Development and Deployment of China National Rapid Response Teams: -- Opportunities and Challenges

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Outline

• Development of China RRTs
  – Creation and management
  – SOPs and equipment
  – Trainings and exercises

• International deployment for biological events

• Challenges and lessons learnt
Increasing health threats

Emerging Infectious Diseases
Disasters
Chemical, radiation, other hazards

Increasing demands
Rapid and efficient response
Qualified health services

Call for a more operational and deployable taskforce!
3 Key Milestones of emergency response system

- **SARS** 2003: Preliminary development
- **WenChuan Earthquake** 2008: Improving and upgrading
- **Ebola** 2014-15: Further improvement and upgrading
4-Pillar Framework of Health Emergency System in China

Legislation

Organizational Structure

Surveillance
Investigation and lab test
Command and control
Risk communication
R & D

Mechanism

Planning

Stockpile

Information system

Human resource

Organizational structure

Essential elements

Community Engagement
National government funded RRT program officially launched in 2010

RRT Logo instructions

RRT management requirements

RRT development program protocols
RRT program

- **Goals**: to develop self-sufficient, rapidly deployable mobile response teams with vehicle-loading capacity to support response to health emergencies.

- **Funds**: Over 500M RMB since 2010:
  - by central government: 64%
  - by local governments: 36%

- 37 national level RRTs in 4 types
  - Medical rescue, infectious disease, chemical poisoning, nuclear and radiation

- 18846 RRTs at provincial, city and county level
Geographical distribution of 37 national RRTs

Legend
- Medical Rescue: 19 teams
- Infectious Disease: 13 teams
- Chemical Poisoning: 3 teams
- Nuclear and Radiation: 2 teams
Roles in RRTs management:
- National level: planning, development and management;
- Provincial health administrative department and ownership institutions/hospitals: establishment, equipment, and daily operation

Team composition:
- Multiple occupations: emergency management, technical operations, logistics support...
- 20 members (1 team lead and 2 deputy). 10 back-up members. Update every 3 years.

Qualification:
- >5 years relevant experiences
- Senior technical title: >20%

Responsibilities and obligations
RRT plans and SOPs

- Management of national RRTs (2010, Interim)
- Reference catalog of RRT equipment (2008)
- Technical standards on RRT individual carrying equipment (2011, Interim)
- Technical standards on RRT uniform and clothing (2011, Interim)
- Logo of National RRTs (2011, Interim)
- Health emergency work specification for disease control facilities (2015)
- Health emergency work specification for health care facilities (2015)
- Logo of National mobile operation center (2017, Interim)
RRT individual carrying equipment
- flexible, easy-to-carry, specially-designed -
1. Command and communication platform
- vehicle-loading, good for land transportation -

- Internet connections via satellite
- VC and TC devices
• 2. Technical support platform-Medical rescue

• Mobile hospital based on vehicle-load expandable cabin and tent
• Facilities for outpatient care, lab test & X-ray, surgical care…
• 2. Technical support platform - Infectious disease

- Small mobile labs
- Portable devices
- Disinfection and vector control device
- Sample collection and transportation
• 3. Logistics support platform

• Accommodation, dining and bathing
Water, electricity, and oil supply
3 national EMTs were classified by WHO

- **Type 3 EMT:** Huaxi Hospital (2018)
- **Type 2 EMTs:** Shanghai (2016) and Guangdong (2017)
3 National public health RRTs in China CDC

• Developed since 2012, certified in 2015
  – 3 RRTs: Infectious disease, chemical poisoning, radiation events

• 215 team members:
  – Command, management and logistic: 74 (1/3)
  – Technical (surveillance, risk assessment, laboratory, infectious disease, sanitation, poisoning, risk communication...): 141 (2/3)

• 20 million RMB budget
China CDC RRT for Natural Disasters

• A rapidly deployable small team for disasters.
• Established in Aug 2014
• **Composition:**
  • 2 teams, 40 members with 8 team leads
  • Selected from 14 occupations and 11 institutes of China CDC

- **Roster**
  • 2 teams switch every month
  • 1 team lead, 4 team members on call per day

- **Training**
  • First-aid
  • Technical skills for post-floods response

- **Exercise**
  • Drill in Xinjiang and Qinghai
  • Exercise games with Yunnan, Guangdong
Trainings: routine and ad hoc based

- Technical trainings on emerging infectious diseases:
  - Avian Influenza A(H7N9), MERS, Ebola, Zika, Yellow Fever...
- Emergency management:
  - Command and control, EOC
- Field survival skill and first aid
- PPE, security, and pre-deployment
Simulation Exercises

• 2013: Full-scale exercise for plague response
• 2013: National RRTs joint exercise
• 2015: Drill for mobile labs of infectious disease
• 2015: Full-scale exercise for logistics support
• 2016: Bio-terrorism response exercise
• 2017: Natural disaster joint exercise
• 2018: Joint exercise of 3 national RRTs
International Deployment, 2012-2018

- Cambodia, EV71
- Sierra Leone, Ebola
- Philippines, Typhoon
- Nepal, Earthquake
- Angola, Yellow Fever
- Madagascar, Plague
- Guyana, Zika
- DRC, Ebola
Deployment to West Africa for Ebola Response
Summary of deployment during 2014-15

- China Government’s aid: ≥750 million RMB
- RRTs deployment: 19 teams, 179 members
  - China CDC staff: 62% (111)
  - Provincial staff: 18% (32)
    - Provincial CDCs: 25 persons
    - Hospitals: 7 persons
  - Military CDC staff: 11% (20)
  - NHC, Other ministries or institutions: 9% (16)
- Average age: 38.9 yrs
- Male : Female = 90% : 10%
Needs-based multiple tasks

1. Aid Materials Use Training Teams
2. Mobile BSL-3 Laboratory Testing Teams
3. Fixed BSL-3 Laboratory Construction Teams
4. Fixed BSL-3 Laboratory Testing Teams
5. Public Health Training Team
6. Demonstration Project Team
The first deployed teams

- **Aug. 08, 2014**: EVD was declared PHEIC
- **Aug. 11, 2014**: RRTs were sent to Liberia, SL and Guinea for aid materials use training
- 3 teams, 9 persons: from China CDC and Military CDC
- 1-week mission
Mobile BSL-3 laboratory Testing Teams

• **3 teams:** Majority from Military CDC, 15 members from China CDC
• Each team worked 2 months
• **Sep. 28, 2014:** lab testing started
• 4867 samples were tested by March 10, 2015
Fixed BSL-3 Lab Constructing Teams

- 3 teams, 19 persons
  - China CDC, NHC, Constructing Institution and Commercial Company
- 383 m²: BSL-3 and BSL-2 working area

- **Construction completed in 87 days**
  - Sep. 2014 Site selection
  - Nov. 16, 2014 Groundbreaking
  - Nov. 21, 2014 Foundation stone laying ceremony
  - Dec. 19, 2014 Roof-sealing completion
  - Jan. 26, 2015 Building completion
  - Feb. 5, 2015 Debugging completion
  - Feb. 10, 2015 Project accreditation
  - Feb. 11, 2015 Completion ceremony
Fixed BSL-3 Laboratory Testing Teams

- Feb. 7 and 14, 2015: testing teams arrived SL to prepare the lab
- Mar. 10, 2015: SL president visited the lab
- Mar. 11, 2015, the lab started to accept samples and replaced the temporary mobile BSL-3 lab

- After 2015, ToRs of teams transited to longer-term training support:
  - 2.5 mons $\rightarrow$ 1 year
Public Health Training Teams

- **Outcomes:**
  - over 13,000 community workers of 9 Countries (SL, Liberia, Guinea, Mali, Senegal, Ghana, Benin, Togo, Guinea-Bissau) were trained

- **3 teams, 42 persons**
  - China CDC: 50%; Provincial CDCs: 20%; Hospitals: 15%; Health Education Institute: 12%

- **Duration:** 2 months
Objective:
- to provide best practices for EVD control based on local public health system

Pilot sites:
- 3 villages in West Area Rural, SL

A team of 12 members, 2 mons in 2015

Activities:
- Baseline survey: ≈9400 households
- Enhanced training: PHU workers /HCWs, school teachers/students
- Active case finding and contact tracing
- Epi investigations
- Health education and social mobilization
Added value of international deployment

- Contribution to global emergency response efforts is Chinese government’s reinforced commitment
  - Long history of friendship between China and Africa
  - Partnership with other donor countries

- Protect people’s health in both Africa and China
  - Prevent cross-border transmission

- Facilitate capacity building for biological events
  - Gained rich experiences on lab testing and clinical management of EVD
  - Trained personnel for domestic capacity building
After Action Review
- Feedback from deployed teams, 2015 -

What we did well:

• Team forming and member selection
  – Qualification requirements on experience and language capability
  – Pre-defined specific roles for each team member
  – Field team management SOPs

• Pre-deployment preparation
  – Pre-deployment vaccine prophylaxis
  – Addressed trainings on field security and local culture
  – Accident and medical insurance

• Transport
  – Rapid transportation of construction materials
  – Strong support from military

• Good support from:
  – CCDC: weekly VC, real time communication, translation, funding support
  – Embassy: government networking, logistics, information sharing and media communication
  – Other units: China-SL hospital, Chinese commercial companies
What we need to improve:

• Transportation of hazardous materials
• Coordination with custom for bulk materials and lab supplies
• Field logistics: accommodation, local transportation, security
• Language capacity to enable comprehensive communication
• Sustainable capacity on continuous/long-term deployment
• Full time responsible taskforce for international deployment
• Experiences from previous large-scale international deployment
Gaps and Challenges

• Increasing demands of health response services
  – Lack of sufficient human resource and operational capacity

• Logistic support should not rely on temporary solutions
  – Prepared SOPs and pre-signed contract with delivery companies, arrangement with customs

• No adequate/detailed information on situation and needs of the affected countries and on overall offer from other donor countries
  – A global network for sharing such info is needed: beyond GOARN and EMT

• Field coordination:
  – Roles of international agencies in bilateral deployment
Conclusions

- International deployment should be country-requested and needs based.
- Government commitment and investment on RRTs during peace time, inter-sectoral coordination before and during deployment are critical.
- Pre-developed plans and SOPs should be updated, trained and exercised through strategic planning. And must be flexible enough!
- Capacity building priorities:
  - Training: security, field communication and coordination, international mechanisms
  - Exercise: rapid deployment, field operation, communication skills
- Learning by Doing: continuously work with international partners in future responses.
Thank you for your attention.

- Commitment, Contribution and Collaboration