ANNUAL REPORT
STATE FISCAL YEAR
2016

Oklahoma
Breast and Cervical Cancer

Table of Contents

Executive Summary 1
Purpose 2
Breast and Cervical Cancer Act Revolving Fund 2
Populations at Highest Risk for Breast and Cervical Cancer 3
Data Sources for Breast and Cervical Cancer Burden in Oklahoma 3
Breast Cancer Burden in Oklahoma 4
Cervical Cancer Burden in Oklahoma 6
Oklahoma Breast and Cervical Cancer Early Detection Programs (BCCEDP) 8
Oklahoma Diagnostic and Treatment Program 10
Oklahoma Cares 11
Statewide Breast and Cervical Cancer Activities 11
Epidemiological Trend Studies 11
Take Charge! Statewide Provider Recruitment/Outreach 12
Upcoming Priority Strategies 15
Emerging Technology and Strategies to Reduce the Costs of Breast and Cervical Cancer 16
Breast and Cervical Cancer Resources for Oklahomans 19
References 20

Contact the Chronic Disease Service, Oklahoma State Department of Health, (405) 271-4072 or CancerPCP@health.ok.gov for an electronic copy of this report. This report was developed by Amber Sheikh, MPH; Jon Lowry, MPH; Raffaella Espinoza, MPH; and Tia Yancey, MPH, CHES.

Executive Summary

The overall purpose of this report is to provide breast and cervical cancer information in accordance with the requirements of the Oklahoma Breast and Cervical Cancer Act (63 O.S. §1 554-558). This report provides breast and cervical cancer data specific to Oklahoma and can be used for planning purposes.

Breast cancer is the most frequently diagnosed cancer among Oklahoma women and is the leading cause of cancer death among women. Men can get breast cancer, but it is very uncommon.[1] There are steps that can help to reduce the risk of breast cancer which include: maintain a healthy weight, exercise at least four hours a week, get a good night's sleep, avoid or limit alcohol consumption, limit exposure to medical imaging if not medically necessary, and breastfeed.[2]

In 2013 in Oklahoma, 3,096 new cases of female breast cancer and 178 new cases of cervical cancer were diagnosed. The rates of breast cancer differ by race, ethnicity, and age. African American women and American Indian/Alaska Native women have a higher incidence of breast cancer in comparison to White and Hispanic women. Oklahoma women under 60 years of age have a lower rate of breast cancer in comparison to the U.S., but Oklahoma women 60 years and older have a higher incidence in comparison to the U.S.

Cervical cancer is not a leading cause of cancer death among Oklahoma females nor is it the leading cause of death among women in the U.S. There has been a decline from cervical cancer deaths as a result of many women receiving Pap tests.[3] There are steps that can reduce the risk of cervical cancer which include: get screened, stop tobacco consumption, limit the number of sexual partners, use condoms during sex and obtain the Human Papilloma Virus (HPV) vaccine (if age appropriate).[4]

In Oklahoma, the mortality rate of cervical cancer continues to be higher than the U.S. Oklahoma women report receiving a Pap test less frequently compared to the U.S. Oklahoma also has a lower percentage of persons receiving HPV vaccination in comparison to the U.S.

As Oklahomans, there are steps we can take to help reduce breast and cervical cancer:

- Increase high quality breast and cervical cancer screening in Oklahoma in collaboration with partners;
- Encourage evidence-based breast and cervical cancer public education and targeted outreach to women at highest risk;
- Utilize policy approaches and health systems changes to improve implementation of breast and cervical guidelines and practices for healthcare professionals;
- Encourage patient navigation services to assist with access to screening and diagnostic services; and
- Decrease structural barriers (transportation, availability, and accessibility) that limit access to breast and cervical cancer screening and diagnostic and treatment services.

Purpose

The Oklahoma Breast and Cervical Cancer Act (OBCCA) was established in 1994 to implement plans to significantly decrease breast and cervical cancer morbidity and mortality in the state of Oklahoma (63 O.S. §1 554-558). In 2013, OBCCA was amended and shifted the responsibility of annual reporting from the Breast and Cervical Cancer Prevention and Treatment (BCCPT) Advisory Committee to the Oklahoma State Department of Health (OSDH). The following items in this report are mandated in the OBCCA:

- Funding information for breast and cervical cancer screening activities;
- Identification of populations at highest risk for breast and cervical cancer;
- Identification of priority strategies and emerging technologies, to include newly introduced therapies and preventive vaccines that are effective in preventing and controlling the risk of breast and cervical cancer;
- Recommendations for additional funding to provide screenings and treatment for breast and cervical cancer for uninsured and underinsured women; and
- Strategies or actions to reduce the costs of breast and cervical cancer in the state of Oklahoma.

Breast and Cervical Cancer Act Revolving Fund

The Oklahoma Breast and Cervical Cancer Act established the Breast and Cervical Cancer Act Revolving Fund. The monies in the revolving fund consist of gifts, donations, and contributions from individual income tax returns. In addition, $20 of each *Fight Breast Cancer License Plate* sold is put into the Breast and Cervical Cancer Act Revolving Fund. Samples of the *Fight Breast Cancer License Plates* are shown below. All monies in the revolving fund are appropriated to the OSDH to support the implementation of the Oklahoma Breast and Cervical Cancer Act. Past expenditures of funds have paid for breast and cervical cancer screening and diagnostic services for women enrolled in Take Charge!

Samples of Fight Breast Cancer License Plates

Populations at Highest Risk for Breast and Cervical Cancer

Breast Cancer Risk Factors

According to the Centers for Disease Control and Prevention (CDC), there are several factors that increase the risk for developing breast cancer. The risk factors include: female gender, increasing age (over 50 years of age), change in breast cancer genes (BRCA1 and BRCA2), early menstrual period, family or personal history of breast cancer, and sedentary lifestyle.[5] Additional information and a complete listing of breast cancer risk factors can be found on the CDC website at http://www.cdc.gov/cancer/breast/basic_info/risk_factors.htm.

Cervical Cancer Risk Factors

According to the CDC, there are several factors that increase the risk for developing cervical cancer. The risk factors related to cervical cancer include: behaviors related to exposure to Human Papilloma Virus (HPV), lack of HPV immunization, immunosuppression, and smoking.[6] Additional information and a complete listing of cervical cancer risk factors can be found on the CDC website at http://www.cdc.gov/cancer/cervical/basic_info/risk_factors.htm.

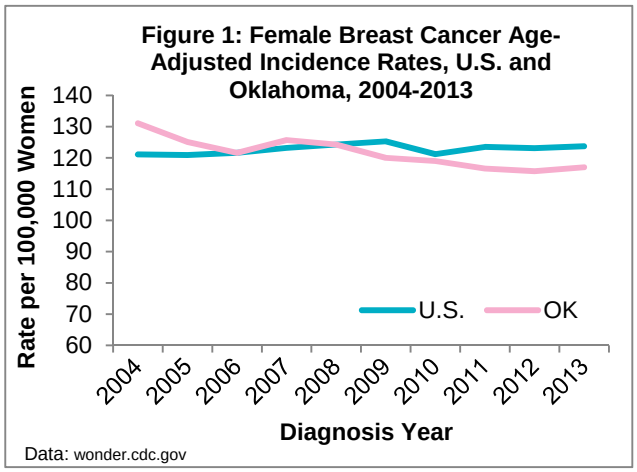
Data Sources for Breast and Cervical Cancer Burden in Oklahoma

The following figures represent data collected from three sources:

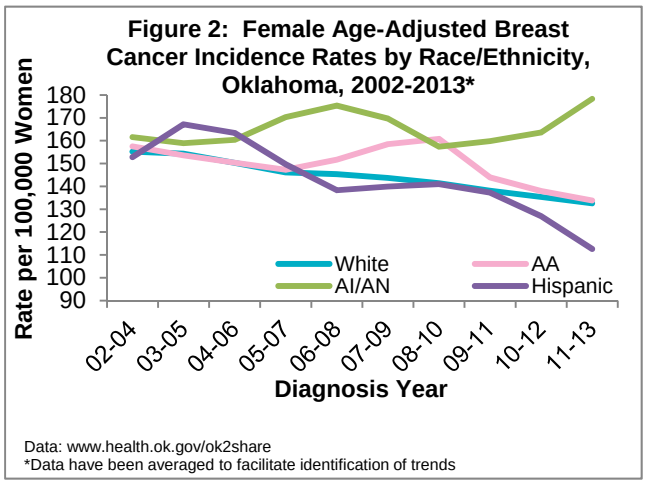
1. The Oklahoma Central Cancer Registry (OCCR) is a statewide central database of information on all cancers diagnosed or treated in Oklahoma since January 1, 1997. The latest Oklahoma specific cancer incidence data is available through 2013.
2. CDC WONDER (Wide-ranging Online Data for Epidemiologic Research, WONDER.cdc.gov) provided the latest national cancer incidence (2013) and mortality data (2014).
3. Behavioral Risk Factor Surveillance System (BRFSS) data provided the prevalence of the major behavioral risks among adults associated with premature morbidity and mortality. The latest finalized BRFSS data is through 2013.

Breast Cancer Burden in Oklahoma

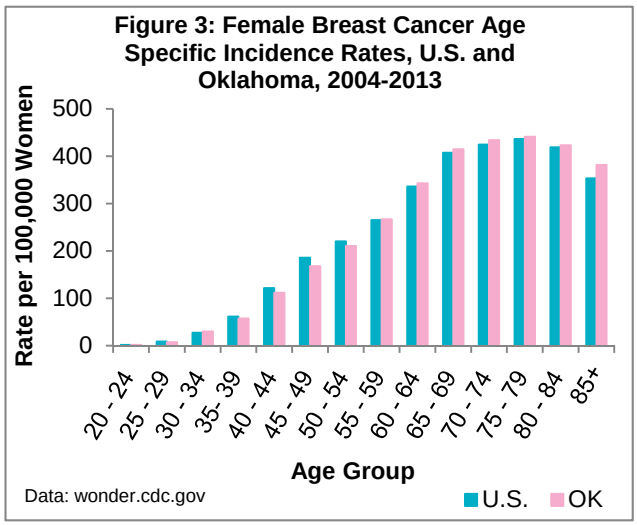
According to OCCR data, there were 3,096 new cases of female breast cancer (excluding in-situ) diagnosed in Oklahoma in 2013. The age-adjusted female breast cancer incidence rates for the U.S. gradually decreased about 5.6% between 2004 (131.1/100,000 population) and 2013 (117.0/100,000 population). There has been no decline in the last three years (Figure 1). In Oklahoma, the age-adjusted female breast cancer incidence rates decreased by 10.1% between 2004 and 2013. The incidence of breast cancer in Oklahoma has decreased in the last few years in comparison with the U.S.



In Oklahoma, the incidence of breast cancer differed by race and ethnicity. Oklahoma White women had a slightly decreasing trend of breast cancer incidence rate, while Hispanic women have experienced a significant decrease since 2010. The breast cancer incidence rate for African American (AA) women increased from 2006 to about 2009; however, the most recent rates show a declining trend and are similar to rates among White women. American Indian/Alaska Native (AI/AN) women had an increasing trend from 2006 to 2008, and then decreasing from 2008 to 2009. However, the AI/AN women's incidence rate has been on a significant incline since 2010. This year's legislative report presents a higher trend for AI/AN compared to previous years, because the Indian Health Service (IHS) linked race variable was used for analysis (Figure 2).

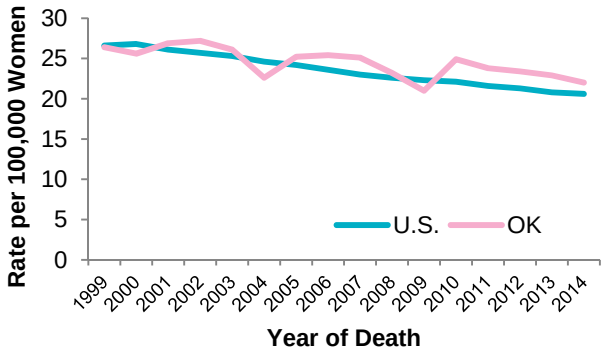


Breast cancer incidence increased substantially with increasing age, peaking at 75-79 years (Figure 3). These trends were similar in both Oklahoma and the U.S. Interestingly, Oklahoma had lower incidence rates than the U.S. among women under 60 years of age and higher rates than the U.S. among women 60 years and older.



Both U.S. and Oklahoma female breast cancer mortality rates have declined over time (Figure 4). The rate of the decline for the U.S. has been faster than that in Oklahoma. While the rates continue to decline, there is still a need for improvements in detecting breast cancer at the earliest stage through high quality screening to facilitate effective and efficient treatment. Cases identified at earlier stages have lower mortality.

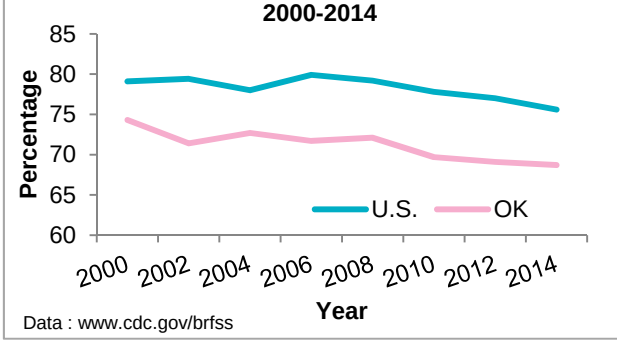
Figure 4: Female Breast Cancer Age Adjusted Mortality Rates, U.S. and Oklahoma, 1999-2014



Data: wonder.cdc.gov

Screening rates for breast cancer had a slight decrease recently for the U.S. and Oklahoma. Oklahoma women 50 years and older reported lower percentages of having a mammogram in the past two years compared with the percentage in U.S. women (Figure 5). Currently the U.S. Preventive Services Task Force (USPSTF) recommends biennial screening mammography for women 50-74 years of age.[7]

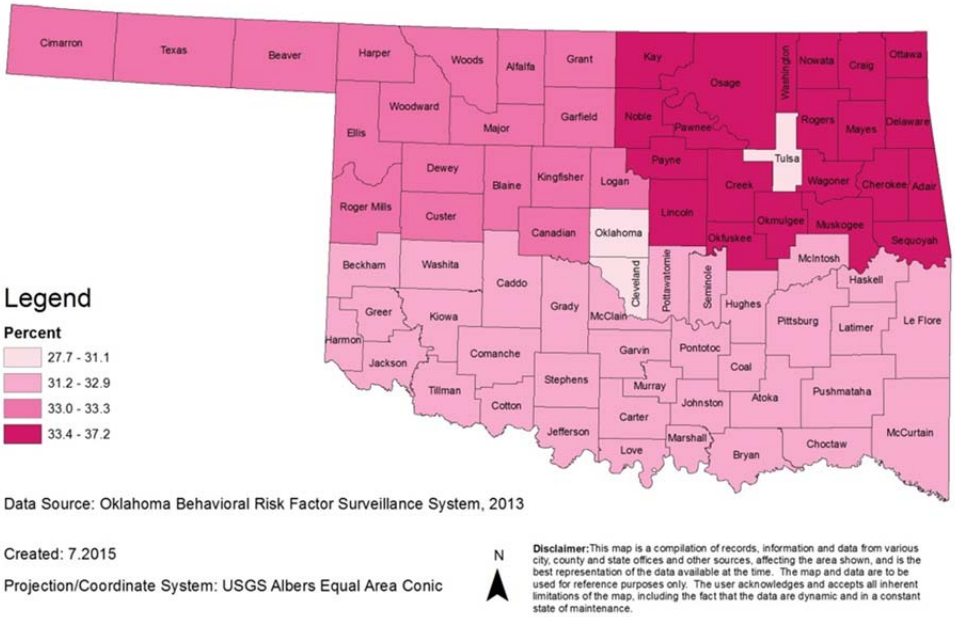
Figure 5: Percentage of Women 50 Years and Older who had a Mammogram in the Past Two Years, U.S. and Oklahoma, 2000-2014



Data : www.cdc.gov/brfss

Figure 6 displays the percentage of women aged 50 years and older who had not received a mammogram in the past two years by region. BRFSS weighted regional data for mammograms was used since county level data is not available. In Oklahoma, 33.6% of women reported not having a mammogram in the past two years. This is a slightly larger percentage of the population than was seen in the U.S. (23.0%). Counties located in the northeast region of the state had a higher proportion of women not receiving breast cancer screening.

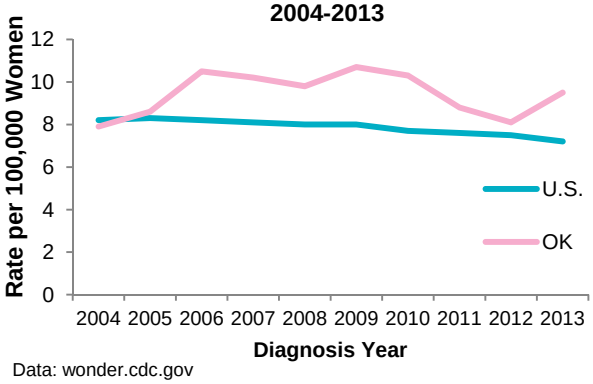
Figure 6: Percentage of Women 50 Years and Older who had Not Received a Mammogram in the Past Two Years in Oklahoma, by Region, 2013



Cervical Cancer Burden in Oklahoma

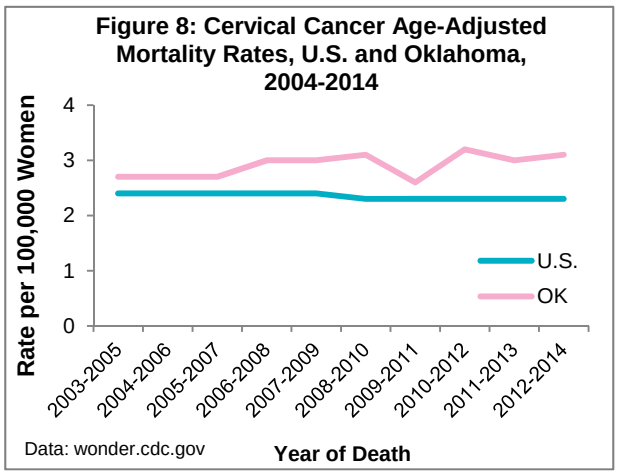
According to OCCR data, there were 178 new cases of cervical cancer diagnosed in Oklahoma in 2013. The cervical cancer incidence rates have been steadily decreasing in the U.S. In Oklahoma, however, the rates have not followed the same pattern, with an increasing trend between 2004 and 2006 followed by a relatively stable period, then decreasing between 2009 and 2012, and an increase in 2013 (Figure 7). The increasing incidence rate of cervical cancer is of great concern due to the fact that cervical cancer can be prevented through appropriate cervical cancer screenings. It is of additional concern that the rates in Oklahoma have consistently stayed much higher than rates in the U.S.

Figure 7: Cervical Cancer Age-Adjusted Incidence Rates, U.S. and Oklahoma, 2004-2013



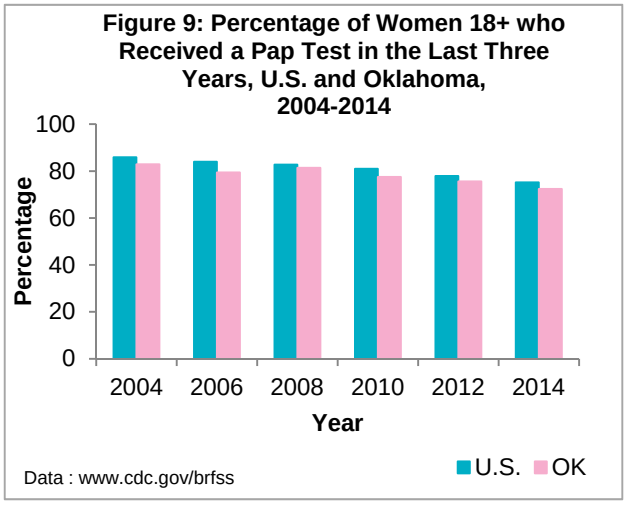
Data: wonder.cdc.gov

In Oklahoma, 36.4% of girls 13-17 years old had received three doses of the HPV vaccine in 2014. Oklahoma's coverage level was 3.3% lower than the U.S. level.[8] Compared with females, the vaccination level of males was quite a bit lower. Only 19.9% of Oklahoma males 13-17 years old had received three doses of the HPV vaccine in 2014.[8] Additional information can be found on the Immunization Service, Oklahoma State Department of Health website at http://imm.health.ok.gov.



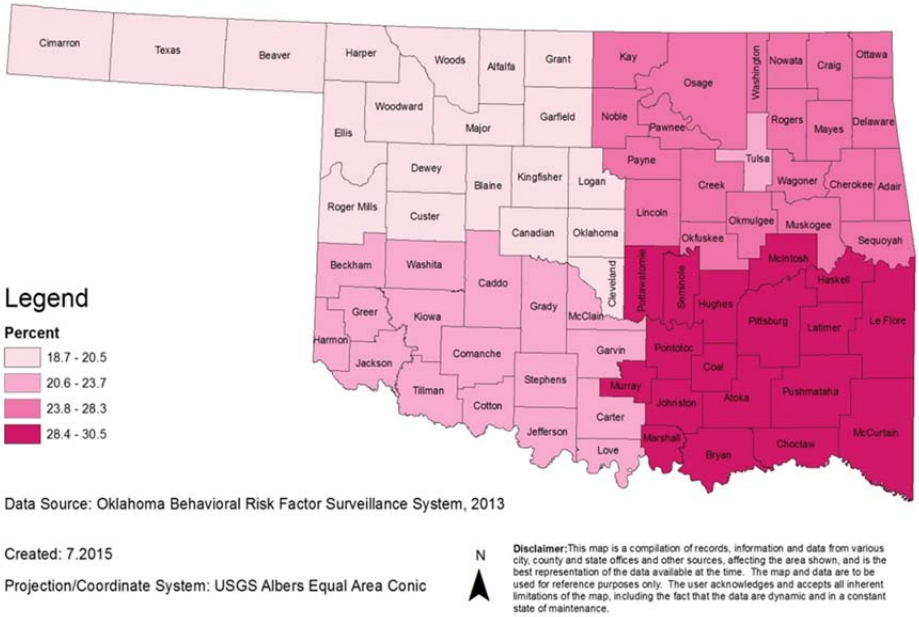
There was a slight decline in cervical cancer mortality nationally; however, Oklahoma's cervical cancer mortality rates have remained higher than the U.S. and have increased slightly (Figure 8).

Based on data from the BRFSS, screening rates for cervical cancer in both Oklahoma and the U.S. appear to be declining (Figure 9). Furthermore, the percentage of Oklahoma women receiving Pap tests has consistently remained lower than women throughout the U.S. The U.S. Preventive Services Task Force (USPSTF) currently recommends cervical cancer screening for women 21-65 years old every three years. USPSTF further recommends that women 30-65 years old who have a normal Pap test and HPV test may lengthen the testing interval to every five years.



In 2014, 27.6% of Oklahoma women aged 18 years and older reported that they had not received a Pap test within the last three years versus 24.8% in the U.S.[9] BRFSS weighted regional data for a Pap test was used since county level data is not available. Southeastern Oklahoma counties had a higher proportion of women who had not received a Pap test within the past three years when compared to the rest of state (Figure 10).[10]

Figure 10: Percentage of Women 18 Years and Older who Had Not Received a Pap Test in the Past Three Years in Oklahoma, by Region, 2013



Oklahoma Breast and Cervical Cancer Early Detection Programs (BCCEDP)

Oklahoma has three BCCEDPs: Cherokee Nation Breast and Cervical Cancer Early Detection Program, Kaw Nation Women's Health Program, and the OSDH, Take Charge! Program. These three screening programs receive funding through a cooperative agreement with the Centers for Disease Control and Prevention (CDC). At least 60% of the funds are for direct services. Support services such as health education and data collection constitute up to 40% of the funds. No more than 10% of the funds for support services can be used for administrative services. Funds from the CDC cooperative agreement cannot be used for treatment.

The screening programs serve low-income, uninsured, and underinsured women. The screening programs provide access to breast and cervical cancer screening services including a clinical breast exam, mammogram, pelvic examination, Pap test and HPV co-testing as appropriate. The purpose is to facilitate earlier screening, ensure prompt diagnosis, and improve access to treatment for breast and cervical cancer. The three screening programs work in partnership with each other to ensure Oklahoma women are enrolled in the screening program that best fits their needs.

Women with abnormal findings on breast and/or cervical cancer screening examinations receive a referral and access to diagnostic services. The three screening programs encourage women in need of diagnostic or treatment services to apply for Oklahoma Cares (SoonerCare Medicaid program). The Cherokee Nation BCCEDP will often provide diagnostic services for women that are screened regardless of their eligibility for Oklahoma Cares. Take Charge! provides diagnostic services for women that are screened through Take Charge! who are ineligible for Oklahoma Cares.

Oklahoma BCCEDP programs strive to serve women who are at highest risk for breast cancer, which includes women with increasing age and women in minority populations. In state fiscal year (SFY) 2015, a greater proportion of African American and Hispanic women received screening through Take Charge! than was represented among the general population of the state (Table 1). It is important to note that American Indian women are also served through the Cherokee Nation and Kaw Nation BCCEDP along with Take Charge! The data in Table 1 reflects only Take Charge! clients. All women served through Cherokee Nation BCCEDP and Kaw Nation are American Indian.

Table 1: Racial/Ethnic Distribution of Take Charge! Clients and the Oklahoma Population, SFY 2015

Race/Ethnicity	Program Percentage	Population Percentage
African American	11.6%	7.4%
American Indian*	1.2%	8.6%
Asian/Pacific Islander	0.8%	1.8%
Hispanic	41.4%	8.9%
Other/Unknown	0.2%	N/A
White	43.9%	72.2%
More than one Race	0.6	5.9%

Data Sources: Cancer Screening and Tracking System (CaST) and Census.gov

*American Indian reflects Take Charge! clients only.

The priority populations, contracting facilities, types of services provided, and funding level of each BCCEDP program are described in Table 2.

Table 2: Description of BCCEDP Programs

BCCEDP Program	Priority Population	Contracts	Services Provided	Funding FY 2015
Cherokee Nation Began: 1996	***Breast cancer screening:*** American Indian (AI) women enrolled in a federally recognized tribe, 40-64 years of age, with an income at or below 250% of the federal poverty level (FPL), and uninsured or underinsured. ***Cervical cancer screening***: AI women enrolled in a federally recognized tribe, 21-64 years of age who have not had a Pap test in five or more years, with the same income and insurance guidelines as breast cancer screening.	Provided services through Cherokee Nation Health Facilities, Cherokee Nation healthcare providers, an Indian Health Service hospital and a mobile mammography facility.	Screened over 22,505 eligible women since inception. In FY 2015 provided 3,557 breast cancer screenings and 1,267 cervical cancer screenings. Provided 165 diagnostic referrals.	Federal: $ 824,400 Tribal: $ 274,525 Total: $1,098,925 Federal BCCEDP funds require a $3:$1 match in the amount of $274,525.

BCCEDP Program	Priority Population	Contracts	Services Provided	Funding FY 2015
Kaw Nation Began: 2001	***Breast cancer screening*:** AI women 50-64 years of age, with an income at or below 250% of the FPL, and uninsured or underinsured. ***Cervical cancer screening*:** AI women 21-64 years of age who have not had a Pap test in five or more years, with the same income and insurance guidelines as breast cancer screening.	Provided services through Kanza Clinic and clinics located within the Ponca Tribe, Pawnee Tribe, Osage Tribe, and Iowa Tribe through memorandums of understanding (MOU).	Since inception screened over 4,140 eligible women. In FY 2015 provided 403 breast cancer screenings and 306 cervical cancer screenings.	Federal: $369,358 Tribal: $123,119 Total: $492,477 Federal BCCEDP funds require a $3:$1 match in the amount of $123,119.
Take Charge! Began: 1995	***Breast cancer screening:*** Oklahoma women 50-65 years of age, with an income at or below 185% of the FPL, and uninsured or underinsured. ***Cervical cancer screening:*** Oklahoma women 35-65 years of age who have not had a Pap test in five or more years, with the same income and insurance guidelines as breast cancer screening. Oklahoma women not included in the priority population may qualify for services based on appointment availability and funding resources.	Provided services through contracted healthcare providers, federally qualified health centers, health care organizations, laboratories, surgical consultants, mammography facilities, and colposcopy providers.*	Since inception screened over 68,602 eligible women. In FY 2015 provided 3,839 breast cancer screenings and 2,721 cervical cancer screenings. Provided 1,270 diagnostic referrals.^	Federal: $1,165,687 State: $388,562 Revolving: $127,365 Total: $1,681,614 Federal BCCEDP funds require a $3:$1 match in the amount of $388,562.

^The breast and cervical cancer screenings and diagnostic referrals are number of procedures performed.
*The list of current contracts with healthcare providers is located on http://takecharge.health.ok.gov

Oklahoma Diagnostic and Treatment Program

The Breast and Cervical Cancer Prevention and Treatment Act of 2000 (Public Law 106-354) provided medical assistance through SoonerCare Medicaid for women screened through any of the BCCEDP in the state that need assistance with breast and cervical cancer treatment. Oklahoma implemented the SoonerCare program, Oklahoma Cares, in January 1, 2005.

Oklahoma Cares

Oklahoma Cares provides diagnostic and treatment services for eligible women with abnormalities indicating a breast or cervical pre-cancerous condition or cancer. To be eligible to enroll in Oklahoma Cares for treatment services, women must be screened by a healthcare provider in accordance with Take Charge!, Cherokee Nation BCCEDP or the Kaw Nation Women's Health Program. Women must be 19-64 years of age, not insured, low income, and meet medical eligibility guidelines. Women enrolled in the Oklahoma Cares program receive full scope SoonerCare coverage inclusive of diagnostic and treatment services. Additional information about the Oklahoma Cares program can be found on the Oklahoma Health Care Authority (OHCA) website at http://www.okhca.org.

Statewide Breast and Cervical Cancer Activities

Over 14,000 Oklahomans participated in public education awareness events or outreach campaigns through multiple community organizations across the State. Major contributors to these efforts include Susan G. Komen Race for the Cure,® American Cancer Society Making Strides about Breast Cancer Walk,® Take Charge! contracted healthcare providers, and Oklahoma Project Woman.

Epidemiological Trend Studies

The following epidemiological trend studies have requested data from the OCCR during FY 2016.

1. Osteosarcoma Surveillance Study/ Forteo Patient Registry Linkage Study
    - Investigator: David Haris
    - Data Requested: July 23, 2015

2. Naloxone Administration Among Cancer Patients by Emergency Medical Services in Oklahoma, 2011-2014
    - Investigator: Johnnie Gilpen
    - Date Requested: August 17, 2015

3. Ovarian cancer mortality and survival trends in relation to changing patterns of menopausal hormone therapy in the U.S.
    - Investigator: Hannah Yang and Mark Sherman
    - Date Requested: March 3, 2016

4. Forecasting trends in testicular germ cell tumors in the U.S.
    - Investigator: Armen Ghazarian
    - Date Requested: January 1, 2016

5. Socioeconomic status and variation in laryngeal cancer stage at diagnosis and survival: a cross-country comparison
    - Investigator: Eshwar Kumar
    - Date Requested: June 11, 2016

6. Trends in Incidence Rates of Biliary Tract Cancers by Age Group and Cancer Site among Adults in North America (1999-2013) and Associations with Trends in Obesity Rates
    - Investigator: Alison Van Dyke
    - Date Requested: June 11, 2016

7. Rates of childhood cancers in the United States
    - Investigator: Meredith Shiels
    - Date requested: January 7, 2016

8. The association between the incidence of Chronic Lymphocytic Leukemia among adults in the U.S. and rural-urban residence
    - Investigator: S. Cristina Oancea
    - Date Requested: January 7, 2016

Take Charge! Statewide Provider Recruitment/Outreach

Take Charge! uses multiple methods to ensure screening services are provided to women in the geographic areas of highest need and in the most cost effective manner possible. In order to determine which counties have the highest need, Census 2014 (American Community Survey) data are reviewed and analyzed. Using the data, two weighted models (Model 2 and 2R) were developed combining social factors for breast and cervical cancer among women ages 45-64. Model 2 combines social factors such as low education level, no insurance and low income among all women in Oklahoma ages 45-64 (Figure 11). Model 2R combines social factors such as low education level, no insurance and low income among African American and Native American women ages 45-64 (Figure 12). The models assign a weight to each social factor to obtain a combined weighted rank for each Oklahoma county. The maps represent high need services areas by social factors for FY 2016. The resulting total ranks are split into five quintiles. The counties with the highest ranks are considered highest need.

Figure 11: Model 2 High Need Areas by Social Factors Modeling Women, Age (45-64), Education, Insurance Status, Income Oklahoma 2016

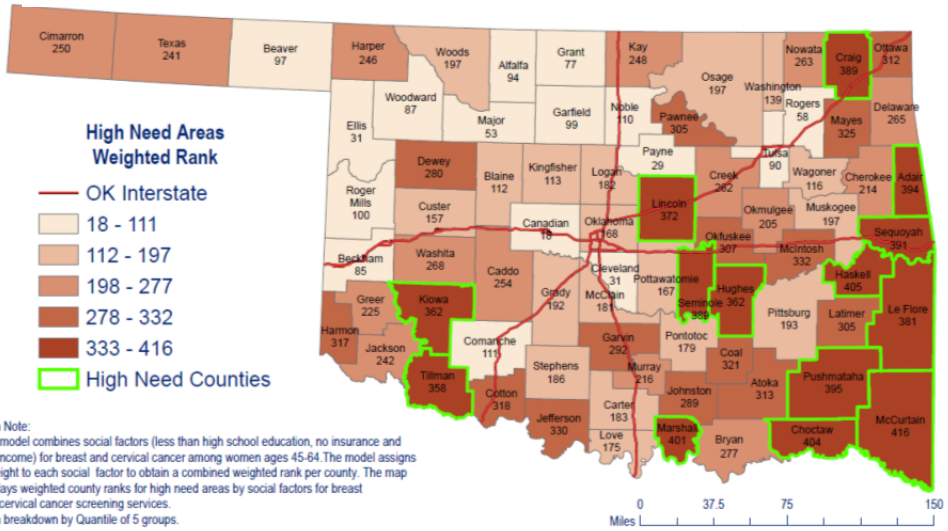
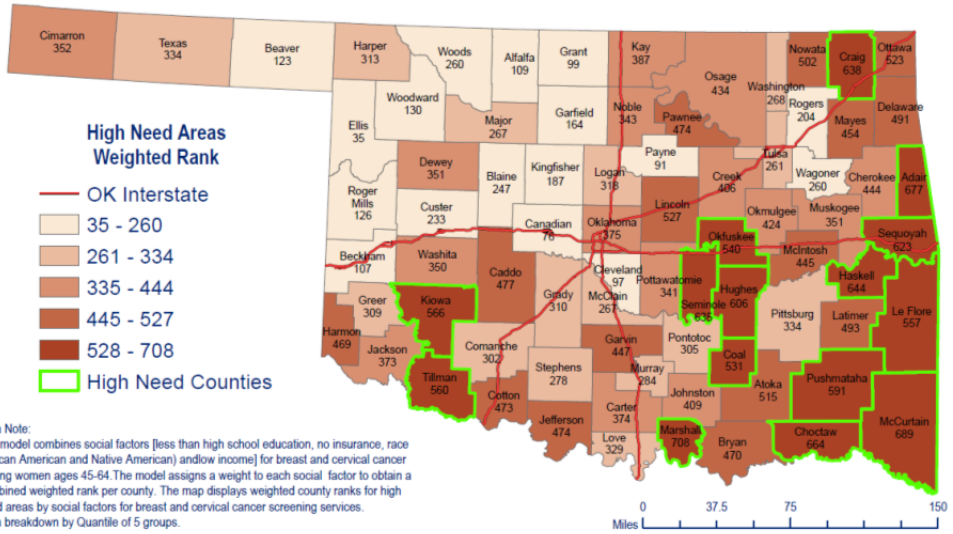


Figure 12: Model 2R High Need Areas by Social Factors Modeling Women, Age (45-64), Education, Insurance Status, Race (African American and Native American), and Income Oklahoma 2016



Recruitment efforts of healthcare providers are enhanced in highest need counties based on demographic and social factors in conjunction with breast cancer late stage incidence (map on page 17) and breast and cervical cancer mortality burden by county. Identification of healthcare providers located within high need counties is performed by reviewing Oklahoma Cares screener lists, conducting internet searches, receiving referrals from county health department staff, and referrals from contracted healthcare providers.

Table 3: Breast Cancer Age-Adjusted Death Rate+ by County, Oklahoma, 2005-2014

County	Rate	County	Rate	County	Rate
Adair	13.0	Grant	19.1	Nowata	10.7
Alfalfa	10.4	Greer	8.3	Okfuskee	16.9
Atoka	11.1	Harmon	19.5	Oklahoma	14.1
Beaver	20.2	Harper	18.8	Okmulgee	14.8
Beckham	10.7	Haskell	14.3	Osage	10.4
Blaine	13.9	Hughes	16.2	Ottawa	12.9
Bryan	12.1	Jackson	13.8	Pawnee	13.5
Caddo	13.9	Jefferson	8.8	Payne	14.1
Canadian	11.5	Johnston	15.5	Pittsburg	10.2
Carter	13.2	Kay	12.9	Pontotoc	11.2
Cherokee	12.3	Kingfisher	9.8	Pottawatomie	14.6
Choctaw	11.6	Kiowa	13.6	Pushmataha	9.1
Cimarron	12.4	Latimer	9.8	Roger Mills	10.5
Cleveland	10.8	Leflore	14.6	Rogers	13.0
Coal	*	Lincoln	13.1	Seminole	12.0
Comanche	12.5	Logan	12.9	Sequoyah	15.0
Cotton	11.3	Love	20.5	Stephens	10.9
Craig	9.6	McClain	11.3	Texas	7.7
Creek	13.4	McCurtain	16.6	Tillman	11.6
Custer	10.3	McIntosh	11.5	Tulsa	14.8
Delaware	9.7	Major	12.6	Wagoner	12.5
Dewey	11.1	Marshall	14.5	Washington	15.7
Ellis	10.1	Mayes	12.7	Washita	9.0
Garfield	13.1	Murray	12.3	Woods	9.3
Garvin	13.0	Muskogee	12.1	Woodward	12.1
Grady	11.6	Noble	12.0	STATE	13.1

+Rate per 100,000 population

*Calculations have been suppressed due to small cell size (less than 5 deaths/populations less than 20)

Source: Oklahoma State Department of Health, Vital Statistics, 2005-2014

Table 4: Cervical Cancer Age-Adjusted Death Rate+ by County, Oklahoma, 2005-2014

County	Rate	County	Rate	County	Rate
Adair	2.7	Grant	*	Nowata	*
Alfalfa	*	Greer	*	Okfuskee	*
Atoka	*	Harmon	*	Oklahoma	1.4
Beaver	*	Harper	*	Okmulgee	1.2
Beckham	*	Haskell	*	Osage	1.2
Blaine	*	Hughes	*	Ottawa	2.8
Bryan	1.3	Jackson	2.9	Pawnee	*
Caddo	2.2	Jefferson	*	Payne	1.3
Canadian	1.5	Johnston	*	Pittsburg	3.1
Carter	1.5	Kay	1.4	Pontotoc	*
Cherokee	1.1	Kingfisher	3.0	Pottawatomie	2.5
Choctaw	*	Kiowa	*	Pushmataha	*
Cimarron	*	Latimer	6.7	Roger Mills	*
Cleveland	1.1	Leflore	1.5	Rogers	0.8
Coal	^	Lincoln	*	Seminole	2.4
Comanche	1.3	Logan	1.8	Sequoyah	2.8
Cotton	*	Love	*	Stephens	1.3
Craig	*	McClain	*	Texas	*
Creek	1.6	McCurtain	2.2	Tillman	*
Custer	*	McIntosh	*	Tulsa	1.5
Delaware	1.2	Major	*	Wagoner	0.6
Dewey	*	Marshall	*	Washington	2.1
Ellis	*	Mayes	1.5	Washita	*
Garfield	0.7	Murray	*	Woods	*
Garvin	*	Muskogee	2.4	Woodward	12.1
Grady	1.7	Noble	*	STATE	1.5

+Rate per 100,000 population
*Calculations have been suppressed due to small cell size (less than 5 deaths/populations less than 20)
Source: Oklahoma State Department of Health, Vital Statistics, 2005-2014
^ No data available

Upcoming Priority Strategies

- Increase high quality breast and cervical cancer screening in Oklahoma in collaboration with partners;
- Encourage evidence-based breast and cervical cancer public education and targeted outreach to women at highest risk;
- Utilize policy approaches and health systems changes to improve implementation of breast and cervical guidelines and practices for healthcare professionals;
- Encourage patient navigation services to assist with access to screening and diagnostic services; and

- Decrease structural barriers (transportation, availability, and accessibility) that limit access to breast and cervical cancer screening, and diagnostic and treatment services.

Emerging Technology and Strategies to Reduce the Costs of Breast and Cervical Cancer

A recent emerging strategy to improve breast screening is breast tomosynthesis for breast cancer screening. A recent study reviewed digital breast tomosynthesis screening compared with digital mammography. The study was conducted from September 2010 through September 2014 and published in the Journal of the American Medical Association Oncology. The study concluded that digital breast tomosynthesis screening outcomes can reduce recall for additional imaging and assist with detection of cancer at an earlier point in time. The authors indicated that the study is the first step in integrating tomosynthesis for breast cancer screening.[11]

There are several emerging strategies to assist with breast cancer treatment. One strategy is the genetic test, MammaPrint,® which can reduce the use of post-surgery chemotherapy among early stage breast cancer patients. The study suggests that the use of the MammaPrint® could decrease the use of adjuvant chemotherapy and reduce unfavorable aggressive treatments. MammaPrint® is part of the phase III microarray in node negative disease may avoid chemotherapy (MINDACT) trial, which is a prospective randomized controlled clinical trial of breast cancer recurrence genomic assay and prospective translational research study.[12]

Another emerging strategy is to reduce mortality by utilizing partial breast irradiation instead of whole breast irradiation for women undergoing breast conserving therapy for early breast cancer. The study was comprised of a meta-analysis of partial breast irradiation versus whole-breast irradiation for breast cancer treated with a lumpectomy. The results of the meta-analysis concluded that the partial breast irradiation was better than whole breast irradiation and may reduce overall mortality for non-breast cancer deaths and total mortality.[13]

A strategy to reduce the medical costs of breast cancer is to prevent late stage diagnosis by promoting breast screening for early detection. Early detection of cancer at the in situ stage (cancer cells have not spread to nearby tissue[14]) or local stages (cancer is limited to the place it started, with no sign that it has spread[14]) provides better chances of five-year survival. Figure 13 displays the proportion of late stage cases of breast cancer by Oklahoma counties.

Figure 13: Percent of Breast Cancer Cases Diagnosed at Late Stage by County, Oklahoma, 2011-2013

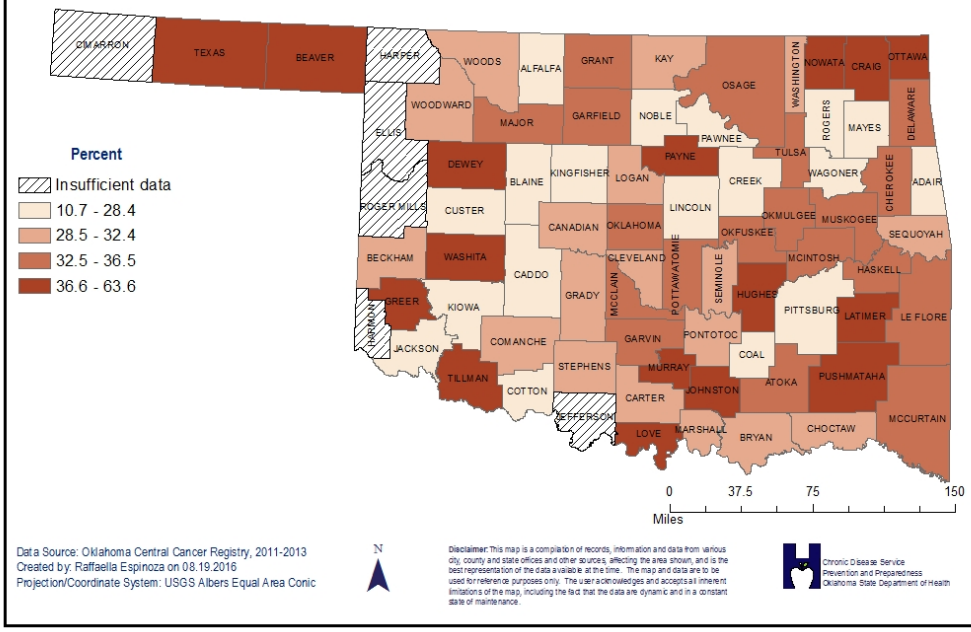


Table 5 shows the proportion of diagnosed late stage breast cancers by region. The rate of Oklahoma women diagnosed with late stage breast cancer is slightly higher in the southeast and central regions of Oklahoma as compared to rest of the state. Women in southeast and central Oklahoma that are 50 years of age and older, low income, uninsured or underinsured need access to additional screening, diagnostic and treatment services. Barriers to accessing services in the southeast and central regions of Oklahoma include financial, transportation, distance to services, culturally appropriate clinic availability, and clinic hours. In addition, the southeast region is considered a medically underserved area/population. It has too few primary care providers, high poverty and/or high elderly populations.

Table 5: Percent of Breast Cancer Cases Diagnosed at Late Stage in Oklahoma by Region, 2011-2013

Percentage	Region
33.2%	Central Cleveland and Oklahoma
31.3%	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
30.8%	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
33.2%	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, LeFlore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
29.9%	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
32.6%	Tulsa Tulsa

A recent emerging strategy to improve cervical cancer screening is to develop personalized interventions for mental health services users. A study on this strategy indicates there are specific barriers such as knowledge about screening processes, knowledge of and attitudes regarding mental illness, and health services delivery factors that inhibit cancer screening. The study indicates that an integrated approach of healthcare professionals and mental healthcare professionals would be beneficial in improving screening for mental health services users.[15] Another strategy to improve cervical cancer screening is to offer self-sampling for HPV testing for women that are not getting cervical cancer screening. The study on this strategy indicates that HPV is the main risk factor and cause of cervical cancer and there are barriers that prevent women from receiving cervical cancer screening. The study indicates there are numerous technologies and methods used for HPV self-sampling and that more research is needed to review the technical performance and acceptability of self-sampling technologies and methods.[16]

Breast and Cervical Cancer Resources for Oklahomans

The Oklahoma Cancer Resource Guide, *Threads of Support*, is available for Oklahomans to use to find resources to assist with breast and cervical cancer screening, diagnostic testing and treatment. The guidebook contains resource information about all cancers, not just breast and cervical cancer. *Threads of Support* can be accessed online at http://cccp.health.ok.gov. The link is located on the left side of the page. Limited hard copies of the guide are available by calling (405) 271-4072.

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