

## Ethnic and racial disparities in cervical cancer: lessons from a modelling study of cervical cancer prevention



Cervical cancer, a preventable disease, still affects more than 500 000 women and kills close to 300 000 women globally every year.<sup>1</sup> It is now more than a decade since the advent of HPV vaccines, yet millions of women are beyond the recommended age of vaccination, and if cervical screening rates do not dramatically increase, an estimated 19 million will die of cervical cancer in the next 40 years.<sup>2</sup> While most cervical cancer cases and deaths occur in low-income and middle-income countries, every country should be asking a few important questions: How are we doing towards reaching the goal of cervical cancer elimination?<sup>3</sup> Have we reached our projected targets for population coverage of HPV vaccination and cervical cancer screening? And, crucially, where are the gaps—the key differences in access, utilisation, and in the (short term) measurable health effects such as cervical dysplasia and invasive cervical cancer between the general population and the many underserved population groups that bear the disproportionate burden of this cancer?

Cervical cancer, vaccination and screening deficits in racial and ethnic communities will require extra efforts to bring them to the rates of the majority communities in all countries. The problem is one of public health, and thus, we must ask tough questions of public health and health policy leaders in terms of what they are doing to honestly address cervical cancer inequities, the very definition of which infers social injustice.

In *The Lancet Public Health*, Helen Johnson and colleagues<sup>4</sup> present a novel modelling study projecting cervical cancer in the future, by focusing on various scenarios for vaccination and screening in England, UK. Several important tenets underlie this study. First, that both vaccination and screening are important to combat cervical cancer. Second, disparities in incidence and mortality arise because of inequities in access to both strategies. Third, different patterns of sexual partners in populations that suffer these disparities are also important to consider.

The study begins with a provocative question: will health disparities in cervical cancer increase over time because of the tendency to engage in sexual activity patterns of “like with like” versus “sexual mixing”

between racial and ethnic groups? The researchers present an innovative approach to individual-based modelling of HPV transmission and disease using sexual behaviour, and to vaccine uptake by race and ethnicity with projected estimates of oncogenic HPV prevalence and cervical cancer incidence. The implications for future disparities in cervical cancer incidence in the UK was estimated under several conditions: if vaccination and screening rates remain unchanged, if vaccine uptake among minorities is (somehow) increased rapidly to mirror that of white women, if screening is similarly increased among minorities in the vaccinated cohort, and if screening is similarly increased to the same level as white women in all (vaccinated and unvaccinated) women.

The results are quite surprising: first, absent any changes in sexual mixing, vaccine uptake, or cervical screening uptake among girls and women from ethnic minorities, they predict an initial increase in HPV disease inequality among ethnic minorities, especially among Asian versus white girls (an excess of 10·8 cases of invasive cervical cancer by 2027). In time, herd immunity would be expected to reduce or narrow some of the disparity, but less quickly than if there were greater levels of sexual mixing between these arguably broad categories of ethnic groups. Second, even if there was a mass campaign that effectively zeroed out the difference in vaccine uptake between Asian, black, and white girls beginning in 2018, there will still be no difference in the cervical cancer incidence gap over the next 40 years. Third, a mass effort in 2018 to close the gap in screening uptake between groups was predicted to overcome the ethnic disparities in cervical cancer incidence in only 20 years.

In view of the study's weaknesses—not accounting for possible changes in natural immunity, in the presumed life-long protection of HPV vaccines, the introduction of nine-valent vaccine, or vaccination for boys—this report serves as a stark reminder that we do still need to act, and do so aggressively to rapidly improve vaccination and cervical screening uptake in ethnic minority girls and women to reduce cervical cancer disparities, even in the UK.

Published Online  
December 18, 2017  
[http://dx.doi.org/10.1016/S2468-2667\(17\)30233-5](http://dx.doi.org/10.1016/S2468-2667(17)30233-5)  
See [Articles](#) page e44

Despite high level calls to action<sup>3,5</sup> and with the 2017 World Health Assembly passing of the Cancer Resolution,<sup>6</sup> funding for this effectively neglected disease remains shamefully miniscule for what should be a public health priority. We must think creatively and strategically, to engage not only the ministries of health but ministries of finance, to develop nationally-relevant investment cases for cervical cancer prevention and control.<sup>7</sup> Globally, a woman dies every 2 minutes from this entirely preventable disease. Vaccinating every single girl and boy in the next year will have no effect on cervical cancer mortality for adult women alive today, unless we also address the social inequalities that drive the cervical cancer mortality divide, nationally and globally.

\**Ophira Ginsburg, Electra D Paskett*

Population Health and Medicine, NYU Langone Health, New York, NY 10016, USA (OG); Comprehensive Cancer Center, Ohio State University, Columbus, Ohio, USA (EDP)  
Ophira.Ginsburg@nyumc.org

We declare no competing interests.

Copyright © The Author(s). Published by Elsevier Ltd. This is an Open Access article under the CC-BY-NC-ND 4.0 license.

- 1 Ferlay J, Soerjomataram I, Dikshit R, et al. Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. *Int J Cancer* 2015; **136**: E359–E386.
- 2 Jeronimo J, Tsu V. Saving the worlds' women from cervical cancer. *NEJM* 2016; **374**: 2509–11.
- 3 UN Secretary General. UN Secretary General statement on World Cancer Day. Feb 4, 2016. <http://www.un.org/sg/statements/index.asp?nid=9437> (accessed Nov 29, 2017).
- 4 Johnson HC, Lafferty EI, Eggo RM, et al. HPV vaccination and cervical screening in England by ethnicity: a modelling study. *Lancet Public Health* 2018; **3**: 44–51.
- 5 Aranda S, Berkley S, Cowal S, et al. Ending cervical cancer: A call to action. *Int J Gynecol Obst* 2017; **138**: 4–6.
- 6 World Health Assembly. Cancer Resolution WHA72. <http://www.who.int/cancer/media/news/cancer-prevention-resolution/en/> (accessed Nov 29, 2017).
- 7 Tsu V, Ginsburg O. The investment case for cervical cancer elimination. *International Journal of Gynaecology and Obstetrics*. *Int J Gynaecol Obstet* 2017; **138** (suppl 1): 69–73.