

# Evaluating and improving health equity among patients with chronic diseases: case of an innovative integrated care delivery model in China

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## Purpose

The patients with chronic diseases have been disadvantaged within the healthcare system due to inefficient service delivery which may result in health inequity for this vulnerable patient group. Health equity can be evaluated from at least two dimensions: the equity of healthcare access and the equity of disease burden. Our research aims to evaluate the health equity for chronic patients and to improve it through an innovative integrated care delivery model.

## Methods

This model contained three elements: customized health intervention plan for individual chronic patient through community-based primary care delivery, continuous and coordinated clinical pathways between primary care and hospital treatment among multi-institutions, and the provider incentives to stimulate the inter-professional collaboration.

We implemented a field experiment in one rural area with a population size of 500,000 in Southwestern China between July 2012 to December 2014, with one intervention group and one control group (in total 6 towns of 126,000 people). We included all the officially registered hypertension and diabetes II patients as our study sample (around 6,800 patients). By comparing their number of hospitalization visits and medical expenditures on both town-hospital and county-hospital inpatient visits between targeted towns every 5 months before/after intervention (in total 12 periods and 34,000+ observations from year 2010-2014), we tested the model effects on improving the access of healthcare and lowering the medical burden. We also examined the continuity of care of county doctors after town hospital treatment as our secondary outcome, together with their willingness on continuous care delivery between groups.

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## Results

Compared to the control group, the rate of hospitalizations in experimental group was reduced by 0.42% (CI: 0.30-0.54) per-person/period and the likelihood of using an upper level service was reduced by 0.16% (CI: 0.09-0.25). Total and reimbursed inpatient spending were reduced by 12.43% and 5.53% respectively (both  $P < 0.001$ ). Health related quality of life (HRQoL) was increased by 15.5%, and the doctors' collaboration behavior and willingness to provide continuous care were increased by 13.1% and 10.4% (all  $P < 0.001$ ).

## Interpretation

Our model could effectively reduce the likelihood of higher-level inpatient service utilization, which indicates a more equal access and lower burden of disease for chronic patients. It could also lower the total and reimbursed medical expenditure and improve the HRQoL of patients. Additionally, the doctors' willingness to cooperate and provide continuous care is increased which may together explain the origins of higher efficiency of healthcare delivery.