Mobile Telemedicine System is effective facility for improvement of health services to population in the Caribbean countries

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Russian Telemedicine Consortium
Establishing of National Telemedicine System (NTS) will allow to solve four socially important challenges:

- Maintenance of accessibility of medical and social services for the population;
- Ensuring of unified and common high quality of medical and social services for people irrespective of their residential and social status;
- Optimizing of the costs of healthcare while improving quality and coverage;
- Creation of new workplaces for technical and medical NTS personnel.

The structure and functions of NTS work are defined by:

- Objectives of public health system in the Caribbean countries;
- Economic, social, demographic, etc. conditions of development of the Caribbean countries;
- Geographical and climatic features of the given region.
- Reduce child mortality
- Improve maternal health
- Combat HIV/AIDS, Malaria and others diseases:
  - Halt and begin to reverse the spread of HIV/AIDS
  - Halt and begin to reverse the incidence of malaria and other major diseases

"We will have time to reach the Millennium Development Goals – worldwide and in most, or even all, individual countries – but only if we break with business as usual. We cannot win overnight. Success will require sustained action across the entire decade between now and the deadline. It takes time to train the teachers, nurses and engineers; to build the roads, schools and hospitals; to grow the small and large businesses able to create the jobs and income needed. So we must start now. And we must more than double global development assistance over the next few years. Nothing less will help to achieve the Goals."

United Nations Secretary-General
The Fifty-eighth World Health Assembly,

Noting the potential impact that advances in information and communication technologies could have on health-care delivery, public health, research and health-related activities for the benefit of both low- and high-income countries;

Aware that advances in information and communication technologies have raised expectations for health;

Stressing that e-Health is the cost-effective and secure use of information and communications technologies in support of health and health-related fields, including health-care services, health surveillance, health literature, and health education, knowledge and research,

URGES Member States:

to consider drawing up a long-term strategic plan for developing and implementing e-Health services in the various areas of the health sector, including health administration, which would include an appropriate legal framework and infrastructure and encourage public and private partnerships;

to develop the infrastructure for information and communication technologies for health as deemed appropriate to promote equitable, affordable, and universal access to their benefits, and to continue to work with information and telecommunication agencies and other partners in order to reduce costs and make e-Health successful;

From WHA58.28 e-Health Resolution
BRICS SCIENCE, TECHNOLOGY AND INNOVATION
WORK PLAN 2015-2018


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8. The BRICS national research institutions are encouraged to consider collaboration under BRICS thematic leadership in Biomedicine and life sciences such as:

- integrated telemedicine systems in the regions of BRICS;

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Action Plan 2015-2016:

1. Activities in the defined main areas of cooperation:

- Creation of experts network from BRICS countries to support the development of compatible telemedicine systems in BRICS regions (Russia);

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- Attract the resources of the New Development Bank as an additional funding mechanism of projects within the Action Plan of the development of global research infrastructures;

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2.4. Activities to facilitate collaboration within the BRICS Research and Innovation Networking Platform:

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- Development of a concept note (White Paper) on the BRICS Research and Innovation Networking Platform;
- Identification of relevant BRICS stakeholders and partners;
- Holding an international workshop “BRICS Research and Innovation Networking Platform” and building a Road map for its development;
- Creation of a BRICS STI Information Exchange System.
Agreement on establishment of an International Telemedicine Society

8-th IT-Forum with the participation of the BRICS member states in Khanty-Mansiysk (Russia) 08.06.2016.


Khanty-Mansiysk

June 09, 2016

Preamble

Russian Telemedicine Consortium,

Brazilian Telemedicine University Network RUTE / National Research and Education Network RNP

School of Telemedicine & Biomedical Informatics National Resource Center, Indian National Medical College Network, SGPGIMS, Lucknow, India,

Shanghai Advanced-Research Institute, Chinese Academy of Sciences,

Nelson R Mandela School of Medicine, University of KwaZulu-Natal, University of Limpopo South Africa

hereinafter referred to as "Participants" in order to coordinate actions in the sphere of telemedicine and for a successful implementation of the project "Creating compatible integrated telemedicine systems in the BRICS member states regions" (the Project) using the principle of equality and mutual respect, based on:

1. «Experts memorandum of the VIth International IT-Forum with the participation of BRICS member states» with an appeal to the Governments of the BRICS member states to support the project (Khanty-Mansiysk, June 6, 2014)

2. "BRICS member states telemedicine experts' appeal to the Ministries of Health of the BRICS member states" to support the inclusion of the Project into the program of financing by the New Development Bank (NDB) of the BRICS members states (VIth International IT Forum with the participation of the BRICS member states, Khanty-Mansiysk, July 7, 2015)

3. Recommendations of the Moscow Declaration and Action Plan adopted at the Moscow meeting of the BRICS Ministers of Science, Technology and Innovation (Moscow, 27-29 October 2015)

4. Recommendations of the BRICS New Development Bank for the selection of projects for the Bank financing in order to:

- create economically recoverable telemedicine system as an infrastructure of a modern healthcare system in the BRICS member states which will provide accessibility and a uniform high quality standard of medical service for 2.8 billion people of the BRICS member states,
- provide quality medical services to the population, improvement of the quality of life, increasing life expectancy, reducing infant and maternal mortality, ensure active aging, control epidemics of contagious and non-contagious diseases, improve the human development index in accordance with the UN and World Health Organization recommendations,
Agreement on establishment of an International Telemedicine Society

Experts Working Group on BRICS Telemedicine
Union of leading Russian developers and suppliers of telemedicine systems based on the information and telecommunication technologies proposes to interested Caribbean Ministries, Departments and organizations a cooperation in implementation of telemedicine networks based on use of Mobile Telemedicine Units.

Availability of such complexes will help to raise level of healthcare services to the population in remote districts and islands territories.
Intellectual property and copyrights

Member of Russian Telemedicine Consortium - RPU “National Telemedicine Agency” owns patents on key elements of telemedicine systems and property rights to used specialized software packages.
The telemedicine project of the «National Telemedicine Agency» RPU recognized by Russian Ministry of Health as the «Best Medical Information System 2010»
The Telemedicine System for Caribbean countries (TSCC) consists of two parts: network of telemedicine consulting-diagnostic centers, at stationary clinics of Caribbean countries and info-communicated with them sea-vehicle hospitals (SVH). Equipped with various digital telemedicine equipment, SVH intended for rendering of a wide spectrum of medical and social services to population. Based on the International standards the suggested telemedicine system can be integrated with similar systems of other countries.
Suggested telemedicine system allows Caribbean countries' clinics to receive medical consultations of the foremost clinics of the World and may be used for rendering of medical and social services to other countries of the Caribbean Basin.
Proposed Telemedicine Network represents 4-levels system:

- **International Level**
- **State Level**
- **Regional Level**
- **Local Level**
Suggested Management Plan of the Caribbean countries Telemedicine Agency

Ministry of Infrastructure and Environment

Caribbean countries Telemedicine Agency

Ministry of Health, Welfare and Sport

Research Centers

State sanitary-hygienic Departments

Regional & Local Health Departments

Regional Telemedicine Points

Mobile Telemedicine Units
- Clinical examination, occupational diseases examination, first aid
- Health of Mothers and neonates
- Fight against HIV/AIDS, tuberculosis etc.
Spheres of Telemedicine System use

- Clinical telemedicine
- Medical examinations and preventive health care
- Telemedicine in rural areas, remote and hard-to-access regions
- Telemedicine for military structures and assigned risk enterprises
- «Personal» and «Home» telemedicine
- Emergency telemedicine
- Remote education
- Rendering of complex social services to the population in rural areas, remote and hard-to-access regions
- Monitoring and control of epidemic situation Caribbean countries
Economical benefits of Telemedicine Technologies

Economical efficiency of using of telemedicine technologies based on providing healthcare and social services at lower costs comparing to traditional healthcare.

In particular, optimization of cost is achieved by conducting mass screening of the population, earlier detection of diseases, reduction of number of erroneous diagnoses, shifting the center of gravity providing high technology medical aid to regions with reduced costs of moving patients to Central clinics, the transformation and expansion of primary health care at the field level in accordance with the standards, the types and nature of which correspond to the level of morbidity, the needs and expectations of the population.

Legends:

- Health Care investment without use of telemedicine
- Health Care investment with use of telemedicine
- Earnings from telemedicine services
MOBILE TELEMEDICINE UNIT

Mobile telemedicine unit (MTU) is the basic component of the telemedicine project. The MTU is the leading telemedicine machine equipped for massive scale screening of large population, capable of providing of primary medical care for individuals in emerging countries with a lack of medical hospitals by means of telemedicine support and under control of the national medical centers. The MTU medical capabilities include the screening of large groups, X-rays by low radiation digital equipment, sampling for biochemical express-investigations and to carrying out functional diagnostics. The MTU telecommunication and telemedicine equipment includes satellite communication station VSAT, equipment for telemedicine consultations support, including videoconference communication, workstations for radiologist and biochemist, local network. MTU is capable of long autonomous raids.
General View of Mobile Telemedicine Unit in working position
Interior of Mobile Telemedicine Unit
Samples of electronic images with results of medical examinations, transmitted from MTU to central medical institutions for inspection
This kind of MTU intended for medical service for population in coastal districts including tropical zones and represents the unique project in the world. The medical hospital vehicle meant for hospitalization up to 400 patients with rendering of all necessary medical services. The ship is equipped with labs, OR’s, independent air-conditioning and cleaning systems, quarantine branch. The cargo deck of a ship is intended for transportation of several mobile telemedicine transports: tracks, helicopters, air cushion crafts for transportation of telemedicine complexes to remote continental areas. All accommodations are provided for the hospital staff and patients on the ship.
Telemedicine system for rendering medical services to population in a course of elimination of emergency consequences

Proposed telemedicine system allows to solve many tasks, arisen during rendering of helps to population in emergence causes:

1. Rendering of primary medical care to victims in the immediate emergency zones.
2. Control and combat against epidemic outbreaks in the emergence zone.
3. Rendering of social services to population in the emergence zone.
Variant of the Hovercraft transportation of the emergence telemedicine system
Mobile part of Telemedicine system for emergence situations
Small Mobile Telemedicine point of the Telemedicine System for emergence situations
Telemedicine system for monitoring and management of epidemic situation

The international level of interaction

Ground network of data transmission

National center of monitoring and management

Regional center of monitoring and management

Mobile diagnostic Unit
Mobile Telemedicine Diagnostic Laboratory «Terek» for monitoring of the epidemiological situation

Mobile Diagnostic Telemedicine Laboratory «Terek» is designed for urgent diagnostic of infectious agents on territories, i.e. zoonotic natural-focal (birds’ flu, leptospirosis, tularemia, tick-borne encephalitis, tick-borne borreliosis and others) and anthroponosis infections (poliomyelitis, virus hepatitis, typhoid fever and others). The basic diagnostic technology is a method of polymerase chain reaction (PCR) in the real-time regime (Real Time PCR) enabling the quantitative determination of DNA/RNA of infectious agents in the studied material, automatization of registration and interpretation of obtained results and also significant reduction of a number of false-positive results. If the targeted examinations are needed the Mobile Telemedicine Laboratories «Terek» may be additionally provided with the equipment and materials for indication and identification of respective agents.
Implementation of system for different virus epidemiological monitoring allows:

- In proper time to localize infected places and to prevent epidemic expansion;
- To provide epidemiological mapping of the area with the purpose of forecasting and mathematical modeling of opportunity of epidemic occurrence;
- To provide the coordination of the supervising and control authorities actions during detection and liquidation of different infection within the frame of the actions for prevention of infection drift on the territory.

Use of such system allows to support the following functions:

- On-site epidemic screening with use of mobile laboratories including in remote and hard-to-access regions;
- Transmission of monitoring data to the situation center;
- Fulfillment of the center directions.
Mobile Diagnostic Telemedicine Unit «Terek» for monitoring of epidemic situation

Components of equipment and interior

PCR Laboratory: amplification and detection zone

Telemedicine Terminal

PCR Laboratory: Nucleic Acid separation zone
Multipurpose mobile Post complex «Cyber Twin»

- **Telemedicine compartment**
  - Workplace telemedicine operator/medical assistant
  - Diesel generator
  - Household zone
  - Lavatory

- **Post compartment**
  - Safe’s compartment
  - The monetary safe
  - Containers for storage post
  - Departures container and the post operator
  - Zone of clients of the post operator
  - Workplace «Cyber Twin»
  - Workplace of the post operator
  - Show-window for accommodation of the consumer goods
Training medical and technical professionals use of telemedicine technologies

At the department, all listeners can receive training and professional development on a wide range of telemedicine and health information teaching programs of different duration and depth.

The most popular and demanded programs:

- "Information and analytical technologies in health care"
- "Telemedicine systems, technologies and equipment"
- "Fundamentals of Health Informatics"
- "Information technology in health insurance"
- "Management of the organization with the use of information technologies" and others.

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Honorary diplomas and certificates awarded to RPU «National Telemedicine Agency’s» Mobile Telemedicine Units
During the International summit on information society taken place in Geneva in 2003, Dr. Hamadoun Toure, Deputy Secretary General of the International Telecommunication Union at that time, has examined MTU.

This MTU project is one of greatest contributions to the Digital Divide Bridge.

I am confident that together with the International Telecommunication Union (ITU) and the member States we will ensure a successful implementation of this project in many countries in the world.

MTU saves lives.

Thank you.

Hamadoun I. Toure
director BDT/ITU.

10/12/2003, Geneva.
Mr. Vladimir Putin, the President of Russian Federation, inspect the MTU (The State Council of the Russian Federation in Kurgan City, October, 02, 2006)
CIS Heads of Governments Summit
Kishinev (Moldova), November, 14, 2008
Presentation of Telemedicine project for CIS countries
Telemedicine for people’s health

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