



# DEPARTMENT OF BIOSAFETY AND EDP NATIONAL CENTER FOR DISEASE CONTROL AND PUBLIC HEALTH

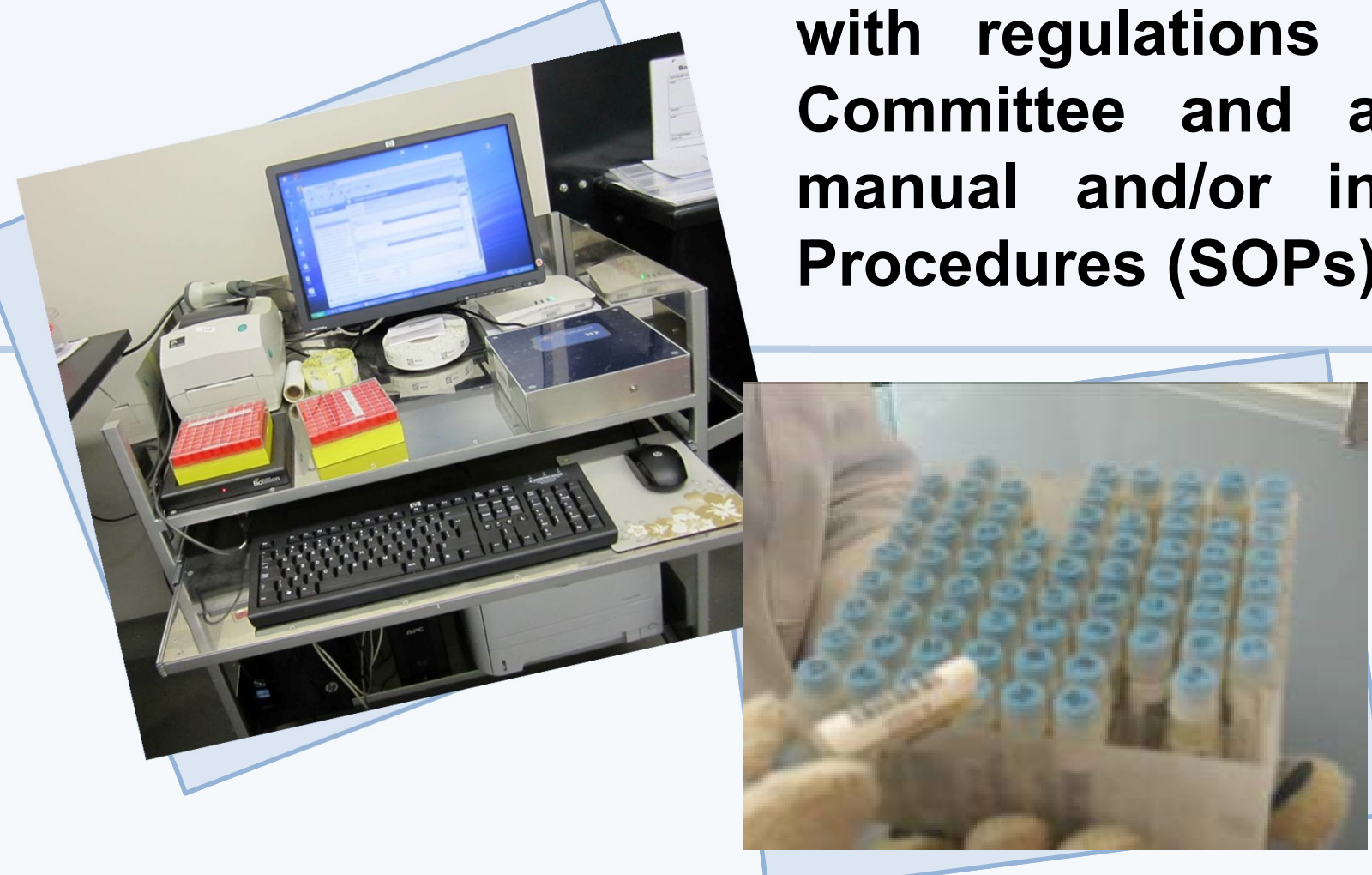


## National Repository of Bacteria and Viruses

National Repository for Bacteria and Viruses has been in operation since 1971. The main functions are:

- ✓ Safely storing collection of Especially Dangerous Pathogens (EDP) includes strains, obtained from humans and environment – *B.anthraxis*, *Y.pestis*, *F.tularensis*, *Brucella*, *C.botulinum* and other pathogenic and potentially pathogenic microorganisms that are of a scientific or practical value – *V.cholerae and other Vibriones*, *Listeria*, *Legionella*, *E.coli*, *Shigella*, etc. and Standard strains; All confirmed EDP and Non-EDP strains are registered in the Pathogen Asset Control System (PACS);
- ✓ Provide different NCDC laboratories and external laboratories which are licensed for work with particular pathogens with microorganisms for scientific research and External /Internal QC.
- ✓ Determination of the bactericidal and sporicidal effects of disinfectants.
- ✓ To give permission to import/export biological substance.

All work conducted at the repository is in compliance with regulations established by NCDC's Biosafety Committee and are incorporated in the biosafety manual and/or in appropriate Standard Operating Procedures (SOPs).



## Biosafety Unit

NCDC Biosafety Program designed for the entire laboratory network, this program is performed by a biosafety team. The team consists of 4 biosafety officers (2 -Lugar center, Imereti Division 1, Adjara Division 1 o), and 7 designated person (each per-LSS)

In the NCDC is established and implimented 2 Biosafety Manual: One for the Lugar Center, where a high kontainment Laboratories (BSL-3) are located, and biosafety manual for NCDC&PH regional laboratories, Which correspond to BSL-2 level and Biosafety SOP-s, separate for BSL-3 and separate for BSL-2 laboratories. Biosety officers regularly are conducting risk assessment, related to the all laboratory procedures. Has been designed measures to mitigate these risks and prevention measures, which are reflected in the relevant part of the Biosafety SOP's. In the NCDC is established a Biosafety Committee, which provides development and periodically revision of the policy related to the bio risk because this policy must be in accordance with the applicable regulations in the country. The committee also reviews each new project and provide the investigation of the risks related to the research procedures and gives the recommendation to reduce risks. Laboratory Biosafety officers regularly supervise staff working procedures in accordance with the requirements of biosafety. Biosafety program includes blood borne pathogens, laboratory waste management, decontamination and disinfection, sample packaging and transportation design, field biosafety, medical surveillance of laboratory staff, training for staff and visitors and emergency response programs.

In the Lugar center is created a Biosafety Training Center. Have been held one regional training for the representatives of the 4 region country.

NCDC&PH biosafety specialists are participate in the country's national CBRN team work as bio threat experts.

## Especially dangerous Pathogens Laboratory

In different regions of Georgia every year are registered cases of especially dangerous infections among humans such as Crimean-Congo hemorrhagic fever, Brucellosis, Anthrax, Tularemia.

Laboratory of Especially dangerous pathogens perform investigation of different samples from humans and different environmental objects. Laboratory of Especially dangerous pathogens perform investigation of different samples from humans and different environmental objects on presense of Especially dangerous pathogens, such as *Y.pestis*, *Brucella*, *Fr.tularensis*, *B.anthraxis* and Viruses of Crimean-Congo hemorrhagic fever across all country. The study includes the identification of pathogens circulation in humans, as well as in major reservoirs of infection, in the vectors and in various environmental objects. Laboratory studies are carried out by bacteriological, serological and molecular biology research methods.

IDP basic laboratory work is in progress in – BSL 3 laboratory of the Lugar Center. The laboratory has also a laboratory of primary processing of field samples. Where these samples (rodents, fleas, mites, environmental objects) are processing, divide by aliquots, plating and then samples are sent to the BSL-3 laboratory. Where the using of above-mentioned whole research process is being conducted. It should be noted that for the first time has been isolated microbes of *Fr.tularensis* from bubo of Tularemia sick human.

IDP laboratory employees have undertaken BSL-3 laboratory practices and skills training. And have enough work experience. 2 Laboratory employee with the help of American colleagues formed as trainers of BSL-3 laboratory practice and procedures. From EDP Laboratory staff designed Emergency Response Team (3 group), which are equipped with appropriate PPE, sample taking, packaging and transport means. Which is ready to respond in any time.



## Zoentomology laboratory

Laboratory staff conduct the research and monitoring of the natural and endemic foci of the especially dangerous and aligning with them other infections, which are located on the territory Georgia. In the Zoentomology laboratory, epizootic investigations are conducted by two groups – zoakarology and entomology groups.

Zoakarology group functions include: obtain of vectors and reservoirs of the especially dangerous infectious disease and aligning with them other infections, to define their numbers and generative condition, taking soil samples, puke of wild poultry, to specify their addresses by the GPS data, the study of risk factors, transferring the obtained Field samples to the laboratory for investigation. In the cases of positive laboratory result, provide the preliminary forecast for preventing outbreaks and a single case, associated with this infection. Zoakarology group detected new natural foci of tularemia and Crimean-Congo hemorrhagic fever. Vectors were found in such areas and villages where they have not accounted of previously by the authors.

Entomological group functions include: annual monitoring on the population of malaria mosquito *Anopheles* and no malaria mosquito *Culex* and *Aedes* genus, their catching, and the kinds of generative study. Hence the prognosis and risk factors on the season and next year.

The event was held in the country have been reached, decrease of malaria cases and the elimination.

Group, as a result of investigation, found two different types of mosquito the *Aedes albopictus*, *Aedes aegypti*, which are non-endemic for Georgia and represents the vectors of the especially dangerous viral infections.

The staff members are involved, throughout the country, in the implementation of the international projects, preparation of recommendations, participate in the conferences.

Within the country, among population, regularly conducting lectures and conversations associated with especially dangerous communicable diseases, reservoirs, vectors and their defense matters.



## General Bacteriology laboratory

Laboratory functions include:

- ✓ Studies of biology/morphology, and biochemistry of pathogenic microorganisms from clinical and environmental samples
- ✓ Studies of sensitivity of microorg-anisms to antibiotics laboratory is integral part of surveillance program
- ✓ Studies of sensitivity of microorganisms to antibiotics

Laboratory is integral part of surveillance program

Accreditation/certification

External quality assessment program for haemophilus influenzae, neisseria meningitidis and streptococcus pneumoniae by WHO

External quality assessment program for salmonella/shigella species by WHO

Diphtheria accredited reference laboratory by WHO

AMR reference laboratory since 2014 certified by the international CEASAR program AMR external quality assessment program

Laboratory is involved in several sate programs and international research projects:

State programs

Surveillance of Nosocomial Infectious

Surveillance of Diarrheal Infectious

Surveillance of Malaria

Research projects

ISTC/BTEP #G-1759p "Epidemiology of Clostridium difficile – associated disease in Georgia"

ISTC/BTEP #G-1683p "Distribution and diversity of Bartonella pathogens among people and animals in Georgia and evaluation of factors associated with the emergence of bartonellosis"

ISTC/BTEP #G-2099p "Molecular Epidemiology of Toxigenic Escherichia coli in country of Georgia"

ISTC/BTEP # G-1462p "Establishment of national sentinel-site, laboratory based Salmonella surveillance system and outbreak response capacity for enhanced control of food borne disease in the Republic of Georgia"

AMR Reference Center

Laboratory is certified by CEASAR on EQA

Lugar Center is leading microbiological lab network across the country

Conformation and characterization of interesting strains (CEASAR pathogens)

PoP Study (WHO surveillance project on AMR)