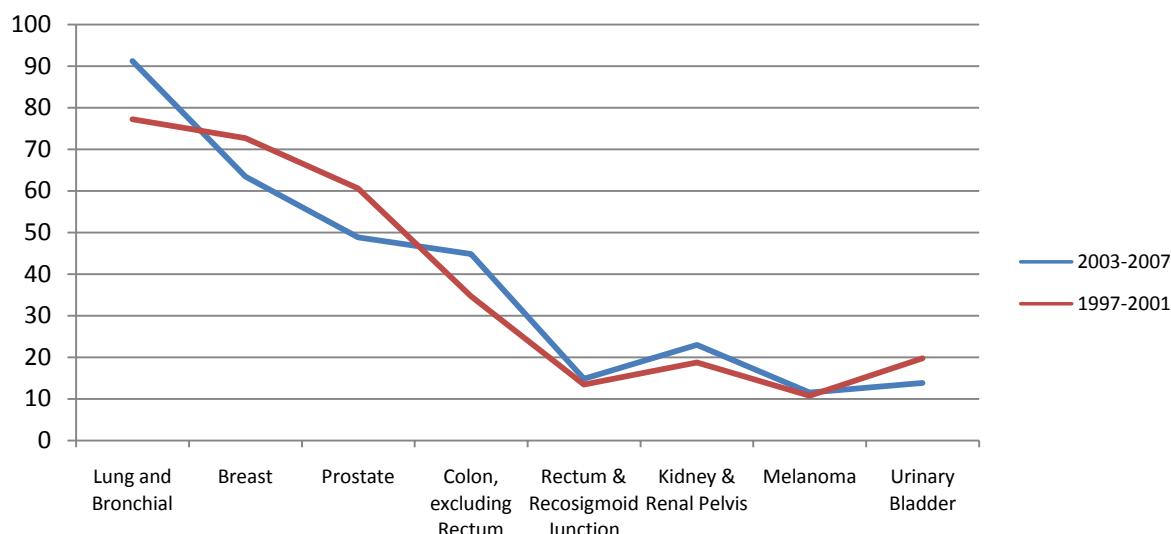
Native American cancer registry data was first analyzed in 2003, during which time development of the first comprehensive cancer control plan began. Registry data captured at that time, for years 1997-2001, in the Cherokee Nation Tribal Jurisdictional Service Area (CNTJSA) revealed the primary cancer sites to be lung & bronchial, breast, colorectal, prostate, and kidney cancer, respectively. Current data, collected for years 2003-2007, shows the same primary cancer sites in Figure 5, except prostate cancer is now the 3rd primary cancer site and colorectal cancer is the 4th.

Figure 5 Age Adjusted Incidence Rates for Cherokee Nation (2003-2007)



According to Figure 6, data from the first plan was gathered and compared with the current data. Lung and bronchial, colon, and kidney cancers are all showing an increase in number of cases while breast, prostate, and urinary bladder cancers are showing a slight decrease, and in some instances a substantial decrease.

Figure 6. Comparing Incidence Rates for Primary Cancers in Cherokee Nation



Information received from the Cherokee Nation Cancer Registry November 2010

Several factors may have played a part in these outcomes, such as increasing education, which may have encouraged an increase in the number of patients requesting screenings. Another factor that may have contributed to these outcomes is clinical staff increasing their communication with patients regarding screening, causing more patients to be informed of possible screening modalities appropriate for their age.

Since the Breast and Cervical Cancer Early Detection Program (BCCEDP) in the Cherokee Nation has been in existence, this program has increased screening rates on breast and cervical cancer; therefore these cancers are being identified at earlier stages. This has no doubt played a major role in the gradual decrease in the number of women being diagnosed with breast cancer. Further data will be analyzed to see if mortality rates for these cancers have also decreased.

Further data, shown in Figure 7 on the following page, shows age-adjusted incidence and mortality rates per 100,000 people in the Cherokee Nation. Lung, breast, prostate, colon and Non-Hodgkin's (NH) Lymphoma, for years 1997-2006, were highest. Figure 8 shows mortality rates are also highest among these primary cancer sites. However mortality rates for colon cancer comes in as the 3rd highest mortality due to cancer in the Cherokee Nation. Looking at the incidence to mortality ratio lung cancer has the highest mortality rates, where 77% of those diagnosed are now deceased.

Figure 7. Incidence Rates for Primary Cancer Sites in CN

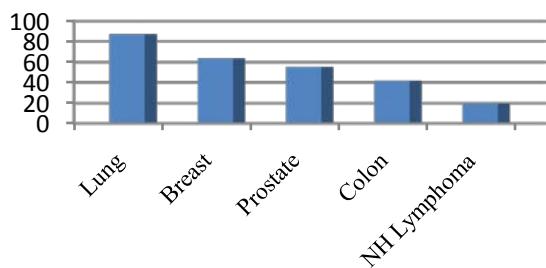
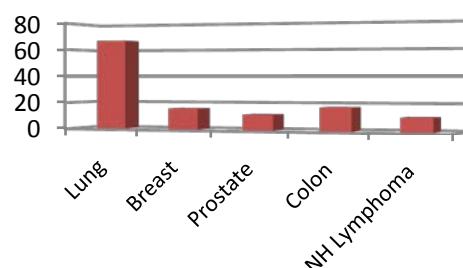


Figure 8. Mortality Rates for Primary Cancer Sites in CN



Rates per 100,000 cases adjusted to the 2000 US Standard Population Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Incidence – Cherokee Nation, November 2008 (1997-2006), National Cancer Institute, DCCPS, Surveillance Research Program, Cancer Statistics Branch, released April 2009, based on the November 2006 submission.

In the following chapter, more detailed information will be given regarding the burden of cancer in the Cherokee Nation. Diagnosing and treating these primary cancers will be briefly discussed, as well as several other cancer sites of concern, which include lung and bronchial, breast, prostate, kidney, skin, colon, gynecologic, and hematopoietic cancers. These cancers are the most prominent cancers in the Cherokee Nation.

Lung Cancer Screening and Early Detection

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% with treatment, while the five-year survival rate for all stages of lung cancer combined has only a 15% survival rate (15). There is considerable research interest in identifying a screening test for lung cancer. Several screening modalities have been evaluated in large-scale trials, including a chest radiograph, sputum cytology, and helical chest computer assisted tomography scan (CT). Current research shows a significant benefit for patients undergoing CT scans, as compared to chest x-rays, with those undergoing CT scans showing an increased survival rate due to early diagnosis. However, further studies will need to be done before this type of screening can be recommended. Accordingly, there are still no recommended screening tests at this time for cancer of the lung and bronchus and therefore prevention is the key to decreasing incidence and mortality rates from lung cancer.

Five Year survival rates for all stages of lung cancer combined is only 15%.

Once lung cancer is suspected, initial diagnostic workup, to evaluate for carcinoma of the lung and bronchus, can be performed within the Cherokee Nation 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. Depending on the clinical situation of the patient, a secondary diagnostic procedure will usually be performed by the Cherokee Nation healthcare 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 to Contract Health for care/treatment outside the Cherokee Nation health system.

Kidney Cancer Screening and Early Detection

The risk of getting kidney cancer in the United States is 1 in every 75 people, and the risk is higher in men than in women. The American Cancer Society website shows that in 2009 there were 57,760 new cases and 12,980 deaths from this cancer. It also shows the most common form of kidney cancer found in these cases is Renal Cell Carcinoma, which accounts for more than 9 out of 10 cases. Screening for kidney cancer is not routinely done. There are no early screenings available like there are for breast cancer. Kidney cancer is being increasingly detected as an unexpected incidental finding on scans done for other reasons.

Although kidney cancer is not one of the four primary cancer sites in the Cherokee Nation, it has been slowly increasing in the Cherokee Nation, with many of these cancers showing up in Sequoyah County. However, further statistical testing and analysis has been completed by the Oklahoma State Department of Health and the research pertaining to renal cancer as being a hot spot in this area is not justified.

If kidney cancer is suspected, your doctor will order a kidney imaging study. The initial imaging study is usually an ultrasound or CT scan. If a tumor is found and is, in some cases a combination of imaging studies may be needed to completely evaluate the tumor (16). If it is suspected to have metastasized beyond the kidney other tests may be done that includes an abdominal CT scan or Magnetic Resonance Imaging (MRI), chest X-ray and blood tests. A bone scan is also recommended if you have bone pain, recent bone fractures, or certain abnormalities on your blood tests. Additional tests may be ordered if your doctor feels it is necessary. Other tests used to diagnose and evaluate kidney cancer include: urinalysis, positron emission tomography (PET scan), Intravenous Pyelogram (IVP), Angiography, or a biopsy procedure (17).

Skin Cancer Screening and Early Detection

Skin cancer is the most common form of cancer in the United States and 3.5 million cases are diagnosed annually (18). According to the National Cancer Institute's (NCI) website on skin

Skin cancer is the most common form of cancer in the US and 3.5 million cases are diagnosed annually.

cancer, there are several different kinds of skin cancer. The most common form begins in the outer surface of the skin and is not usually fatal, but can be disfiguring if not treated early; called basal cell carcinoma. The second most common type develops in the flat cells that form the surface of the skin and is called squamous cell

carcinoma, which can be deadly. Then there is still another type of skin cancer called melanoma and it forms in the cells that make pigment, and is the most deadly of all the different types of skin cancer.

In 2010 it is estimated that there will be 1,000,000 new cases of skin cancer in the United States and less than 1,000 deaths will occur. Although there are an increasing number of people being diagnosed with skin cancer, in most cases, it is not lethal.

In previous years, it was believed that American Indians, or those with darker skin, did not get skin cancer and their dark skin protected them against ultra violet rays. However, this is not the

case; dark skinned individuals do get skin cancer, just not as often as fair skinned individuals. It is speculated this is one reason people with darker skin are being diagnosed at later stages; when this type cancer can be potentially fatal. According to the CDC, ways of preventing skin cancer include:

- Using sunscreen with sun protective factor (SPF) 15 or higher, and both UVA and UVB protection
- Wear clothing to protect exposed skin
- Wear a hat with a wide brim to shade the face, head, ears, and neck
- Wear sunglasses that wrap around and block as close to 100% of both UVA and UVB rays as possible
- Seek shade, especially during midday hours

Since skin cancer can be potentially avoided in most cases, or can have a high survival rate for those diagnosed with certain types, it has been identified as a type of cancer that can be targeted in the Cherokee Nation, decreasing morbidity and mortality rates. If the cancer is caught early, surgery can be performed to eliminate the cancer before it becomes life threatening.

According to Women's Health Resource; Taking Care of Your Body, if you know the early signs of skin cancer and identify it early, "a more appropriate treatment can be selected." The resource also goes on to say that regular skin examinations are the best tool for detecting skin cancer early. The following are skin cancer signs and symptoms you should look for:

- New skin growth
- Changes in existing skin growths
- A wound that is not healing properly
- Appearance of unusual moles

When checking moles there are some rules to follow and this is the **ABCDE** rule which is outlined below. If any of the rules below apply you should be concerned and consult your physician:

- A** is for asymmetry - if the mole does not look equal on all sides
- B** is for border - if the mole has a blurry or jagged border or outline
- C** is for color - if the color of your mole changes or has multiple colors
- D** is for diameter - if the mole is larger than 1/4 inch in diameter
- E** is for elevation - if the mole is raised or uneven

Once cancer is suspected, there are several types of biopsies that can be used for diagnosis depending on what type cancer is suspected. These include:

- Shave biopsy - removing the skin with a tool similar to a razor, which does not require stitches
- Punch biopsy - a small section of skin, with deeper layers, is removed with a circular tool, which requires stitches
- Excisional biopsy - removal of the entire growth, which is a little more invasive, but may be the only treatment that is needed
- Incisional biopsy - a scalpel is used to remove some of the suspicious cells. Stitches may be needed and is the most common type of biopsy

Blood Borne Cancer Screening and Early Detection

Several blood borne cancers exist in the Cherokee Nation, such as **Leukemia, Multiple Myeloma, and Lymphoma**. When grouped together they rank as one of the five primary cancer sites within the Cherokee Nation, however when separate they rank within the 10 primary cancer sites.

Leukemia - According to the American Cancer Society, leukemia is not like other cancers that grow tumors. Instead, these cancer cells involve the blood and blood-forming organs and circulate through other tissues where they grow. In a person with leukemia, the bone marrow produces out of control white blood cells that crowd out normal blood cells.

There are four different types of leukemia; Acute Myelogenous Leukemia (AML), Chronic Myeloid Leukemia (CML), Acute Lymphocytic Leukemia (ALL), and Chronic Lymphocytic Leukemia (CLL). According to the American Cancer Society, not all leukemia's are treated the same or have the same outcomes. The term "Chronic" refers to the cancer as progressing at a slower rate than the other cancers. The term "Acute" refers to a fast growing cancer. "Myelogenous" refers to the bone marrow or spinal cord, and "Lymphocytic" refers to the cells in the lymph system, or lymph nodes.

AML patients need quick treatments as this type cancer can progress very quickly, and if not treated, survival may last only months; but when patients are treated they can be cured from this cancer.

Signs and symptoms in the early stages are similar to other diseases and include:

- Fever and bone pain
- Continuous infections
- Fatigue
- Loss of weight
- Shortness of breath
- Pale skin
- Bruising easily
- Stroke or clotting of the blood

Screening and Early Detection - AML will include a complete set of blood tests (blood count, chemistry studies, and blood smear) to detect abnormalities that may be present. Biopsies of tissue samples may also be taken to look for signs of cancer. Bone and/or bone marrow may be taken from the hipbone or breast bone for biopsy to identify any abnormal cells. Other tests that may be performed include a tumor biopsy, lymph node biopsy, a chromosome analysis, and cell staining for cancer markers (19).

CML patients may live a very long time since this type cancer progresses over a longer period of time, but it is much harder to cure and is very uncommon. Older adults are usually affected by this cancer when something goes haywire in the genes. Those who are older, male, or those who have been exposed to radiation are more susceptible to this cancer, and it is not inherited and therefore develops after birth.

Signs and symptoms include:

- Fatigue
- Excessive bleeding
- Pain and infection
- Enlarged spleen
- Stroke or clotting of the blood
- Death

Screening and Early Detection - CML includes a check up from your physician to check vital signs, and feel for abnormalities. Different types of blood tests will be done to reveal any abnormalities in your blood. Bone marrow biopsies and aspirations are done to collect marrow for testing. Other specialized testing to check for a certain chromosome gene is done as well.

Once CML has been detected, the pathologist will determine what phase of Chronic Myelogenous Leukemia the patient has. This refers to how aggressive the disease is (20).

ALL - is a common diagnosis among children, who have a good prognosis once they are treated. Adults, however, are not diagnosed with this type cancer too often and have a worse prognosis. According to the University of Maryland Medical Center, about 5,200 people are diagnosed each year with ALL. Children account for two-thirds of these cases.

Signs and symptoms include:

- Fatigue
- Pale skin
- Recurrent infections
- Bone pain
- Easy bruising
- Small red spots under the skin

Screening and Early Detection - There are currently no recommended standard screening tests available for leukemia. Most people are diagnosed when running tests for some other illness or who may be getting tests done for some other reason. If certain signs continue and are persistent, such as low grade fever, fatigue, continuous infections and bone pain you should seek a doctor for testing (21).

CLL is the main type of leukemia and there are approximately a little over one hundred thousand people either living with this type of cancer, or are currently in remission, here in the U. S. The biggest majority of people who are diagnosed with this cancer are over the age of 60 and it does not target children.

Signs and symptoms of this cancer develop slowly and may include:

- Weakness
- Lethargy
- Repeated infections
- Stomach pain
- Swollen lymph nodes or spleen
- Weight loss
- Fever
- Night sweats

Screening and Early Detection - Again, there are currently no recommended standard screening tests available for leukemia. Most people are diagnosed when running tests for some other illness or are getting tests done for some other reason. If certain signs continue and are persistent, such as low grade fever, fatigue, continuous infections, and bone pain, you should seek a doctor for testing (22).

Multiple Myeloma - This cancer begins in plasma cells which produce proteins called antibodies that help to fight infection. This is a type of white blood cell in bone marrow. When these cells get together and begin multiplying they are abnormal and increase the amount of protein in your system, which affects bones, immune system and red blood cells.

Signs and Symptoms - Although there are no early symptoms of this type cancer, later progression causes the following symptoms:

- Bone Pain (ribs, back, pelvis, skull)
- Unexplained bone fractures
- Excessive thirst & urination
- Weakness/numbness in legs
- Loss of appetite
- Mental confusion
- Repeated infections
- Nausea

Screening and Early Detection - It is important to see your doctor as soon as possible if any of the above signs or symptoms persists for any length of time, especially for early diagnosis.

Tests that are performed by a doctor once multiple myeloma is suspected include blood and urine tests to check for M proteins. Other tests include x-rays, MRI, PET, and CT scan to check for problems with your bones (23).

Lymphoma - this type cancer targets the lymphatic system (lymph nodes, vessels, and ducts). The lymph nodes lay along the larger blood vessels around the neck, underarms, abdomen, pelvis, and groin. Lymph nodes are usually the size of a pea and are connected by vessels. These nodes filter the blood for toxic substances, fighting infection. There are two types of lymphoma, Hodgkin's lymphoma and non-Hodgkin's lymphoma.

Hodgkin's Disease (HD) have Reed-Sternberg cells that make it easy to tell HD from Non-Hodgkin's Lymphoma (NHL). HD is more predictable than NHL and usually does not spread beyond the lymph nodes like NHL does. Another notable difference is that NHL is diagnosed more in the United States than HD, and NHL targets more people between the ages of 40 and 70.

Signs and symptoms - include painless swelling in lymph nodes, chest pain, coughing, fatigue, shortness of breath, abdominal pain. But, as with most other blood borne cancers, there are no early warning signs and there are no early screening guidelines or recommendations to help identify this cancer at the earliest stages. Therefore it is important to contact your doctor when any of these signs persist.

Screening and Early Detection - Once lymphoma is suspected the doctor will perform a biopsy on an enlarged lymph node and a pathologist will examine the tissue under a microscope to confirm the diagnosis. Other tests may be performed such as x-rays, computed tomography scans, and magnetic resonance imaging to identify and detect other abnormalities and enlarge nodes. Usually bone marrow aspirations will be performed to identify stage of cancer for treatment, or lumbar puncture with a thin needle to see if lymphoma has spread (24).

Prostate Cancer Screening and Early Detection

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 it is most often diagnosed at the regional stage, with only 2% diagnosed in the early stages of the disease.

Screening and Early Detection - 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% in men with BPH, and the false negative rate (occurrence of prostate cancer in men with a normal PSA) is approximately 15% (25).

The Digital Rectum Exam (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% 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 has 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 (26).

Colorectal Cancer Screening and Early Detection

According to the NCI, colon cancer is the fourth leading cancer in men and women in the United States and is the second leading cause of cancer death, next to lung cancer. Colorectal cancer is also the fourth leading cancer among American Indian men and women, as well as the second leading cause of cancer death in the Cherokee Nation. There are no early warning signs for this type cancer and it is most often diagnosed in the later stages, especially among American Indians living in the Cherokee Nation, where only 13% of the cases are caught at the earliest stage.

Colorectal Cancer is the 2nd leading cause of cancer death in the U.S. and in 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 flexible sigmoidoscopy or double-contrast barium enema every five years, in accordance with the American Cancer Society screening guidelines. Each of these procedures is available at the Cherokee Nation W.W. Hastings Hospital, as well as Claremore Indian 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,

although this list has been shortened in the past year by a contract with the Tahlequah City Hospital surgery department for surgery space use.

Women's Cancer Screening and Early Detection

Breast Cancer

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 (27). Taking an aspirin daily was very recently shown in one observational study to be

associated with a decreased risk of breast cancer (28). However, this study is preliminary, and will need to be repeated with more patients before taking a daily aspirin can be recommended.

Breast Cancer appears to be on the decline in the Cherokee Nation.



Tear Dress Tonia Weave

Changes have become apparent on the incidence of breast cancer in the United States. Since 1999 breast cancer has been decreasing yearly, with insitu breast cancers increasing from 1998-2003. This indicates more breast cancers are being diagnosed at the earliest stage; however, even this trend is now on a decline. These outcomes are what is to be expected once the Breast and Cervical Cancer Early Detection (BCCEDP) program was set into motion in the U.S. This also appears to be the case in Cherokee Nation, where breast cancer cases have been on a decline after the inception of the Cherokee Nation BCCEDP program in 1994.

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 (29). CBE and BSE instruction occurs at all Cherokee Nation Health Centers and Cherokee Nation Hastings Hospital, and mammography is performed at the Wilma P. Mankiller Health Center in Stillwell, AMO Health Center in Salina, and 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 at the age of five years younger than the age when 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 (30).

Cervical Cancer Screening and Early Detection

Cervical Cancer is the second most common cancer among women worldwide, and is the third most common cause of cancer-related deaths. It is the most common cancer among women in developing countries. In the CNTJSA, cervical cancer is a concern, as it is the 8th highest cancer in the Cherokee Nation, although not one of the four primary cancers. Cervical cancer was once the leading cause of cancer death in the United States, however, the annual incidence has remained steady at 8 cases per 100,000 women over the past several years (31).

Cervical Cancer was once the leading cause of cancer death in the U.S.

Cervical cancer is a slowly progressive disease that proceeds through a premalignant stage for many years, called cervical dysplasia. During this time the opportunity to screen repeatedly, decreases the impact of a single false-negative test, thereby increasing the likelihood of detecting cervical cancer in its premalignant stage. Much of the decline in the number of cervical cancer deaths is due to the introduction of widespread screening with the Pap test (32). The mean age at the time of a cervical cancer diagnosis is 51.4 years, with equal numbers of women between the ages of 30-39 years being diagnosed as often as those between the ages of 60-69 (33). However, there is an increase in the stage of the cancer at a later age, which suggests that fewer women are getting screened as they get older.

Diagnostic testing is mostly performed at the local hospitals and by only a select few providers at the health centers. Treatment during the premalignant stage is only done at the hospitals. Once a diagnosis of cervical cancer is made, the patient is referred to outside facilities for treatment. This is accomplished through the contract health services of the Cherokee Nation.

Many of the risk factors for cervical cancer have been known for years. These include: beginning sexual intercourse at an early age, multiple lifetime sexual partners, a history of sexually transmitted diseases, and having a partner with a history of multiple sexual partners (34, 35). Other risk factors such as smoking and immunosuppression have also been well documented. More recently, it has been discovered that Human Papillomavirus (HPV) plays an important role in the progression from cervical dysplasia to cervical cancer.

HPV is perhaps the most common sexually transmitted disease (STD). It is estimated that over 60% of sexually active women younger than 35 have been exposed to HPV (35). Unfortunately, most infected individuals are unaware that they have the virus and the virus may be present for many years before causing any abnormalities in a women's cervical screening.

Smoking is thought to influence the local immunological defenses in the cervix, thereby preventing the host from adequately defending against HPV infection. Smoking cessation would allow a women a better chance of viral elimination. The overall health benefits from smoking cessation are limitless and should be encouraged in every health arena.

Many of the risk factors involve sexual contact in order to transmit the HPV. The prevention of direct skin to skin contact with an individual would decrease the transmission. The use of condoms has been proven to reduce the risk of contracting STDs and evidence suggests their use decrease the risk of transmitting HPV. It is important to stress this prior to the beginning of sexual activity in a young girl's life. Beginning sexual activity within 1 year of starting menses increases a women's lifetime risk of cervical cancer 26-fold, as opposed to beginning sexual activity after age 23 (35).

Preliminary data would indicate that a majority of cervical cancer in the Cherokee Nation is caught during the premalignant phase. Cervical dysplasia is often treated at the Claremore Indian Hospital or the Cherokee Nation Hastings Indian Hospital with a simple cervical excision procedure, such as a cone biopsy. However, once a patient is diagnosed with cervical cancer, she is referred to a gynecology oncologist and a radiation oncologist for further evaluation and treatment. These specialists are outside of the Cherokee Nation Health Centers jurisdiction and are processed through the Cherokee Nation Contract Health System.

Ovarian Cancer Screening and Early Detection

According to the American Cancer Society website, in 2009 there were about 21,550 new cases of ovarian cancer diagnosed and about 14,600 deaths occurred from this disease in the U.S. It is the eighth most common cancer among women and it ranks fifth in cancer deaths. Women in the

Women have a 1 in 72 lifetime risk of developing ovarian cancer and a 1 in 100 risk of dying from it!

general population have a 1 in 72 (1.4%) lifetime risk of developing ovarian cancer and a 1 in 100 (1.00%) risk of dying from the disease (36). In the Cherokee Nation, it ranks as the 17th highest cancer on the list of cancers, but is a very aggressive and deadly cancer and therefore is a concern. Research efforts to develop an effective

screening test for the early detection of ovarian cancer have surpassed many obstacles, but there are still problematic areas with the testing.

There has been a lot of research to develop a screening test for ovarian cancer, but there has not been much success. There are some tests that are commonly used for screening; one is the CA-125 test. The CA-125 consists of testing the protein in the blood, which is higher in many women with ovarian cancer. In some cases this test can be normal in women that have ovarian cancer, but the problem is that it can detect conditions other than ovarian cancer. If problems persist or continue with the CA-125, another test can be performed and that is a Transvaginal Sonography. This is an ultrasound test which helps to find a mass in the ovary, but this test can't distinguish whether or not it is a benign or cancerous mass. Therefore, at this time, early detection is the key to reducing the mortality rate so research efforts are aimed directly at finding a test that will have sufficient efficacy for ovarian cancer.

Screening and Early Detection Goals, Objectives and Strategies

Screening

Colorectal Cancer

Goal A: Reduce morbidity and mortality of colorectal cancer by reducing late stage diagnosis among American Indians living in Cherokee Nation Tribal Jurisdiction Service Area.

Objective 1: By July 31, 2015 increase percentage of adults age 51-80 who receive colorectal cancer screening examinations annually.

Strategies:

- Educate our population about the incidence of colorectal cancer in the Cherokee Nation Tribal Jurisdiction Service Area.
- Nurse Care Managers will perform chart reviews to assure callback of empanelled patients for colon cancer screenings.
- Incorporate FOBT screening during annual wellness exam via digital rectal examination.
- Complete referral for further testing such as colonoscopy with biopsy for positive FOBT as indicated.
- Refer patients to surgeon for biopsy or resection as indicated.
- Identify number of late stage diagnosis patients for comparison.

Baseline: Fifty-seven percent (57%).

Target: Eighty percent (80%).

Partners: Cherokee Nation W.W. Hastings Hospital, Cherokee Nation Clinics, Cherokee Nation Health Administration

Cervical Cancer

Goal B: Reduce morbidity and mortality of cervical cancer by reducing late stage diagnosis among American Indian women living in Cherokee Nation Tribal Jurisdiction Service Area.

Objective 1: By June 30, 2015 increase percentage of annual pap smears obtained for women ages 21-64.

Strategies:

- Cherokee Nation Breast and Cervical Cancer Early Detection Program will educate women ages 21-64 about the need for annual pap smears.
- Nurse Care Managers in Cherokee Nation Health Services Clinics will conduct chart reviews to assure callback of empanelled patients for annual Well Woman Exams.

- Patient's Cherokee Nation designated provider collects sample for thin prep pap smear during pelvic exam.
- Patient's Cherokee Nation designated provider refers patient with atypical squamous cells (ASC) for colposcopy, patient with atypical glandular cells (AGC) for colposcopy and endocervical biopsy, and patient with atypical endometrial cells for endometrial biopsy.
- Patient's Cherokee Nation designated provider refers patient to Gynecologic Oncologist if invasive disease is identified.

Baseline: Seventy-three percent (73%).

Target: Eighty percent (90%).

Partners: Cherokee Nation W.W. Hastings Hospital, Cherokee Nation Breast and Cervical Cancer Early Detection Program

Breast Cancer

Goal C: Reduce morbidity and mortality of breast cancer by reducing late stage diagnosis among women living in Cherokee Nation Tribal Jurisdiction Service Area.

Objective 1: By September 30, 2015 there will be an increased percentage of mammograms for women aged 40-64.

Strategies:

- Educate communities and families about incidence of breast cancer among American Indian women.
- Utilize Nurse Care Managers in Cherokee Nation Health Services Clinics for chart reviews to assure callback of empanelled female patients over 40 for annual Well Woman Exams.
- Provider will instruct patient in BSE at time of CBE, and offer mammography annually to all female patients over 40.
- Provider refers abnormal CBE or abnormal mammogram for U.S. and for biopsy as indicated.
- Provider refers positive biopsies to surgeon and/or oncologist referral.

Baseline: Sixty-five percent (65%).

Target: Eighty percent (85%).

Partners: Cherokee Nation W.W. Hastings Hospital, Cherokee Nation Breast and Cervical Cancer Early Detection Program, Cherokee Nation Health Centers

Early Detection

While standard screening procedures are not available for the following cancers it is recommend that everyone get an annual exam and discuss any concerns with your physicians.

Renal Cancer

Goal D: Reduce morbidity and mortality of renal cancers by education and screening, thereby reducing late stage diagnosis among American Indian adults living in Cherokee Nation Tribal Jurisdiction Service Area.

Objective 1: By September 30, 2012 increase the number of annual physicals and preventive health exams performed yearly in Cherokee Nation Health Services Clinics.

Strategies:

- Obtain baseline measure on incidence and mortality of kidney cancers in the Cherokee Nation Tribal Jurisdiction Service Area.
- Determine the annual preventive health exams completed annually for baseline measures of physical exam for Cherokee Nation Health Services adults.
- Increase education that no effective screening program is currently available for renal cancers, thus routine periodic clinic check-ups is recommended.
- Educate local community about high incidence of renal cancers in our population.
- Advocate for increased annual screening to Health Service Administrators.
- Increase funding for annual wellness exams.

Baseline: Number of annual preventive health exams completed in Cherokee Nation Services Clinics (To Be Determined).

Target: Increase by two percent (2%) annually.

Partners: Cherokee Nation W.W. Hastings Hospital, Cherokee Nation Clinical Informatics, Cherokee Nation Health Administration.

Prostate Cancer

Goal E: Reduce morbidity and mortality of prostate cancer by reducing late stage diagnosis among men living in Cherokee Nation Tribal Jurisdiction Service Area.

Objective 1: By December 31, 2012 there will be an increased number of men aged 50 or over screened (PSA or DRE) for prostate cancer.

Strategies:

- Identify barriers to prostate cancer screening for American Indian men living in Cherokee Nation Tribal Jurisdiction Service Area.
- CCC Outreach Coordinator will work with Health Service Administration to develop Men's Wellness Fair, to educate men on prostate cancer and to provide screenings for American Indians.
- Nurse Care Managers will complete chart reviews of empanelled patients to assure callback of established patients for annual Well Man Exams.

- Patient's designated provider will perform digital rectal exam after Prostate-Specific Antigen (PSA) and urinalysis (UA) have been obtained.
- Patient's designated provider will refer patients with elevated Prostate-Specific Antigen (PSA) and/or abnormal digital rectal examination (DRE), to urologist for trans-rectal ultrasound and biopsy.

Baseline: One thousand two hundred seventy nine (1,279) Prostate Specific Antigen (PSA) and one thousand one hundred forty nine (1,149) Digital Rectal Exam (DRE) in 2010.

Target: Increase by one percent (1%) annually.

Partners: Cherokee Nation W.W. Hastings Hospital, Cherokee Nation Health Centers, Cherokee Nation Health Administration

Blood Cancers

Goal F: Reduce morbidity and mortality of blood cancers by education and screening, thereby reducing late diagnosis among American Indian adults living in Cherokee Nation Tribal Jurisdiction Service Area.

Objective 1: By September 30, 2012 increase the number of annual physicals and preventive health exams performed yearly in Cherokee Nation Health Services.

Strategies:

- Educate patients that no effective screening program is currently available for any of the nine established classifications of tumors of blood and lymph tissues.
- Work with Cherokee Nation Health Services to increase annual or biannual wellness physical exam for all empanelled patients.

Baseline: Number of annual preventive health exams completed in Cherokee Nation Services Clinics (To Be Determined).

Target: Increase by two percent (2%) annually.

Partners: Cherokee Nation W.W. Hastings Hospital, Cherokee Nation Clinical Informatics, Cherokee Nation Health Centers, Cherokee Nation Health Administration

Ovarian Cancer

Goal G: Reduce morbidity and mortality of ovarian cancer by reducing late stage diagnosis among America Indian women living in Cherokee Nation Tribal Jurisdiction Service Area.

Objective 1: By December 30, 2012 incidence, mortality and stage at time of diagnosis will be identified.

Strategy:

- Work with registry staff to identify baseline measures.
- Obtain baseline measure on incidence and mortality of ovarian cancers in the Cherokee Nation Tribal Jurisdiction Service Area.
- Determine the annual preventive health exams completed annually for baseline measures of physical exam for Cherokee Nation Health Services adults.
- Increase education that no effective screening program is currently available for ovarian cancers, thus routine periodic clinic check-ups is recommended.
- Advocate for increased annual screening to Health Service Administrators.
- Increase funding for annual wellness exams.

Baseline: Number of annual preventive health exams completed in Cherokee Nation Services Clinics (To Be Determined).

Target: Increase by two percent (2%) annually.

Partners: Cherokee Nation W.W. Hastings Hospital, Cherokee Nation Clinical Informatics, Cherokee Nation Health Administration, Cherokee Nation Health Services.

Objective 2: by July 2012 increase percentage of bi-manual pelvic exams for women during annual Well Woman Exams.

Strategies:

- Educate patients that an annual bi-manual pelvic exam is the only screening test that is currently recommended for detection of ovarian cancer in otherwise healthy women.
- Perform chart reviews to assure callback of empanelled patients for annual Well Woman Exams.
- Patient's Designated Provider will order Transvaginal Ultrasound and CA-125 for women with abnormal clinical presentation (palpable ovary in postmenopausal woman, or post menopausal ascites).
- In high risk women only (prior breast, colon, or uterine cancer; first degree relative with ovarian cancer), patient's designated provider considers annual bi-manual pelvic exam, also considers CA-125 and transvaginal ultrasound.
- Patient's Cherokee Nation Health Services designated provider will refer patient to gynecological surgeon for laparotomy for suspect patients.
- Refer to oncologist.

Baseline: Number of annual well-women health exams completed in Cherokee Nation Services Clinics (To Be Determined).

Target: Increase by three percent (3%) annually.

Partners: Cherokee Nation W.W. Hastings Hospital, Cherokee Nation Clinical Informatics, Cherokee Nation Health Administration, Cherokee Nation Health Services.

Lung Cancer

Goal H: Reduce morbidity and mortality of lung cancer by reducing late stage diagnosis among American Indians living in Cherokee Nation Tribal Jurisdiction Service Area.

Objective 1: by September 30, 2012 clinical staff will have increased the percentage of annual physical exams.

Strategies:

- Educate patients that no effective screening program is currently available and prevention is key.
- Educate local community about high incidence of lung cancers in our population.
- Advocate for increased annual screening to Health Service Administrators.
- Determine the annual preventive health exams completed annually for baseline measures of physical exam for Cherokee Nation Health Services adults.
- Increase education that no effective screening program is currently available for lung cancers, thus routine periodic clinic check-ups is recommended.

Baseline: Number of annual preventive health exams completed in Cherokee Nation Services Clinics (To Be Determined).

Target: Increase by two percent (2%) annually.

Partners: Cherokee Nation W.W. Hastings Hospital, Cherokee Nation Clinical Informatics, Cherokee Nation Health Administration, Cherokee Nation Health Services.

Ronnie Trentham



In 2003 Ronnie started his battle with oral cancer, but with his positive attitude, support from his family, and his faith in God, he overcame many challenges and ordeals, and has been cancer free since 2007.

He recently teamed up with the Cherokee Nation Comprehensive Cancer Control Program, and took his story on the road to share with school age kids.

"I remember when the Cancer Program first contacted me. It was around late summer of 2009 and they needed a cancer survivor, and former commercial tobacco user, to speak to the kids about the dangers of tobacco use," Ronnie said.

In November, 2009, Ronnie teamed up with Brian Jackson (the I Believe Guy) and Robert Lewis (Cherokee Story Teller) and they shared their stories, talents, and experiences with kids at several schools.

"When we hit the road, I hadn't done much public speaking but I learned as I went along and made some great friends. How many people can say they worked with someone who holds a world record? And to hear Robert tell his stories about the Cherokee way of life; it was all pretty cool," Ronnie said.

During his presentations, Ronnie shared the pain and hardships he endured, but he also shared some humorous stories in order to drive his point home. One story that really stands out to the kids is how he had hair growing in his mouth after he received a skin graft from his leg.

During the 3rd Bi-Annual Cherokee Nation Cancer Summit Ronnie was awarded the Distinguished Spirit of Life Award for using his experiences as a cancer survivor to advocate for cancer prevention and control.

"I couldn't believe it; I was blown away and honored. If I can keep just one kid from using tobacco and going through what I had to endure, then all my time on the road was worth it," Ronnie said.

Ronnie's speaking engagements with the American Cancer Society and the Cherokee Nation Comprehensive Cancer Control Program keep him pretty busy, but he still finds time to sneak off to the woods and enjoy the beauty of rural Adair County.

Diagnosis and Treatment

Once a diagnosis of cancer has been made, for any American Indian living in the Cherokee Nation, who has a CDIB card, treatment is recommended. In many situations the clinical staff at the Cherokee Nation Health Centers will usually refer patients to the Cherokee Nation W.W. Hastings Hospital or the Claremore Indian Hospital. These facilities have the ability to request further testing in order to make a diagnosis of cancer, with resources to treat some patients who have been diagnosed. If treatment is not an option in the Cherokee Nation health care system, the patient is referred to a specialist to undergo treatment. Many times these patients are treated and then are lost to follow-up. There may be many reasons the patient does not get back into the health care system once they have been treated, and if not monitored on a routine basis there is a possibility of the cancer reoccurring.

"I believe it is unacceptable that Native American communities still face gaping health care disparities. Our responsibility to provide health services to American Indians and Alaska Natives derives from the nation-to-nation relationship between the federal and tribal governments." – March 23, 2010 statement by the President on the Reauthorization of the Indian Health Care Improvement Act

In the past, there has been a huge funding gap for cancer treatment. Recent changes to contracts and policies have made it possible to increase the numbers of those who are treated for their cancer. Changes in colon cancer screening policies and procedures have also changed somewhat due to the transition from an Indian Health Services (IHS) hospital to the Cherokee Nation W.W. Hastings Hospital, managed by the Cherokee Nation Health Services administration. The Cherokee Nation Health Centers and the hospital are now following the same procedures to screen and refer a patient for further testing and treatment when necessary.

According to previous data collected from the Cherokee Nation Cancer Registry, late stage diagnosis has been a big concern, as many patients are being diagnosed in the later stages of their disease, making treatment options unlikely and palliative care their only option. Survival rates for these patients are also low since many of these patients do not seek treatment for their cancer due to many reasons, which may include costs for travel, childcare, treatment, and choosing not to burden their family with these costs.

Clinical Trials in Cherokee Nation

Currently, very few cancer patients living in this area have undergone clinical trials at this time. Facilities within the Cherokee Nation do not usually offer this as an option to their patients and if it were to be an option it is highly unlikely that many would undergo these trials. The Cherokee Nation Institutional Review Board, who review requests for research on American Indians before research can be approved, would need to be involved in any kind of research involving human subjects. Many patients would probably not be willing to undergo clinical trials, even if it were offered for free. This is most likely due to the mistrust issues many American Indians have

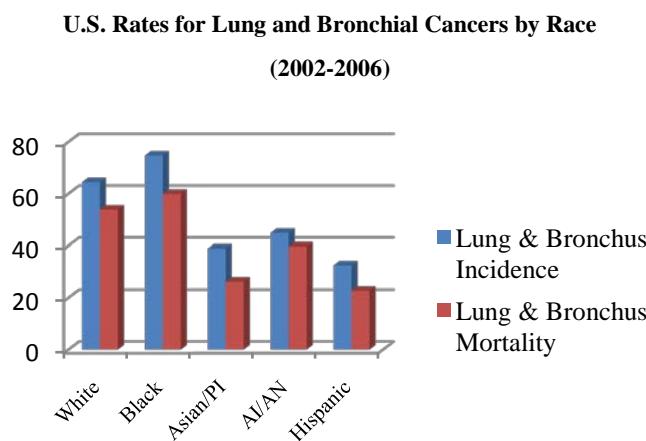
learned from family history of being mistreated and abused by the government throughout the years, or even what they may have gone through themselves.

Education in this area is necessary for the patient, as well as the clinical staff who treat these patients. Insurance companies need to be more informed of these types of treatments, as well as the standard of care that all patients undergo when receiving clinical trial treatments

Lung Cancer in Cherokee Nation

Lung cancer is the number one cancer site in the Cherokee Nation, and it also has the highest mortality rate among all the other cancers diagnosed in the Cherokee Nation Tribal Jurisdictional Service Area (CNTJSA), as noted in Chapter I. Tobacco prevention is the key to eliminating incidence and mortality rates for many cancers due to tobacco use, especially lung and bronchial cancers.

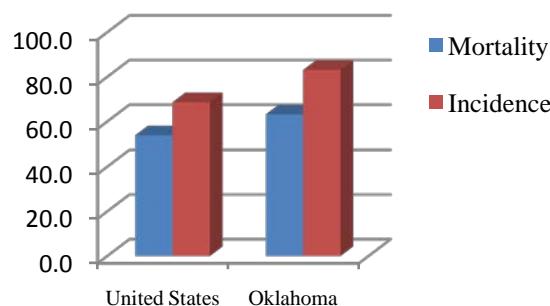
Figure 9



In Figure 9 the Surveillance, Epidemiology and End Results (SEER) Cancer Incidence and U.S. Death Rates data below show that although there is a higher incidence and mortality rate among whites and blacks, the gap between incidence and mortality among American Indians and Alaska Natives (AI/AN) is much smaller than all of the other races in the United States. What this data is showing is that there is a lower survival rate among AI/AN who are diagnosed with lung or bronchial cancers, as compared to the other races.

Figure 10

**2002-2006 Age-Adjusted Incidence and Mortality Rates
(SEER Data) per 100,000 - September 2010**



Shown in Figure 10, Oklahoma also has a higher incidence, and mortality rate, for lung and bronchial cancers than the United States.

According to Figure 11, since 2005, lung cancer appears to be decreasing, although it did rise slightly again in 2007. It will take several more years before we can see what the real impact smoking cessation and education has played on lung cancer, especially once smoking rates have dramatically dropped.

The graph in Figure 12, below, 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, and Figure 13 indicates that the biggest majority of lung cancer patients are either diagnosed at later stages, stage 3 and 4, or their stage is unknown; meaning they probably did not seek medical attention and/or their cancer was found on death certificate cases. Only a very few patients diagnosed were diagnosed at the earliest stages, stage 1 and stage 2.

Figure 12 Cherokee Nation Cancer Registry January 2008

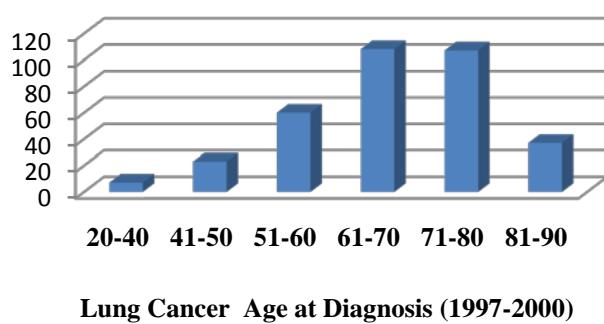
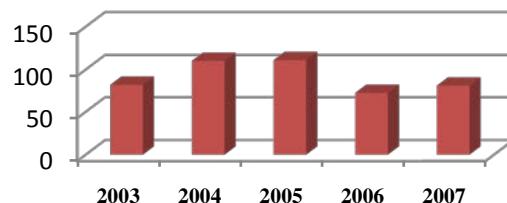


Figure 11

**2003-2007 Age Adjusted Incidence Rates
Lung and Bronchial per 100,000**

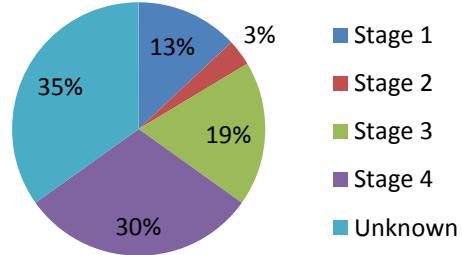


Cherokee Nation Cancer Registry October 17, 2010

The graph in Figure 12, below, 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, and Figure 13 indicates that the biggest majority of lung cancer patients are either diagnosed at later stages, stage 3 and 4, or there stage is unknown; meaning they probably did not seek medical attention and/or their cancer was found on death certificate cases. Only a very few patients diagnosed were diagnosed at the earliest stages, stage 1 and stage 2.

Figure 13 Cherokee Nation Cancer Registry, October 2010

Lung and Bronchial Cancers



After 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 Cherokee Nation W.W. Hastings Hospital, which include CT of the brain, chest, abdomen, and pelvis, as well as pulmonary function testing.

Other possible studies that are referred to Contract Health for referral outside the Cherokee Nation health care system include Positron Emission Tomography (PET) scan, combined CT/PET scanning, radio nucleotide bone scan, and mediastinoscopy.

Lung cancer patients in the Cherokee Nation healthcare system are referred through Contract Health Services (CHS) to thoracic surgery, oncology, and radiation therapy. There is no specialty care in the Cherokee Nation for lung cancer patients. 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.

Prostate Cancer in Cherokee Nation

Prostate cancer is the third most prominent cancer diagnosed in the Cherokee Nation, and comes in fourth as having the highest mortality rates of the primary cancers. There are no early signs or known risk factors for this type of cancer other than age and family history.

In Figure 14, the SEER Cancer Incidence and U.S. Death Rates for prostate cancer on the following page show that prostate cancer among AI/AN is less than all other races, while mortality rates are similar to most all races in the U.S. This graph indicates AI/AN mortality rates are higher, as the gap between incidence and mortality is somewhat smaller than all other races. This could be due to patients foregoing treatment, being diagnosed at later stages due to lack of age appropriate screening, and other unknown barriers.

Figure 14 - SEER Prostate Cancer Incidence and Mortality Rates for Race (2002-2006)

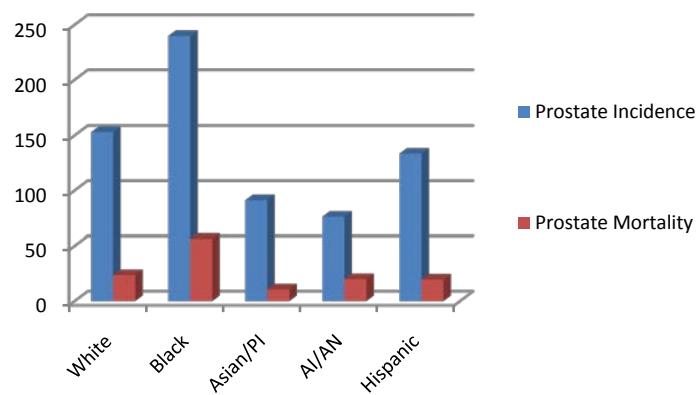
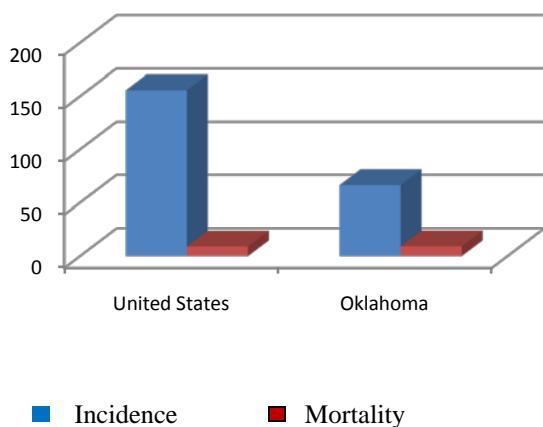


Figure 15 - SEER Prostate Cancer Incidence and Death Rates Per 100,000 for US and Oklahoma



As shown in Figure 15, SEER data also show that Oklahoma has a much lower incidence of prostate cancer, while mortality rates are slightly higher than the United States. But given the ratio of incidence to mortality, Oklahoma is showing a much higher mortality rate for those diagnosed with this cancer. The gap between incidence and mortality show that approximately 9% of those diagnosed in Oklahoma are deceased, while only 2% of the U.S. prostate cancer patients are deceased.

Figure 16, on the following page, shows the majority of prostate cancers diagnosed in American Indians living in Cherokee Nation are found in patients between the ages of 65 and 74 years. The chart in Figure 17, on the following page, shows us that it appears prostate cancer is either going down or we are not screening patients in order to identify those with prostate cancer.

Figure 16 Age at Time of Diagnosis collected January 2005 (1997-2001)

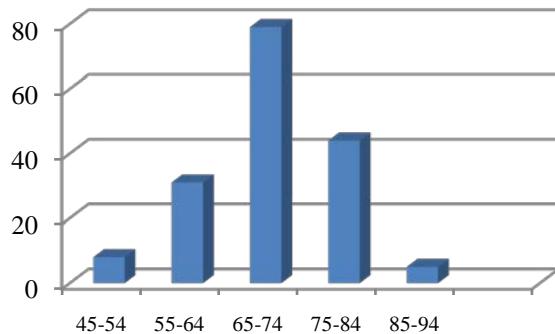
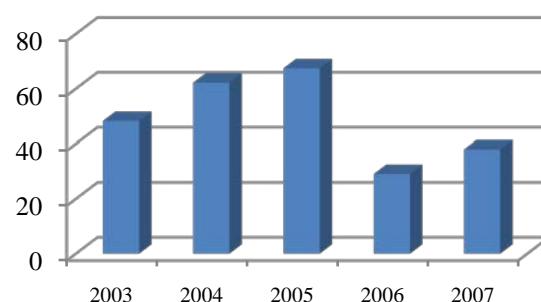


Figure 17 Prostate Cancer Cases per year in Cherokee Nation, collected October 2010, CN Cancer Registry



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 CHS referral to a urologist. Compliance with these screening guidelines is approximately 50% among all patients in the United States, and only 30% among patients without health insurance (37). Compliance rates in the Cherokee Nation have not been studied, but they are unlikely to be higher than the national rates.

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 Cherokee Nation W.W. Hastings Hospital 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. Seventy-Seven 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.

Colon Cancer in Cherokee Nation

Colon and rectal cancer, together, is the fourth most prominent cancer diagnosed in the Cherokee Nation, and comes in 2nd as having the highest mortality rates of the primary cancer sites. There are no early signs or symptoms for this type of cancer and it is therefore diagnosed at much later stages in the disease process.

In Figure 18, the SEER data on the following page show that incidence and mortality rates among AI/AN colon cancer patients is slightly higher than Hispanic, and Asian and Pacific Islanders, but lower than whites and blacks. The ratio of mortality rates compared to incidence rates appear quite similar to all the races, showing there is no substantial difference in mortality.

As shown in Figure 19, Oklahoma has a slightly higher incidence and mortality rate than that of the United States, but is very similar when viewing the incidence to mortality ratio.

SEER Age Adjusted Incidence and U.S. Death Rates for Colon Cancer (2002-2006)

Figure 18

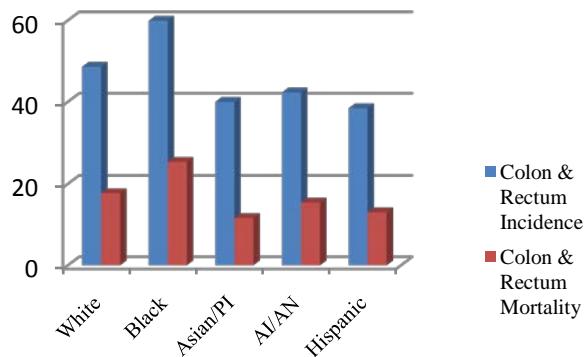
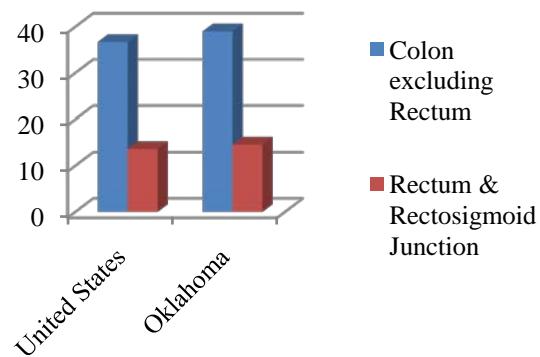


Figure 19



In Figure 20, colon cancer showed a slight decrease in 2005 and 2006, although it did slightly increase in 2007. It will take several more years before we can see what the real pattern and impact on the incidence and mortality of this cancer will be with the increased education, screening, and clinical staff prompts for age appropriate screening that are currently taking place within the Cherokee Nation Health Centers, health programs, and communities.

Figure 20

Incidence and Mortality Data collected from Cherokee Nation Cancer Registry October 17, 2010

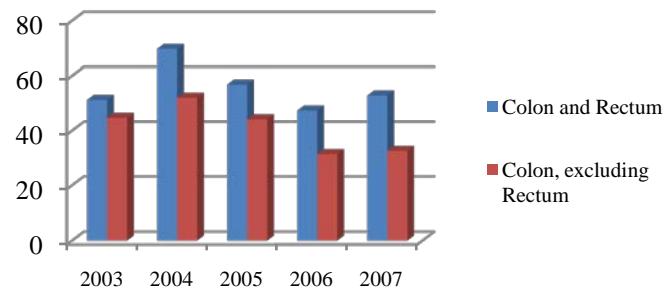


Figure 21, on the following page, shows the majority of colon cancers diagnosed in American Indians living within the Cherokee Nation are found in patients between the ages of 61 and 80 years, and according to Figure 22, 65% of these patients are either diagnosed at the later stage or have an unknown stage of disease, which more than likely means the patient was not treated. Only 35% of these patients are currently being diagnosed at stage 1 and stage 2, although this is a major increase from data collected in 2003 for years 1997-2002. At that time the data collected showed that only 1% of the colon cancer patients were diagnosed at the earliest stage and data now show a 12% increase compared to that time, where stage 1 patients total 13% of those diagnosed in years 2003 to 2007. This information proves that increased education, increased screening, and clinical staff giving age appropriate prompts is working.

These education efforts will no doubt save lives since age-appropriate screening can help stop cancer from growing, by polyp removal before cancer can form.

Figure 21 Age at Time of Diagnosis using Cherokee Nation Cancer Registry data (1997-2001)

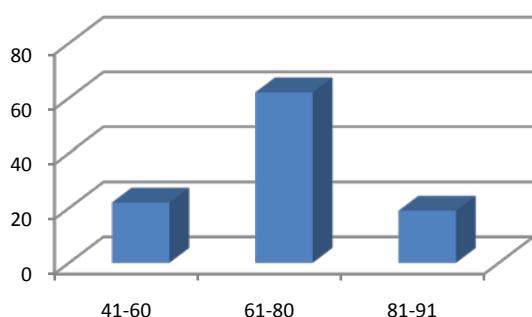
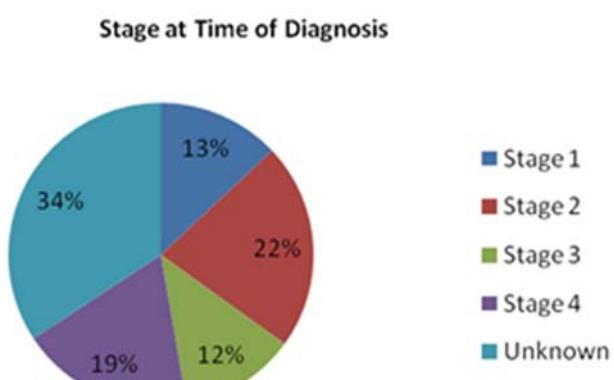


Figure 22



Cherokee Nation Cancer Registry Oct. 2010

As noted earlier, colorectal cancer is the fourth leading cancer site in the CNTJSA for American Indian men and women. These statistics need to be changed, as this is one of the most preventive cancers there is. Increased age appropriate screening could eliminate the high numbers of patients in need of treatment. Many barriers have been identified in the past few years and have been addressed by increased screening, education, awareness, and clinical staff prompts. Other unforeseen gaps addressed were in human resources, needed surgical supplies and surgery space for the increased number of patients in need of colonoscopies. Cherokee Nation W.W. Hastings Hospital surgical staff, as well as administration, addressed the lack of these resources and began contracting with a local hospital for use of a surgical unit, increasing screening rates for these patients. It is anticipated the bottle neck which formed from increased screening requests will be remedied by 2012 and a system will continue to be in place to keep up with the high numbers of age appropriate patients in need of screening.

Patients with colorectal cancer may present with advanced disease causing obstructive symptoms or gastrointestinal bleeding. 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 it, patients are admitted to Cherokee Nation W.W. Hastings Hospital and the colonoscopy will be performed within 24 to 48 hrs whenever possible.

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 Cherokee Nation W.W. Hastings Hospital 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.

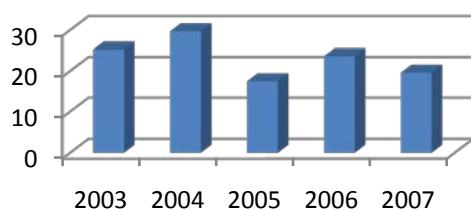
Kidney Cancer in Cherokee Nation

The cancer registry data from 1997-2001 show kidney cancer to be the fifth primary cancer site in the Cherokee Nation and the registry data from 2003-2007, show kidney cancer continues to be the fifth primary cancer diagnosed in the Cherokee Nation.

There are several different forms of kidney cancer that include: Renal Cell Carcinoma - the most common form that affects adults, Nephroblastoma - which usually affects children, and Transitional Cell Carcinoma - a much rarer form of kidney cancer that begins in the renal pelvis (38).

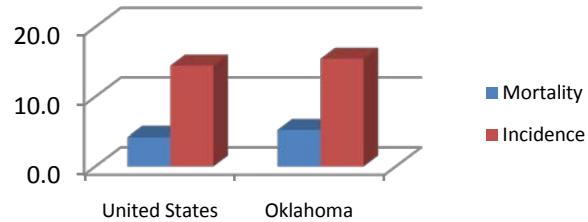
As noted in Figure 23, incidence of Renal Cell cancers appear to be going up and down every other year in the Cherokee Nation, and in Figure 24 data show that Oklahoma has a slightly higher incidence, as well as mortality rate of this type cancer than the United States. It is known that smoking increases a person's risk factor for this type cancer, and smoking rates are high in Oklahoma, therefore that could be one reason why Oklahoma has a higher incident and mortality rate.

Figure 23



Number of Cherokee Nation Renal Cell Cancer Cases - October 2010

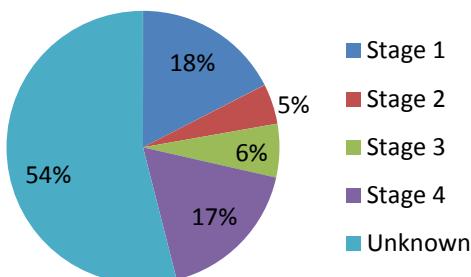
Figure 24



Renal Cell Carcinoma incidence and Mortality (SEER) (2002-2006)

According to Figure 25, over half the patients diagnosed with Renal Cell cancer in the Cherokee Nation have an unknown stage at time of diagnosis. This may be due to the patient choosing no treatment, where staging could not be determined. Nearly a quarter of these patients were diagnosed at the earliest stages, stage 1 and stage 2. Also nearly a quarter of them were diagnosed at stage 3 and 4, where the cancer is starting to spread beyond the primary cancer site to other organs; through either the blood stream or through the lymph nodes.

Figure 25 Renal Cell Carcinoma 2002-2006



Cherokee Nation Cancer Registry (2002-2006)-October 2010

Like several other cancers, kidney cancer has no signs or symptoms in the early stages of the disease, and therefore many patients are diagnosed after going to the doctor for other ailments. This cancer is usually found in the later stages when people stumbled upon it while running various imaging tests or blood test for other reasons. These tests, which are used for diagnosis, also include ultrasounds, MRI, and CT scans. The extent of the disease is usually done through a fine needle aspiration biopsy to test for and see what type cancer the patient has, as well as how far the cancer has spread. Once a diagnosis has been made, the patient's physician will refer the patient to an oncology specialist outside the CNTJSA. If the patient has insurance, the insurance company may request and pay for a second opinion before treatment begins.

The main treatment of kidney cancer is surgery and the survival rate without surgery is small. While surgery is the main treatment, some people are just too sick to have surgery and elect to do other forms of treatment; although according to some studies on these different methods it is not known if they work over a long period of time. Other methods of treatment may include: cryotherapy, radiofrequency ablation, arterial embolization, radiation therapy, targeted therapies, biologic therapy, chemotherapy, and pain control.

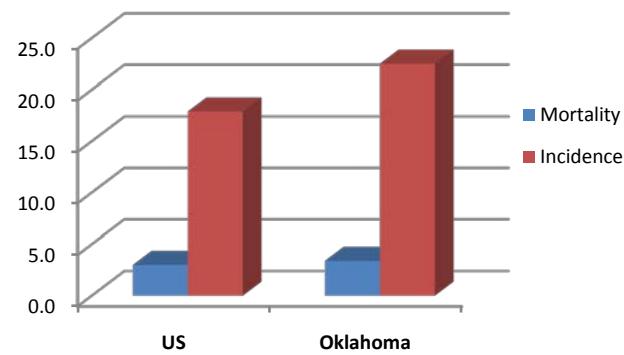
Skin Cancer in Cherokee Nation

There are several types of skin cancer: Basal Cell Carcinoma, Squamous Cell Carcinoma, and Melanoma. Basal Cell and Squamous Cell Carcinoma are the most common types of skin cancer and are the least fatal. Most all skin cancer can be caught early, before it has had a chance to metastasize, or spread to other parts of the body. Spreading can be done through lymph nodes, blood vessels or direct contact with other organs. Melanoma is cancer that develops in the pigment of the skin and can be found in places where skin does not get sun, or in organs of your body. This cancer can even form in the eyes (39).

As noted in Figure 26, melanoma in Oklahoma is quite a bit higher than it is in the United States. Therefore, the Oklahoma Cancer Control Network (OCCN) is focusing in on skin cancer in Oklahoma, targeting schools and businesses, as well as other areas in an effort to prevent this type of cancer from occurring. Cherokee Nation Comprehensive Cancer Control Program (CNCCCCP) is also partnering with OCCN in hopes of decreasing skin cancer in Cherokee Nation.

Figure 26

**2002-2006 Age-Adjusted Incidence and Mortality Rates
(SEER Data) - September 2010**



As shown in Figure 27, males are diagnosed with skin cancer more frequently than females. This is more than likely due to the higher number of men exposed to ultra violet rays, such as carpenters, steel workers, baseball players and others who work outside a good majority of the year, over a number of years.

Keep in mind, the skin cancer shown on the right is melanoma. This type cancer can grow very quickly and can move to other parts of the body. Therefore it is best to always check your skin, focusing on moles and freckles, for unusual changes, especially if you work outside.

Most all skin cancer is diagnosed in the same way, meaning a scraping of the skin is taken and examined under a microscope, but with melanoma all of the suspected cancer is cut out and a biopsy of the tissue is sent for examination. Sometimes good tissue is cut away around the area to make sure the entire tumor has been taken and the margins of the skin tissue are clear.

Once the diagnosis of cancer is confirmed the physician will refer you to a dermatologist or specialist for further testing and treatment. It will be necessary to know the type of cancer you have and if it has spread to other organs or lymph nodes. It is also important that treatment be done to remove the cancer, especially if it is melanoma (39).

In most cases skin cancer doesn't spread to other parts of the body and is not life threatening. It may be treated in the same way as other skin cancers that have not spread and the cure rate for these types of cancer are high. It will be important at times to get more x-rays and other tests to see if the cancer has spread to the lymph nodes or other organs, as well as to see what stage of cancer it is, how aggressive it is, and what cell type it is. This will help to identify the type of treatment that is essential for successful treatment.

Depending on the type of skin cancer, and how it has spread, several treatment modalities exist:

- Incisional biopsy - where scrapings are taken to remove the cancer
- Excisional biopsy - where the whole tumor is excised along with normal tissue
- Punch biopsy - where the tissue is punched with a tool taking a round portion of tissue

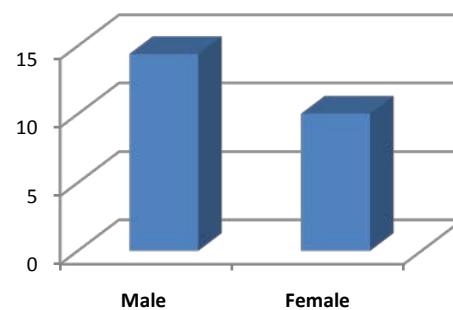
If it is found the cancer has spread, the doctor may use surgery to remove the tumor beyond the tumor borders and underneath the tumor, being sure to remove normal tissue all around the tumor. Lymph nodes may also be removed and biopsied. Other treatments, such as Chemotherapy, radiation therapy or immunotherapy may be part of the treatment process (40).

Blood Borne Cancers in Cherokee Nation

As noted in Chapter V, Screening and Early Detection, there are several different forms of blood borne cancers, which include leukemia, multiple myeloma, and lymphoma. While separate, these cancers are not of too much concern, but when grouped together blood borne cancers become the 5th primary cancer site in the Cherokee Nation.

Figure 27

**Number of Melanoma Incidence Cases
(2003-2007) Cherokee Nation**



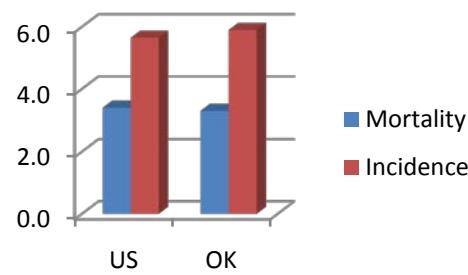
Also noted in Chapter V, there are four different types of leukemia; Acute Myelogenous Leukemia (AML), Chronic Myeloid Leukemia (CML), Acute Lymphocytic Leukemia (ALL), and Chronic Lymphocytic Leukemia (CLL). Because these different types all affect people in different ways, they are not all treated in the same way. Acute cases need to be treated as soon as they are diagnosed, as these type cancers are more aggressive, with shorter survival rates. However, a person can be cured from these types of cancers when treated.

According to Figure 28, Non-Hodgkin's Lymphoma is more prominent than leukemia in the Cherokee Nation. However, grouping all the leukemia's together shows the incidence of these cancers to be almost as high as the lymphomas.

Also noted in the figure, American Indian males living in the Cherokee Nation appear to have a higher incidence of all blood borne cancers, except for that of Hodgkin's Lymphoma, where incidence is slightly higher for American Indian females.

Figures 29, 30, and 31 show the different forms of blood borne cancers in Oklahoma compared to the United States. According to Figure 29, there is a higher incidence of leukemia in Oklahoma than in the U.S., while mortality rates are very similar. Figure 30 shows that incidence rates for Multiple Myeloma are also slightly higher in Oklahoma than in the U.S., and Figure 31, shows incidence and mortality rates are very similar in Oklahoma and the U.S. for Lymphoma.

Figure 30 Multiple Myeloma Incidence and Mortality



2002-2006 Age-Adjusted Incidence and Mortality Rates per 100,000 (SEER Data) - September 2010

Figure 28 Age Adjusted Incidence Rates per 100,000
Cherokee Nation (2003-2007)

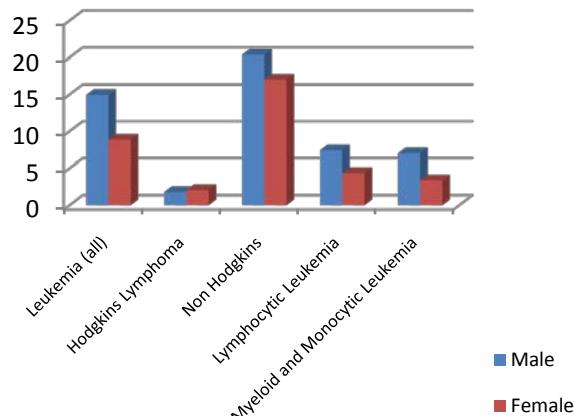


Figure 29 Leukemia Incidence and Mortality

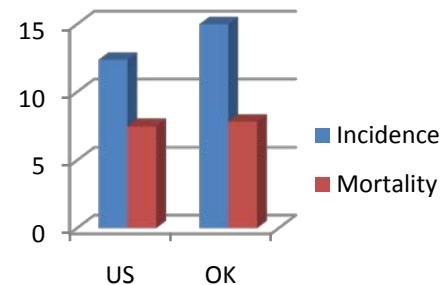
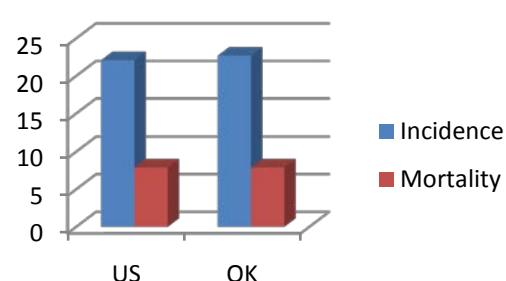


Figure 31 Lymphoma Incidence and Mortality



As previously noted in Chapter V, regarding blood borne cancers, in most cases there are no early warning signs for these types of cancers. Blood borne cancers are usually stumbled upon while doing blood tests for other illnesses. However, if a blood borne cancer is suspected, there will be different types of blood tests done for any one of the different types of blood borne cancers, whichever is suspected. These tests will possibly include chemistry studies and blood smears to detect any abnormalities that may be present. Bone marrow biopsies, lymph node biopsies, tumor biopsies and tissue samples may also be taken to look for abnormal cells and tissue. Other tests may include chromosome analysis and cell staining to look for cancer markers, which are fluids from the body that shows elevated cells indicative of cancer.

Other tests may be performed such as x-rays, computed tomography scans, and magnetic resonance imaging to identify and detect other abnormalities and enlarged nodes. Usually bone marrow aspirations will be performed to identify stage of cancer for treatment, lumbar puncture with a thin needle to see if the cancer has spread (21).

Acute Lymphocytic Leukemia (ALL) - Treatment options are based on the type of blood borne cancer a patient is diagnosed with. In ALL treatment depends on the age of the patient, if the cancer has spread to the brain or spinal cord, whether the Philadelphia chromosome is present and whether the cancer has been treated before, or if the cancer has come back (30). Treatment for ALL in adults is done in phases and consists of chemotherapy, with the first phase to kill the leukemia cells in the blood and bone marrow, which puts the leukemia into remission. The second phase is post remission treatment, where the chemotherapy is given to kill any remaining leukemia cells that could begin to re-grow. Because the chemotherapy may not reach the central nervous system, another therapy is also done during each phase to target this system, using Intrathecal chemotherapy and radiation therapy.

Myelogenous Leukemia (AML) - Treatment for this type of cancer depends on what subtype of leukemia you have, as well as your age, your health, and which treatment you prefer. As in ALL, treatment is done in phases, with the first phase to kill the leukemia cells, and the second phase; called post-remission, is done to kill any remaining leukemia cells.

Types of therapies used in these phases include chemotherapy, and anti-cancer drugs aimed at cancer cells, stem cell transplant, and some people enroll in clinical trials (21).

Chronic Myeloid Leukemia (CML) - According to the National Cancer Institute, most patients with CML have an abnormal change in their Chromosome, where DNA travels from one chromosome to another. The change is called a Philadelphia chromosome and causes an enzyme to be secreted, causing stem cells to turn into white blood cells.

Therapy treatments used to target specific genes, proteins, and the tissue environment that promotes cancer growth, are drugs called imatinib, dasatinib, and nilotinib. Other treatments consist of Chemotherapy, stem cell transplant or bone marrow transplant and immunotherapy (20).

Treatment for Chronic Lymphocytic Leukemia (CLL) - Experts on this type of leukemia make note that watchful waiting is the best approach when dealing with patients with early stage CLL.

Therefore, in most cases these patients do not receive treatment and treatment is delayed until their leukemia progresses. However, their blood will be tested on a continual bases to monitor the patient's condition.

Once the doctor decides it is necessary to begin treatment, it will consist of either chemotherapy or targeted drug therapy such as rituximab, alemtuzumab and ofatumumab. Other treatment may consist of a bone marrow stem cell transplant.

For all these types of blood borne cancers, patients are referred outside of the Cherokee Nation for treatment to a medical oncologist, hematologist or a doctor who specializes in treating blood disorders (22).

Female Cancers in Cherokee Nation

Breast Cancer in Cherokee Nation

Breast cancer is the second primary cancer site in the Cherokee Nation and very few of these cancers are being diagnosed in the male population, although men do get breast cancer too. As noted in Figure 32, American Indians and Alaska Natives (AI/AN) have a lower incidence of breast cancer than all other races in the United States. However, a higher percentage of these cases have mortality rates that are higher among the Black and AI/AN race, with 28% and 24%, respectively, compared to 19% for whites, 14% for Asian and Pacific Islanders and 18% for Hispanic. In Figure 33, Oklahoma also shows a higher incidence, as well as mortality than the United States.

SEER Cancer Incidence and U.S. Death Rates For Breast Cancer per 100,000 (2002-2006)

Figure 32

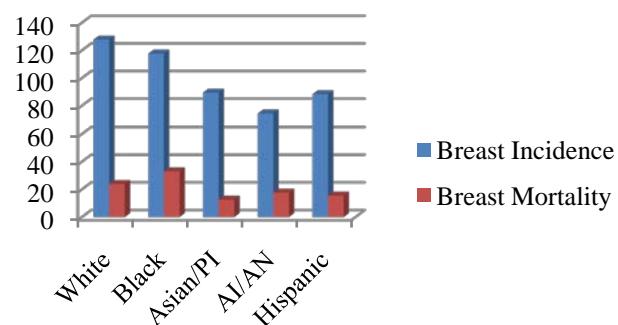
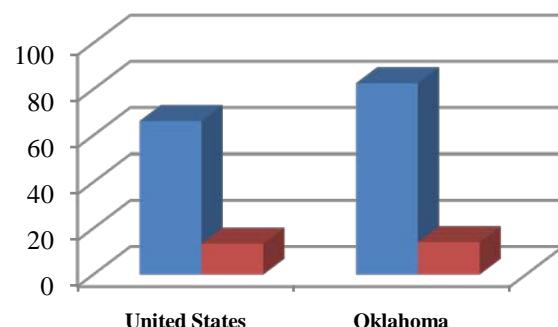


Figure 33



As shown in Figure 34, on the following page, it appears the incidence of breast cancer cases rise and fall each year, although there have been more cases diagnosed in 2007 than in all the years from 2003 to 2006. This could mean that more people are getting screened and more cancer is being diagnosed in these patients. Figure 35, on the following page, shows that a higher number of cases are being diagnosed in persons between the ages of 50 and 69 years in the Cherokee Nation.

Figure 34

Cherokee Nation Cancer Registry Data collected in 2010

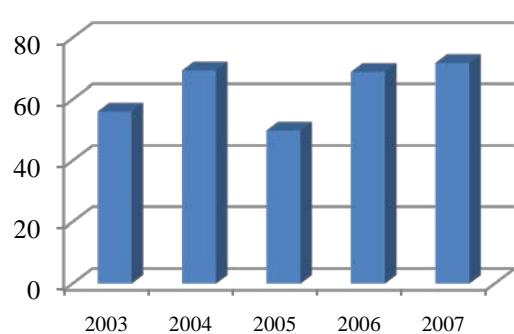
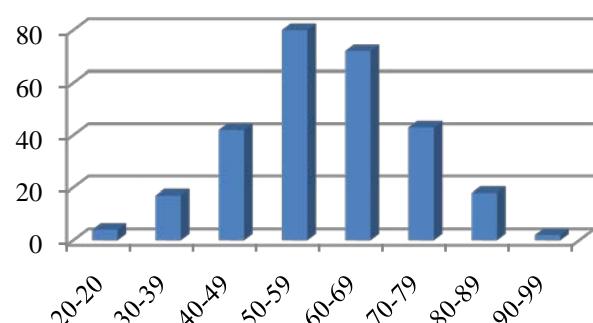


Figure 35

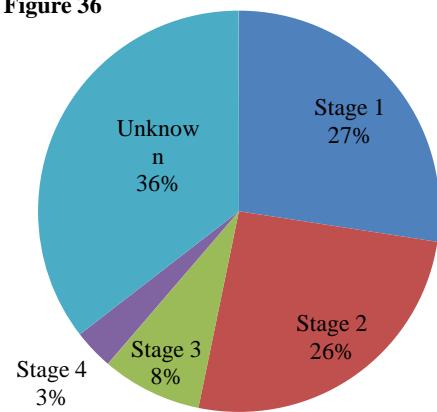
Cherokee Nation Cancer Registry Data collected in 2003 Age Appropriate Incidence Rates in Cherokee Nation



When the CNCCCP began gathering breast cancer data in 2003, for years 1997-2000, the data showed that approximately 3% of breast cancer cases were being diagnosed at the earliest stage, Stage 1; where the cancer is most treatable. According to current cancer registry data collected for years 2003-2007, shown in Figure 36, these numbers have changed dramatically; to approximately 27% of the patients being diagnosed at the earliest stage. These are certainly the anticipated and expected outcomes due to the hard work of our Cherokee Nation Breast and Cervical Cancer Early Detection Program (CNBCCEDP).

These patients usually presented at one of the Cherokee Nation Health Centers, Cherokee Nation W.W. Hastings Hospital, or the Indian Health Services Claremore Indian Hospital. The current reach of the health care facilities in the Cherokee Nation do 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 TJSA, as well as bordering states.

Figure 36



Diagnosis and Treatment of Breast Cancer

Once 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.
- Excision 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 (41).

Among the diagnostic studies listed above, most can be performed within the Cherokee Nation W.W. Hastings Hospital, Wilma P. Mankiller Health Center, or at Claremore Indian Hospital. 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 the hospital facilities.

Staging of all breast cancer patients should include a history and physical exam, chest radiograph, 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 concerning for advanced disease, then further preoperative studies may include imaging studies to evaluate for distant metastasis. These studies may include computer assisted (CT) scanning, magnetic resonance imaging (MRI), positron emission tomography (PET) scan, or bone scan. With the exception of CT scanning which can be performed at the Cherokee Nation W.W. Hastings Hospital or Claremore Indian Hospital; each of these studies is ordered by CHS referral to outside

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 preferred treatment for most patients in the Cherokee Nation.

Several influencing factors can change the course of treatment, as well as outcome, some of which include: the stage of cancer at the time of diagnosis, type of cancer cells, levels of hormones, age of patient, etc.

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 (42).

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 (42). Recent studies have shown an improved survival benefit in women who receive the aromatase inhibitor, letrozole, after five years of tamoxifen therapy (43), and another study showed improved survival when women were switched from tamoxifen to an aromatase inhibitor after 2-3 years (43).

Cervical Cancer in Cherokee Nation

Much of the cervical cancer screening in the CNTJSA is done at the tribally owned and operated Cherokee Nation Health Centers as well as the Cherokee Nation W.W. Hastings Hospital, managed by the Cherokee Nation, and the Claremore Indian Hospital. However, some screening is also done at the local health departments. Diagnostic testing is mostly performed at the previously mentioned hospitals as well as by only a select few providers at the tribally run health centers.

Figure 37
Cervical Cancer Incidence Rates per 100,000

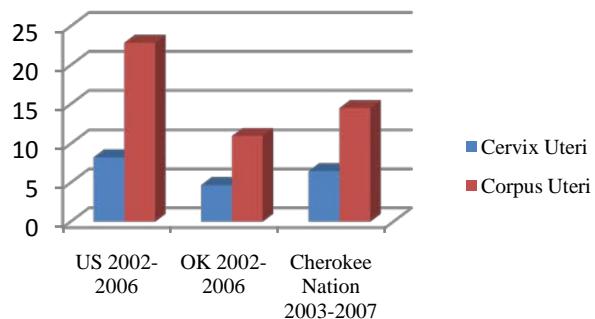
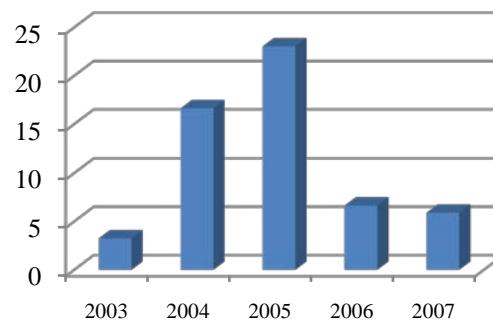


Figure 38
Cervical Cancer Cases in Cherokee Nation 2003-2007



According to the chart in Figure 37 above, cervical cancer is a higher concern for the United States than it is for Oklahoma. Rates are even higher in the Cherokee Nation than they are in Oklahoma. Cervical Cancer is not one of the leading cancer sites for the Cherokee Nation, but in most cases, it can be found at a pre-cancer stage of dysplasia and therefore, along with regular screenings, is able to be treated before becoming cancer.

As shown in Figure 38 on the previous page, cases have dropped considerably in 2006 and 2007. This could be due to the limited funding of the BCCEDP in the Cherokee Nation, or many of the cancers may have been caught in 2004 and 2005 and treated accordingly; identifying cases at earlier stages. Another possibility is that patients stopped getting screened or cancer cases have not been abstracted because the patient received treatment outside the Cherokee Nation. More than likely the drop is due to early screening and treatment in the previous years, showing that the BCCEDP is really working hard to detect these cancers early.

Cervical dysplasia, the premalignant stage, is often treated at the Cherokee Nation W.W. Hastings Hospital or Claremore Indian Hospital with a simple cervical excisional procedure, such as a cone biopsy. However, once a patient is diagnosed with cervical cancer, she is referred to a gynecology oncologist and a radiation oncologist for further evaluation and treatment. These specialists are outside of the CNTJSA health arena and are processed through the contract health system. Since these specialists are not within the CNTJSA health arena, it is difficult to get an accurate number of cases of cervical cancer. Further data are needed to assess the incidence of cervical cancer in the Cherokee Nation.

Once a diagnosis of cervical cancer is made, the patient is referred to outside facilities for treatment. This is accomplished through the contract health services of the Cherokee Nation and treatment depends on the stage of the cancer:

- Stage 0 – Cervical excision procedure (CKC or LEEP)
- Stage Ia1 – Hysterectomy without lymph node dissection
- Stage Ia2-Stage IIa – Radical hysterectomy with a pelvic lymph node dissection or radiation therapy with combination chemotherapy
- Stage IIb or greater – Radiation therapy with combination chemotherapy

There are two basic histological types of cervical cancer, squamous cell and adenocarcinoma. Because adenocarcinoma is thought to have skip lesions (cancerous tissue next to normal tissue and the cancerous tissue), it is treated differently in the earlier stages. A radical hysterectomy with pelvic lymph node dissection or radiation with chemotherapy would be recommended for Stage Ia or greater. A patient with Stage 0 and negative margins could undergo a hysterectomy.

It is important to note that despite finding metastasis during surgery, a patient's stage does not change from the original clinical stage. However, it does influence the treatment options after surgery. Although studies have shown equal 5 year survival rates for either radical hysterectomy versus radiation with chemotherapy, a patient that undergoes surgery and then requires radiation and chemotherapy have a much greater morbidity as a result. The decision to proceed with one or the other is often influenced by the patient's health status, co-morbid condition, and the surgeon's training and experience (44). A patient's desire to retain her fertility options are discussed and considered in the treatment. There have been some centers that perform radical trachelectomy (removal of the cervix only), however, these are still considered experimental.

Ovarian Cancer in the Cherokee Nation

The Cherokee Nation Cancer Registry data for year 2003-2007, ranks ovarian cancer 17th on the list of primary cancers in the Cherokee Nation area. What is of concern is the aggressiveness of

the cancer, causing high mortality rates. Since there are no signs or symptoms, patients are being diagnosed at a later stage, when five year survival rates are low.

The chart in Figure 39 show there are more women being diagnosed with ovarian cancer in the United States than there are in Oklahoma and the Cherokee Nation. However, Cherokee Nation has a slightly higher rate than Oklahoma.

Alarmingly, as noted in Figure 40, there appears to be a higher number of patients diagnosed with ovarian cancer who are deceased in Oklahoma, as compared to all those diagnosed in the U.S.; where over 50% are deceased in Oklahoma and around one-third are deceased in the U.S.

This tells us that the population group in Oklahoma is either not being diagnosed at the earlier stages, or they are not getting appropriate treatment for their cancer. This could be due to a number of barriers that are encountered when seeking treatment, such as no insurance, or other lack of resources that prevents one from seeking treatment.

In Figure 41, the majority of Cherokee Nation patients with ovarian cancer are being diagnosed at the later stages, stage 3, stage 4 and unknown stages. There are no patients diagnosed at stage 1.

Fourteen percent of these patients are being diagnosed at a fairly early stage 2, where treatment may be successful, and 5 year survival rates are encouraging. Mortality rates for this cancer will be looked at further in analyzing registry data for future reference.

As noted in Chapter V, there has been a lot of research to develop a screening test for ovarian cancer, but there has not been much success. There are some tests that are commonly used for the screening of ovarian cancer; one is the CA-125 test. The CA-125 consists of testing the protein in the blood, which is higher in many women with ovarian cancer, but the problem is that it can detect conditions other than ovarian cancer. Another test, an ultrasound, can help to find a mass in the ovary, but this test is unable to distinguish between a benign or cancerous mass.

Figure 39

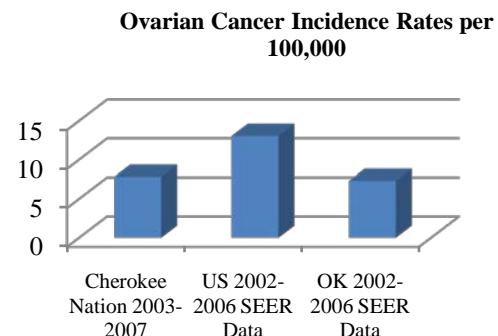


Figure 40 Ovarian Cancer 2002-2006

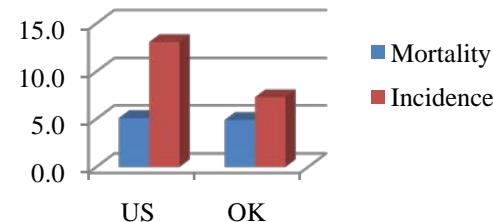
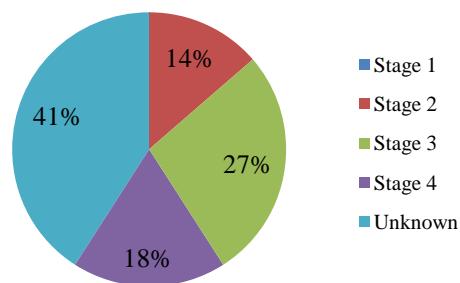


Figure 41 Cherokee Nation 2003-2007



The main treatments for ovarian cancer are surgery, chemotherapy, and radiation therapy. A treatment plan can be different for everyone, depending on the severity of the disease, which consists of the type of cancer and the stage of the disease (45). These treatments will also depend on what type of plan your physician has set up for you. Advances in the uses of these types of treatment have contributed to recent improvements of the survival rates for women and have slightly decreased the incidence rates over the years.

Diagnosis and Treatment Goals, Objectives and Strategies

Clinical Trials

Goal A: Reduce morbidity and mortality of cancer by striving for equal access to and knowledge of on-going clinical trials for American Indians living in Cherokee Nation Tribal Jurisdiction Service Area.

Objective 1: By June 30, 2012 there will be an increase in access to and awareness of clinical trial participation for Cherokee Nation patients.

Strategies:

- Make available information on current clinical trials groups in Cherokee Nation or state and partners.
- Disseminate information on current clinical trials databases, search tools, and lists of available trials in or near Cherokee Nation Tribal Jurisdiction Service Area.
- Increase awareness of clinical trial information to Cherokee Nation physicians, institutional review board, and Medical Executive Committee.
- Increase awareness of clinical trial information to Cherokee residents.
- Assess barriers to clinical trial participation on the part of Cherokee Nation Health Services and residents.

Baseline: Cherokee Nation citizen participants in Clinical Trials (To Be Determined).

Target: Increase participation by Cherokee Nation citizen participants in Clinical Trials.

Partners: Warren Cancer Center, Charles and Peggy Stephenson Oklahoma Cancer Center

Service and Treatment

Goal B: Reduce morbidity and mortality of cancer by reducing delay between diagnosis of cancer and initiation of treatment.

Objective1: By June 30, 2012 there will be an increase in timely access to and utilization of surgical, radiation, and chemotherapy services within Cherokee Nation Tribal Jurisdiction Service Area.

Strategies:

- Identity cancer to be analyzed.
- Identify and utilize appropriate system to track time between diagnosis and initiation of treatment. Tumor registry and/or chart review data will be completed for baseline data.
- Implement strategies, activities, and policies that prove to decrease delay between diagnosis and treatment.

Baseline: Time between diagnosis and first course of treatment for Colorectal and Breast in the Cherokee Nation Tribal Jurisdiction Service Area (To Be Determined).

Target: Decrease diagnosis time between diagnosis and first course of treatment for Colorectal and Breast in the Cherokee Nation Tribal Jurisdiction Service Area

Partners: Charles and Peggy Stephenson Oklahoma Cancer Center, University of Oklahoma College of Public Health, Oklahoma Central Cancer Registry

Objective 2: By June 30, 2012 ensure that culturally-appropriate educational materials are provided to cancer patients.

Strategies:

- Evaluate print and other educational materials that are provided to cancer patients by oncologists. It is not currently known what materials are provided to Cherokee Nation Health Services patients by outside specialists.
- Sample Cherokee Nation Health Services cancer patients will complete surveys to determine current knowledge.
- Determine the appropriate existing multimedia to play in healthcare facility waiting rooms.
- Create additional educational media to help guide newly-diagnosed patients through the appropriate process of obtaining timely treatment, understanding treatment options, and addressing toxicities, including ways to prevent and diminish their impact for patients receiving cancer treatment.

Baseline: Zero (0) resources available.

Target: One (1) resource completed.

Partners: Warren Cancer Center

Sandy Long

For 30 years Sandy Long lived with an abnormal growth under her left breast. As a young woman she was told it was excessive tissue and not to worry. So she didn't.

Sandy kept getting regular exams throughout the years and thought nothing of the little growth. But one day a Nurse Practitioner (NP) at Hastings Hospital decided that little growth needed more examination.

"Brenda Elder was the NP who noticed the abnormal growth on my left breast. I told her what the doctors told me; it was just excess tissue. She was concerned and wanted me to have it checked out with an ultrasound," Long said.



Sandy traveled to Salina clinic and knew something was up because she had to drive through the biggest ice storm of the year. A couple of hours of testing confirmed the place on her left breast was excessive tissue; just like she had been told, but ironically, the ultrasound did find something on her right breast. This meant driving to Tulsa for more tests and a biopsy, which just didn't sit too well with Sandy. "I do income taxes for the Cherokee Nation and this was happening in the middle of my busiest time of the year," Sandy recalled. "But I remember it was on a Monday afternoon around 5:00 pm when they called me, and I was home alone. I received the call from my doctor in Tulsa, and I just assumed she would tell me everything was fine. After she told me they had found cancer in my right breast – I heard nothing more. I started crying and as I was hanging up the telephone my husband came in from work. I couldn't even tell my husband what my Doctor had just told me." Sandy hid her bad news because she didn't want anyone to worry until she knew for sure it was cancer. In the beginning only two people knew, her husband and sister-in-law, a former nurse. Eventually she told her family, which she admitted was not easy.

On April 9th, 2009 a lumpectomy was performed on Sandy's right breast and two lymph nodes were removed and biopsied. The results came back benign, the cancer had not spread. "As soon as I came out of surgery I started feeling up and down my chest. The nurse in recovery said, "Honey you are going to be happy with your results," and she was right. I still had both my breasts and did not have any drain tubes." Sandy said. Because the cancer was found at an early stage Sandy only had to undergo radiation treatments, which was done at Tahlequah City Hospital.

"There has been some good that has come out of all this," said Sandy. Since her treatments were done at Tahlequah City, she was really close to the Sonic Drive-in and she would stop in once a week and get an orange slush, with her sister in law, which created good memories of the event as they laughed, talked, and enjoyed their drink. Also, during her battle, Sandy got to know several good people that were going through the same thing as her, whom she still sees from time-to-time. However, she has also lost some good friend in the process.

"Early detection is the key. Go for your checkups. Go if something doesn't feel right. I look at each and every day as a blessed event. I have been cancer free for over a year now." Sandy said.

Quality of Life & Survivorship

The term "cancer survivors" refers to individuals who have been diagnosed with cancer and the people in their lives who are affected by the diagnosis, including family members, friends, and caregivers (46). The ultimate goal of the comprehensive cancer care team is to facilitate the mental and physical recovery of the one diagnosed. Survivorship includes anyone living who has been diagnosed with cancer sometime in their life. Survivorship also includes any friends or family members who are experiencing the effect of cancer along with the one diagnosed.

Quality of Life

Quality of life reflects a general sense of happiness and satisfaction with life and environment. This encompasses all aspects of life. *Health-related quality of life* reflects a personal sense of physical and mental health and the ability to react to factors in the physical and social environments. Health-related quality of life is more subjective than life expectancy and therefore can be more difficult to measure.

Years of healthy life is a combined measure developed for the Healthy People initiative. The difference between life expectancy and years of healthy life reflects the average amount of time spent in less than optimal health because of chronic or acute limitations. As with life expectancy, various population groups can show dramatic differences in quality of life (47).

The Burden of Cancer Survivorship

According to the Centers for Disease Control and Prevention advances in the early detection and treatment of cancer, people are living many years after a diagnosis. In January 2007, about 11.7 million people with a previous diagnosis of cancer were living in the United States (48).

Approximately 66% of people diagnosed with cancer are expected to live at least five years after diagnosis (41). However, disparities in health care impact survival. Low-income men and women who have inadequate or no health insurance coverage are more likely to be diagnosed with cancer at later stages, when survival times are shorter (49).

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 (50)."

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.

Life after Cancer

Cancer survivors often face physical, emotional, social, and financial challenges as a result of their cancer diagnosis and treatment. Public health professionals are striving to address survivorship and quality of life issues such as the coordination of care, patient-provider communication, health promotion, support services, and fertility preservation. In light of these concerns, public health initiatives aimed at understanding and preventing recurrence and the long-term effects of treatment, as well as encouraging healthy behaviors, are essential. Cancer survivors are at greater risk for recurrence and for developing second cancers due to:

- The effects of treatment
- Unhealthy behaviors such as smoking, obesity, and lack of physical activity
- Genetics
- Risk factors that contributed to the first cancer

What CDC Is Doing

CDC's cancer survivorship activities include:

- Assisting states, tribal groups, territories, and Pacific Island Jurisdictions in their efforts to address cancer survivorship through Comprehensive Cancer Control initiatives
- Studying various aspects of survivorship, including:
 - ✓ Gathering information about cancer survivors through the Behavioral Risk Factor Surveillance System (BRFSS) to plan, implement, and evaluate cancer control strategies
 - ✓ Barriers to receiving appropriate follow-up care and practicing healthy behaviors after colorectal (colon) cancer
 - ✓ The effectiveness of a nationally available survivorship program among a disadvantaged population
 - ✓ Types of physicians who provide long-term care to cancer survivors
 - ✓ Quality of life related to men's choice in prostate cancer treatment
- Supporting the development and distribution of a broad range of cancer survivorship informational materials through the LIVESTRONG National Cancer Survivorship Resource Center
- Funding national organizations to develop and share information that will enhance the quality of life for hematologic (blood) cancer survivors, family, and caregivers, and increase knowledge among the medical community

Survival

According to the chart in Figure 42, about two-thirds of people with cancer are expected to live at least 5 years after diagnosis. Cancer survivors are at greater risk for recurrence and for developing second cancers due to:

- The effects of treatment
- Unhealthy behaviors such as smoking, obesity, and lack of physical activity
- Genetics
- Risk factors that contributed to the first cancer (48).

The age-adjusted incidence rate for all populations was 461.6 per 100,000 men and women per year. These rates are based on cases diagnosed in 2003-2007 from 17 SEER geographic areas. From 2003-2007, the median age at diagnosis for cancer of all sites was 66 years of age (51).

Incidence rates for American Indian/Alaska Natives are 335.8 per 100,000 men, and 306.3 per 100,000 women (50).

The age-adjusted incidence rate for all populations was 461.6 per 100,000 men and women per year. These rates are based on cases diagnosed in 2003-2007 from 17 SEER geographic areas. From 2003-2007, the median age at diagnosis for cancer of all sites was 66 years of age (51).

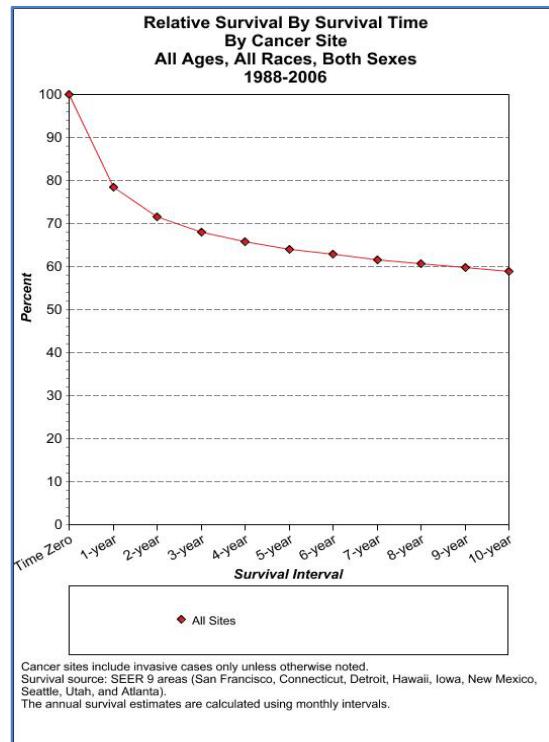
The overall 5-year relative survival for 2006 from 17 SEER geographic areas was 66.0%. Five-year relative survival by race and sex was: 66.8% for white men; 67.0% for white women; 60.6% for black men; 54.9% for black women. It must be noted, data for the Native American population is not included in the statistics for survival time. However, one might surmise the Native American cancer survivor data would be similar to the range of the national average. Oklahoma is working diligently to gather specific data on Native American cancer survivors.

Prevalence

Prevalence is a statistic of primary interest in public health because it identifies the level of burden of disease or health-related events on the population and health care system. Prevalence represents new and pre-existing cases alive on a certain date, in contrast to incidence which reflects new cases of a condition diagnosed during a given period of time. Prevalence is a function of both the incidence of the disease and survival (52).

On January 1, 2007, in the United States there were approximately 11,713,736 men and women alive who had a history of cancer of all sites (5,353,054 men and 6,360,682 women). This data does not include anyone diagnosed with cancer after January 1, 2007. This includes persons with active disease and those who are cured of their disease.

Figure 42.



Barriers

Financial barriers may exist for the cancer survivor. These barriers may include job termination due to cancer diagnosis, loss of insurance, or increased debt due to treatment. Some people may avoid treatment because of the financial burden.

Legal issues may arise for the cancer survivor. Some issues may be related to employee discrimination, confidentiality issues, and the lack of an advance directive.

Follow-up Care

Follow-up care helps to detect any recurring cancers or other primary cancers that may exist. Many times the primary care provider is the person who will see the patient for this care. Health care providers should have information about the late effects of cancer treatment.

Quality Of Life Goals, Objectives and Strategies

Training

Goal A: Train and prepare health care professionals to work with cancer survivors, their families, and their caregivers.

Objective 1: By September 30, 2015 increase the number presentations to health care professionals to improve knowledge of cancer survivorship issues, and how they impact survivors, their families and their caregivers.

Strategies:

- Provide two trainings for health care professionals.
- Offer a breakout session at the bi-annual Cherokee Nation Cancer Summit.
- Provide a total of 300 cancer survivorship resource guides to nine health centers, two hospitals and support groups in the Cherokee Nation Tribal Jurisdiction Service Area.

Baseline: Zero (0) presentations.

Target: Two (2) biannual presentation resources to nine (9) health centers, two (2) hospitals, support groups in Cherokee Nation Tribal Jurisdiction Service Area.

Partners: Oklahoma Area Health Education Centers, Cherokee County Health Coalition

Objective 2: By September 30, 2015 determine if quality of life issues are being taught in medical, nursing (BSN) and pharmacy program curriculum in the State of Oklahoma.

Strategies:

- Survey 100% (2) Medical schools.
- Survey 100% (2) Pharmacy schools.
- Survey 75% (10) Nursing (BSN) schools.
- Report Finding to Cherokee Nation Comprehensive Cancer Committee.

Baseline: Zero (0) surveys.

Target: Fourteen (14) surveys will be completed.

Partners: Oklahoma Area Health Education Centers

Awareness

Goal B: Increase awareness of quality of life issues to cancer survivors, their families, and their caregivers.

Objective 1: By September 30, 2015 the distribution of resource to increase awareness of quality of life related resources available to cancer survivors, families, and caregivers.

Strategies:

- Distribute cancer resource directories, pamphlets, brochures, etc. to nine health centers, two hospitals, and support groups within the Cherokee Nation Tribal Jurisdiction Service Area.
- Update the Cherokee Nation Cancer Program's website quarterly with quality of life resource information.
- Assess the number of downloads of the resource guide.

Baseline: Zero (0) resources distributed to Cherokee Nation Health Services Clinics.

Target: Resources distributed to every Cherokee Nation Health Services Clinics.

Partners: Oklahoma Area Health Education Centers, Northeastern State University

Objective 2: By September 30, 2015 facilitate the development of seven new cancer support groups within the Cherokee Nation Tribal Jurisdiction Service Area.

Strategies:

- Contact the County Hospitals and Councils to identify any survivor groups in the area.
- Work with hospital and health centers to identify advocates and survivors in areas where no survivor group exists.
- Work with hospice facilities and organizations to identify advocates and survivors in areas where no survivor group exists.
- Recruit and train-the-trainers for support group facilitators.

Baseline: One (1) support group in Cherokee Nation Tribal Jurisdiction Service Area.

Target: Two (2) support group in Cherokee Nation Tribal Jurisdiction Service Area.

Partners: Cherokee Nation W.W. Hastings Hospital, Oklahoma Area Health Education Centers, Native American Circle of Hope, Cherokee Nation Home Health, Cancer Survivors

Education

Goal C: Educating cancer survivors, family members and caregivers about specifics of hospice, home health services and palliative care.

Objective 1: By September 30, 2013 increase the understanding of hospice, home health and palliative care services for cancer patients, their family and their caregivers.

Strategies:

- Provide a total of 1,500 pamphlets and brochures on hospice and palliative care issues to nine health centers, two hospitals, and one support group in the Cherokee Nation Tribal Jurisdiction Service Area, for distribution to cancer patients and their family.
- Identify hospice and home health programs in the Cherokee Nation Tribal Jurisdiction Service Area and request copies of guides to be distributed to the nine health centers, two hospitals and identified support groups within the Cherokee Nation Tribal Jurisdiction Service Area.

Baseline: Zero (0) pamphlets and brochures provided in Cherokee Nation Tribal Jurisdiction Service Area.

Target: Fifteen hundred (1500) pamphlets provided to nine (9) Cherokee Nation Services Clinics and two (2) Hospitals health support group in Cherokee Nation Tribal Jurisdiction Service Area.

Partners: Cherokee Nation Health Services, Cherokee Nation W.W. Hastings Hospital, Oklahoma Area Health Education Centers, Cherokee Nation Home Health, Community Health Representatives.

Policy

Through the use of quality cancer registry data, the Cherokee Nation Cancer Registry (CNCR) staff has found cancer to be a major concern in the Cherokee Nation, as many American Indians living in this area are diagnosed at later stages in the disease process. Some of the barriers to prevention and early diagnosis of cancer in rural areas include low socioeconomic status, lack of access and lack of cancer awareness. Many of these barriers are currently being addressed, such as low colon cancer screening rates, lack of dental work prior to cancer treatment, high smoking rates, lack of physical activity, and poor nutrition. The current economic climate, as well as increasing unemployment, plays a major role in the low socioeconomic standard in this area, as well as much of Oklahoma.

Oklahoma ranks 50th in the Nation for chronic disease deaths due to cardiovascular disease, and 47th for cancer deaths. Physical activity is lower in those who have not graduated high school and diabetes is more prevalent in those with lower income levels (53). American Indians have a lower life expectancy than other racial groups and also have the poorest survival rates for “all cancers combined” than any other racial group (54). Other staggering statistics mentioned in previous chapters; “Oklahoma ranks 45th in the nation in the overall health of its citizens,” and “Oklahoma’s death rates have been increasing since 1990 (55).”

Programs like the Cherokee Nation Tobacco Program, Communities Putting Prevention to Work Program (CPPWP) and the Strategic Health Alliance Program; who work with schools, businesses, and city and county officials, all work together to combat this problem. These programs are helping to reduce the risk of chronic diseases in the Cherokee Nation by addressing poor nutrition, physical inactivity, and tobacco abuse; which plays a major role in chronic diseases such as cardiovascular disease and cancer. In an effort to reduce the risk of duplication, these programs work closely with Cherokee Nation Comprehensive Cancer Control Program (CNCCCP), who provides cancer education in the fourteen counties of the Cherokee Nation Tribal Jurisdiction Service Area (CNTJSA).

Recently, cancer incidence in the Cherokee Nation has emerged as a higher priority than in the past and the improvements in cancer registry data has identified the depth of cancer disparities in the American Indian population in Cherokee Nation. The registry collaborates with the Indian Health Services, and the Oklahoma Central Cancer Registry, to improve timeliness and completeness of cancer data. Improved surveillance revealed an increase in cancer incidence and mortality for American Indians.

Cherokee Nation Healthy Nations program has been targeting prevention efforts, such as increased tobacco cessation classes in health centers and hospitals in the CNTJSA, and putting together programs such as the Students Working Against Tobacco (SWAT) teams at community schools. Billboards have also been placed in popular places targeting teens and 24/7 smoking bans have been enacted in many of the schools. The program has also worked to enact policies in the Cherokee Nation that includes a no smoking policy on Cherokee Nation tribal facility grounds, and an increase in the tobacco excise taxes. In March 2010, the program was funded by

the American Recovery & Reinvestment Act for the Communities Putting Prevention to Work program.

The CNCCCCP program networks and coordinates with other programs as well, such as the Cherokee County Health Coalition, to address policies, rules and regulations that need to be in place to address the health disparities in the Cherokee County area. School representatives, community representatives, and other non-profit organizations within the CNTJSA all work together in collaborating for policy change in physical activity, nutrition, and tobacco prevention; striving to reduce the racial and social burdens associated with chronic disease in the health services area.

It will take a united front to push for changes in some policies, rules, or regulations. Therefore, the CNCCCCP will work with other programs to put resources together and identify changes in current laws, rules, regulations and policies which will help in reducing risk factors for chronic diseases on federal, state and tribal levels, which is the basis for this program.

Policy Goals, Objectives and Strategies

Federal Level

Goal A: Improved cancer prevention, screening, and treatment activities at the federal level for American Indians.

Objective 1: By June 30, 2013 support efforts to increase overall Indian Health Service (IHS) funding, including Contract Health Services (CHS) and Health Promotion/Disease Prevention (HPDP).

Strategies:

- Submit information to the Administration (Office of Management and Budget), Department of Health and Human Services (DHHS), Indian Health Service (IHS), and Congress on the needs, including resources, for cancer prevention, screening, and treatment in Cherokee Nation Tribal Jurisdiction Service Area.
- Develop specific testimony on the needs of the Cherokee Nation to submit to the Senate Committee on Indian Affairs House Resources Committee, Senate and House Appropriations Committees, etc.

Baseline: Zero (0) documents developed.

Target: One (1) document developed.

Partners: Cherokee Nation Policy Office

Objective 2: By June 30, 2012 improve cancer prevention, screening, and treatment data collection (IHS, Tribal, VA, CMS, CDC, NIH/NCI, Private Insurance)

Strategies:

- Support efforts to identify data needs and deficiencies within the American Indian health systems.
- Inform stakeholders of data needs regarding cancer prevention, treatment, and control during the development of health information exchanges (HIE) and health insurance exchanges.

Baseline: Zero (0) documents developed.

Target: One (1) document developed.

Partners: Cherokee Nation Policy Office

Objective 3: By June 30, 2012 increase awareness of cancer issues within Indian Country during the Indian Health Service (IHS), Centers for Disease Control and Prevention (CDC), and Department of Health and Human Services (DHHS) budget formulation processes.

Strategies:

- Educate on the need for increased cancer funding (prevention, screening and treatment) during the Indian Health Service (IHS), budget formulation process (area and national meetings).
- Develop and submit testimony during Centers for Disease Control and Prevention (CDC), budget and policy consultation sessions.
- Develop and submit testimony during the annual Department of Health and Human Services (DHHS) budget and policy consultation sessions (regional and national sessions).

Baseline: Zero (0) documents developed.

Target: One (1) document developed.

Partners: Cherokee Nation Policy Office

Objective 4: By June 30, 2012 ensure Tribal eligibility to access new and existing Federal programs (current or newly created).

Strategies:

- Monitor federal agency and legislative activity to identify programs related to cancer prevention, treatment, and control.
- Educate on the need for the inclusion of the Cherokee Nation, other Tribal nations, and Indian Health Service (IHS) as eligible participants in Federal Programs.

Baseline: Zero (0) documents developed.

Target: One (1) document developed.

Partners: Cherokee Nation Policy Office

State Level

Goal B: Improved cancer prevention, screening, and treatment activities at the state level for American Indians.

Objective 1: By June 30, 2012 ensure Tribal eligibility to access new and existing State programs (current or newly created), supporting expansion of health coverage (coverage mandates and increasing the insured population).

Strategies:

- Monitor state agency and legislation activities to identify activities related to cancer prevention, treatment, and control.

- Educate on the need for the inclusion of the Cherokee Nation, other Tribal nations, and Indian Health Service (IHS) as eligible participants in State Programs.

Baseline: As of June 2010, 31,860 enrollees and 5,496 businesses were participating (Oklahoma Health Care Authority SFY2010 Annual Report).

Target: As of June 2011, 35,046 enrollees.

Partners: Cherokee Nation Policy Office

Objective 2: By June 30, 2012 support expansion of health coverage by increasing the insured population.

Strategies:

- Monitor state agency and legislation to identify activities and programs related to increasing insurance coverage in Oklahoma.
- Educate on the need for the inclusion of the Cherokee Nation, other Tribal nations, and Indian Health Service (IHS) as eligible participants in existing state programs.

Baseline: Zero (0) documents developed.

Target: One (1) document developed.

Partners: Cherokee Nation Policy Office

Objective 3: By June 30, 2012, address Cherokee Nation needs regarding cancer prevention, treatment, and control during the development of health information exchanges (HIE)

Strategies:

- Support Secure Medical Records Transfer Network (SMRTNET) expansion.
- Participate in State Health Information Exchange Cooperative Agreement Program (SHIECAP) implementation.
- Participate in Oklahoma Health Insurance Exchange (HUB) implementation.

Baseline: No partnerships.

Target: Partnerships developed.

Partners: Cherokee Nation Policy Office

Objective 4: By December 31, 2012 maintain or build relations with state agencies, workgroups, universities, legislative bodies, and other Tribal Nations

Strategies:

- Active participation in advocacy coalitions.
- Active participation in annual State of Oklahoma Tribal Consultation Session.
- Identify state elected officials, agency and legislative staff to participate in the annual Cherokee Nation Government Relations Retreat.
- Cancer Program participation in the annual Cherokee Nation Legislative Day at the Capitol.

Baseline: No participation.

Target: Participation.

Partners: Cherokee Nation Policy Office

Tribal Level

Goal C: Improved cancer prevention, screening, and treatment activities for American Indians.

Objective 1: By June 30, 2012 ensure tribal participation in Federal and State programs addressing access issues (early detection, contract health, partnerships, expansion, workforce, and facilities/equipment).

Strategies:

- Use Cherokee Nation Cancer Summit to gather concerns among Cherokee Nation program participants.
- Complete Roundtable discussion at the Cherokee Nation Cancer Summit.
- Monitor population health status.

Baseline: No participation.

Target: Participation.

Partners: Cherokee Nation Policy Office

Objective 2: By December 31, 2013 improve clinical guidelines and patient communication.

Strategies:

- Develop a triage system to address backlog for screenings (CHS).
- Identify circumstances when patients would be referred to external providers (ex. medical necessity, private insurance, etc.).
- Develop protocols for clinical staff in addressing cancer prevention, screening, treatment, and quality of life issues.

Baseline: No protocol.

Target: Protocol developed.

Partners: Cherokee Nation W.W. Hastings Hospital, Cherokee Nation Breast and Cervical Cancer Early Detection Program

Objective 3: By June 30, 2015 support partnerships in policy development and training for increasing school involvement in farmers markets, community gardens, and tobacco zoning restrictions in Cherokee Nation Tribal Jurisdiction Service Area.

Strategies:

- Work with partners to increase zoning restrictions for area schools, casinos and public facilities and identify area enforcement officials.
- Work with partners to change school policies on community gardens and Farm to School Policy.

Baseline: No protocol.

Target: Protocol developed.

Partners: Cherokee Nation W.W. Hastings Hospital, Cherokee Nation Breast and Cervical Cancer Early Detection Program

Objective 4: By September 30, 2015 work with the Cherokee Nation Policy staff to assure up to date cancer policy data is available and assessable.

Strategies:

- Identify appropriate data elements.

- Develop database for tracking policy, rules, and resolution updates.
- Collect current and pending tribal, state, and federal policies regarding cancer prevention, screening and control.
- Inform stakeholders of relevant policy issues.

Baseline: No policy.

Target: Policy developed.

Partners: Cherokee Nation Policy Office

Objective 5: By September 30, 2011 the 24/7 smoking policies will be maintained within schools residing in Cherokee Nation Tribal Jurisdiction Service Area.

Strategies:

- Monitor schools within the Cherokee Nation Tribal Jurisdictional Service Area to assure 24/7 smoking policies are being enforced.

Baseline: Thirty nine (39) schools.

Target: Maintain Thirty nine (39) schools.

Partners: Cherokee Nation Policy Office

Objective 6: By March 30, 2014 complete a cost benefit analysis of one cancer site in Cherokee Nation Tribal Jurisdiction Service Area.

Strategies:

- Initiate a cost/benefit analysis on providing cancer services within CNHS as opposed to using contract health service (CHS).
- Report cost/benefit analysis to CN Leadership.
- Report cost/benefit analysis at Cherokee Nation Summit.

Baseline: Zero (0) cost/benefit analysis completed.

Target: One (1) cost/benefit analysis completed.

Partners: Cherokee Nation Policy Office, University of Oklahoma College of Public Health

Resource Guide & Cost Estimates

Revision of the 2005-2007 Cherokee Nation Comprehensive Cancer Control plan currently outlines five chapters where goals, objectives and strategies have been written, and cost of resources have been identified, or cost estimates have been developed for needed resources. The chapters include *Prevention, Early Detection, Treatment, Survivorship, and Policy*. As noted, cost of resources has been identified in most scenarios which are provided by partners, coalition members, organizations, foundation, or government funding, while many other resources are still in need.

Ga-Du-Gi: *Is the Cherokee word for people working together in a system of cooperation and sharing to help each other assist individuals as needed to accomplish a common good.* The Cherokee Nation Comprehensive Cancer Control Coalition and partners are a good example of this motto as they work together in every way possible to decrease the cancer burden in our Nation. In the process, the coalition gathers needed resources that will help to accomplish our goals, objectives, and strategies, in an effort to decrease the high incidence and mortality of cancer in our nation. The coalition identifies and engages partners who have the same goal as ours, search for available funding opportunities, write for the funding, and invite organizations, advocates, and others to become members of the coalition, especially those with needed expertise, or those who have a passion or goal for preventing or reducing the cancer burden in our Cherokee Nation. Once they become members they help in the planning process, work to implement evidence based strategies, donate resources, evaluate processes and outcomes, and identify ways of sustaining the processes and procedures that have been shown to have the best results. Although several areas of the cancer continuum are being addressed, many areas are still in need of resources and therefore the coalition will work on a continual basis to assure needs are being addressed.

This document represents best estimates of current and needed resources based on readily available information from collected data and other programs, partners, and coalition members; which includes in-kind, cost-sharing, federal and other funding sources.

Assumptions have been made when generating the information to reflect best case scenarios where programs are not split between funding agencies, limited program information is available, resource costs are made consistent and where there are no current existing programs to base our resource costing on. Budget costs also reflect an annual cost and therefore a 3% increase annually should be included every year thereafter and should also reflect the cost for an increase in those being diagnosed, with the anticipation of this cost going back down towards the end of the year 2015, as it is anticipated our screening and treatment needs will decreased as we catch up on the needs at this time.

Each one of the five chapters highlighted on the previous page will have different assumptions regarding their budget, as many of the budgeting items were either estimates, best case scenarios, ideal situations, and all calculated under one program.

Since no treatment is included in Comprehensive Cancer Control, treatment costs were only included on costs associated with partner involvement, such as the Cherokee Nation Breast and Cervical Cancer Early Detection Program, where treatment costs have been provided and are easily accessible. It is unclear what the current costs are for those who access contract health services for treatment of their cancer, or what the bottom line cost for cancer treatment at the Claremore Indian Hospital, Cherokee Nation Hastings Indian Hospital and Cherokee Nation Health Centers might be, and these measures are also out of the control of Cherokee Nation Comprehensive Cancer Control Staff. Assumptions can be made if needed by using Cherokee Nation Cancer Registry Data and averaging cost of treatment for certain types of cancer. However, the scope of this cost item is large and is not feasible at this time.

PREVENTION – RISK REDUCTION

Prevention activities are carried out in fourteen counties of the Cherokee Nation. Efforts for prevention are occurring in all Cherokee Nation Healthy Nation programs, environmental services, clinics and hospitals, communities, as well as state organizations. Some assumptions have been made, such as the direct costs which are the same in each entity (space, phone, etc.) and are all housed in one area, with one funding agency in charge of salaries, incentives and overhead. Some costs were actual costs allocated to the different programs, while others were best guess estimates, reflecting funding needs or what were assumed costs. In most cases, costs have been broken down into percentages of total cost.

Grand Total Current Funds = \$2,940,113
Grand Total Funding Needs = \$499,211

Education

Goal A: Reduce the risk of cancer through outreach and education for patients, family members, health professionals and other advocates.

Total Costs = \$275,081.....Funding Needs = \$114,996

| | Current Funding | Funding Needs |
|--|----------------------------|--------------------------|
| 1. Provide education and information regarding comprehensive cancer risk reduction. 40 | \$110,033 | \$45,998 |

| | | |
|--|----------|----------|
| 2. Produce multi-media education resources designed for cancer education and prevention. 20% | \$55,016 | \$22,999 |
| 3. Develop one culturally specific cancer health education event. 10% | \$27,508 | \$11,500 |
| 4. Annually collect up to date cancer data information for the American Indian population in the Cherokee Nation Tribal Jurisdiction Service Area. 20% | \$55,016 | \$22,999 |
| 5. Develop a culturally appropriate multi-media communication for cancer prevention. 10% | \$27,508 | \$11,500 |

Physical Activity

Goal B: Reduce the risk of cancer by increasing physical activity.

Total Current Costs = \$1,191,671..... Funding Needs = \$69,026

| | Current Funding | Funding Needs |
|---|----------------------------|--------------------------|
| 1. Maintain the number of events offered to adults and adolescents to participate in physical activity. | \$715,003 | \$41,415 |
| 2. Increase number of youth attending summer fitness camps. | \$452,835 | \$26,230 |
| 3. Increase physical activity by means of wellness presentations | \$23,833 | \$1,381 |

Nutrition

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

Total Current Costs = \$952,390..... Funding Needs = \$51,075

| | Current Funding | Funding Needs |
|---|----------------------------|--------------------------|
| 1. Increase the number of community gardens in schools and communities. | \$380,956 | \$20,430 |
| 2. Implement healthy cooking classes. | \$238,098 | \$12,769 |

| | | |
|--|-----------|----------|
| 3. Increase the number of Farmer's Markets throughout Cherokee Nation Tribal Jurisdiction Service Area. | \$142,858 | \$7,661 |
| 4. Increase the number of schools in Cherokee Nation Tribal Jurisdiction Service Area that offer healthy vending machine alternatives. | \$190,478 | \$10,215 |

Tobacco

Goal D: Reduce the risk of cancer by reducing the number of American Indians habitually using non-ceremonial tobacco in Cherokee Nation Tribal Jurisdiction Service Area.

Total Costs = \$458,761.....Funding Needs = \$209,935

| | Current Funding | Funding Needs |
|--|------------------------|----------------------|
| 1. Maintain comprehensive cessation services in the fourteen counties of the Cherokee Nation. | \$91,754 | \$41,987 |
| 2. Implement an electronic record system equipped with a provider reminder system for tobacco use in the Cherokee Nation Health Services system. | \$22,929 | \$10,497 |
| 3. Increase knowledge and awareness in schools among students regarding tobacco use by holding annual cancer education events each year. | \$82,579 | \$37,789 |
| 4. Increase the number of calls to the Oklahoma statewide telephone quit line from individuals living in Cherokee Nation. | \$82,579 | \$37,788 |
| 5. Maintain partnerships in development of a tobacco education training and annual conference. | \$178,920 | \$81,874 |

Environmental

Goal E: identify exposures to environmental carcinogens and advocate for education of exposures within Cherokee Nation..

Total Current Costs = \$62,210..... Funding Needs = \$54,179

| | Current Funding | Funding Needs |
|--|----------------------------|--------------------------|
| 1. Develop a GIS mapping system to identify areas of environmental carcinogens, overlaid with cancer registry data | \$55,989 | \$48,761 |
| 2. Increase the number of owned and operated Cherokee Nation rental units with clean indoor air policies. | \$6,221 | \$5,418 |

SCREENING AND EARLY DETECTION

Several assumptions have been made in regard to screening and early detection. It is assumed that all Cherokee Nation patients are empanelled to the provider of their choice, and all patients keep all their appointments. Each Cherokee Nation designed provider offers comprehensive primary care to a panel of patients, and new patients will establish care in Cherokee Nation clinics at a rate of 3% for each year. Health care providers will offer comprehensive cancer screenings during a patient's annual "preventive health" physical exam visit and annual labs will be ordered by Cherokee Nation providers based on individualized criteria. Cherokee Nation contract Health Services maintains contract with specialty consultants for provision of services not available in house and Medicare reimbursement rates will reflect accurate estimates of incurred costs for patients across all third party payer subsets.

Grand Total Current Funds = \$5,176,260
Grand Total Funding Needs = \$151,569

Goal A: Reduce morbidity and mortality of colorectal cancer by reducing late stage among American Indians living in Cherokee Nation.

| | Current Funding | Funding Needs |
|---|----------------------------|--------------------------|
| 1. Increase percentage of adults age 51-80 who receive colorectal cancer screening examinations annually. | \$575,140 | \$16,841 |

Goal B: Reduce morbidity and mortality of cervical cancer by reducing late stage among American Indian women living in Cherokee Nation.

| | Current Funding | Funding Needs |
|---|----------------------------|--------------------------|
| 1. Increase percentage of annual pap smears obtained for women ages 21-64 | \$575,140 | \$16,841 |

Goal C: Reduce morbidity and mortality of breast cancer by reducing late stage diagnosis of breast cancer among women living in Cherokee Nation Tribal Jurisdiction Service Area.

| | Current Funding | Funding Needs |
|--|------------------------|----------------------|
| 1. Increase percentage of mammograms obtained for women ages 21-64 | \$575,140 | \$16,841 |

Goal D: Reduce morbidity and mortality of renal cancers by education and screening, thereby reducing late stage diagnosis among American Indian adults living in Cherokee Nation

| | Current Funding | Funding Needs |
|--|------------------------|----------------------|
| 1. Increase the number of annual physicals and preventive health exams performed yearly in Cherokee Nation Health Services Clinics | \$575,140 | \$16,841 |

Goal E: Reduce morbidity and mortality of prostate cancer by reducing late stage diagnosis of prostate cancer among men living in Cherokee Nation Tribal Jurisdiction Service Area.

| | Current Funding | Funding Needs |
|---|------------------------|----------------------|
| 1. There will be an increased number of men age 50 or over screened (PSA or DRE) for prostate cancer. | \$575,140 | \$16,841 |

Goal F: Reduce morbidity and mortality of blood cancers by education and screening, thereby reducing late stage diagnosis among American Indian adults living in Cherokee Nation.

| | Current Funding | Funding Needs |
|--|------------------------|----------------------|
| 1. Increase the number of annual physicals and preventive health exams performed yearly in Cherokee Nation by 2% | \$575,140 | \$16,841 |

Goal G: Reduce morbidity and mortality of ovarian cancer by reducing late stage diagnosis among American Indian women living in Cherokee Nation.

| | Current Funding | Funding Needs |
|--|------------------------|----------------------|
| 1. Incidence, mortality and stage at time of diagnosis will be identified. | \$575,140 | \$16,841 |

| | | |
|---|-----------|----------|
| 2. Increase percentage of bi-manual pelvic exams for women during annual Well Woman Exams by 3% annually. | \$575,140 | \$16,841 |
|---|-----------|----------|

Goal H: Reduce morbidity and mortality of lung cancer by reducing late stage diagnosis among American Indians living in Cherokee Nation.

| | Current Funding | Funding Needs |
|---|-----------------|---------------|
| 1. Clinical staff will have increased the percentage of annual physical exams by 1% yearly. | \$575,140 | \$16,841 |

DIAGNOSIS AND TREATMENT

Budget items are based on factual costs shared between departments within the Cherokee Nation. Other budget items are estimated costs, where salary is usually found to be at average or low average estimates from the internet. These estimates are based on involvement of the Cherokee Nation Health Services and do not reflect the actual costs associated with treatment of cancer patients. Therefore, costs reflect Contract Health involvement in contracting patients out for screening and do not reflect in-house treatment. It will take some time to collect all cancer treatment costs and develop estimated costs associated with treatment in the Cherokee Nation Health Services area.

Grand Total Current Funding = \$29,758

Grand Total Funding Needs = \$252,899

Clinical Trials

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

| | Current Funding | Funding Needs |
|---|-----------------|---------------|
| 1. Increase access to and awareness of clinical trial participation for Cherokee Nation Patients. | \$2,235 | \$571 |

Service and Treatment

Goal B: Reduce morbidity and mortality of cancer by reducing delay between diagnosis of cancer and initiation of treatment.

| | Current Funding | Funding Needs |
|---|--------------------|------------------|
| 1. Increase timely access to and utilization of surgical, radiation, and chemotherapy services within Cherokee Nation Tribal Jurisdiction Service Area. | \$20,642 | \$189,246 |
| 2. Ensure that culturally appropriate educational materials are provided to cancer patients. | \$6,881 | \$63,082 |

QUALITY OF LIFE

Cancer survivors are growing in number as new treatments are being identified, life span of the average person increases, and baby boomers are coming to the age where more cancer diagnosis occurs. In essence, there is an increasing need to provide resources for the cancer patient and their family. Survivorship begins with diagnosis and includes the care giver, and family members. Therefore the following goals will help to decrease demands of a cancer survivor.

Grand Total Current Funding = \$184,931
Grand Total Funding Needs = \$78,657

Training

Goal A: Trained health care professionals working with cancer survivors, their families, and their caregivers.

| | Current Funding | Funding Needs |
|--|--------------------|------------------|
| 1. Increase the number of presentations to health care professionals, increasing knowledge of survivorship issues, and the impact of cancer on survivors, family and caregivers. | \$83,219 | \$35,396 |
| 2. Determine if quality of life issues being taught in medical, nursing (BSN) and pharmacy program curriculum in the State of Oklahoma. | \$9,247 | \$3,933 |

Awareness

Goal B: Increase awareness of quality of life issues to cancer survivors, their families, and their caregivers.

| | Current Funding | Funding Needs |
|---|----------------------------|--------------------------|
| 1. Distribute resources to increase awareness of quality of life related resources available to cancer survivors, families, and caregivers. | \$18,493 | \$7,866 |
| 2. Facilitate the development of seven new cancer support groups within the Cherokee Nation Tribal Jurisdiction Service Area. | \$36,986 | \$15,731 |

Education

Goal C: Educate cancer survivors, family members and caregivers about specifics of hospice home health services and palliative care.

| | Current Funding | Funding Needs |
|--|----------------------------|--------------------------|
| 1. Increase the understanding of hospice, home health and palliative care issues for cancer patients, their family and their caregivers. | \$36,986 | \$15,731 |

POLICY

There have been no assumptions made in the area of policy. All costs are based on perceived costs and have been funded accordingly. Therefore annual costs have been included below. It is unknown at this time if future funding will be needed for this piece of the plan.

Grand Total Current Funds = \$147,115
Grand Total Funding Needs = 0

Federal Level

Goal A: Improved cancer prevention, screening, and treatment activities at the federal level for American Indians.

| | Current Funding | Funding Needs |
|---|----------------------------|--------------------------|
| 1. Support efforts to increase overall Indian Health Service funding, including Contract Health Services and Health Promotion/Disease Prevention. | \$7,356 | 0 |
| 2. Improve cancer prevention, screening, and treatment data collection (IHS, Tribal, VA, CMS, CDC, NIH/NCI, and Private Insurance). | \$7,356 | 0 |
| 3. Increase awareness of cancer issues within Indian Country during the IHS, CDC, and HHS budget formulation process. | \$22,067 | 0 |
| 4. Ensure tribal eligibility to access new and existing Federal programs (current or newly created). | \$7,356 | 0 |

State Level

Goals B: Improve cancer prevention, screening, and treatment activities at the state level for American Indians.

| | Current Funding | Funding Needs |
|--|------------------------|--------------------------|
| 1. Ensure tribal eligibility to access various programs (current or newly created), and supporting expansion of health coverage (coverage mandates and increasing the insured population). | \$14,711 | 0 |
| 2. Support expansion of health coverage (coverage mandates and increasing the insured population). | \$14,711 | 0 |
| 3. Address Cherokee Nation needs regarding cancer prevention, treatment, and control during the development of health information exchanges (HIE). | \$22,067 | 0 |
| 4. Maintain/build relations (state agencies, workgroups, universities, etc.). | \$10,298 | 0 |

Tribal Level

Goal C: Improve cancer prevention, screening, and treatment activities at the Tribal level for American Indians.

| | Current Funding | Funding Needs |
|--|------------------------|----------------------|
| 1. Address access issues (early screening, contract health, partnerships, expansion, workforce, and facilities/equipment). | \$9,563 | 0 |
| 2. Improve clinical guidelines and patient communication. | \$7,356 | 0 |
| 3. Increase school involvement in farmers markets, community gardens, and tobacco zoning restrictions in Cherokee Nation. | \$9,563 | 0 |
| 4. Work with Cherokee Nation Policy staff to assure up to date cancer policy data is available and accessible. | \$4,413 | 0 |
| 5. Maintain smoking policies within schools residing in Cherokee Nation Tribal Jurisdiction Service Area. | \$4,413 | 0 |
| 6. Complete a cost benefit analysis of one cancer site in the Cherokee Nation Tribal Jurisdiction Service Area. | \$5,885 | 0 |

EVALUATION

Currently there is no funding for evaluation. Information on costs association with this objective is derived from a calculated account of the hours it would take to collect all data that is needed, hire a professional evaluator, as well as an evaluation coordinator to collect data and work with evaluator for time saving measures. Being the first complete evaluation done on the program, many assumptions being used, such as time it will take to complete, develop report, publish and distribute.

Grand Total Current Funds = 0
Grand Total Funding Needs = \$35,000

Goal A: A completed annual evaluation on Comprehensive Cancer Control strategies, to include process and outcomes, with developed and published report for distribution.

| | Current Funding | Funding Needs |
|---|--------------------|------------------|
| 1. Secure evaluator and coordinator for data collection, evaluation development and implementing strategies for program analysis. | 0 | \$33,000 |
| 2. Develop color Tri-fold brochure of evaluation report. | 0 | \$1,500 |
| 3. Distribute report through mail services and other means. | 0 | \$500 |

The Evaluation Plan

The Evaluation Process

Evaluation activities are being conducted for previous years by an external contract evaluator. Upon completion reports will be generated regarding the process and outcomes of the previous Cherokee Nation Comprehensive Cancer Control Program (CNCCCCP) years. This systematic evaluation process will include previous evaluations for the CNCCCCP to track progress in achieving identified cancer-related goals and objectives. Baseline measures and short, intermediate and long term outcomes will be reviewed as available. In many instances, there are no baseline measures and these will be developed or identified as necessary.

In addition to evaluating the short- and long-term outcomes of the objectives and components of the plan, this evaluation will seek to examine processes and procedures used in development of the CNCCCCP and partner activities. Procedures will include surveys, retrospective pre testing, key informant interviewing, archival records review, and other methods of data collection that include both qualitative and quantitative approaches as necessary .

Broad representation will be used to encourage stakeholder involvement in future evaluations to foster partner and stakeholder satisfaction and convey credibility. Flexibility has been built into the design to adapt to changing needs of any particular piece of the plan. This evaluation process will be a systematic collection and analysis of data and program intervention processes and procedures and will incorporate member satisfaction assessments.

Evaluation results will be used to improve effectiveness and decision making in program implementation. The CNCCCCP staff and evaluation committee will develop written reports, website postings, e-mail reports, and occasional oral presentations to relay findings of CNCCCCP evaluation activities, outcomes and successes.

Performance Measurement

Tools will be developed, as new information is received, to assess and measure the achievements and impact of current activities being undertaken by CNCCCCP staff, CNCCCCP coalition, and partners for the updated plan. Since the CNCCCCP plan is data driven, evidence based, and outcome oriented, the assessment and evaluation of the workgroups will be closely monitored by the CNCCCCP Evaluation workgroup. Data collected will be input into the CDC MIS database on a continual basis. In some cases, there is no existing evidence based strategies and current strategies will be monitored and reported. The evaluation process will also provide for collection of information on barriers and how they were addressed. Reports will be generated from tracking short, intermediate and long term goals.

Performance measures developed by the CDC and measures of success, as outlined by the Cherokee Nation Steering Committee, CNCCCCP stakeholders, partners, Evaluation workgroup, and Project Coordinator and Director will be the main components of this evaluation. Evaluation tools will be specific to the process and outcomes of the current work plan, which will have appropriate measures for reachable goals and timelines.

Monitoring of the plan will account for the overlap with other Cherokee Nation departments and programs, as well as partners outside the Cherokee Nation.

Quarterly reports from all the partners will be collected and reported in the MIS database, and evaluation worksheet of the CNCCCP. Reports will be provided to the CNCCCP Steering Committee on a quarterly basis using the MIS database. These reports will also be distributed to the CNCCCP members, internal and external partners, as well as funding agencies.

An outline of the logic model for the evaluation plan is included on the following page.

Evaluation Goals, Objectives and Strategies

Goal B: A developed report and tri-fold on evaluation process, outcomes, and partner satisfaction will be available for distribution to stakeholders.

Objective 1: By September 30, 2012 develop evaluation tools for data collection and analysis of data on processes and outcomes, collect data, analyze and develop report.

Strategies:

- Secure resources for an evaluator and evaluation coordinator.
- Identify and secure evaluator and evaluation coordinator.
- Develop evaluation tools and collect, measure and assess information.

Baseline: Zero (0) evaluations for distribution.

Target: One completed evaluation report for distribution.

Partners: Cherokee Nation Comprehensive Cancer Control partners, coalition members, evaluator, Cherokee Nation Health Administration

Objective 2: By September 30, 2012 develop a tri-fold brochure for distribution to all Cherokee Nation citizens, community members, and stakeholders.

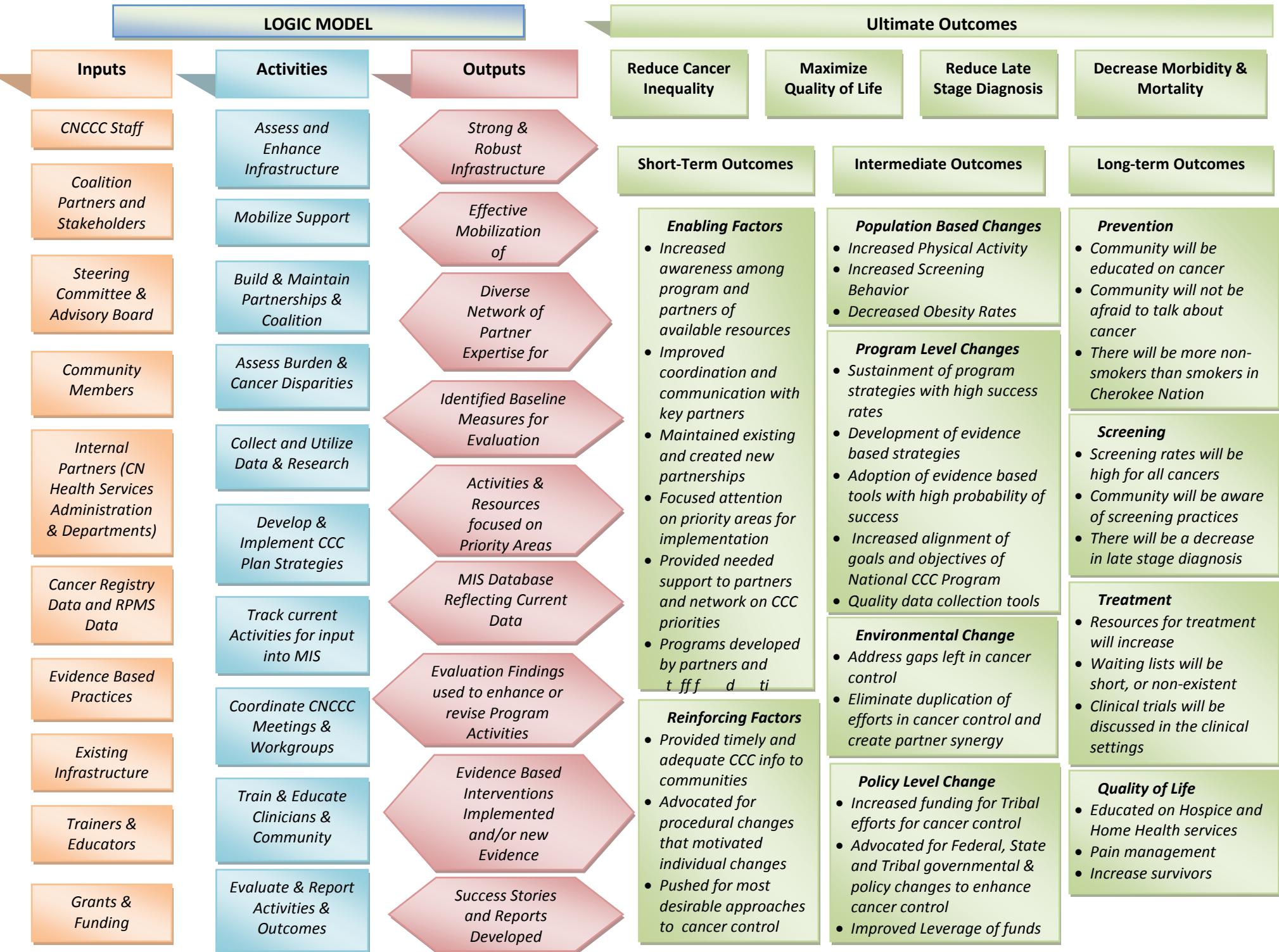
Strategies:

- Design a tri-fold brochure identifying outcomes of the CCC process and successes or distribution.
- Identify and secure publisher for brochure and publish.
- Identify mailing list for distribution and mail out brochure.

Baseline: Zero (0) brochures developed.

Target: One completed tri-fold brochure on successes and outcomes of cancer prevention, detection, treatment and survivorship in Cherokee Nation.

Partners: Cherokee Nation Comprehensive Cancer Control partners, coalition members, evaluator, Cherokee Nation Health Administration, Cherokee Nation Communications Department, Cherokee Nation Hastings Indian Hospital and Cherokee Nation Health Services Clinics.



| Short-Term Outcomes | | Intermediate Outcomes | | Long-term Outcomes | |
|---|---|---|---|---|-------------------------------|
| <i>Enabling Factors</i> | | <i>Population Based Changes</i> | | <i>As measured by</i> | |
| Increased awareness among partners of available resources | Developed Resources Database | Increased Physical Activity | # of Community Members Accessing Gym and WINGS events | Community will be educated on cancer | # of educational events |
| Improved coordination and communication with key partners | Partner Assessment Survey | Increased Screening Behavior | % increase in screenings | Community will not be afraid to talk about cancer | Community Surveys |
| Maintained existing and created new partnerships | # of Partners on Partnership List | Decreased Obesity Rates | BRFSS Data | There will be more non-smokers than smokers | BRFSS data |
| Focused attention on priority areas | # of strategies implemented in Priority Areas | Increased Cessation | Tobacco Cessation enrollment | Screening | <i>As measured by</i> |
| Provided needed support to partners and network on CCC priorities | # of Partnerships sponsored or supported annually | Program Level Changes | <i>As measured by</i> | Screening rates will be higher for all cancers | RPMS Data |
| Programs developed by partners & staff for education & training | # of Educational Programs developed | Sustained program strategies with high success rates | BRFSS Data | Community will be aware of screening practices | RPMS Data |
| Reinforcing Factors | As measured by | Development of evidence based strategies | Cancer Registry & RPMS data | There will be a decrease in late stage diagnosis | Community Surveys/newsletters |
| Provided timely CCC information to communities | Flyers and pamphlets provided | Adoption of evidence based tools with high probability of success | Community Surveys | Treatment | <i>As measured by</i> |
| Advocated for procedure changes to motivated individual changes | Agenda and meeting minutes | Increase in comparable rates and objectives of CCC Program | Resources for treatment will increase | # of Resources available | |
| Pushed for most desirable approaches to cancer control | Agenda and meeting minutes | Quality data collection tools for evaluation | CDC MIS Database | Waiting lists will be short, or non-existent | # of patients on waiting list |

| | <i>Environmental Change</i> | <i>As measured by</i> | Clinical trials will be discussed in the clinical settings | # of trainings presented on clinical trials |
|--|--|--|--|--|
| | <i>Address gaps left in cancer control</i> | <i>Coalition Meetings</i> | <i>Quality of Life</i> | <i>As measured by</i> |
| | <i>Eliminate duplication of efforts in cancer control and create partner synergy</i> | <i>Coalition Meetings, Steering Committee Meetings, Health Executive Meetings</i> | <i>Patients will be education on Hospice and Home Health services</i> | # of community presentations and media campaigns |
| | <i>Policy Level Change</i> | <i>As measured by</i> | There will be pain management for patients | Changes in pain management policy |
| | <i>Increase funding for Tribal efforts for cancer control</i> | <i># of grant proposals and partner resources</i> | Increased survivors | previous and current mortality rates |
| | <i>Advocate for Federal, State and Tribal governmental & policy change for cancer control</i> | <i># of Federal, State and National events attended</i> | | |
| | <i>Improved Leverage of funds</i> | <i>% funding increases</i> | | |

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 of 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.

Blood Chemistry Studies - This is a procedure in which a blood sample is checked to measure the amounts of certain substances released into the blood by organs and tissues in the body. An unusual (higher or lower than normal) amount of a substance can be a sign of disease in the organ or tissue that produces it.

Bone Marrow Aspiration and Biopsy - The removal of a small piece of bone and bone marrow by inserting a needle into the hipbone or breastbone. A pathologist will then view both the bone marrow biopsy and the bone marrow aspiration samples under a microscope to look for abnormal cells.

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.

Complete Blood Count (CBC) – This is a procedure in which a sample of blood is drawn and checked for the number of red blood cells, white blood cells, and platelets; the amount of hemoglobin (the protein that carries oxygen) in the red blood cells and the portion of the sample made up of red blood cells.

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

Cone Biopsy- A Surgical procedure in which a cone-shaped tissue sample from the cervix is removed for examination.

Cytogenetic Analysis - A test in which the cells in a sample of blood or bone marrow are looked at under a microscope to find out if there are changes in the structure or number of chromosomes in the cells.

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

Endocervical – 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.

Immunophenotyping – A process used to identify cells, based on the types of antigens or markers on the surface of the cell that may include special staining of the blood and bone marrow cells. This process is used to diagnose the subtype of AML by comparing the cancer cells to normal cells of the immune system.

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.

Lumbar Puncture: A procedure used to collect cerebrospinal fluid from the spinal column by placing a needle into it. This procedure is also called an LP or spinal tap.

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

Lymph Node Biopsy - The removal of all or part of a lymph node. A pathologist will then view the tissue under a microscope to look for cancer cells.

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.

Peripheral Blood Smear - A procedure in which a sample of blood is checked for blast cells, number and kinds of white blood cells, number of platelets, and changes in the shape of the blood cells.

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.

Tumor Biopsy - A biopsy of a chloroma may be done. A chloroma is a solid tumor composed of immature malignant (cancerous) white blood cells called myeloblasts.

ACRONYMS

| | |
|-----------------|---|
| ACS | American Cancer Society |
| AI | American Indian |
| AI/AN | American Indians and Alaska Natives |
| AIRC | American Institute for Cancer Research |
| ALL | Acute Lymphocytic Leukemia |
| AML | Acute Myelogenous Leukemia |
| AMLS | Advanced Medical Life Support |
| AMO | A Cherokee word that stands for Salt Water |
| BPH | Benign Prostatic Hypertrophy |
| BRFSS | Behavioral Risk Factor Surveillance System |
| BSE | Breast Self Examination |
| CAAS | Commission on Accreditation of Ambulance Services |
| CARF | Commission for Accreditation of Rehabilitation Facilities |
| CBE | Clinical Breast Examination |
| CCC | Comprehensive Cancer Control |
| CDC | Centers of Disease Control and Prevention |
| CDIB | Certified Degree of Indian Blood |
| CFR | Code of Federal Regulations |
| CHR | Community Health Representatives |
| CHS | Contract Health Services |
| CIH | Claremore Indian Hospital |
| CLL | Chronic Lymphocytic Leukemia |
| CML | Chronic Myeloid Leukemia |
| CN | Cherokee Nation |
| CNBCCEDP | Cherokee Nation Breast & Cervical Early Detection Program |
| CNCCCP | Cherokee Nation Comprehensive Cancer Control Program |
| CNCP | Cherokee Nation Cancer Programs |
| CNHIH | Cherokee Nation Hastings Indian Hospital |
| CNHS | Cherokee Nation Health Services |
| CNTJSA | Cherokee Nation Tribal Jurisdictional Service Area |
| CPPWP | Communities Putting Prevention to Work Program |
| CPR | Cardio Pulmonary Resuscitation |
| CRC | Colorectal Cancer |
| CT | Computed Tomography |

| | |
|---------------|--|
| DNV | Det norske Veritas |
| DRE | Digital Rectal Exam |
| EHR | Electronic Health Record |
| EMS | Emergency Medical Services |
| EPA | Environmental Protection Agency |
| ERA | Estrogen Receptor Assay |
| FDA | Federal Drug Administration |
| FNA | Fine Needle Aspiration |
| FOBT | Fecal Occult Blood Test |
| FSIG | Flexible Sigmoidoscopy |
| GIS | Geographical Imaging System |
| HD | Hodgkin's Disease |
| HHS | Department of Health and Human Services |
| HIE | Health Information Exchange |
| HIMC | Hastings Indian Medical Center |
| HP/DP | Health Promotion/Disease Prevention |
| HPV | Human Papiloma Virus |
| HUB | Health Incurrence Exchange |
| IARC | International Agency for Research of Cancer |
| IHS | Indian Health Services |
| ITEC | Inter-Tribal Environmental Council |
| JC | Joint Commission |
| 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 |
| NH | Non-Hodgkin |
| NHL | Non-Hodgkin's Lymphoma |
| NRC | Nuclear Regulatory Commission |
| OCCR | Oklahoma Central Cancer Registry |
| PET | Positron Emission Tomography |
| PRA | Progesterone Receptor Assay |

| | |
|----------------|---|
| PSA | Protein Specific Antigen |
| RN | Registered Nurse |
| SEER | Surveillance, Epidemiology & End Results |
| SFC | Sequoyah Fuels Corporation |
| SHIECAP | State Health Information Exchange Cooperative Agreement Program |
| SMART | Specific, Measurable, Attainable, Relative, Time phased |
| SMRTNET | Support Secure Medical Records Transfer Network |
| SPF | Sun Protective Factor |
| STD | Sexually Transmitted Disease |
| SWAT | Students Working Against Tobacco |
| TNM | Tumor, Nodes, Metastasis |

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