Prevention and Control Measures of COVID-19 in Beijing, China

Beijing Center for Disease Prevention and Control
April 21, 2020
Background


- On 30 January, WHO declared the outbreak a Public Health Emergency of International Concern (PHEIC).

- On 11 March, WHO Director-General characterized COVID-19 as a pandemic.
Epidemiological features of COVID-19

- **Infection source**
  - Symptomatic cases at presymptomatic or symptomatic course
  - Asymptomatic cases

- **Routes of Transmission**
  - Respiratory droplets
  - Direct contact or indirect contact with contaminated objects & surfaces
    - The virus persisted on surfaces up to several days
      - up to 4 hours on copper
      - up to 24 hours on cardboard
      - up to 2–3 days on plastic & stainless steel
  - Aerosol of high concentration in relatively closed space
  - Contamination of faeces or urine

- **No prior immunity**
- **Incubation period:** 3-7 (range: 1-14) days
- **R₀:** 2.2 (95%CI:1.4-3.9)
- **Serial interval:** 7.5 (95%CI:5.3-19) days

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Global situation

As of April 19, according to the WHO:

- Countries/regions/territories affected: Over 200
- Globally confirmed cases: 2,241,359
Epidemic curve of COVID-19 in China

As of April 18, according to the National Health Commission:

- Confirmed cases: 82735
- Deaths: 4632
Epidemic curve of COVID-19 in Beijing (As of April 19)

- 593 confirmed cases
- Crude CFR: 1.35% (8 deaths)
- The epidemic situation can be roughly divided into two stages.
  - 1\textsuperscript{st} stage (January 19-February 28)
    - Mainly imported cases and local infected cases.
  - 2\textsuperscript{nd} stage (March 7 to now)
    - Imported cases, and sporadic cases infected by imported cases.
  - Transitional period (February 29 to March 6)
    - Sporadic imported cases and local infected cases
Demographic distribution of COVID-19 in Beijing

- **Sex**
  - Male: 272 (45.9%)
  - Female: 321 (54.1%)
  - Male-to-female ratio: 0.85:1

- **Age**
  - Range: 6 months to 94 years old,
    - 0-2 years: 10 (1.7%)
    - 3-5 years: 16 (2.7%)
    - 6-17 years: 31 (5.2%)
    - 18-59 years: 431 (72.7%)
    - 60 and older: 115 (19.4%)
    - 80 and older: 17 (2.9%)
Severity of COVID-19 in Beijing

- Mild cases: 213 (35.9%)
- Moderate cases (mild pneumonia): 297 (50.1%)
- Severe cases: 67 (11.3%)
- Critical cases: 16 (2.7%)
- Percentage of severe and critical cases increased with age.
Epidemiologic Parameters of COVID-19 in Beijing

- $R_0$ was estimated at 2.5 by MCMC model.
- The secondary attack rate of close contacts: 5.54%（233/4204）.
  - Household contacts: 19.79%
  - Contacts of other relationships: 2.43%
- The average incubation period: 6.31 days (95% CI: 6.03-6.58)
- Family cluster analysis
  - One case was able to transmit virus to two family members (95% CI: 1.63-2.39).
  - The average serial interval: 7.64 days (95% CI: 6.43-8.93)
- Risk factors for household transmission
  - Primary case’s lack of knowledge of their own infectiousness when developing illness,
  - Less frequent disinfection in households
  - Daily close contact with primary case at home (within 1 meter)
  - None of the family members wearing a mask at home before primary case developing illness
Measures in China

- Social distancing measures
- Travel-related measures
- Case and contact management
- Personal protection
- Environmental measures

- Wuhan city travel ban
- Level 1 national emergency response

- Guarding against imported cases
- Preventing a resurgence of local outbreak

Without Wuhan travel ban or the national emergency response:
- 744,000 cases;
- 96% of these cases were averted by both measures.

Strategies in Beijing

• Guarding against imported cases and preventing a resurgence of local outbreak.

• Strictly implement the "Four-party Responsibilities".
Measures in Beijing

• **Strictly prevent import of cases, and take measures beforehand**
  
  – All personnel entering Beijing from abroad or other provinces underwent medical observation at home or at designated places (i.e. hotels)
  
  – Strengthen port health quarantine through health declaration by entry personnel, boarding quarantine, as well as body temperature inspection.
  
  – All personnel entering Beijing from abroad underwent medical observation for 14 days and nucleic acid detection.

• **Social distancing**
  
  – Extend the Spring Festival holiday in 2020
  
  – Avoid mass gatherings
    
    • Cancel or suspend sports events, concerts, etc.
    
    • Closure of entertainment venue
    
    • Limit flow rate into parks or resorts
  
  – Postpone the opening of universities, middle schools, primary schools and kindergartens
  
  – Limit passenger load of public transportation.
  
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Measures in Beijing

- Strengthen community management
  - Access cards were issued to the residents by community administration companies
  - Check temperature for people entering the community, and strengthen the verification and management of guests

- Strengthen the detection, management and treatment of cases
  - Over 70 fever clinics have been set up to screen and test fever patients
  - Isolation and treatment of cases at designated hospitals
    - Suspected cases should be isolated in a single room
    - Confirmed cases and asymptomatic infection could be isolated in the same room
Measures in Beijing

- Strengthen the detection, management and treatment of cases
  - 50 testing institutions were recruited with a capacity of testing 13000 specimens everyday
  - 20 designated hospitals with a capacity of over 3000 beds,
    - 3 at the municipal level
    - 17 at the district level
  - A clinical expert group was organized at the urban level.
  - The combination of Chinese traditional and Western medicine was used to strengthen the treatment.
Measures in Beijing

• Close contact tracing and management
  - Any person who had come in contact (within 1 meter) with a confirmed or suspected case since 4 days before illness onset, or with an asymptomatic infection since 4 days before sampling.
  - Underwent medical observation at designated places for 14 days since the last exposure.
  - Body temperature and health status examination were conducted twice everyday by community health care workers.
  - Unnecessary outdoor activities were prohibited.
  - Living accommodation was supplied by local community.
Measures in Beijing

- Preparation and stockpile of adequate resources
  - A material support working group has been set up to coordinate the procurement, use and storage of PPE, medicines and equipments.
  - Xiaotangshan Hospital has been constructed and opened in an emergency, with 1000 beds, to admit cases found from entry personnel.

- Science-driven measures, and guidance for the public
  - Release epidemic information openly and transparently
  - Publicize prevention and control knowledge to the public through various channels,
  - Formulate 36 guidelines for resumption of work in various settings: buildings, restaurants, barbershops, elevators, shopping malls, subways, buses, etc.

- The "Health Treasure" app was developed to verify personnel information

- Encourage telecommuting and online learning

- Establish a psychological hotline to provide psychological assistance to medical staff and the public.
Nine-point tips for personal protection

- Wearing a mask
- Washing your hands
- Opening the window
- Keeping a one-meter distance
- Following a healthy diet
- Conducting proper disinfection
- Stop gathering together
- Keeping a healthy condition
- Ensuring a healthy mentality
Thank you