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than 700 000 men aged 35–49 years in sub-Saharan Africa unaware of their HIV status,<sup>8</sup> similar advocacy and political will are urgently needed to address the greatest gap in HIV services.

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\*Morna Cornell, Mandla Majola, Leigh F Johnson, Vuyiseka Dubula-Majola  
**morna.cornell@uct.ac.za**

Centre for Infectious Disease Epidemiology and Research, School of Public Health and Family Medicine, University of Cape Town, Cape Town 7700, South Africa (MC, LfJ); Movement for Change and Social Justice, Gugulethu, Cape Town, South Africa (MM); Africa Centre for HIV/AIDS Management, Stellenbosch University, Stellenbosch, South Africa (VD-M)

- 1 US Centers for Disease Control and Prevention. Pneumocystis pneumonia—Los Angeles. *MMWR Morb Mortal Wkly Rep* 1981; **30**: 250–52.
- 2 UNAIDS. AIDSinfo. 2021. <https://aidsinfo.unaids.org/> (accessed May 20, 2021).
- 3 Marsh K, Eaton JW, Mahy M, et al. Global, regional and country-level 90–90–90 estimates for 2018: assessing progress towards the 2020 target. *AIDS* 2019; **33**: S213–26.
- 4 Mahy M, Marsh K, Sabin K, Wanyeki I, Daher J, Ghys PD. HIV estimates through 2018: data for decision-making. *AIDS* 2019; **33**: S203–11.
- 5 Pillay Y, Johnson L. World AIDS Day 2020: reflections on global and South African progress and continuing challenges. *South Afr J HIV Med* 2021; **22**: 1205.
- 6 Simelela NP, Venter WDF. A brief history of South Africa's response to AIDS. *South Afr J HIV Med* 2014; **104**: 249–51.
- 7 Honermann B, Heywood M. A judgment that saved a million lives. *The Star*, April 15, 2012. <https://www.iol.co.za/the-star/a-judgment-that-saved-a-million-lives-1334636> (accessed May 20, 2021).
- 8 Giguère K, Eaton JW, Marsh K, et al. Trends in knowledge of HIV status and efficiency of HIV testing services in sub-Saharan Africa, 2000–20: a modelling study using survey and HIV testing programme data. *Lancet HIV* 2021; **8**: e284–93.
- 9 Cornell M, McIntyre J, Myer L. Men and antiretroviral therapy in Africa: our blind spot. *Trop Med Int Health* 2011; **16**: 828–29.
- 10 Tanser FC, Kim HY, Mathenjwa T, et al. Home-based Intervention to Test and Start (HITS): a community-randomized controlled trial to increase HIV testing uptake among men in rural South Africa. *J Int AIDS Soc* 2021; **24**: e25665.
- 11 Dovel K, Shaba F, Offorjebu OA, et al. Effect of facility-based HIV self-testing on uptake of testing among outpatients in Malawi: a cluster-randomised trial. *Lancet Glob Health* 2020; **8**: e276–87.
- 12 Sharma M, Barnabas RV, Celum C. Community-based strategies to strengthen men's engagement in the HIV care cascade in sub-Saharan Africa. *PLoS Med* 2017; **14**: e1002262.
- 13 Makusha T, van Rooyen H, Cornell M. Reframing the approach to heterosexual men in the HIV epidemic in sub-Saharan Africa. *J Int AIDS Soc* 2020; **23**: 70–71.
- 14 Nattrass N. Gender and access to antiretroviral treatment in South Africa. *Feminist Econ* 2008; **14**: 19–36.
- 15 UNAIDS. Blind spot—reaching out to men and boys. Geneva: UNAIDS, 2017.
- 16 Dovel K, Dworkin SL, Cornell M, Coates TJ, Yeatman S. Gendered health institutions: examining the organization of health services and men's use of HIV testing in Malawi. *J Int AIDS Soc* 2020; **23** (suppl 2): e25517.
- 17 Heise L, Greene ME, Opper N, et al. Gender inequality and restrictive gender norms: framing the challenges to health. *Lancet* 2019; **393**: 2440–54.
- 18 Doyal L. Challenges in researching life with HIV/AIDS—an intersectional analysis of black African migrants in London. *Cult Health Sex* 2009; **11**: 173–88.
- 19 Connell R. Gender, health and theory: conceptualizing the issue, in local and world perspective. *Soc Sci Med* 2012; **74**: 1675–83.
- 20 Higgins JA, Hoffman S, Dworkin SL. Rethinking gender, heterosexual men, and women's vulnerability to HIV/AIDS. *Am J Public Health* 2010; **100**: 435–45.
- 21 Poulin M, Dovel K, Watkins SC. Men with money and the "vulnerable women" client category in an AIDS epidemic. *World Develop* 2016; **85**: 16–30.
- 22 Esacove AW. Good sex/bad sex: the individualised focus of US HIV prevention policy in sub-Saharan Africa, 1995–2005. *Social Health Illn* 2013; **35**: 33–48.



## India's COVID-19 crisis: a call for international action

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India's current COVID-19 surge is an unprecedented public health crisis. With exponential growth in the number of daily COVID-19 cases since March, 2021, India reported more than 400 000 new cases daily on May 1, 2021.<sup>1</sup> This number is likely to be an underestimate of the true burden of COVID-19 cases, given reports of backlogs of test results, poor access to testing, and many people not getting tested due to fear and stigma.<sup>2,3</sup> Without mitigation, estimates suggest India could reach more than 1 million COVID-19 cases per day with over 1 million cumulative COVID-19 deaths by Aug 1, 2021.<sup>4</sup>

The Indian Government and health authorities must act fast to flatten this second wave. We strongly endorse

the national action plan laid out by The *Lancet* COVID-19 Commission India Task Force and we have summarised some of their recommendations in the panel.<sup>5</sup> Early in the pandemic, India provided COVID-19 vaccines and medications to other countries. Now it is time for the global community to support India as it endures its own public health crisis.<sup>6</sup> As a group of clinicians, public health professionals, and scientists working in India or with research and clinical collaborators in India, we call for eight steps the international community must take to help address the crisis in India.

First, the most urgent need is to save lives by expanding health-care capacity. India needs donations

**Panel: Summary of some of the recommendations of the Lancet COVID-19 Commission India Task Force<sup>5</sup>**

**1 Enhance medical preparedness**

- Prepare estimates to predict demand for medical services
- Use primary care to supervise home care and triage of patients
- Ramp up medical supplies to prepare for future increases in COVID-19 cases
- Train medical trainees as back-up staff
- Set up oxygen-generating plants
- Suspend elective procedures and restrict non-emergent outpatient care
- Prevent hospitals, testing sites, and vaccination centres from becoming super-spreader sites
- Equip staff with high-quality personal protective equipment
- Set up temporary, dedicated COVID-19 facilities in partnership with the private sector

**2 Coordinate and scale up mass vaccination campaigns**

- Prioritise vulnerable populations when there are COVID-19 vaccine supply constraints
- Support state level estimations of demand
- Negotiate and coordinate vaccine procurement across states
- Negotiate patent waivers and production clearances for the broader set of vaccines
- Incentivise and support local manufacturing capacity
- Ensure smooth supply chains
- Implement a coordinated strategy between states

**3 Temporarily ban gatherings of more than ten people and close all venues where such gatherings can occur**

**4 Close indoor public spaces, except those providing essential services**

**5 Physical distancing and hygiene along with mandatory universal mask wearing in confined spaces and outdoors; focus on cross-ventilation of indoor spaces**

**6 International and domestic mobility**

- International travellers have 7 days of institutional quarantine and a second week of home quarantine (with daily follow-ups and a negative RT-PCR on day 8)
- Make rapid antigen testing available in low-risk areas at all points of travel (eg, bus)

**7 Scaled up SARS-CoV-2 testing**

- Immediate expansion in supply of RT-PCR tests
- Allow patients with a diagnosis of COVID-19 based on symptoms or RDT to be admitted to hospitals
- Expanded testing and expedited, transparent reporting of results

**8 Decentralised contact tracing and isolation**

- Quarantine and isolation for 2 weeks enforced and managed at the local level
- Test and isolate immediate family and close known contacts

**9 Public communication, data transparency, and engagement for collective responsibility and action**

- Transparency in reporting the numbers of COVID-19 cases, hospitalisations, and deaths
- Regular communication with daily official public briefings
- Acknowledge the pandemic's impact on poorest and most vulnerable populations
- High-profile campaign with clear, consistent, and forceful messaging of evidence-based content
- Coordinate communication between the centre and states and engagement with civil society and non-governmental organisations
- Group-specific communication on behaviour change, tailored to targeted populations

**10 Political leadership**

- COVID-19 central and state level war-room cabinet that meets daily

**11 Data for decision making**

- Credible and regular projections of trajectory of the pandemic
- Sharing of anonymised microdata
- Ramp up genome sequencing to 5% of all tests
- Open dataset for real-time data collection
- Transparency in the sources of data
- Release data on SARS-CoV-2 sequencing and age and gender distribution of COVID-19-related mortality and severe events to the broader scientific community

We have devised this panel from the recommendation made by the Lancet COVID-19 Commission India Task Force's report *Country-wide Containment Strategies for Reducing COVID-19 Cases in India* April 2021.<sup>5</sup>

of oxygen concentrators, ventilators, medications, vaccines, high-quality personal protective equipment (PPE), and SARS-CoV-2 rapid diagnostic tests (RDTs). The international community can help support the public and private sectors with the scale-up of in-country oxygen production and importation of supplies needed to transport oxygen and medical supplies over large geographical areas. To expand home-based care when

appropriate and promote self-isolation, international partners can collaborate with local organisations to ensure that communities, particularly vulnerable rural and slum populations, have access to pulse oximeters, supplies for risk mitigation such as high-quality masks, economic provisions, and food rations.

Second, global partners must support expanded access to COVID-19 vaccines in India. India's shortage

in vaccine supply is projected to last until July, 2021.<sup>7</sup> The Serum Institute of India is a major contributor to COVAX, and India's current crisis has forced the country to prioritise vaccinating Indian citizens over supplying COVAX with vaccines.<sup>8</sup> This shift will likely delay vaccines reaching other low-income and middle-income countries. The international community should release its surplus COVID-19 vaccine stockpiles to India and other countries that are facing COVID-19 surges. Additionally, high-income countries (HICs) must waive intellectual property rights on COVID-19 vaccines, lift impediments to raw materials needed for vaccine manufacture, and support technology transfer to increase global vaccine manufacturing. We welcome the US Government's support for the intellectual property rights waiver on COVID-19 vaccines and ask other HICs to do the same.<sup>9</sup>

Third, international partners should support the scale-up of laboratory testing and genomic sequencing of SARS-CoV-2. To identify potential hotspots early and prevent future surges, SARS-CoV-2 testing must be urgently scaled up using RDTs and pooled testing combined with innovative methods of delivery such as self-administered home-based testing or mobile outreach vans.<sup>10</sup> The rise of the B.1.617 and B.1.1.7 variants of concern in India highlights the need for expanding genomic sequencing to detect the emergence of epidemiologically and clinically important SARS-CoV-2 variants.<sup>11</sup> This sequencing effort requires partnerships with research agencies, academic institutions, and laboratories to expand and augment centres in India, such as the Indian SARS-CoV-2 Genomic Consortia.

Fourth, the international community can help provide technical assistance and training for people on the ground, especially for non-physician health-care providers to triage, administer testing, care for patients with mild COVID-19, and vaccinate people. Trained personnel are working relentlessly on the front lines; expanding the pool of workers with task-trained personnel to support this effort is crucial. With telemedicine and telementoring expertise gained during the COVID-19 pandemic, international partners can support India in expanding these services to conserve human resources and decrease the pressures on hospitals.

Fifth, international agencies can work with state and local partners in India to assist with the logistics of

securing and transporting resources, such as oxygen canisters, oxygen concentrators, and medications, operationalising field hospitals, developing isolation and quarantine centres, improving infection prevention and control practices, and expanding telemedicine services. International corporations and non-governmental organisations should work with local industry to boost manufacturing of high-quality PPE, medications, oxygen cylinders and concentrators, RDTs, and COVID-19 vaccines. Humanitarian agencies should send medical staff to India to support and assist with medical care. The Indian Government needs to enable temporary licensing of international health-care personnel from recognised medical institutions so that they can provide medical care and telemedicine to support clinicians in India.

Sixth, India is one of the world's largest producers of vaccines,<sup>12</sup> generic medications, antiretrovirals, and tuberculosis medications. The global supply chain for these medications is likely to be disrupted by the crisis in India.<sup>13</sup> The international community must step in to fill the gaps and ensure that global supply chains of medications are not derailed by helping to support the scale-up of manufacturing in other parts of the world and developing relationships with industry to ensure medications will be available. Such disruption could have devastating consequences for chronic disease control and prevention worldwide.

Seventh, India's COVID-19 surge could become a regional disaster impacting all of south Asia. Strengthening of surveillance systems, travel restrictions, and mandatory travel quarantine for individuals returning from India must be implemented to help control the spread of SARS-CoV-2 to neighbouring countries. There has been an increase in COVID-19 cases in Nepal,<sup>14</sup> and other neighbouring countries are at risk of a rise in COVID-19 cases.<sup>15</sup>

Finally, global political leaders must work with India to deliberate on and initiate stricter, science-guided mitigation measures to curb the spread of SARS-CoV-2 and call for accurate reporting of COVID-19 cases and deaths.<sup>16</sup> Historical and current mortality data, sequencing data, and granular data (eg, age, gender, rural vs urban, and comorbidities) on COVID-19-related severity at different timepoints are essential to understand the transmission and clinical dynamics of the virus in India. Long-term strategies for

monitoring and collecting data on post-acute sequelae of COVID-19 and reinfections<sup>47</sup> should be developed to understand disease pathogenesis and support affected patients. These data should be available in real-time for researchers to analyse and guide future strategies for pandemic control.

We have the knowledge and tools to control SARS-CoV-2 transmission. The current situation in India requires urgent, bold measures and close cooperation between India and the global community to mitigate further damage.

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**\*Krutika Kuppalli, Pooja Gala, Kartikeya Cherabuddi, S P Kalantri, Manoj Mohanan, Bhramar Mukherjee, Lancelot Pinto, Manu Prakash, C S Pramesh, Sahaj Rathi, Nitika Pant Pai, Gavin Yamey, Madhukar Pai**  
krutika.kuppalli@gmail.com

Division of Infectious Diseases, Medical University of South Carolina, Charleston, SC 29425, USA (KK); Department of Population Health, New York University, New York, NY, USA (PG); Division of Infectious Diseases and Global Medicine, University of Florida, Gainesville, FL, USA (KC); Department of Medicine, Mahatma Gandhi Institute of Medical Sciences, Sevagram, Maharashtra, India (SPK); Sanford School of Public Policy (MM) and Center for Policy Impact in Global Health (GY), Duke University, Durham, NC, USA; School of Public Health, University of Michigan, Ann Arbor, MI, USA (BM); P D Hinduja Hospital, Mumbai, Maharashtra, India (LP); Department of Bioengineering (MPr), Woods Institute for the Environment (MPr) and Center for Innovation in Global Health (MPr), Stanford University, Palo Alto, CA, USA; Tata Memorial Centre, Homi Bhabha National Institute, Mumbai, Maharashtra, India (CSP); Department of Hepatology, Institute of Liver and Biliary Sciences, New Delhi, India (SR); Division of Clinical Epidemiology and Infectious Diseases (NPP) and School of Population and Global Health (MPa), McGill University Health Center, Montreal, QC, Canada

- 1 Ritchie H, Ortiz-Ospina E, Beltekian D, et al. India: Coronavirus Pandemic Country Profile. Our World In Data. 2021. <https://ourworldindata.org/coronavirus/country/india> (accessed May 11, 2021).
- 2 Jamkhandikar S, Ghoshal D. Many Indians struggle to get coronavirus tests as cases rocket. Reuters, April 20, 2021. <https://www.reuters.com/world/india/many-indians-struggle-get-coronavirus-tests-cases-rocket-2021-04-20/> (accessed May 12, 2021).
- 3 The New India Express. Fear, stigma, laxity contribute to rising Covid-19 cases. May 11, 2021. <https://www.newindianexpress.com/states/odisha/2021/may/11/fear-stigma-laxity-contribute-to-rising-covid-19-cases-2301129.html> (accessed May 12, 2021).
- 4 Institute for Health Metrics and Evaluation. COVID-19 projections 2021. May 6, 2021. <https://covid19.healthdata.org/india?view=cumulative-deaths&tab=trend> (accessed May 11, 2021).
- 5 The Lancet COVID-19 Commission India Task Force. Country-wide containment strategies for reducing COVID-19 cases in India April 2021. <https://covid19commission.org/regional-task-force-india> (accessed May 11, 2021).
- 6 Firstpost. COVID-19 vaccine rollout by India has "rescued the world" from pandemic, says Dr Peter Hotez. March 7, 2021. <https://www.firstpost.com/health/covid-19-vaccine-rollout-by-india-has-rescued-the-world-from-pandemic-says-dr-peter-hotez-9389171.html> (accessed May 11, 2021).
- 7 ET Bureau. India could face vaccine crunch for 2-3 months, says Serum CEO Adar Poonawalla. *The Economic Times*, May 4, 2021. <https://economictimes.indiatimes.com/news/india/india-may-face-vax-crunch-for-2-3-months-poonawalla/articleshow/82362388.cms> (accessed May 11, 2021).
- 8 Thakur D. India is suffering immensely under the weight of Covid. Now its failures are threatening much of the world. *STAT*, May 5, 2021. <https://www.statnews.com/2021/05/05/india-vaccine-heist-shoddy-regulatory-oversight-imperil-global-vaccine-access/> (accessed May 12, 2021).
- 9 Office of the United States Trade Representative. Statement from Ambassador Katherine Tai on the COVID-19 Trips Waiver. Executive Office of the President. May 5, 2021. <https://ustr.gov/about-us/policy-offices/press-office/press-releases/2021/may/statement-ambassador-katherine-tai-covid-19-trips-waiver> (accessed May 11, 2021).
- 10 Siow WT, Liew MF, Shrestha BR, et al. Managing COVID-19 in resource-limited settings: critical care considerations. *Crit Care* 2020; **24**: 167.
- 11 WHO. COVID-19 weekly epidemiological update data as received by WHO from national authorities, as of 25 April 2021, 10 am CET. 2021. [https://www.who.int/docs/default-source/coronaviruse/situation-reports/20210427-weekly-epi-update\\_37.pdf](https://www.who.int/docs/default-source/coronaviruse/situation-reports/20210427-weekly-epi-update_37.pdf) (accessed May 10, 2021).
- 12 Horner R. The world needs pharmaceuticals from China and India to beat coronavirus. *The Conversation*, May 25, 2020. <https://theconversation.com/the-world-needs-pharmaceuticals-from-china-and-india-to-beat-coronavirus-138388> (accessed May 12, 2021).
- 13 Goel V. As coronavirus disrupts factories India curbs exports of key drugs. *The New York Times*, March 3, 2020. <https://www.nytimes.com/2020/03/03/business/coronavirus-india-drugs.html> (accessed May 11, 2021).
- 14 Reuters. "Human catastrophe" as India's COVID-19 surge spreads to Nepal. May 5, 2021. <https://www.reuters.com/article/us-health-coronavirus-nepal-india/human-catastrophe-as-indias-covid-19-surge-spreads-to-nepal-idUSKBN2CM0QN> (accessed May 11, 2021).
- 15 Kazmi S. Coronavirus likely to move from India to neighboring countries. *Eurasia Review*, May 6, 2021. <https://www.eurasiareview.com/06052021-coronavirus-likely-to-move-from-india-to-neighboring-countries-oped/> (accessed May 11, 2021).
- 16 Pulla P. "There are so many hurdles." Indian scientists plead with government to unlock COVID-19 data. *Science* 2021; published online May 4. <https://doi.org/10.1126/science.abj2944>.
- 17 To KK, Hung IF, Ip JD, et al. COVID-19 re-infection by a phylogenetically distinct SARS-coronavirus-2 strain confirmed by whole genome sequencing. *Clin Infect Dis* 2020; published online Aug 25. <https://doi.org/10.1093/cid/ciaa1275>.