The Effects of Primary Care Chronic Disease Management in Rural China

Yiwei Chen1*, Hui Ding1, Min Yu2, Jieming Zhong3, Ruying Hu3, Xiangyu Chen3, Chunmei Wang, Kaixu Xie, and Karen Eggleston1

1 Stanford University, Stanford, CA.
2 Zhejiang Provincial Center for Disease Control and Prevention, Hangzhou, China.
3 Department of NCD Control and Prevention, Zhejiang CDC, Hangzhou, China.
4 Tongxiang Center for Disease Control and Prevention, Tongxiang, China.

*Corresponding author: Yiwei Chen

EXTENDED ABSTRACT

Health systems globally face increasing morbidity and mortality from chronic disease, yet many—especially in low- and middle-income countries—lack strong primary care. China provides an important case study, as a large and rapidly developing middle-income country once famous for its “barefoot doctors” but with a hospital-based service delivery system for its ageing population. We analyze the effectiveness of a program promoting primary care management for insured rural Chinese with chronic disease.

Assembling a unique dataset linking administrative and health data at the individual level for over 70,000 rural Chinese diagnosed with hypertension or diabetes between 2011 and 2015, we utilize variation in management intensity generated by administrative and geographic boundaries to study program effects. We focus on villages that are within two kilometers of each other, but have primary care services managed by different townships. The 24 pairs of boundary villages are balanced across observable population characteristics such as age, gender, and educational attainment, and their residents enjoy identical insurance coverage and hospital access. Differences in township intensity of management are largely explained by ranking incentives from county supervisors and the pre-existing stock of primary care physicians in the township.

Utilizing this plausibly exogenous variation, we find that patients residing in a village within a township with more intensive primary care management, compared to neighbors with less intensive management, had more primary care visits, fewer specialist visits, fewer hospital admissions, and lower inpatient spending. No such effects are evident in a placebo treatment year. Results are robust to examining differences in health outcomes since initiation of the program, and a “leave-1-out” measure of township management intensity to mitigate any concern that unobserved differences in health demand of adjacent villages may explain the differences in management. Exploring the mechanism for reduced specialist and hospital utilization, we find that patients with more intensive primary care management exhibited better drug adherence as measured by medication-in-possession (e.g., the percentage of days in which the patient had a filled anti-hypertensive prescription in 2015).
Overall results suggest that primary care chronic-disease management in rural China can improve drug adherence, reduce health spending and improve health outcomes as measured by fewer hospitalizations. A back-of-the-envelope estimate of welfare suggests that the resource savings from avoided inpatient admissions substantially outweigh the public subsidy costs of the program, even if we ignore the value of any associated improvements in quality of life and survival.