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Background
• Cervical cancer is the fourth most common gynecologic malignancy affecting women in the world and one of the leading causes of death worldwide.1,2
• Human papillomavirus (HPV) is the main risk factor for the development of cervical cancer, and it is known to be the most common sexually transmitted infection.1,3
• The incidence of this gynecological cancer has declined since the implementation of the periodic screening guidelines.4–7
• Although preventable, new trends in incidence and burden have been observed indicating possible geographical health disparities in the continental United States (US).1,4–6
• We evaluated the trajectory of the incidence and burden of cervical cancer by state and birth year to conduct a retrospective cohort study of the incidence of cervical cancer across the US from 2001 through 2018 using the Surveillance, Epidemiology, and End Results (SEER) dataset.

Methods
• Cervix malignancies were filtered using diagnosis codes C53.0-C53.9 and morphology type ICD-O-3 codes 8010-8671, 8940-8941. (All cases were microscopically confirmed).
• Age-adjusted incidence rates per 100,000 persons were calculated using SEER*Stat software.
• The Jointpoint Regression Program (version 4.9.0.0) was used to compare temporal trends by states and to estimate annual percent change (APC).
• The NCI’s Age Period Cohort online tool was used to fit birth cohort models establishing 1954 as a reference year (1953 for Nevada).
• For these analyses, threshold probability for statistical significance was set at 0.05.

Results
• 218,660 cervical cancer cases were diagnosed amongst women in the US from 2001 to 2018.
• Nationally, the incidence of cervical cancer per 100,000 person-years has decreased from 9.7 (95% CI, 8.5-8.8) in 2001 to 7.1 (95% CI, 7.0-7.3) in 2018.
• Cervical cancer incidence declined significantly in Nevada from 2001 to 2011 (APC = -2.8%, 95% CI = -0.9% to -3.1%) and then significantly increased from 2011 to 2018 (APC = 5.2%, 95% CI = 0.7% to 9.8%).
• Kentucky cervical cancer incidence decreased significantly from 2001 to 2008 (APC = -3.4%, 95% CI = -6.5% to -0.2%) and then significantly increased from 2008 to 2017 (APC = 1.8%, 95% CI = 0.2% to 3.8%).
• Indiana had a similar trend having a significant decrease in cervical cancer incidence from 2001 to 2008 (APC = -2.9%, 95% CI = -4.7% to -1.1%) and a significant incidence increase from 2008 to 2018 (APC = 1.2%, 95% CI = 0.1% to 2.4%).

Figure 1. Trends in Annual Incidence Rates of Cervical Cancer Among Women in the United States by state (2001-2018)

Results
• Compared with the reference year in Indiana, Kentucky, and Nevada (women born in 1954 or 1953 in Nevada), the risk of cervical cancer was higher amongst the 1994, 1989, and 1983 cohorts (respectively) (Figure 2).
• A. Indiana IRR (1994)=1.5 [95% CI: 0.9-2.3] B. Kentucky IRR (1989)=2.0 [95% CI: 1.2-3.1] C. Nevada IRR (1983)= 1.5 [95% CI: 0.9-2.3]

Figure 2. Incidence Rate Ratios (IRRs) by Birth Cohort Models for Cervical Cancer in Indiana, Kentucky, and Nevada (2001-2018)

Conclusion
• This study reveals possible geographical health disparities, which might indicate the underutilization of preventative care in specific states which has implications for future cancer prevention campaigns.
• Additional research is needed to assess screening and vaccination rates by state to better understand the cause for state-specific differences in cervical cancer incidence trends.

References

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