

**UP CIDS POLICY BRIEF 2020-07**

# The Need to Increase Supply of Medical Workers and Build Telemedicine Infrastructure to Prepare for Future Public Health Crises

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The COVID-19 pandemic covering most of the world has put a spotlight on medical workers and has rekindled an appreciation for their importance and heroism during times of public health crises.

In the Philippines, more than 2,669 health care workers have been infected by COVID-19 as of June 1, 2020, according to the Department of Health (DOH). Of those infected, 32 have died, including 26 doctors and four nurses, based on the same DOH data. Although losing any life to COVID-19 is tragic, losing medical workers is doubly tragic because of their role in saving lives during this pandemic and because they are already in scarce supply in the country.

## Medical worker shortage

Even before the current pandemic, the Philippines was already facing a serious shortage of medical workers. Based on the most recent data from DOH, there were 40,775 medical doctors (in the health sector) in the country in 2017, translating to a medical doctor to population ratio of 0.4:1,000.

The generally accepted standard is one doctor for every 1,000 people, which means that the country is 63,710 doctors short, given the Philippines' 2017 population of 104 million.

According to the DOH, the Philippines had 90,308 practicing nurses and 43,044 practicing midwives in public and private health facilities in 2017, equivalent to a nurses and midwives-to-population ratio of 1.3:1,000. There is no clear recommended standard for the number of nurses and midwives, but the average for low middle income countries, to which the Philippines belongs, is 1.7:1,000, according to the World Health Organization.<sup>3</sup> Even with this modest standard, the country was short by 44,273 nurses and midwives in 2017.

## Shortage more severe outside Metro Manila

It is extremely important that the country's COVID-19 infection be contained within Metro Manila and Luzon, as the shortage in medical workers is generally more severe in the Visayas and Mindanao.

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<sup>3</sup> World Health Organization, "Health Workforce Requirements for Universal Health Coverage and the Sustainable Development Goals" (Human Resources for Health Observer Series No. 17, World Health Organization, Geneva, 2017).

In fact, Metro Manila, the location of more than 70 percent of the country's COVID-19 cases as of April 14, 2020, had a healthy 1.1 medical doctors per 1,000 population ratio. The rest of Luzon, meanwhile, only has 0.32 doctor per 1,000 population, and Visayas and Mindanao had even less at 0.30 and 0.24 doctor per 1,000 population, respectively. The Autonomous Region in Muslim Mindanao (ARMM) only had 0.1 doctor per 1,000 population. The picture for nurses and midwives is similar: Metro Manila had 1.6 per 1,000 population, Visayas had 1.3 per 1,000 population, and other Luzon and Visayas both had 1.2 per 1,000 population.

These numbers, combined with the generally inferior quantity and quality of medical facilities and equipment in the rural areas, suggest the spread of COVID-19 in the Visayas and Mindanao could be potentially catastrophic.

## Outlook on medical worker supply

The country's medical worker shortage is not expected to be filled anytime soon, especially the shortage in medical doctors. A 2019 study by the University of the Philippines Center for Integrative and Development Studies (UP CIDS) estimated that more than 16,000 students should enter medical school every year (of whom 90 percent should graduate, 68 percent pass the board exam, and all passers practice in the country) for the next five years if the country is to achieve the one-doctor-per-1,000-population ratio in ten years' time.<sup>4</sup> But this enrollment figure is four times the current level of annual entry in medical schools. Even if the doctor deficit is to be filled in 15 years' time, new enrollment should total about 7,000 annually for the next ten years, which is still much higher than the current level.

These scenarios do not even account for the expected radical decline in medical school enrollment in school years (SYs) 2020–2021 and 2021–2022 due to the K to 12 transition. It is also still a question as

to whether this pandemic will inspire young people to take up medicine (or nursing) or scare them from doing so.

At the same time, it is expected that demand for Filipino medical workers abroad will surge as other countries move to bolster their health systems to prepare for future pandemics. In the United States (US) alone, as of 2015, there were about 10,000 doctors and more than 140,000 nurses who were originally from the Philippines according to the Migration Policy Institute in Washington D.C., which used 2015 US Census data.<sup>5</sup> There are many other health care professionals working in Europe, the Middle East, and other Asian countries.

## Two-pronged strategy

Solving the medical worker shortage in the country likely requires a two-pronged strategy: (1) increasing the supply of medical workers, especially doctors; and (2) investing heavily in telemedicine to dampen the demand for medical workers.

### Increasing the supply of medical doctors<sup>6</sup>

As of 2018, there were 44 recognized medical schools in the country, of which 14 are in Metro Manila, 13 in other parts of Luzon, 12 in the Visayas, and five in Mindanao. Of the 44 medical schools, nine are public and 35 are private schools. From SYs 2012–2013 to 2015–2016, enrollment for all year levels averaged 18,300, although the trend was increasing. In SY 2015–2016, 92 percent of the enrollees and 86 percent of medical school graduates came from private schools.

Increasing the supply of medical workers would involve the strategic expansion of medical schools, both public and private, and a large-scale government scholarship program with a return service requirement. Although there is a scholarship program in place for medical students in state universities and

<sup>4</sup> Clarissa C. David, Geoffrey Ducanes, Jose Luis Vargas Bacigalupo, Shaira Melissa Tengco, and Karol Mark Yee, "Eliminating the Deficit in Medical Doctors: Strategies and Costs" (UP CIDS Discussion Paper Series 2019-02, UP Center for Integrative and Development Studies, Quezon City, 2019).

<sup>5</sup> Jeanne Batalova, "Immigrant Health-Care Workers in the United States," *Migration Information Source* (blog), Migration Policy Institute, May 14, 2020, <https://www.migrationpolicy.org/article/immigrant-health-care-workers-united-states>.

<sup>6</sup> David et al., "Eliminating the Deficit in Medical Doctors."

colleges, this covers only tuition fees. This should be thus expanded to also include private schools, and should prioritize students from rural areas with more severe doctor shortages. The financial barriers to poor but capable students should also be lowered by including a reasonable living allowance and non-tuition medical school expenses, such as for textbooks and uniforms, and should extend until the board examinations.

Many medical workers opt to work abroad due to better pay and employment conditions. There is thus also a need to put up a better talent retention program to get new and existing medical workers to stay in the country.

### Investing heavily in telemedicine

Telemedicine is the provision of medical services—diagnostics, treatment and monitoring, and prevention—via interactive communications media (e.g., video chat, phone call), without physical interaction between health care professionals—and in some warranted instances, artificial intelligence (AI)—and patients. In more developed countries where it has been operational for some time, telemedicine provides a timelier and less costly access to medical care for patients who are unable to physically go to a health care facility but require either routine and non-urgent (or even urgent) medical care.

In the long run, investing heavily in telemedicine technology may help address the shortage of health care professionals in the Philippines, and thus, the underprovision of even basic health care services in far-flung areas. More urgently, in this pandemic, telemedicine would provide both an alternative and complementary option to traditional medical care, enabling a more efficient allocation and utilization of scarce medical resources, and also a means for flattening the COVID-19 curve.<sup>7</sup>

Telemedicine may be used as a virtual triage to assess the urgency of medical attention required based on the patient's relayed symptoms. It can thus help protect our health care professionals from contamination by facilitating “medical distancing” from possible COVID-19-positive patients who are experiencing early symptoms and are seeking professional medical diagnosis.

Especially for highly vulnerable patients (i.e., the elderly and those with comorbidities), telemedicine would facilitate much needed “social distancing” by continuously providing these groups with access to medical care without having to leave the relative safety of their homes. For patients exhibiting mild symptoms of COVID-19, telemedicine would enable health care professionals to remotely monitor such patients—again, enabling medical distancing—and also helping prevent health care facilities from being overwhelmed.

The current pandemic presents an unprecedented opportunity for the rapid adoption of telemedicine technology. Indeed, other countries affected by COVID-19, notably the US, European Union countries, and other countries in Asia, have relaxed laws and regulations to allow the faster adoption of telemedicine. In the Philippines, the Department of Health (DOH) and the National Privacy Commission (NPC) have jointly developed a framework that would boost the use of telemedicine to help combat COVID-19. Free telemedicine hotlines have also been set up to “decongest our hospitals and minimize risks posed by unnecessary patient traffic.”<sup>8</sup> The RxBox, a portable multi-component telemedicine device developed by the University of the Philippines (UP) and the Department of Science and Technology (DOST), now also plays a big role in enabling telehealth services—especially in the now heavily embattled UP–Philippine General Hospital (UP–PGH)—amidst the COVID-19 outbreak.<sup>9</sup>

<sup>7</sup> Lee H. Schwamm, “Can Telehealth Help Flatten the Curve of COVID-19?” *Harvard Health Blog* (blog), Harvard Health Publishing, March 24, 2020, <https://www.health.harvard.edu/blog/can-telehealth-help-flatten-the-curve-of-covid-19-2020032419288>; Kimberly Lovett Rockwell and Alexis S. Gilroy, “Incorporating Telemedicine as Part of COVID-19 Outbreak Response Systems,” *The American Journal of Managed Care* 26, no. 4 (April 2020): 147–48, <https://doi.org/10.37765/ajmc.2020.42784>.

<sup>8</sup> “DOH Boosts Telemedicine Services for NCR; Service to Expand to Other Regions Soon,” Department of Health, April 7, 2020, <https://www.doh.gov.ph/doh-press-release/DOH-BOOST-TELEMEDICINE-SERVICES-FOR-NCR-SERVICE-TO-EXPAND-TO-OTHER-REGIONS-SOON>.

<sup>9</sup> “What Is RxBox,” RxBox, accessed April 14, 2020, [https://rxbox.chits.ph/what\\_is\\_rxbox/](https://rxbox.chits.ph/what_is_rxbox/); Jwynne Gwyneth Macan, “PGH to Use DOST’s RxBox for COVID-19 in-Patient Monitoring,” Philippine Council for Health Research and Development, April 1, 2020, <http://www.pchr.dost.gov.ph/index.php/news/6527-pgh-to-use-dost-s-rxbox-for-covid-19-in-patient-monitoring>.

Developing telemedicine in the Philippines would involve investing in both fixed and human capital. Fixed capital investments involve the procurement and production of more telemedicine-related devices, ensuring accessible and stable internet connection, and developing and/or adopting telemedicine software, including AI.<sup>10</sup> Human capital investments, on the other hand, involve the training of health care professionals and the mass education of the population. Moving forward even further, making provisions for investments in telesurgery (i.e., surgical procedures done remotely

with robotic technology over wireless networking) infrastructure would also help address the relative shortage of surgeons in remote areas.<sup>11</sup> Likewise, prospective bills on creating an eHealth system in the Philippines will also have to weigh some considerations.<sup>12</sup>

Undoubtedly, increasing the supply of medical workers and investing in the telemedicine infrastructure are costly, but necessary undertakings to improve public health and better prepare the country for the next public health crisis. ■

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<sup>10</sup> Teresa lafolla, "What are the Basic Technical Requirements for Telehealth?," *The eVisit Blog*, n.d., <https://blog.evisit.com/what-are-the-basic-technical-requirements-for-telehealth>; also see, for instance, Danica Mitch M. Pacis, Edwin D.C. Subido, Jr., and Nilo T. Bugtai, "Trends in Telemedicine Utilizing Artificial Intelligence," *AIP Conference Proceedings* 1933, 040009 (2018): 1–9, <https://aip.scitation.org/doi/pdf/10.1063/1.5023979>, on the viability of using AI in providing telemedicine services.

<sup>11</sup> Paul J. Choi, Rod J. Oskouian, and R. Shane Tubbs, "Telesurgery: Past, Present, and Future," *Cureus* 10, no. 5 (2018): 1–5, <https://doi.org/10.7759/cureus.2716>.

<sup>12</sup> Delon Porcalla, "House Vows to Improve Universal Health Care," *Philippine Star*, January 13, 2020, <https://www.philstar.com/headlines/2020/01/13/1984345/house-vows-improve-universal-health-care>; Christia Marie Ramos, "Angara to File Bill Creating PH EHealth System for Telemedicine," *Inquirer.net*, April 8, 2020, <https://newsinfo.inquirer.net/1255555/angara-to-file-bill-creating-ph-ehealth-system-for-telemedicine>.

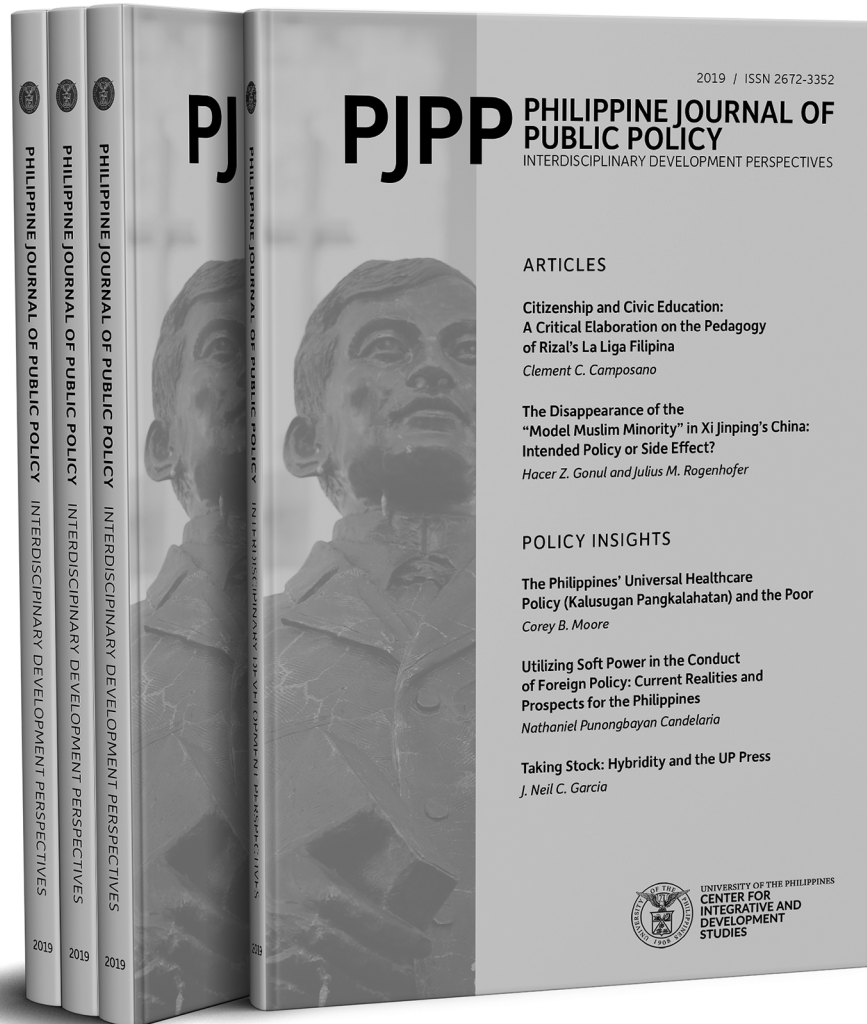
## References

- Batalova, Jeanne. 2020. "Immigrant Health-Care Workers in the United States." *Migration Information Source* (blog), Migration Policy Institute, May 14, 2020. <https://www.migrationpolicy.org/article/immigrant-health-care-workers-united-states>.
- Choi, Paul J., Rod J. Oskouian, and R. Shane Tubbs. 2018. "Telesurgery: Past, Present, and Future." *Cureus* 10, no. 5 (2018): 1–5. <https://doi.org/10.7759/cureus.2716>.
- Commission on Higher Education and Department of Budget and Management. 2018. "Implementing Guidelines for the Cash Grants to Medical Students Enrolled in State Universities and Colleges." Joint Memorandum Circular No. 2018-1, November 20, 2018. <https://ched.gov.ph/wp-content/uploads/2018/12/Joint-Memorandum-Circular-No.-2018-1-Implementing-Guidelines-for-the-Cash-Grants-to-Medical-Students-enrolled-in-SUCs.pdf>.
- David, Clarissa C., Geoffrey Ducanes, Jose Luis Vargas Bacigalupo, Shaira Melissa Tengco, and Karol Mark Yee. 2019. "Eliminating the Deficit in Medical Doctors Strategies and Costs." UP CIDS Discussion Paper Series 2019-02. Quezon City: UP Center for Integrative and Development Studies.
- "DOH Boosts Telemedicine Services for NCR; Service to Expand to Other Regions Soon." 2020. Department of Health, April 7, 2020. <https://www.doh.gov.ph/doh-press-release/DOH-BOOST-TELEMEDICINE-SERVICES-FOR-NCR-SERVICE-TO-EXPAND-TO-OTHER-REGIONS-SOON>.
- Iafolla, Teresa. n.d. "What are the Basic Technical Requirements for Telehealth?" *The eVisit Blog*. <https://blog.evisit.com/what-are-the-basic-technical-requirements-for-telehealth>.
- Macan, Jwynne Gwyneth. 2020. "PGH to Use DOST's RxBox for COVID-19 in-Patient Monitoring." Philippine Council for Health Research and Development, April 1, 2020. <http://www.pchrd.dost.gov.ph/index.php/news/6527-pgh-to-use-dost-s-rxbox-for-covid-19-in-patient-monitoring>.
- Pacis, Danica Mitch M., Edwin D.C. Subido, Jr., and Nilo T. Bugtai. 2018. "Trends in Telemedicine Utilizing Artificial Intelligence." *AIP Conference Proceedings* 1933, 040009 (2018): 1–9. <https://aip.scitation.org/doi/pdf/10.1063/1.5023979>.
- Rockwell, Kimberly Lovett, and Alexis S. Gilroy. 2020. "Incorporating Telemedicine as Part of COVID-19 Outbreak Response Systems." *The American Journal of Managed Care* 26, no. 4 (April 2020): 147–48. <https://doi.org/10.37765/ajmc.2020.42784>.
- Schwamm, Lee H. 2020. "Can Telehealth Help Flatten the Curve of COVID-19?" *Harvard Health Blog* (blog), Harvard Health Publishing, March 24, 2020. <https://www.health.harvard.edu/blog/can-telehealth-help-flatten-the-curve-of-covid-19-2020032419288>.
- Porcalla, Delon. 2020. "House Vows to Improve Universal Health Care." *Philippine Star*, January 13, 2020. <https://www.philstar.com/headlines/2020/01/13/1984345/house-vows-improve-universal-health-care>.
- Ramos, Christia Marie. 2020. "Angara to File Bill Creating PH EHealth System for Telemedicine." *Inquirer.net*, April 8, 2020. <https://newsinfo.inquirer.net/1255555/angara-to-file-bill-creating-ph-ehealth-system-for-telemedicine>.
- "What Is RxBox." n.d. RxBox: Advancing Community Healthcare, accessed April 14, 2020. [https://rxbox.chits.ph/what\\_is\\_rxbox/](https://rxbox.chits.ph/what_is_rxbox/).
- World Health Organization. 2017. "Health Workforce Requirements for Universal Health Coverage and the Sustainable Development Goals." Human Resources for Health Observer Series No. 17. Geneva: World Health Organization.



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