A New Three-tier Healthcare Delivery Model in Urban China

Junjie Huang[1], Tiffany WY Pang[1], Xiangyang He[2], Linli Zhao[2], Huaxiong Wu[2], Yan Huang[2]*, Martin CS Wong[1]* (wong_martin@cuhk.edu.hk)

1. JC School of Public Health and Primary Care, Faculty of Medicine, Chinese University of Hong Kong, Hong Kong SAR, China. 2.First affiliated Hospital of Shenzhen University, Shenzhen Dapeng New District Medical Health Group, Shenzhen, Guangdong, China

** Corresponding authors*

Introduction

- **Patient-centred integrated care** involved preventive and curative health services managed and delivered continuously to patients by different tiers of the healthcare system.
- Globally, there is an increasing need for integrated care due to the rapidly growing burden of **non-communicable diseases** and **ageing population**.
- The current healthcare delivery system in China is **hospital-centred** and **treatment-orientated**, with little collaboration among different tiers of the system. The government is concerned about **the increased health service demands and medical cost**.
- **This study aimed to evaluate a new three-tier healthcare delivery model in urban China.**

The Dapeng Model

- With a population of around 140,000 in an area of 600 km^2, Dapeng New District is the most **sparsely, ageing populated, and the least economically developed** district of Shenzhen City, Guangdong. However, **the capacity of health providers was limited**, comprising only three district-level public hospitals with a total of **246** beds and **19** community health stations.
- The Dapeng model was developed in response to the increasing demands of healthcare service among residents in the district. In **June 2017**, the Dapeng New District government implemented a healthcare reform model to promote patient-centred care among the residents. The first three-tier healthcare delivery model in Shenzhen, consisting of **city-level, district-level public hospitals**, and **community health stations**, was established. A council consisting of government officials and representatives from local communities managed the operation of this Model.
- The goal of the model is to achieve people-centred integrated care by promoting effective collaboration between institutions across different tiers of the health care system in **twelve core action areas**:

1. Administration;
2. Human resources management;
3. Electronic information systems;
4. Referral framework;
5. Patient registration;
6. Care management functions;
7. Laboratory tests;
8. Drugs management;
9. Continuous learning;
10. Performance evaluation;
11. Research;
12. Logistics support.

Evaluation Methods

- **The primary outcomes** were the proportions of residents signing contract with the family physicians and receiving primary healthcare services in the community health stations.
- **Other outcomes** such as inpatients visits and drug sales as a share of total revenue were also measured.
- Baseline characteristics of the model were evaluated independently by a research group using administered survey. The annual self-evaluation of the Model was performed by the council collecting data from the representatives of hospitals and health stations.

Preliminary Results

- According to the annual self-evaluations of the Dapeng New District Medical Health Group, **106,448** residents (around **75.6%** of the population) had signed contracts with family physicians by Dec 2018. From June 2017 to Dec 2018, increasing proportions (**22.5%**) of the population had received primary healthcare services after establishment of the integrated care model (Table 2). There had been an increase in the number of inpatients visits (**18.4%**). By contrast, the drug sales as a share of total revenue had decreased by **23.5%**.

Performance Indicators	Jan 2018 to Dec 2018	Jan 2017 to Dec 2017
Outpatient visits (hospitals)	594,577	562,653
Inpatient visits	11,176	9,439
Inpatient emergency visits	721	366
Inpatient surgery	3,162	2,848
Drug sales as a share of total revenue for hospitals （hospitals and community health stations）	22.73%	29.71%
Outpatient visits (community health stations)	184,778	150,805

Conclusion

- The initial evaluation of the first one and a half years of the Dapeng model supports the effectiveness of the patient-centred integrated care programme.
- Application of the model may promote the transformation from a treatment-oriented healthcare delivery system to a patient-centred one.
- This may have implications for other **low and middle-income regions** to **improve health resource allocation and medical cost management** in ways driven by patient demands.