

TACKLING WORKFORCE CONSTRAINTS... FOR QUALITY CARE AMIDST ABSOLUTE INFRASTRUCTURE AND RESOURCE CONSTRAINTS



THE CHALLENGE

Rural areas can face acute human resource shortages of

doctors, nurses, and other health professionals. Health workers may perceive rural postings as low-status, offering few professional opportunities, and limiting their quality of life; in those situations, they cluster in relatively advantaged urban areas, leaving rural areas understaffed. Adequate staffing of rural areas will require better incentives for rural service; creative applications of the medical education system to better serve rural areas; and creative and appropriate task-shifting to prioritize health workers' scarce time.

FEW HEALTH WORKERS ARE AVAILABLE IN RESOURCE-POOR RURAL REGIONS

Disparities in the geographic distribution of health workers is a global problem. Almost half of the world's population lives in rural settings, but they are served by just 33% of the nursing workforce and less than 25% of physicians.ⁱ Instead, health professionals cluster in relatively wealthy urban areas. In Bangladesh, four metropolitan districts have 35% of all doctors but just 14.5% of the country's population,ⁱⁱ and in Senegal, the Dakar region hosts 60% of the country's physicians but just 23% of its population.ⁱⁱⁱ Sub-Saharan Africa suffers from particularly acute shortages: the region has 12% of the world's population and 27% of the total burden of disease, yet only 3.5% of the world's health care workforce. As a result, maldistribution of the health workforce represents an even greater constraint to rural care.^{iv}

Workers Reject or Leave Rural Postings Because of Quality of Life Concerns

Health workers perceive rural areas as offering a lower quality of life and lacking in professional opportunities. Health professionals cite a lack of staff accommodation, quality schools for their children, and consistent electricity as reasons to reject rural postings.^v Low supplies, insufficient or variable funding, and poor infrastructure are cited as rationales for leaving rural positions. Some workers feel stressed or demoralized by their inability to provide high quality services; others cite too much time on administrative tasks versus direct patient care.^{vi} Systematic review evidence suggests employer and community recognition are among





.....
Rural/urban
disparities in the
distribution of
health workers
are striking, with
health workers
concentrated in
urban areas
which are
perceived to
offer a better
quality of life. For
example, the
Dakar region has
60% of Senegal's
doctors but only
23% of its
population.
.....

.....
Professional
opportunities,
which can be
extremely
limited in rural
areas, are highly
valued by health
workers. A study
in Lao PDR found
salary levels
were less salient
when study
opportunities
were available.
.....

the most motivating factors for health workers;^{vii} deficits in supervision and recognition in rural areas may lead directly to health worker attrition and poor performance.

Workers Reject Postings Because of Professional Opportunity Costs

Beyond quality of life considerations, health workers may also feel that rural postings represent a career dead-end, with few professional opportunities and low professional prestige. Continuing education can be highly constrained in these areas; most schools for health professionals are in urban centers,^{viii} while resource-constrained areas can lack the necessary infrastructure for online courses. Professional opportunities are highly valued by health workers, and their absence can exacerbate health worker frustrations. A survey in Lao PDR, for example, found that the availability of study opportunities and promotions made salary levels less salient.^{ix}

THE PATH FORWARD: OVERCOMING WORKFORCE CONSTRAINTS

.....

Change the Incentive Environment to Encourage Rural Service

Encouraging rural service requires changing the balance of incentives that currently often pushes health workers toward urban centers. One common approach is to offer financial or in-kind benefits to counterbalance quality of life concerns. Rural health workers receive housing benefits and electricity in Moldova, allowances in South Africa, and paid tuition fees for their children and housing renovations in Zambia. Few studies have assessed interventions in lower- and middle-income countries (LMICs) empirically and individually (i.e., not as a package of services). A Cochrane review found that providing bursaries or scholarships had variable success across countries, while increased financial compensation generated more consistently positive results (though with undetermined cost-effectiveness).^x A review of systematic reviews similarly found such policies were effective at attracting practitioners, but that few physicians stayed in rural areas long-term.^{xi}

Rural service requirements may also help fill vacant postings, and several countries have made service in resource-constrained areas a prerequisite to graduation or certification. Japan and Lesotho exchange pre-graduation financial aid for post-graduation rural service,^{xii} while other countries, such as Mongolia and Vietnam, have made rural service a prerequisite to certain career changes (e.g., entering a postgraduate or specialization program).^{xiii} Most of the existing research on compulsory service programs is descriptive and uses stakeholder interviews to document program effects. Anecdotal evidence suggests participants in compulsory service programs often leave soon after the mandatory period ends. Such programs can also be difficult to enforce, particularly for wealthier individuals who can use their financial resources to bypass service requirements. Thailand imposes financial penalties on public medical school graduates who violate their rural service requirements—but many graduates choose to work in the private sector, quickly earning enough to offset the penalty.^{xiv}



Leverage the Medical Education System to Better Staff Rural Areas

.....
Offering financial or in-kind benefits for rural health workers is a common approach. A Cochrane review found that bursaries or scholarships had variable success, while increased financial compensation generated more consistently positive results.
.....

Studies from high-income countries and LMICs identify rural residence or upbringing as a consistent predictor of an applicant’s eventual willingness to accept a post-graduation rural posting.^{xv} Where sensible, medical schools could adjust admissions criteria to prioritize rural applicants, increasing the number of graduates who would be willing to assume rural positions. In addition, opening medical schools or other training facilities in rural areas can reduce the workforce gap via two channels. First, rural medical schools can offer continuing medical education and professional opportunities in rural areas, making rural service more attractive. Second, rural medical schools can attract more students from rural areas, who would be more inclined to remain in rural postings. In Japan, for example, almost 70% of graduates from a rurally located medical school remained in their home prefectures for at least six years after the end of their mandatory service periods.^{xvi} In the Democratic Republic of the Congo, graduates from a rural medical school were almost four times as likely to practice in rural areas compared to a cohort from an urban medical school;^{xvii} and in China, a single rural medical school produced more rural doctors than 12 metropolitan schools combined.^{xviii} However, evidence for or against these policies is limited by the lack of longitudinal studies on medical school graduates in LMICs.

Deploy Task Shifting and Digital Technology to Conserve and Prioritize Scarce Health Worker Time

.....
Lay health workers can focus on non-medical procedures such as managing patient flow and record-keeping, helping reduce the administrative burden on scarce health workers.
.....

A lay health worker is someone who “performs functions related to health care delivery, is trained in some way in the context of the intervention, but has received no formal professional or paraprofessional certificate or tertiary education degree.”^{xix} Lay workers, including community health workers, have been used extensively to pre-screen potential patients and support adherence to treatment regimes, with mixed results (see Briefs 6a and 7a). VisionSpring, for example, trains people without a medical background to distribute oral contraceptives and conduct eye exams.^{xx} Alternatively, lay health workers can focus on non-medical procedures such as managing patient flow and record-keeping, helping reduce the administrative burden on health workers. The Aravind Eye Care System in India, for example, trains high school graduates from rural areas to become patient flow managers.^{xxi}

Digital technologies may also facilitate certain tasks and free up health workers’ time. Digitizing medical records from the start using tablets, for example, may facilitate data analysis and reporting. One systematic review found two program evaluations in which the use of mobile applications seemed to increase patients’ time with CHWs or midwives.^{xxii} The same systematic review also noted several obstacles to such initiatives, including low actual use despite high provider acceptance; limited motivation by providers to use phones without an additional incentive; and patient confidentiality problems (phones were sometimes shared between family members).^{xxiii} Telemedicine approaches (discussed further in Brief 10b) may also offer a path to access expertise remotely in rural villages. For example, community members in the Aravind system send photographs of patients’ eyes and information about patients’ symptoms to an Aravind doctor, who then assesses a patient’s need for hospital care via a real-time chat.^{xxiv}



SPOTLIGHT

Zambia Health Worker Retention Scheme (ZHWRS)

- ▶ To counter rural health worker shortages, Zambia introduced an incentive package to attract health to “rural” or “extremely rural” districts. Health workers who sign on for a 3-year term receive a rural hardship and education allowance for their children; they are also eligible to receive funding for a housing renovation/upgrade and car or house loan, among other incentives. The Ministry of Health enrolled 94 doctors in the scheme in 2008; 65% of the 88 doctors completing a first term renewed for a second.^{xxv} However, the scheme’s mid-term review described several limitations: the number of doctors covered by the scheme had not grown evenly or at all in some provinces; the scheme did link pay to performance; and providers who had left their postings continued to receive benefits. Interviews and participant focus groups revealed that many saw the rural hardship allowance as insufficient to counteract the direct and opportunity costs of rural service.^{xxvi} For example, participants noted that “the ZHWRS car loans were insufficient to purchase the kind of vehicle needed to navigate rural and remote roadways, and that the rural hardship allowance is less than the cost of transport back and forth from the bank (necessary to collect wages).”^{xxvii}



Physician Shortage Area Program (PSAP)

- ▶ In the United States, Jefferson Medical College’s Physician Shortage Area Program (PSAP) deliberately recruits and admits applicants from a rural background who intend to practice family medicine in a rural area. A longitudinal study found that the 1978–1991 cohorts of PSAP graduates represent 1 of every 8 family physicians practicing in rural Pennsylvania.^{xxviii} Despite the program’s lack of a formal compliance mechanism, its 11- to 16-year retention rate for family physicians in the same rural area is 68%. A longitudinal analysis found 43.3% of PSAP participants who graduated between 1992 and 2002 were practicing in rural areas of the United States compared to 15.8% of non-PSAP JMC graduates.^{xxix}

ENDNOTES

- ⁱ James Buchan et al., “Early Implementation of WHO Recommendations for the Retention of Health Workers in Remote and Rural Areas,” *Bulletin of the World Health Organization* 91, no. 11 (November 1, 2013): 834–40, <https://doi.org/10.2471/BLT.13.119008>.
- ⁱⁱ Uta Lehmann, Marjolein Dieleman, and Tim Martineau, “Staffing Remote Rural Areas in Middle- and Low-Income Countries: A Literature Review of Attraction and Retention,” *BMC Health Services Research* 8 (January 23, 2008): 19, <https://doi.org/10.1186/1472-6963-8-19>.
- ⁱⁱⁱ Buchan et al., “Early Implementation of WHO Recommendations for the Retention of Health Workers in Remote and Rural Areas.”
- ^{iv} C. E. Chen et al., “Walk-in Clinics versus Physician Offices and Emergency Rooms for Urgent Care and Chronic Disease Management,” *Cochrane Database of Systematic Reviews*, no. 2 (February 17, 2017), <https://doi.org/10.1002/14651858.CD011774.pub2>.
- ^v Lehmann, Dieleman, and Martineau, “Staffing Remote Rural Areas in Middle- and Low-Income Countries.”

- vi Lucy Gilson and Ermin Erasmus, "Supporting the Retention of Health Resources for Health: SADC Policy Context," Equinet Discussion Paper (Johannesburg: Centre for Health Policy, School of Public Health University of Witwatersrand, September 2005), <http://equinetafrica.org/sites/default/files/uploads/documents/DIS37HRes.pdf>.
- vii Mischa Willis-Shattuck et al., "Motivation and Retention of Health Workers in Developing Countries: A Systematic Review," *BMC Health Services Research* 8, no. 1 (December 4, 2008): 247, <https://doi.org/10.1186/1472-6963-8-247>.
- viii James Rourke, "How Can Medical Schools Contribute to the Education, Recruitment and Retention of Rural Physicians in Their Region?," *Bulletin of the World Health Organization* 88, no. 5 (May 1, 2010): 395–96, <https://doi.org/10.2471/BLT.09.073072>.
- ix Buchan et al., "Early Implementation of WHO Recommendations for the Retention of Health Workers in Remote and Rural Areas."
- x Liesl Grobler et al., "Interventions for Increasing the Proportion of Health Professionals Practising in Rural and Other Underserved Areas," *Cochrane Database of Systematic Reviews*, no. 1 (2009), <https://doi.org/10.1002/14651858.CD005314.pub2>.
- xi Mickey Chopra et al., "Effects of Policy Options for Human Resources for Health: An Analysis of Systematic Reviews," *The Lancet* 371, no. 9613 (February 23, 2008): 668–74, [https://doi.org/10.1016/S0140-6736\(08\)60305-0](https://doi.org/10.1016/S0140-6736(08)60305-0).
- xii Seble Frehywot et al., "Compulsory Service Programmes for Recruiting Health Workers in Remote and Rural Areas: Do They Work?," *Bulletin of the World Health Organization* 88, no. 5 (May 1, 2010): 364–70, <https://doi.org/10.2471/BLT.09.071605>.
- xiii Frehywot et al.
- xiv V. Wiwanitkit, "Mandatory Rural Service for Health Care Workers in Thailand.," *Rural and Remote Health* 11, no. 1 (2011): 1583–1583.
- xv Steven Simoens, "Experiences of Organization for Economic Cooperation and Development Countries with Recruiting and Retaining Physicians in Rural Areas," *Australian Journal of Rural Health* 12, no. 3 (June 1, 2004): 104–11, <https://doi.org/10.1111/j.1440-1854.2004.00569.x>.
- xvi Carmen Dolea, Laura Stormont, and Jean-Marc Braichet, "Evaluated Strategies to Increase Attraction and Retention of Health Workers in Remote and Rural Areas," *Bulletin of the World Health Organization* 88, no. 5 (May 1, 2010): 379–85, <https://doi.org/10.2471/BLT.09.070607>.
- xvii Ahuka O. Longombe, "Medical Schools in Rural Areas--Necessity or Aberration?," *Rural and Remote Health* 9, no. 3 (September 2009): 1131.
- xviii Lexin Wang, "A Comparison of Metropolitan and Rural Medical Schools in China: Which Schools Provide Rural Physicians?," *Australian Journal of Rural Health* 10, no. 2 (April 1, 2002): 94–98, <https://doi.org/10.1046/j.1440-1584.2002.00451.x>.
- xix Claire Glenton et al., "Barriers and Facilitators to the Implementation of Lay Health Worker Programmes to Improve Access to Maternal and Child Health: Qualitative Evidence Synthesis," *Cochrane Database of Systematic Reviews*, no. 2 (2013), <https://doi.org/10.1002/14651858.CD010414>.
- xx Onil Bhattacharyya et al., "Innovative Health Service Delivery Models in Low and Middle Income Countries - What Can We Learn from the Private Sector?," *Health Research Policy and Systems* 8 (July 15, 2010): 24, <https://doi.org/10.1186/1478-4505-8-24>.
- xxi Bhattacharyya et al.
- xxii Alice White et al., "Health Worker MHealth Utilization: A Systematic Review," *Computers, Informatics, Nursing : CIN* 34, no. 5 (May 2016): 206–13, <https://doi.org/10.1097/CIN.000000000000231>; Alex Little et al., "Meeting Community Health Worker Needs for Maternal Health Care Service Delivery Using Appropriate Mobile Technologies in Ethiopia," *PLOS ONE* 8, no. 10 (October 29, 2013): e77563, <https://doi.org/10.1371/journal.pone.0077563>; Krisda H. Chaiyachati et al., "A Pilot Study of an MHealth Application for Healthcare Workers: Poor Uptake Despite High Reported Acceptability at a Rural South African Community-Based MDR-TB Treatment Program," *PLOS ONE* 8, no. 5 (May 28, 2013): e64662, <https://doi.org/10.1371/journal.pone.0064662>.
- xxiii White et al., "Health Worker MHealth Utilization"; Little et al., "Meeting Community Health Worker Needs for Maternal Health Care Service Delivery Using Appropriate Mobile Technologies in Ethiopia"; Chaiyachati et al., "A Pilot Study of an MHealth Application for Healthcare Workers."
- xxiv Bhattacharyya et al., "Innovative Health Service Delivery Models in Low and Middle Income Countries - What Can We Learn from the Private Sector?"

- xxv Jeff Gow et al., "Health Worker Shortages in Zambia: An Assessment of Government Responses," *Journal of Public Health Policy* 32, no. 4 (August 2011): 476–88, <https://doi.org/10.1057/jphp.2011.41>.
- xxvi Fastone M. Goma et al., "Evaluation of Recruitment and Retention Strategies for Health Workers in Rural Zambia," *Human Resources for Health* 12, Suppl. 1 (May 12, 2014): S1, <https://doi.org/10.1186/1478-4491-12-S1-S1>.
- xxvii Goma et al.
- xxviii Howard K. Rabinowitz et al., "A Program to Increase the Number of Family Physicians in Rural and Underserved Areas: Impact After 22 Years," *JAMA* 281, no. 3 (January 20, 1999): 255–60, <https://doi.org/10.1001/jama.281.3.255>.
- xxix Howard K. Rabinowitz et al., "Increasing the Supply of Rural Family Physicians: Recent Outcomes From Jefferson Medical College's Physician Shortage Area Program (PSAP)," *Academic Medicine* 86, no. 2 (February 2011): 264–69, <https://doi.org/10.1097/ACM.0b013e31820469d6>.

REFERENCES

- Bhattacharyya, Onil, Sara Khor, Anita McGahan, David Dunne, Abdallah S. Daar, and Peter A. Singer. "Innovative Health Service Delivery Models in Low and Middle Income Countries - What Can We Learn from the Private Sector?" *Health Research Policy and Systems* 8 (July 15, 2010): 24. <https://doi.org/10.1186/1478-4505-8-24>.
- Buchan, James, Ian D. Couper, Viroj Tangcharoensathien, Khampasong Thepannya, Wanda Jaskiewicz, Galina Perfilieva, and Carmen Dolea. "Early Implementation of WHO Recommendations for the Retention of Health Workers in Remote and Rural Areas." *Bulletin of the World Health Organization* 91, no. 11 (November 1, 2013): 834–40. <https://doi.org/10.2471/BLT.13.119008>.
- Chaiyachati, Krisda H., Marian Loveday, Stephen Lorenz, Neal Lesh, Lee-Megan Larkan, Sandro Cinti, Gerald H. Friedland, and Jessica E. Haberer. "A Pilot Study of an MHealth Application for Healthcare Workers: Poor Uptake Despite High Reported Acceptability at a Rural South African Community-Based MDR-TB Treatment Program." *PLOS ONE* 8, no. 5 (May 28, 2013): e64662. <https://doi.org/10.1371/journal.pone.0064662>.
- Chen, C. E., C. T. Chen, J. Hu, and A. Mehrotra. "Walk-in Clinics versus Physician Offices and Emergency Rooms for Urgent Care and Chronic Disease Management." *Cochrane Database of Systematic Reviews*, no. 2 (February 17, 2017). <https://doi.org/10.1002/14651858.CD011774.pub2>.
- Chopra, Mickey, Salla Munro, John N. Lavis, Gunn Vist, and Sara Bennett. "Effects of Policy Options for Human Resources for Health: An Analysis of Systematic Reviews." *The Lancet* 371, no. 9613 (February 23, 2008): 668–74. [https://doi.org/10.1016/S0140-6736\(08\)60305-0](https://doi.org/10.1016/S0140-6736(08)60305-0).
- Dolea, Carmen, Laura Stormont, and Jean-Marc Braichet. "Evaluated Strategies to Increase Attraction and Retention of Health Workers in Remote and Rural Areas." *Bulletin of the World Health Organization* 88, no. 5 (May 1, 2010): 379–85. <https://doi.org/10.2471/BLT.09.070607>.
- Frehywot, Seble, Fitzhugh Mullan, Perry W. Payne, and Heather Ross. "Compulsory Service Programmes for Recruiting Health Workers in Remote and Rural Areas: Do They Work?" *Bulletin of the World Health Organization* 88, no. 5 (May 1, 2010): 364–70. <https://doi.org/10.2471/BLT.09.071605>.
- Gilson, Lucy, and Ermin Erasmus. "Supporting the Retention of Health Resources for Health: SADC Policy Context." Equinet Discussion Paper. Johannesburg: Centre for Health Policy, School of Public Health University of Witwatersrand, September 2005. <http://equinet africa.org/sites/default/files/uploads/documents/DIS37HRes.pdf>.
- Glenton, Claire, Christopher Colvin, Benedicte Carlsen, Alison Swartz, Simon Lewin, Jane Noyes, and Arash Rashidian. "Barriers and Facilitators to the Implementation of Lay Health Worker Programmes to Improve Access to Maternal and Child Health: Qualitative Evidence Synthesis." *Cochrane Database of Systematic Reviews*, no. 2 (2013). <https://doi.org/10.1002/14651858.CD010414>.
- Goma, Fastone M., Gail Tomblin Murphy, Adrian MacKenzie, Miriam Libetwa, Selestine H. Nzala, Clara Mbwili-Muleya, Janet Rigby, and Amy Gough. "Evaluation of Recruitment and Retention Strategies for Health Workers in Rural Zambia." *Human Resources for Health* 12, Suppl. 1 (May 12, 2014): S1. <https://doi.org/10.1186/1478-4491-12-S1-S1>.
- Gow, Jeff, Gavin George, Given Mutinta, and Lutungu Ingombe. "Health Worker Shortages in Zambia: An Assessment of Government Responses." *Journal of Public Health Policy* 32, no. 4 (August 2011): 476–88. <https://doi.org/10.1057/jphp.2011.41>.

- Grobler, Liesl, Ben J. Marais, S. A. Mabunda, P. N. Marindi, Helmuth Reuter, and Jimmy Volmink. "Interventions for Increasing the Proportion of Health Professionals Practising in Rural and Other Underserved Areas." *Cochrane Database of Systematic Reviews*, no. 1 (2009). <https://doi.org/10.1002/14651858.CD005314.pub2>.
- Lehmann, Uta, Marjolein Dieleman, and Tim Martineau. "Staffing Remote Rural Areas in Middle- and Low-Income Countries: A Literature Review of Attraction and Retention." *BMC Health Services Research* 8 (January 23, 2008): 19. <https://doi.org/10.1186/1472-6963-8-19>.
- Little, Alex, Araya Medhanyie, Henock Yebo, Mark Spigt, Geert-Jan Dinant, and Roman Blanco. "Meeting Community Health Worker Needs for Maternal Health Care Service Delivery Using Appropriate Mobile Technologies in Ethiopia." *PLOS ONE* 8, no. 10 (October 29, 2013): e77563. <https://doi.org/10.1371/journal.pone.0077563>.
- Longombe, Ahuka O. "Medical Schools in Rural Areas--Necessity or Aberration?" *Rural and Remote Health* 9, no. 3 (September 2009): 1131.
- Rabinowitz, Howard K., James J. Diamond, Fred W. Markham, and Christina E. Hazelwood. "A Program to Increase the Number of Family Physicians in Rural and Underserved Areas: Impact After 22 Years." *JAMA* 281, no. 3 (January 20, 1999): 255–60. <https://doi.org/10.1001/jama.281.3.255>.
- Rabinowitz, Howard K., James J. Diamond, Fred W. Markham, and Abbie J. Santana. "Increasing the Supply of Rural Family Physicians: Recent Outcomes From Jefferson Medical College's Physician Shortage Area Program (PSAP)." *Academic Medicine* 86, no. 2 (February 2011): 264–69. <https://doi.org/10.1097/ACM.0b013e31820469d6>.
- Rourke, James. "How Can Medical Schools Contribute to the Education, Recruitment and Retention of Rural Physicians in Their Region?" *Bulletin of the World Health Organization* 88, no. 5 (May 1, 2010): 395–96. <https://doi.org/10.2471/BLT.09.073072>.
- Simoens, Steven. "Experiences of Organization for Economic Cooperation and Development Countries with Recruiting and Retaining Physicians in Rural Areas." *Australian Journal of Rural Health* 12, no. 3 (June 1, 2004): 104–11. <https://doi.org/10.1111/j.1440-1854.2004.00569.x>.
- Wang, Lexin. "A Comparison of Metropolitan and Rural Medical Schools in China: Which Schools Provide Rural Physicians?" *Australian Journal of Rural Health* 10, no. 2 (April 1, 2002): 94–98. <https://doi.org/10.1046/j.1440-1584.2002.00451.x>.
- White, Alice, Deborah S.K. Thomas, Nnamdi Ezeanochie, and Sheana Bull. "Health Worker MHealth Utilization: A Systematic Review." *Computers, Informatics, Nursing : CIN* 34, no. 5 (May 2016): 206–13. <https://doi.org/10.1097/CIN.0000000000000231>.
- Willis-Shattuck, Mischa, Posy Bidwell, Steve Thomas, Laura Wyness, Duane Blaauw, and Prudence Ditlopo. "Motivation and Retention of Health Workers in Developing Countries: A Systematic Review." *BMC Health Services Research* 8, no. 1 (December 4, 2008): 247. <https://doi.org/10.1186/1472-6963-8-247>.
- Wiwanitkit, V. "Mandatory Rural Service for Health Care Workers in Thailand." *Rural and Remote Health* 11, no. 1 (2011): 1583–1583.