Rospotrebnadzor’s mobile biomedical units: capabilities and roles in disease surveillance and response operations

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National surveillance system is regulated by Federal Law “About sanitary and epidemiological well-being of the population” from 30.03.1999 N 52-ФЗ (last version – October 21, 2018)

The federal state sanitary and epidemiological surveillance is carried out by authorities and institutions that constitute a single state centralized system.

Federal executive body exercising federal state sanitary and epidemiological surveillance is Federal Service for Surveillance on Consumer Rights Protection and Human Well-Being (in Russian is Rospotrebnadzor)
Federal Service of Rospotrebnadzor

Territorial divisions of Federal executive bodies established for the implementation of Federal state sanitary and epidemiological supervision in the subjects of the Russian Federation,

Territorial divisions of Federal executive bodies established for the implementation of Federal state sanitary and epidemiological supervision in transport, in organizations with particularly dangerous working conditions

Structural units of the Federal executive bodies on defense, internal affairs, security, justice, activities of the National Guard troops of the Russian Federation, carrying out federal state sanitary and epidemiological supervision, respectively, in the Armed Forces of the Russian Federation, other troops, military formations, at defense and defense facilities
Russian anti-plague Rospotrebnadzor service is a specialized healthcare institutions network for state sanitary and epidemiological surveillance on dangerous infections.

Anti-plague service implement scientific and practical support of the Russian population protection from the occurrence and spread of plague diseases, as well as in the field of sanitary protection of the territory of Russia, prevention of especially dangerous and natural focal infectious diseases, including viral etiology.

Anti-plague service consist on 5 Scientific research institutions and 15 regional anti-plague stations covers all the territory of Russian Federation.

The Service is one of the most important part of outbreaks monitoring and prevention, detection and alert in case of a deliberate use of bio-threats agents (pathogens and toxins) system.

Anti-plague system works as part of National surveillance system. Chief Sanitary Inspector (Head of Rospotrebnadzor) leads the anti-plague service.
RUSSIAN FEDERATION SURVEILLANCE SYSTEM COMPONENTS

Federal Service of Rospotrebnadzor

Territorial divisions of Anti-Plague Service (total 15 regional stations)

Federal Anti-Plague Scientific Research Institution “Microb” Saratov
- Mobile anti-epidemic unit 1
- Mobile anti-epidemic unit 2
- Training center

Federal Anti-Plague Scientific Research Institution Stavropol
- Mobile anti-epidemic unit 1
- Mobile anti-epidemic unit 2
- Training center

Federal Anti-Plague Scientific Research Institution Rostov-on-Don
- Mobile anti-epidemic unit 1
- Mobile anti-epidemic unit 2

Federal Anti-Plague Scientific Research Institution Volgograd
- Mobile anti-epidemic unit 1
- Mobile anti-epidemic unit 2

Federal Anti-Plague Scientific Research Institution Irkutsk
- Mobile anti-epidemic unit 1
- Mobile anti-epidemic unit 2

Total 10 mobile anti-epidemic units on duty, 5 – on truck basis, 5 – on pneumomodules basis
MOBILE BIOMEDICAL UNITS OF ROSPOTREBNADZOR

Mobility and autonomy, environmentally safe

Multifunction, compatible with all IT systems

Modern technologies and high throughput

High biological safety level (BSL 3+)

Module (Lego) principle

Fully trained crew of specialists
Investigation upto 12-16 foci of infection and 8-12 epidemiologically significant objects per day

- Laboratory diagnostics of dangerous infections (Ebola, Marburg, Rift Valley, cholera, plaque etc.) up to 300 samples per day
- Tropical variant as well as polar available (temperature range +50°C÷-50°C)
- Biological safety level BSL-3
- Water, air, food - up to 100 samples per day
Ensuring biological safety: in areas of natural disasters; in areas of armed conflicts; during mass gathering events: Winter Olympics 2014; G20 summit; FIFA World Cup 2018 and others

Participation in the elimination of 123 foci of particularly dangerous infections, including the epidemic of Ebola (17 month of autonomous work in Guinea: 21097 tests for more than 20 infections)
MOBILE BIOMEDICAL UNITS: EFFECTIVE PREVENTION, PROMPT IDENTIFICATION AND RAPID RESPONSE TO BIOLOGICAL THREATS

- Epidemiological investigation in an emergency zone
- Collection and delivery of samples
- Sanitary protection of territories
- Identification of biologically contaminated zones
- Identification and diagnostic of contacts
- Development of restrictive measures (quarantine), emergency mass prevention
Mobile biomedical lab is fully completed with reagents for PCR and ELISA assays based on open platform and verified by WHO authorities. Most of devices are compatible with different types of PCR and ELISA kits from different manufacturers. **Transported reagents are enough for one month work**

**Total cost of mobile biomedical unit** consists of 6 modules – **2,7 millions USD**, including 0,86 millions USD for removable laboratory equipment

**Cost of delivery (5000 km by air) and autonomic operation of Mobile biomedical unit in emergency zone on the territory of foreign country within 14 days:**

**488 000 USD** (including costs of laboratories’ work and personnel)
Mobile biomedical unit can conduct research work as well as diagnostics.

Local laboratory staff can be trained to operate with devices and diagnostic reagent used in mobile lab.

Highest biological safety completely protect researchers and trained staff (medical loses in Russian sector during last Ebola outbreak = 0)

During working period foreign staff could be gradually replaced by local staff
• In April 2016 Russian Federation introduced the working paper entitled "Operationalizing mobile biomedical units to deliver protection against biological weapons, investigate their alleged use, and to suppress epidemics of various etiology"
At the August 2016 meeting of the Preparatory Committee, the Russian Federation tabled the Addendum containing specific information, on the prototype of mobile biomedical units — Russian specialized anti-epidemic teams under the Federal Service for Surveillance on Consumer Rights Protection and Human Well-Being.

- The concept was also discussed at several BWC-related seminars outside of Geneva.
- The proposal has already generated a great interest.
- Mobile Biomedical Units may open a new and promising page in the history of the Convention by creating novel opportunities to measurably improve BWC implementation in several areas.
Thank you for attention!