Modeling disparities may help with cervical cancer prevention

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Researchers reported that explicit inclusion of disparities in cost-effectiveness analysis, would allow policy makers to identify strategies that would reduce overall cancer risk, reduce disparities between racial ethnic subgroups, and be cost-effective, according to a study published online September 6 in the *Journal of the National Cancer Institute.*

Disease simulation models can be used to identify effective and cost-effective strategies for reducing overall cancer incidence and mortality, but are sometimes criticized for not considering how the benefits are distributed within the population. Advances in computer-based modeling, together with the availability of better data, allows details to now be included that account for inequalities between different population subgroups.

To provide a framework for how health inequities could be more explicitly considered in model-based cost-effectiveness analysis, Sue J. Goldie, MD, MPH, and Norman Daniels, Ph.D., of the Harvard School of Public Health, devised a typology of cancer disparities among black, white, and Hispanic populations in the United States that differentiated inequalities resulting from different factors, such as access and quality of treatment and prevention. They used this typology to guide an evaluation of different cervical cancer screening and vaccination strategies in which the health and economic outcomes were calculated for the average population, and also for the three racial subgroups separately.

The researchers identified strategies that reduced the overall risk of cervical cancer from 60% to 74.5%, and that improved cancer outcomes in all racial subgroups. However, they also found that the benefits were unequally distributed; for example, while current screening patterns would resulted in a 60% reduction in overall cancer incidence, reductions ranged from 54.8% for Hispanic women to 62.5% for white women.

The researchers found that screening strategies that directly targeted racial subgroups bearing the greatest inequalities, when combined with vaccination, provided a more equitable distribution of benefits. For example, reduction in cervical cancer incidence was 69.7% in white women versus 70.1% in Hispanic women. These strategies were also more effective and less costly than current screening patterns.

The authors conclude that modeling disparities in cancer prevention can identify strategies that will improve overall population health, distribute health benefits fairly, and utilize health care resources efficiently. They write, "These points of convergence are 'win-win' in the sense that they have the biggest positive impact in worst-off groups as well as on population health overall.

Our claim is that such win-win strategies are most desirable from the perspective of both goals of health policy, population health improvement, and health equity."

In an accompanying editorial, Kevin A. Ault, M.D., of the Department of Gynecology and Obstetrics at Emory University School of Medicine writes that the introduction of the HPV vaccines into the world of medicine has made cervical cancer prevention a reality. Ault agrees with the study's conclusions on the utility of modeling, particularly that, "modeling of racial and ethnic subgroups at increased risk identifies strategies that can reduce cancer burden among these groups." Ault adds

that since recent research has identified HPV vaccination and diagnostic testing as potential improvements to the Pap smear in cervical cancer prevention, these strategies should be made available to all women.

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