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## Association of Medicaid expansion with mortality from gynecologic cancers

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### OBJECTIVE:

The Affordable Care Act was signed in March 2010, aiming to improve health outcomes, primarily through coverage expansions and protections.<sup>1</sup> Most policies were implemented universally, but Medicaid expansion was delayed by litigation and ultimately made an optional program for states.<sup>2</sup> We sought to capitalize on variable policy uptake using quasi-experimental, difference-in-difference methods to assess the association of Medicaid expansion with gynecologic cancer mortality.

### STUDY DESIGN:

We accessed mortality data from the National Center for Health Statistics from 1999 to 2018.<sup>3</sup> Age-adjusted annual gynecologic cancer (International Classification of Diseases, 10th Revision, C51–C58) mortality rates per 100,000 women ages 15 to 64 were assessed. We compared mortality by cancer (ovary, C56, C57.0, C57.4; uterus, C54, C55; cervix, C53; vulva and vagina, C51, C52), race, ethnicity, metro or nonmetro residence, and January 2014 Medicaid expansion (AZ, AR, CO, DE, HI, IL, IA, KY, MD, MA, NV, NM, NY, ND, OH,

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The authors report no conflict of interest.

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OR, RI, VT, WV) vs nonexpansion states (AL, FL, GA, ID, KA, ME, MS, MO, NE, NC, OK, SC, SD, TE, TX, UT, VA, WI, WY). We assessed for policy impact with difference in differences (DID), by comparing means and changes in mortality in the preexpansion vs postexpansion period (2010–2013 vs 2015–2018, with 2014 as an a priori assigned washout year owing to expectation of some delay in mortality impact of insurance change).

## RESULTS:

From 1999 to 2018, age-adjusted annual gynecologic cancer mortality among women ages 15 to 64 fell from 9.9 to 8.6 per 100,000, although uterine cancer mortality increased slightly (1.8/100,000 to 2.5/100,000). Across races, mortality was consistently highest for black women (10.6/100,000 for black women vs 8.5/100,000 for white women in 2018), but trends over time were similar. Although comparable in early years, mortality was significantly higher among nonmetro vs metro women in 2018 ( $\mu=1.0/100,000$ ;  $P<.001$ ). The nonexpansion states represented a larger population of women ages 15 to 64 compared with the expansion states (41.6 vs 31.6 million). Nonexpansion states had relatively more black women (18.8% vs 13.7%) and fewer Asian women (4.4% vs 7.4%), but growth in minority, Hispanic, and metro populations over time was similar. Expansion and nonexpansion states exhibited overall parallel trends in gynecologic cancer mortality across 1999–2009 and the preexpansion period (2010–2013;  $\mu_{\text{Exp}}=-0.10/100,000$ ;  $\mu_{\text{Non-exp}}=-0.05/100,000$ ) but diverged in the postexpansion period (2015–2018;  $\mu_{\text{Exp}}=-0.48/100,000$ ;

$\mu_{\text{Non-exp}}=0.16/100,000$ ), with significantly lower mortality in 2018 in expansion states ( $\mu=-0.64/100,000$ ;  $P=.001$ ). By DID (Figure), Medicaid expansion was associated with significant reduction in mean annual age-adjusted gynecologic cancer mortality among women ages 15 to 64 ( $\mu=-0.56/100,000$ ; 95% confidence interval,  $-0.85$  to  $-0.27$ ;  $P=.002$ ). Change in mortality in the postexpansion vs preexpansion period in expansion states trended more negatively ( $\mu=-0.59/100,000$ ;  $P=.16$ ). Within subgroups, we estimated treatment effect reductions in mean mortality within uterine cancer ( $\mu=-0.18/100,000$ ;  $P=.01$ ), cervical cancer ( $\mu=-0.25/100,000$ ;  $P=.002$ ), and nonmetro women ( $\mu=1.03/100,000$ ). Overall, we estimated that 246 deaths from gynecologic cancers in nonexpansion states might have been prevented with Medicaid expansion in 2018 alone.

## CONCLUSION:

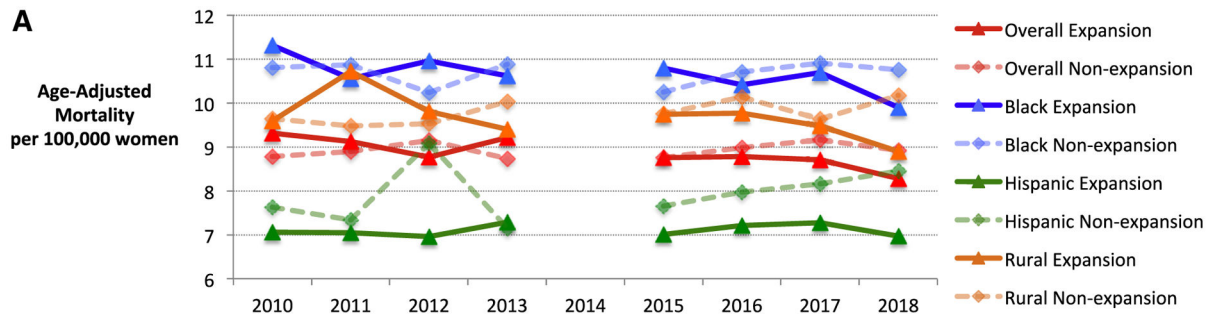
Building on previous evidence of improved access for gynecologic cancer patients,<sup>4</sup> we used DID methods to demonstrate evidence of small relative reductions in gynecologic cancer mortality, particularly from uterine and cervical diseases, in states that expanded Medicaid relative to those that did not, possibly owing to improved access to screening and treatment. This analysis is limited in model precision and statistical testing by availability of data only at the group level and not patient level. Although more states have adopted expansion recently, 13 states continue to decline the policy.<sup>5</sup> Patients with gynecologic cancer in these states may benefit from expansion.

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B	Expansion States						Non-expansion States						Diff-in-Diff Estimates	
	$\mu_{2010-13}$	$\mu_{2015-18}$	$\Delta\mu$	$\Delta_{2010-13}$	$\Delta_{2010-13}$	$\Delta\Delta$	$\mu_{2010-13}$	$\mu_{2015-18}$	$\Delta\mu$	$\Delta_{2010-13}$	$\Delta_{2010-13}$	$\Delta\Delta$	$\Delta\Delta\mu$	$\Delta\Delta\Delta$
<b>Overall</b>	9.110	8.614	-0.496	-0.101	-0.481	-0.380	8.895	8.956	0.061	-0.048	0.158	0.206	-0.557***	-0.586
<b>Cancer</b>														
Ovary	4.126	3.674	-0.451	-0.513	-0.251	0.262	3.811	3.460	-0.352	-0.421	0.160	0.581	-0.100	-0.319
Uterus	2.354	2.496	0.142	0.219	-0.095	-0.314	2.097	2.422	0.324	0.169	0.102	-0.067	-0.182*	-0.247
Cervix	2.307	2.066	-0.241	0.213	-0.101	-0.314	2.629	2.642	0.013	0.169	-0.067	-0.236	-0.254**	-0.078
<b>Race</b>														
Black	10.869	10.440	-0.429	-0.692	-0.889	-0.197	10.674	10.639	-0.035	0.085	0.498	0.413	-0.394	-0.610
White	9.051	8.573	-0.478	0.098	-0.410	-0.508	8.704	8.749	0.045	-0.118	0.167	0.285	-0.523**	-0.793
<b>Ethnicity</b>														
Hispanic	7.077	7.091	0.014	0.231	-0.041	-0.272	7.422	8.064	0.642	-0.472	0.806	1.278	-0.6281	-1.55
Non-Hispanic	9.314	8.776	-0.538	-0.170	-0.496	-0.326	8.875	9.049	0.174	0.053	0.128	0.075	-0.712***	-0.401
<b>Residence</b>														
Metro	9.005	8.505	-0.500	-0.101	-0.467	-0.366	8.730	8.797	0.067	-0.114	0.160	0.274	-0.567***	-0.640
Non-metro	9.863	9.467	-0.395	-0.182	-0.843	-0.661	9.296	9.931	0.635	0.393	0.416	0.023	-1.030**	-0.684

All values age-adjusted annual mortality per 100,000 females  $\mu$  = mean;  $\Delta$  = difference; \*  $p<0.05$ ; \*\* $p<0.01$ ; \*\*\* $p<0.001$

**FIGURE.**

Difference-in-difference analysis of mortality from gynecologic cancers in relation to medicaid expansion

Difference-in-difference analysis for change in age-adjusted annual mortality rate from gynecologic cancers per 100,000 women comparing January 2014 Medicaid expansion with nonexpansion states in preexpansion (2010–2013) and postexpansion (2015–2018) periods.

**A**, Time plots. **B**, Difference-in-difference calculation table.

Albright. Impact of Medicaid expansion on mortality from gynecologic cancers. Am J Obstet Gynecol 2021.