Reasons for optimism about eliminating cervical cancer in China

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Since the global call to action for the elimination of cervical cancer as a public health problem in 2018, WHO has been drafting a strategy to achieve elimination in all countries through vaccination, screening, and treatment. Many high-income countries are on track to meet the proposed threshold for elimination—an age-standardised annual incidence of fewer than four cases of cervical cancers per 100 000 women—through human papillomavirus (HPV) vaccination and cervical cancer screening programmes. However, elimination of cervical cancer as a public health problem remains a challenge in many low-income and middle-income countries (LMICs) because of the high cost of implementing and maintaining such programmes. In their Article in *The Lancet Public Health*, Changfa Xia and colleagues[1] find that it would be possible to meet this threshold for elimination in China within the next century with vaccination and screening, even with reasonable budgetary constraints. This is welcome and encouraging news given the substantial burden of cervical cancer in China. More cases of cervical cancer are diagnosed in China per year than in any other country, accounting for around 20% of all estimated cervical cancers diagnosed worldwide in 2018. Simulation and economic studies such as those by Xia and colleagues are important to bolster policy makers' confidence in public investments, such as HPV vaccination and screening programmes, given that such programmes require large upfront costs to achieve health benefits in the long-term. The results are also timely given the 2016 approval of existing HPV vaccines by the Chinese Food and Drug Administration and the prospect of a new low-cost domestic bivalent HPV vaccine candidate in China.[2,3]

However, the study by Xia and colleagues highlights an issue likely to arise in many countries where resources are scarce: the difficult question of whether to prioritise investments in screening or in HPV vaccination. Although both approaches prevent cervical cancer, vaccination is likely to be the most effective in the long-term because of its extremely high preventive efficacy.[3-5] Indeed, HPV vaccination programmes are likely necessary to eliminate cervical cancer as a public health problem,[5] given that even countries with high-quality screening programmes have not yet achieved an age-standardised incidence of fewer than four cases per 100 000 women. However, because the vaccine is most effective when given before initiation of sexual activity, vaccination programmes will mostly benefit younger and future generations of women. Further, because of the long natural history of cervical cancer, the health effects of vaccination will take many decades to be realised in China and other LMICs.[6] This inevitably raises the question of intergenerational equity. Although screening programmes on their own might be insufficient to reach the threshold for elimination of cervical cancer as a public health problem, good screening programmes can more quickly decrease the burden of cervical cancer and would benefit both current and future generations of women. If nothing is done to improve current screening practices then, as Xia and colleagues predict, the number of cervical cancers diagnosed per year will keep increasing over the next few decades in China, due to increasing background cervical cancer incidence and an ageing population.[7]

Several unanswered questions remain regarding optimal budget allocation. Because Xia and colleagues optimised their budget for the birth cohort of 2015, it is perhaps unsurprising that they find that the most effective strategy for future birth cohorts under the current (2012–18) budget is to first vaccinate them, and then to screen as many people as possible, when the cohort is older, with the leftover budget. However, the optimal strategy for the current age-structured population of China might be different, because the middle-aged women who would benefit more from screening account for a larger proportion of the population than young girls. More formal cost-utility analyses of integrated screening and vaccination strategies in an age-structured population should also be considered by policy makers, since cost-utility analyses could account for the time preferences for earlier health benefits through discounting (weighting short-term costs and benefits more than long-term costs and benefits).[8]

However, the pitting of vaccination against screening presents a false dichotomy. It is likely that both

For the **WHO draft global strategy towards cervical cancer elimination** see https://www.who.int/cancer/cervical-cancer/cervical-cancer-elimination-strategy

For the **International Agency for Research on Cancer 2018 global cancer observatory data** see https://gco.iarc.fr/today

For the **WHO cancer tomorrow tool** see https://gco.iarc.fr/tomorrow/home

For the **China statistical yearbook 2018 age structure data** see http://www.stats.gov.cn/tjsj/ndsj/2018/indexeh.htm

screening and vaccination will be needed to successfully reduce cervical cancer incidence in many countries,[6] and WHO includes both vaccination and screening targets in its draft global elimination strategy. Although Xia and colleagues based their current budget for cervical cancer prevention on 2012–18 public financing for screening in China, additional public funding for HPV vaccines would likely come from different budget allocation structures, such as the Government's Expanded Programme on Immunization.[9] Upscaling screening services in China still presents substantial logistical hurdles, including shortages of trained personnel, and a paucity of funding for the follow-up and management of screen-positive women.[10] Robust screening is still needed to guard against potential public confidence losses in vaccines, of which China has had its share. Nevertheless, the increased public funding for screening in China since 2009,[10] and the prospect of a domestically produced low-cost HPV vaccine, suggest that the more optimistic scenarios in the study by Xia and colleagues, which incorporate an increased budget for both screening and vaccination, are not so far from reach.

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I declare no competing interests.

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