

in *The Lancet*. We welcome wide participation in our network and invite those interested to be in touch.

Lancet Migration will work with global academic institutions, civil society, UN agencies, and policy makers to implement principles of intersectionality in research, and to hold stakeholders accountable by investigating and countering myths about migration and health. With rising populism and xenophobic rhetoric in many countries, there is an urgent need to engage societies in countering the false narratives that surround people who migrate—misinformation that encourages and attempts to justify harmful migration policies. The Lancet Migration global collaboration will contribute to improving health for all people: those who migrate, nationals, and those who are left behind. Through collaboration at local, regional, and global levels, we aim to transform evidence into action, addressing access to health care and the social and political determinants of health within all aspects of migration.

MO reports personal fees as a migration health specialist from Médecins Sans Frontières (MSF), as a public health and migration consultant from WHO, and from the UCL–Lancet Commission on Migration and Health. We declare no other competing interests.

\*Miriam Orcutt, Paul Spiegel, Bernadette Kumar, Ibrahim Abubakar, Jocalyn Clark, Richard Horton, on behalf of Lancet Migration  
 m.orcutt@ucl.ac.uk

Institute for Global Health, University College London, London WC1N 1EH, UK (MO, IA); Johns Hopkins Bloomberg School of Public Health and Johns Hopkins Center for Humanitarian Health, Baltimore, MD, USA (PS); Norwegian Institute of Public Health, Oslo, Norway (BK); and *The Lancet*, London, UK (JC, RH)

We are grateful to all who attended the first research planning workshop, including: Paul Spiegel, Ibrahim Abubakar, Bernadette Kumar, Jocalyn Clark, Miriam Orcutt, Rob Aldridge, Delan Devakumar, Michael Knipper, Davide Mosca, Rachel Burns, Lucinda Hiam, Poonam Dhavan, Elisabeth Waagensen, Kabir Sheikh, Jo Vearey, Mauricio Barreto, Ozge Karadag Caman, Reem Mussa, Alyna Smith, Priscilla Idele, Anthony Zwi, Robert Verrecchia, and Fouad M Fouad.

1 International Labour Organization. ILO global estimates on international migrant workers: results and methodology. International Labour Organization, 2017. [https://www.ilo.org/global/publications/books/WCMS\\_652001/lang--en/index.htm](https://www.ilo.org/global/publications/books/WCMS_652001/lang--en/index.htm) (accessed Jan 22, 2020).

- 2 Abubakar I, Aldridge RW, Devakumar D, et al. The UCL–Lancet Commission on Migration and Health: the health of a world on the move. *Lancet* 2018; **392**: 2606–54.
- 3 United Nations Human Rights Office of the High Commissioner. UNHCR annual global trends report. 2019. <https://www.unhcr.org/ph/figures-at-a-glance> (accessed Jan 7, 2020).
- 4 World Bank. Fragility, conflict and violence: Washington, DC: World Bank, 2019. <http://www.worldbank.org/en/research/dime/brief/fragility-conflict-and-violence> (accessed Jan 7, 2020).
- 5 Vijayasingham L, Rhule E, Asgari-Jirhandeh N, Allotey P. Restrictive migration policies in low-income and middle-income countries. *Lancet Glob Health* 2019; **7**: e843–44.
- 6 Pottie K, Martin JP, Cornish S, et al. Access to healthcare for the most vulnerable migrants: a humanitarian crisis. *Confl Health* 2015; **9**: 16.
- 7 United Nations Human Rights Office of the High Commissioner. Migration and human rights. <https://www.ohchr.org/EN/Issues/Migration/Pages/MigrationAndHumanRightsIndex.aspx> (accessed Jan 8, 2020).
- 8 Orcutt M, Mussa R, Hiam L, et al. EU migration policies drive health crisis on Greek islands. *Lancet* 2020; published online Jan 13. [https://doi.org/10.1016/S0140-6736\(19\)33175-7](https://doi.org/10.1016/S0140-6736(19)33175-7).
- 9 Fazel, M, Karunakara U, Newnham E. Detention, denial, and death: migration hazards for refugee children. *Lancet Glob Health* 2014; **6**: e313–14.
- 10 Euronews. Baby dies in Moria migrant camp, MSF reveals. Euronews, Nov 17, 2019. <https://www.euronews.com/2019/11/17/baby-dies-in-moriainmigrant-camp-msf-reveals> (accessed Jan 9, 2020).
- 11 Sulbarán Lovera P. How did six migrant children die on the US border? BBC News, May 23, 2019. <https://www.bbc.co.uk/news/world-us-canada-48346228> (accessed Jan 8, 2020).
- 12 Moore R, Schmidt S, Jameel M. Inside the cell where a sick 16-year-old boy died in border patrol care. ProPublica, Dec 5, 2019. <https://www.propublica.org/article/inside-the-cell-where-a-sick-16-year-old-boy-died-in-border-patrol-care> (accessed Jan 8, 2020).
- 13 UN. 2030 Agenda for Sustainable Development. <https://sustainabledevelopment.un.org/post2015/transformingourworld> (accessed Jan 7, 2020).
- 14 UN. UN High-Level Declaration on Universal Health Coverage. New York: United Nations, 2019.
- 15 WHO. The Helsinki statement on Health in All Policies. The Global Conference on Health Promotion, Helsinki, Finland, June, 2013. [https://www.who.int/healthpromotion/conferences/8gchp/8gchp\\_helsinki\\_statement.pdf](https://www.who.int/healthpromotion/conferences/8gchp/8gchp_helsinki_statement.pdf) (accessed Jan 14, 2020).
- 16 UN General Assembly. New York Declaration for Refugees and Migrants. Resolution adopted by the General Assembly on 19 September 2016. [https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A\\_RES\\_71\\_1.pdf](https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_71_1.pdf) (accessed Jan 14, 2020).
- 17 UN. Global Compact for Migration. Morocco. December, 2018. <https://www.un.org/en/conf/migration/global-compact-for-safe-orderly-regular-migration.shtml> (accessed Jan 9, 2020).

## Increased production and comprehensive guidelines needed for HPV vaccine



High-level action is needed to address a global shortage of human papillomavirus (HPV) vaccine. HPV vaccine protects against infection from HPV, which is spread through sexual contact. Infection can lead to cervical cancer in women, penile cancers in men, and oropharyngeal, anal, and other cancers across genders. Globally, there are

an estimated 570 000 HPV-related cancer cases in women and 60 000 in men.<sup>1</sup> In 2018, about 311 000 women died from cervical cancer, more than 85% in low-income and middle-income countries (LMICs).<sup>2</sup>

The global supply of HPV vaccine is insufficient to meet demand, and the impact is most keenly felt

in low-income countries. Only two manufacturers globally had full manufacturing capacity.<sup>3</sup> There are large variations in cost, ranging from US\$4.50 to \$154.28 per dose in 2017.<sup>3</sup> Unless urgent corrective action is taken, these market constraints will continue until at least 2024.<sup>3</sup> This situation has serious implications for projected mortality and morbidity from associated cancers, especially among the poor in high-burden, low-income countries, and is a breach of health rights.<sup>4</sup> Insufficient resources cannot justify inaction or delay by the global community or states to find solutions.

HPV vaccine has been introduced by 100 countries; only five are low income and 13 low-middle income.<sup>5</sup> Gavi, the Vaccine Alliance notes that while the HPV programme is one of its most impactful, progress is hampered by vaccine shortages.<sup>6</sup> Investment in comprehensive HPV vaccination, and effective cancer screening and treatment programmes, in 50 LMICs over a decade would avert an estimated 3.7 million deaths from cervical cancer and 22 million disability-adjusted life-years at a programme cost of \$3.2 billion.<sup>7</sup>

WHO guidelines recommend HPV vaccination for girls aged 9–14 years,<sup>8</sup> on the basis of evidence that females are ten times more at risk from cancers attributable to HPV than males.<sup>1</sup> However, there are strong arguments for vaccinating boys and at-risk adults.<sup>9</sup> WHO guidelines need to be updated, based on evidence, to comprehensively identify all who would benefit from HPV vaccination. WHO and its global partners should then work with countries to apply the

guidelines within national plans for universal health coverage (UHC). In low-resource settings, progressive realisation will be necessary. This is an approach to human rights that obligates states to take appropriate measures to the maximum of their available resources.<sup>10</sup>

Solutions are available. Global vaccine shortages are not new. Proven means exist to stimulate production rapidly and ensure fair prices. Gavi encourages manufacturers to use tiered pricing. This matches vaccine prices to a country's ability to pay, while companies benefit from market access.<sup>11,12</sup> Another Gavi initiative is the Advance Market Commitment (AMC) for pneumococcal vaccine, launched in 2009, which has led to more than 143 million children in 60 low-income countries being vaccinated at less than 10% of the cost per dose in Europe and the USA.<sup>13</sup> HPV was one of six diseases considered for an AMC pilot in 2006<sup>14</sup> but was not selected at that time. AMC would be a proven way to scale up HPV vaccination.

New manufacturing plants are needed where unmet demand for HPV vaccine is highest, notably across Africa. WHO, Gavi, and other development partners should work closely with governments to advise on creating favourable regulatory regimes that incentivise manufacturers to establish plants in their countries. Local production is a proven success story. In 2003, the Clinton Foundation worked with Indian pharmaceutical company Cipla and other companies to make paediatric antiretroviral drugs available at affordable rates.<sup>15</sup> Since then, the Clinton Health Access Initiative with UNITAID has expanded efforts globally, helping to reduce the price of paediatric antiretroviral regimens by more than 80% and treating 647 000 children.<sup>16</sup>

Intellectual property for HPV vaccines should be opened up to incentivise manufacturers. Voluntary licensing agreements allow generic manufacturers to produce and sell low-cost versions for use in lower-income countries. Such agreements are allowed under the World Trade Organization's TRIPS (Trade-Related Intellectual Property Rights) agreement so that vaccine manufacturers do not resist competitors entering the market.<sup>17</sup> Examples are the 2014 agreements signed by ViiV Healthcare and the Medicines Patent Pool to allow generic production of the antiretroviral drug dolutegravir.<sup>18</sup> The licensing approach could be adapted to ensure that new producers sign matching agreements



Tommy Trenchard/Panos

for HPV vaccines so that each dose produced for a high-income market is matched by a dose produced for a low-income market under favourable pricing and distribution terms.

Comprehensive, new guidelines are needed on all priority vaccination cohorts, and high-level leadership is needed from countries, WHO, UNICEF, Gavi, and others to implement the guidelines and to stimulate vaccine production. Country leaders and politicians should commit to prioritising HPV vaccination for all eligible girls, boys, and at-risk adults within their UHC plans. They should work with the private sector to secure licensed production of the HPV vaccine within countries where feasible. The shortage of affordable HPV vaccine is a global emergency, which will potentially condemn millions of people to death from cancer unless the global community takes action.

The members of the UN Secretary-General's Independent Accountability Panel (IAP) are: Dame Carol Kidu (Papua New Guinea); Brenda Killen (Ireland); Nicholas Kojo Alipui (Ghana); Elizabeth Mason (UK); Giorgi Pkhakadze (Georgia); Jovana Ríos Cisneros (Panama); Gita Sen (India); Alicia Ely Yamin (USA); Joy Phumaphi (Botswana) and Kul Chandra Gautam (Nepal) as co-chairs. With thanks for technical support from Shyama Kuruville, Richard Cheesman, Paul Bloem, and Narissia Mawad. We declare no competing interests.

*\*Joy Phumaphi, Kul Chandra Gautam, Elizabeth Mason on behalf of the UN Secretary-General's Independent Accountability Panel (IAP) for Every Woman, Every Child, Every Adolescent*  
**info@iapewec.org**

Independent Accountability Panel (IAP) for Every Woman, Every Child, Every Adolescent, Geneva 2111, Switzerland

- 1 WHO. Global Cancer Observatory. International Agency for Research on Cancer. Cancer cases (all infectious agents) among females in 2012 attributable to infections, in the world, shown by infectious agents. 2016. [https://gco.iarc.fr/causes/infections/toolsbars?mode=2&sex=2&population=who&country=4&continent=0&cancer=0&key=attr\\_cases&lock\\_cale=0&nb\\_results=10](https://gco.iarc.fr/causes/infections/toolsbars?mode=2&sex=2&population=who&country=4&continent=0&cancer=0&key=attr_cases&lock_cale=0&nb_results=10) (accessed Dec 10, 2019).
- 2 WHO. Global Cancer Observatory. International Agency for Research on Cancer. Cervix uteri fact sheet. 2018. <https://gco.iarc.fr/today/data/factsheets/cancers/23-Cervix-uteri-fact-sheet.pdf> (accessed Dec 10, 2019).
- 3 WHO. Global Market Study. HPV vaccines. 2018. [https://www.who.int/immunization/programmes\\_systems/procurement/mi4a/platform/module2WHO\\_HPV\\_market\\_study\\_public\\_summary.pdf](https://www.who.int/immunization/programmes_systems/procurement/mi4a/platform/module2WHO_HPV_market_study_public_summary.pdf) (accessed Dec 10, 2019).
- 4 Tsu VD, Ginsburg O. The investment case for cervical cancer elimination. *Int J Gynaecol Obstet* 2017; **138** (suppl 1): 69–73.
- 5 WHO. Major milestone reached as 100 countries have introduced HPV vaccine into national schedule. Oct 31, 2019. <https://www.who.int/news-room/detail/31-10-2019-major-milestone-reached-as-100-countries-have-introduced-hpv-vaccine-into-national-schedule> (accessed Dec 16, 2019).
- 6 Gavi, the Vaccine Alliance. HPV programme under supply constraints: a Q&A. Geneva: Gavi, the Vaccine Alliance, 2019.
- 7 Campos NG, Sharma M, Clark A, et al. The health and economic impact of scaling cervical cancer prevention in 50 low- and lower-middle-income countries. *Int J Gynaecol Obstet* 2017; **138** (suppl 1): 47–56.
- 8 WHO. Comprehensive cervical cancer control: a guide to essential practice. 2nd edn. 2014. <https://www.who.int/reproductivehealth/publications/cancers/cervical-cancer-guide/en/> (accessed Dec 10, 2019).
- 9 Petrosky E, Bocchini JA, Hariri S, et al. Use of 9-valent human papillomavirus (HPV) vaccine: updated HPV vaccination recommendations of the advisory committee on immunization practices. *MMWR Morb Mortal Wkly Rep* 2015; **64**: 300–04.
- 10 Office of the United Nations High Commissioner for Human Rights. Frequently asked questions on economic, social and cultural rights, fact sheet no. 33. 2008. <https://www.ohchr.org/Documents/Publications/FactSheet33en.pdf> (accessed Dec 10, 2019).
- 11 Berkley S. Improving access to vaccines through tiered pricing. *Lancet* 2014; **383**: 2265–67.
- 12 Gavi, the Vaccine Alliance. Return on investment stories. GAVI approach creates tiered pricing for vaccines. <https://www.gavi.org/library/news/roi/2010/gavi-approach-creates-tiered-pricing-for-vaccines/> (accessed Dec 10, 2019).
- 13 Gavi, the Vaccine Alliance. Support. Pneumococcal vaccine support. <https://www.gavi.org/support/nvs/pneumococcal/> (accessed Dec 10, 2019).
- 14 Gavi, the Vaccine Alliance. About the pneumococcal AMC. <https://www.gavi.org/investing/innovative-financing/pneumococcal-amc/about/> (accessed Dec 10, 2019).
- 15 Clinton Foundation. President Clinton tours Cipla factory in India. Feb 18, 2006. <https://www.clintonfoundation.org/main/news-and-media/press-releases-and-statements/pressrelease-president-clinton-tours-cipla-factory-in-india.html> (accessed Dec 10, 2019).
- 16 Clinton Foundation. Pediatric AIDS website. <https://www.clintonfoundation.org/our-work/clinton-health-access-initiative/programs/pediatricaids> (accessed Dec 10, 2019).
- 17 World Trade Organization. TRIPS: agreement on Trade-Related Aspects of Intellectual Property Rights, April 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299, 33 I.L.M. 1197. Geneva: World Trade Organization, 1994.
- 18 Root R. How voluntary licensing agreements are transforming HIV care. Devex, Aug 5, 2019. <https://www.devex.com/news/how-voluntary-licensing-agreements-are-transforming-hiv-care-95362> (accessed Dec 10, 2019).