Biosafety of Work Environment in Natural Foci of Especially Dangerous Infections in Kazakhstan

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Characteristics of the Aral Sea area

Once the Aral Sea was the 4th largest in the world.
Reasons for shallowing of the Aral Sea

1. The destruction of the bottom layer of the Aral Sea

2. The disappearance of the Aral Sea is a natural process, connected with the global climate change of the planet

3. The degradation of the surface of mountain glaciers, their dusting and mineralization of sediments feeding the Syr Darya and Amu Darya rivers.
But the main reason is the incorrect distribution of water resources feeding the Aral Sea.
The decline in the water level of the Aral Sea since early 1960s contributed to the release of the bottom of the sea from water.
It led to the expansion of natural foci of infection (plague, Congo-Crimean hemorrhagic fever, tularemia, etc.) previously located around the Aral Sea.
BIOSAFETY IN FIELD CONDITIONS

Objects of collection in natural foci of especially dangerous infections

Rodents are reservoirs of infections

Ectoparasites are carriers of these infections
1. Damaged integrity of the skin of rodents

2. Rodent bite

3. Contact with biological excreta of animals

4. Violation of safety regulations

5. Ectoparasite bite

Risks of infection in field conditions
# Methods for reducing the risk of infection of employees during field work

<table>
<thead>
<tr>
<th>Specific</th>
<th>Vaccination of the risk group for each nosological form</th>
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<tr>
<td>Nonspecific</td>
<td>Primary protective barriers (PPE, special adaptations, training and correct practical actions)</td>
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Targeted training for biosafety and biosecurity staff

- Compliance of systematicity and multiplicity
  - Mandatory consolidation of theoretical knowledge by practical skills
    - Usage of visual aids, video recordings, demonstration posters
  - Acquaintance with the innovations used in field work (fishing gear, containers for transport)

Principles of training

- Learning
- Compliance
- Consolidation
- Usage
- Acquaintance
Training of employees

- Appropriate use of PPE
- Convenience for work
  - Simplicity in dressing up and taking off
- Matching by size
- Matching by season
- Comfort in thermoregulation
Conditions to allow to work in field conditions

1. Presence of preventive medical examination
2. Vaccination against especially dangerous infections
3. Examination of the anti-epidemic regimen of a specially created commission
Requirements for fishing gear

1. Convenience in use
2. Tightness of packaging
3. Easily processed disinfectants
4. Maintenance of thermoregulation
Ectoparasitic catching equipment

1. Safety in usage
2. With easily treated disinfectants
3. Interchangeability depending on the weather conditions (wind amplification, scorching heat)
4. Tightness of packaging
Use of fishing gear

- Strictly for the purpose
- Their use depends on weather conditions
- Proper disinfection after use
- Proper storage
Rules of dislocation in field conditions

Selection of the dislocation (in the places free from the settlement of rodents, predators, insects)

Pre-treatment of dislocation by disinsectants
Field Conditions

- Field conditions are the conditions of residence, work and leisure of employees in the enzootic territories.

- Field material are the biological substances collected from the enzootic territories for desk research.
Security of the collection of field material

1. Elimination of direct contact with captured rodents or their corpses

2. Avoid contact with biological substances of rodents on fishing gear

3. Avoid bite of ectoparasites using weather conditions and disinsectants, repellents, scaring agents
• Correct isolation of trapped rodents to avoid spreading their fleas
Packaging of materials
Transportation of field material

- Use of packaging containers
- Transportation by special transport
- The cargo is accompanied by trained biosafety and biosecurity personnel
- Tracking of the route
Collection of field material for the Congo-Crimean hemorrhagic fever

- Correct selection of the place of congestion of ticks (potholes, field, meadow, forest plantations, watering)
- Correct selection of survey objects (animals)
• Use of protective clothing
• Using tools to remove ticks from animals
• Transportation of materials
Risks of infection when working on the Congo-Crimean hemorrhagic fever in the field

• 1. A tick bite;
• 2. Crushed tick;
• 3. Spraying of blood;
Training of personnel on disinfection work

- Proper preparation of the percentage of disinfectants
- Application of disinfectants to their intended use

- Knowledge of the algorithm of action in the event of an accident in field conditions
- First aid and partnership skills
CONCLUSION

To reduce the risk of infection while working in the field, it is necessary to put mobile groups for each infection separately.
THANK YOU FOR YOUR ATTENTION