

Running the Numbers

*A Periodic Feature to Inform North Carolina Health Care Professionals
About Current Topics in Health Statistics*

Gynecologic Cancers: Incidence and Mortality Trends Among Women in North Carolina

This analysis used data on gynecologic cancers among women in North Carolina obtained from the North Carolina Central Cancer Registry (NCCCR). The NCCCR collects, processes, and analyzes data on all cancer cases diagnosed among North Carolina residents. All health care providers who diagnose or treat cancer are required to report cases to the NCCCR within 6 months of diagnosis. To examine trends in incidence and mortality, annual incidence and mortality rates were calculated for gynecologic cancers among women in North Carolina (age-adjusted to the 2000 US standard population) for the years 1995 through 2011 (the most recent year for which complete incidence data were available).

According to the Centers for Disease Control and Prevention (CDC), there are 5 main types of gynecologic cancers: cervical, uterine, ovarian, vaginal, and vulvar. The cancer site groupings were defined according to site recode variables from the Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute [1]. When calculating rates for minority women, we included all races other than white. These cancers do not include in-situ cases.

Cervical Cancer

Cervical cancer, which is primarily caused by human papillomavirus (HPV) infection, can be prevented through regular Papanicolaou (Pap) smear screenings and use of the recently developed HPV vaccine [2]. The incidence rate of cervical cancer among all women in North Carolina decreased slightly between 1995 and 2011, from 9.4 to 7.3 cases per 100,000 women (Figure 1). During that same period, the rate of mortality from cervical cancer also decreased, from 3.6 to 1.9 deaths per 100,000 women (Figure 2). The incidence rates for white and minority women differed throughout this period, with minority women consistently having

higher cervical cancer incidence rates than white women. The incidence rate among white women remained stable between 1995 and 2011 (Figure 3), but the incidence rate among minority women decreased significantly, from 14.0 to 7.8 cases per 100,000 minority women (Figure 4). Similarly, the mortality rate among white women remained stable (Figure 5), while a significant decrease occurred among minority women, from 7.7 to 2.6 deaths per 100,000 minority women (Figure 6). The disparity in mortality rates between whites and minorities was significant over those years.

Uterine Cancer

To calculate rates for uterine cancer, this analysis included endometrial cancer, which is cancer of the lining of the uterus (corpus uteri), and cancer of the uterus not otherwise specified. The incidence rate of uterine cancer among all women in North Carolina increased steadily between 1995 and 2011 (Figure 1), from 21.2 to 24.4 cases per 100,000 women. Nevertheless, the mortality rate remained stable from 1995 through 2011 (Figure 2). There is no standard or routine method of screening for endometrial cancers, but they are usually detected at early stages through symptoms and can be treated effectively [3]. Although the incidence rate of uterine cancer was initially lower among minority women than among white women, the rate among white women increased only slightly between 1995 and 2011 (Figure 3), while the rate among minority women increased significantly, from 17.9 to 25.5

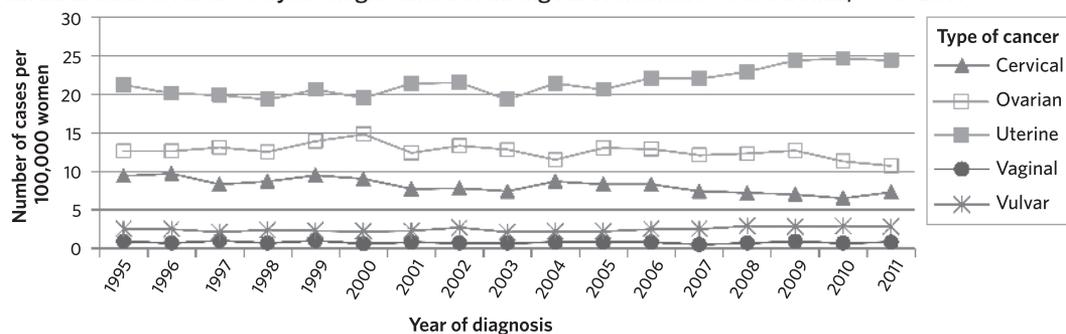
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FIGURE 1.

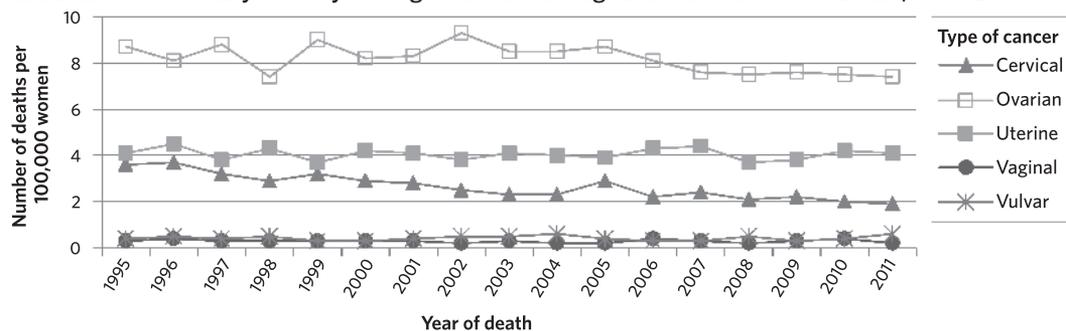
Annual Incidence Rates of Gynecologic Cancers Among All Women in North Carolina, 1995-2011



Source: North Carolina Central Cancer Registry, North Carolina State Center for Health Statistics.

FIGURE 2.

Annual Rates of Mortality From Gynecologic Cancers Among All Women in North Carolina, 1995-2011



Source: North Carolina Central Cancer Registry, North Carolina State Center for Health Statistics.

cases per 100,000 minority women (Figure 4). The mortality rates among both white women (Figure 5) and minority women (Figure 6) remained stable over those years.

Ovarian Cancer

The incidence rate of ovarian cancer among all women in North Carolina remained stable from 1995 to 2011 (Figure 1), while the rate of mortality from ovarian cancer decreased slightly between 2002 and 2011 (Figure 2). As is the case for endometrial cancers, ovarian cancers cannot be detected through routine screening tests. The incidence rates for ovarian cancer among both white women (Figure 3) and minority women (Figure 4) remained stable between 1995 and 2011. Rates of mortality from ovarian cancer among both groups decreased slightly during those years: from 8.8 to 7.5 deaths per 100,000 among white women

(Figure 5), and from 8.2 to 6.7 deaths per 100,000 among minority women (Figure 6).

Vaginal Cancer

Vaginal cancer is rare and is known to be caused by HPV infection [4]. The incidence rate of vaginal cancer among all women in North Carolina was low and remained stable between 1995 and 2011 (Figure 1). The rate of mortality from vaginal cancer was also low and remained stable from 1995 to 2011 (Figure 2). The incidence rate of vaginal cancer among white women remained stable from 1995 to 2011 (Figure 3), while the rate among minority women initially remained stable and then increased slightly, from 0.9 to 1.3 cases per 100,000 minority women (Figure 4). The rate of mortality from vaginal cancer remained stable among white women (Figure 5) while decreasing slightly among minority women (Figure 6).

Vulvar Cancer

Vulvar cancer is another rare cancer known to be caused by HPV infection [4]. Incidence and mortality rates for vulvar cancer among all women in North Carolina remained steady from 1995 to 2011 (Figures 1 and 2). The incidence rates among minority women (Figure 4) were consistently lower than the incidence rates among white women (Figure 3), but rates were stable for both groups from 1995 through 2011. The rate of mortality from vulvar cancer also remained stable from 1995 to 2011 for both white women (Figure 5) and minority women (Figure 6).

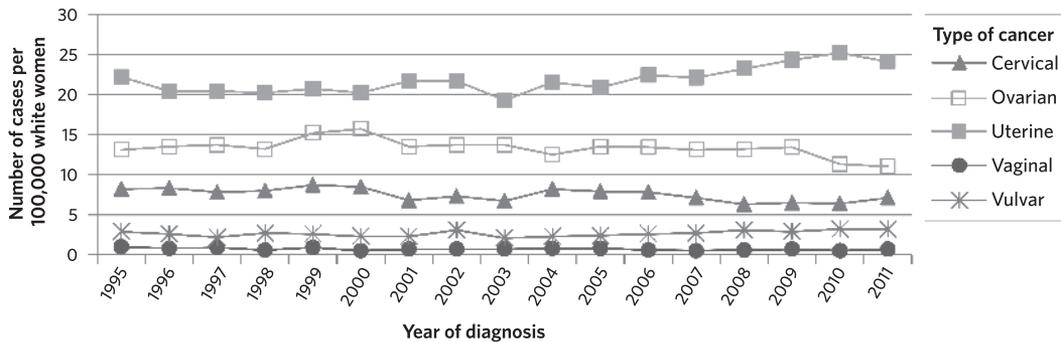
Conclusion

Overall, the incidence rates of ovarian, vaginal, and vulvar cancers remained stable between 1995 and 2011, and there was a slight decrease in the incidence of cervical cancer. However, there was a slight increasing trend in the incidence of uterine

cancer. The rates of mortality from uterine, vaginal, and vulvar cancers remained stable between 1995 and 2011, while rates of mortality from ovarian and cervical cancer decreased slightly. This finding suggests that treatments can be effective if these cancers are detected at early stages. Looking at incidence and mortality trends by race illustrates disparities between white women and minority women; identifying such disparities can assist cancer control programs in directing activities to the groups in need of additional prevention and treatment efforts.

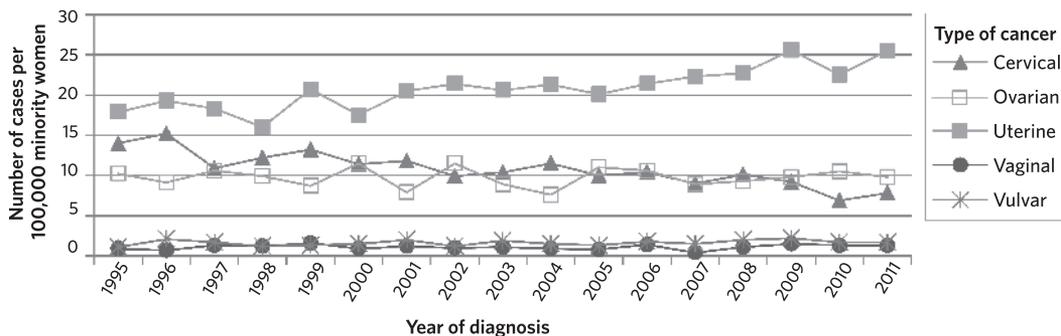
Several gynecologic cancers are caused by HPV infection and thus could be largely prevented by appropriate vaccination strategies. The Advisory Committee on Immunization Practices of the CDC recommends HPV vaccination for females aged 11 or 12 years of age (or up to age 26 years, if not previously vaccinated) [5]. Pap screening is also recommended for all women aged 21–65 years [6].

FIGURE 3.
Annual Incidence Rates of Gynecologic Cancers Among White Women in North Carolina, 1995–2011



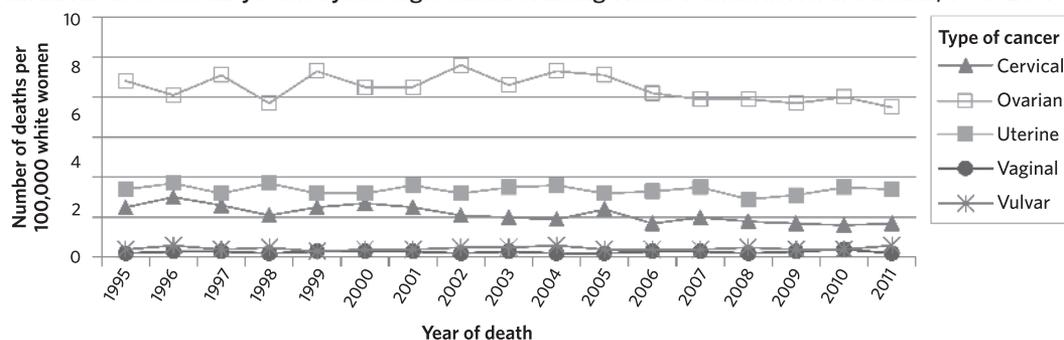
Source: North Carolina Central Cancer Registry, North Carolina State Center for Health Statistics.

FIGURE 4.
Annual Incidence Rates of Gynecologic Cancers Among Minority Women in North Carolina, 1995–2011



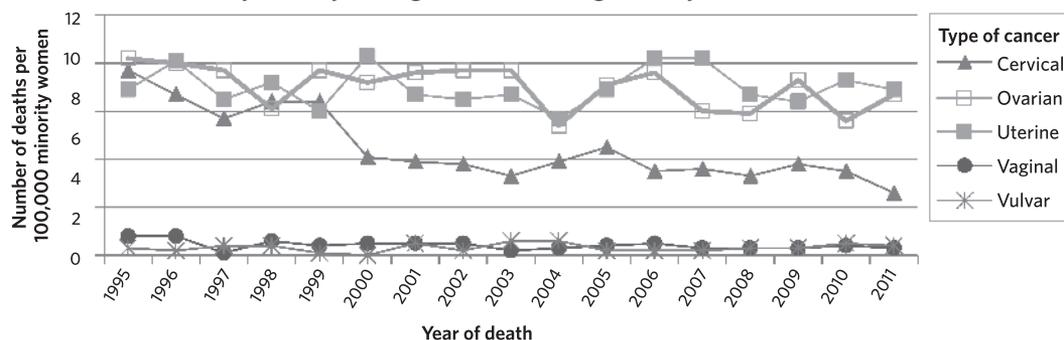
Source: North Carolina Central Cancer Registry, North Carolina State Center for Health Statistics.

FIGURE 5.
Annual Rates of Mortality From Gynecologic Cancers Among White Women in North Carolina, 1995-2011



Source: North Carolina Central Cancer Registry, North Carolina State Center for Health Statistics.

FIGURE 6.
Annual Rates of Mortality From Gynecologic Cancers Among Minority Women in North Carolina, 1995-2011



Source: North Carolina Central Cancer Registry, North Carolina State Center for Health Statistics.

Finally, as treatments are effective for most gynecologic cancers when they are detected at early stages, routine physical exams and screening are recommended for all women. **NCMJ**

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References

1. Surveillance, Epidemiology, and End Results (SEER) Program. Site recode. SEER Web site. <http://seer.cancer.gov/siterecode/>. Accessed April 14, 2014.
2. Centers for Disease Control and Prevention (CDC). Gynecologic cancers. Cervical cancer. CDC Web site. <http://www.cdc.gov/cancer/cervical/index.htm>. Page last updated March 7, 2014. Accessed April 8, 2014.
3. National Cancer Institute (NCI) at the National Institute of Health. Endometrial cancer screening. NCI Web site. <http://www.cancer.gov/cancertopics/pdq/screening/endometrial/Patient/page3>. Accessed April 14, 2014.
4. Centers for Disease Control and Prevention (CDC). Vaginal and vulvar cancer. CDC Web site. http://www.cdc.gov/cancer/vagvulv/pdf/vagvulv_facts.pdf. Accessed April 9, 2014.
5. Centers for Disease Control and Prevention. FDA licensure of bivalent human papillomavirus vaccine (HPV2, Cervarix) for use in females and updated HPV vaccination recommendations from the Advisory Committee on Immunization Practices (ACIP). *MMWR Morb Mortal Wkly Rep.* 2010;59(20):626-629.
6. US Preventive Services Task Force (USPSTF). Screening for cervical cancer. USPSTF Web site. <http://www.uspreventiveservicestaskforce.org/uspstf/uspstfcerv.htm>. Accessed June 13, 2014.