COVID-19: an emergency management perspective in China

Prof. Saini Yang
2020.03.26
To organize the preparation of the national overall emergency plan
To guide all departments in all regions to deal with emergencies
To promote the construction of the contingency plan system and the drill.
To establish a disaster reporting system and release the disaster information
To coordinate the construction of emergency forces and material warehouses and relief dispatching
To organize the construction of disaster relief system
To undertake the work of the national response headquarters for major disasters
Numbers by Mar. 26

- **Confirmed:** 81960  
  - **Imported cases:** 541
- **Cured:** 74196
- **Death:** 3,293
- **Mortality rate**
  - **National:** 4.0%
  - **Hubei:** 4.7%
  - **Other 30 provinces:** 0.9%

*Wuhan is the capital city of Hubei*

The serious shortage of medical resources may contribute to the high death rate in Hubei/Wuhan.
Recap – Five phases in Wuhan

• Phase I (December 1, 2019 to January 23, 2020): No strict epidemic control, except reporting cases, until the lockdown of the city was announced on January 23;

• Phase II (January 24 to February 1): With city restriction, Wuhan gradually established traffic control and quarantine programs to restrict population flow. There was a huge shortage in medical resources;

• Phase III (February 2 to 6): Strengthen prevention and control measures in community in Wuhan; “Huoshenshan", “Leishenshan" and cabin hospitals have been delivered, and medical rescue teams of 20 provincial rushed to help;

• Phase IV (Feb. 7 till Mar. 8th): Prevention and control measures have been further strengthened, and strict community measures have been implemented. Infected patients are basically all receivables and treated by hospitals.

• Phase V (Mar. 9th till now): limited increment of new infection everyday, mainly are imported cases from abroad. But death rate is still increasing. 16 cabin hospitals closed. Continued community quarantine but less restriction.
Based on our estimation (As of Feb 18): it is highly possible that the situation will be stabilized by the end of March in China.
Three features of a complex network

- Small World: Short average distance
- Scale Free: Nodal degree conforms Power Law distribution.
- Aggregation:

These features contribute to the fast spread of virus.

Wuhan is in the central part of China and has a population of 15 million. More than 5 million people left Wuhan before Jan. 23.

Wuhan is a city with very high population density.

January 25th is the 2020 Chinese New Year. The most important holiday for the union of families and friends.
A disaster perspective

• Hazard
  • New virus
  • Very limited knowledge

• Exposure
  • Huge population: Wuhan has a permanent population of 11.081 million and a floating population of over 5 million

• Vulnerability
  • Limited healthcare infrastructure: 81,700 hospital beds by 2018
  • Aging society: 14% population are 65 years old+
  • Low public awareness
Measures - All governments, all societies

- Identify the source of infection, control the source of infection
  - Test + Epidemic survey
  - Isolation

- Control transmission
  - Cut off the long-range transmission link (airline, railway, high-speed train etc.) to prevent and control the spread;
  - Initialize the city/community/family isolation/quarantine plan
  - Popularize the knowledge of sanitization and epidemic prevention

- Resource allocation
  - Hospital beds
    - 50,000 by Feb. 15th, 100,000 by Feb. 20th
  - Medical Team:
    - paired assistance program, 40,000+ Medicare people
  - Military force
  - Emergency Logistics

- Research and development of drugs and vaccines

- Protect the vulnerable population
  - Hospital
  - Nursing house
  - Prison
  - School

Substantial undocumented infection facilitates the rapid dissemination of novel coronavirus (SARS-CoV2)

Yuanxuan Dong, Xi Mo, Yabin Ha, Xin Qi, Fang Jiang, Zhongyi Jiang, Shu Tong

Affiliations: 1Shanghai Children’s Medical Center, Shanghai Jiao Tong University School of Medicine, Shanghai 200027, China; 2Child Health Advocacy Institute, China Hospital Development Institute, Shanghai Jiao Tong University, Shanghai 200027, China; 3School of Public Health, Xian Jiao Tong University School of Medicine, Xian 710049, China; 4School of Public Health, Institute of Environment and Population Health, Anhui Medical University, Hefei 230032, China; 5School of Public Health, Nanjing Medical University, Nanjing 211166, China
Challenges

- Information release
  - Timeliness
  - Completeness

- Emergency logistics
  - Integration of official and unofficial resources
  - Coordination among agencies

- Involvement of CSO
  - Training demand
  - Coordination with official teams

- Issues with new technologies
  - Legal issue
  - Capacity issue
New policies

The guiding opinions on novel coronavirus pneumonia prevention and control in the district classification and scientific control and precision measures

Announced by the Joint defense joint control mechanism of the State Council (2020.02.18)

• Scientific prevention and control
• Precise policy implementation
• Regionalization and classification
  • Dynamic Risk zoning
  • Diversified control measures and different schedule for factory resumption
Potential Improvements – Healthy Cities

- Density Control
  - Population
  - Building
- Circulation corridor
- Five-minute Life-Circle
- Infrastructure standards
- Health Culture
- Integrated City Plan

(Source: WHO)
Potential Improvements – Others

• Improving the awareness and ability of the public and the community in disaster prevention and mitigation/Risk communication

• Continuity plan for multiple stakeholders (governments at all levels, business, community, family⋅⋅⋅)

• Mechanism to support the development of small and medium-sized enterprises.

• Integrated channel/platform for mobilization of emergency materials
We need global cooperation

- Information sharing
- Transmission control
- Emergency logistics
- Collaborations in R&D
- ...

“覆巢之下无完卵”

There will be no complete egg when a nest is flipped over.
Thank you!

All information are based on person research.
For internal use only.