

On Implementation of Healthcare Information System within the Infection Prevention And Control (IPC) Program

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НАЦИОНАЛЬНЫЙ ЦЕНТР ОБЩЕСТВЕННОГО ЗДРАВООХРАНЕНИЯ
МИНИСТЕРСТВА ЗДРАВООХРАНЕНИЯ РЕСПУБЛИКИ КАЗАХСТАН

BASIC PRINCIPLES OF HIS

CODE ON HEALTH AND THE HEALTHCARE SYSTEM.

Chapter 7. DIGITAL HEALTHCARE

Article 57. Fundamental Principles of Digital Healthcare

The principles of digital healthcare are:

- 1) implementation of healthcare principles through the digitalization of data and processes;
- 2) ascendancy of standards instrumental to the implementation of policies and strategies which are the basis of the methodology determined by the authorized body;
- 3) Protection and security of healthcare digital facilities containing personal medical data and confidentiality of personal medical data, as well as patient access to their personal data;
- 4) support for ensuring healthcare accessibility, objectivity, and continuity;
- 5) support for improving the efficiency of the healthcare system;
- 6) support for improving healthcare quality.

Healthcare Information System (HIS) is a document management automation system for healthcare institutions that combines a medical decision support system, electronic patient medical records, electronic medical research data, patient monitoring data from medical devices, means of communication between employees, financial and administrative information.

IS is designed to provide medical personnel with timely information to meet specific information needs within medical activities. The outcome of information systems is information — documents, data arrays, databases, and information services.



WHY DEVELOP AN IPC SYSTEM

Implementation of state task under the 070 "Public healthcare" program
Subprogram: 100 "Ensuring sanitary and epidemiological welfare of the population"
is carried out in accordance with:

• 2021

Service Agreement for the implementation of the state task No. 2 on "Public Healthcare" dated 05.02.2021 and Addendum No. 1 dated 28.06.2021, between the Ministry of Health of the Republic of Kazakhstan and the National Center for Public Health of the Ministry of Health of the Republic of Kazakhstan

Service: "Development and implementation of a system for data collection, evaluation, and monitoring of IPC programs in healthcare"

•2022

Service Agreement for the implementation of the state task No. 19 on " Public Healthcare" dated 01.04.2022, between the Ministry of Health of the Republic of Kazakhstan and the National Center for Public Health of the Ministry of Health of the Republic of Kazakhstan

Service: "Industrial implementation of the system of data collection, evaluation and monitoring of IPC programs in healthcare"

CONCEPT OF THE IPC INFORMATION SYSTEM

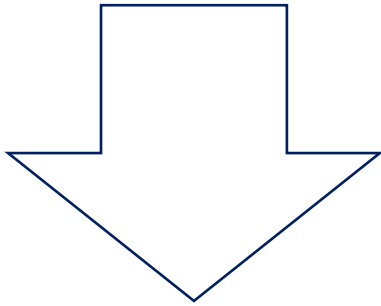
The concept stems from an integrated approach to information systems to develop a base platform and then build up individual modules to address specific tasks. HIS platforms (*developers of existing healthcare information systems operating in the country's healthcare organizations*) create an operational environment for a digital "Epidemiologist's Office" and allow interaction with computing equipment and patient database.

Systematization of the Epidemiologist's Office module and digital tools implies integration and centralization in one digital HIS. This model will provide an accommodative interface for collecting and analyzing IPC information.



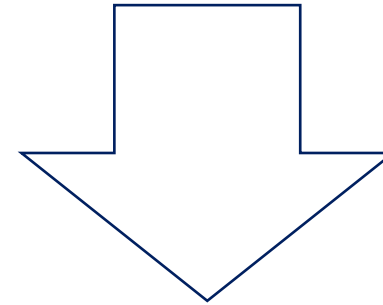
CONCEPT OF THE IPC INFORMATION SYSTEM

SHORT-TERM



**DEVELOPMENT OF
EPIDEMIOLOGIST'S OFFICE IN
EXISTING HEALTHCARE
INFORMATION SYSTEMS**

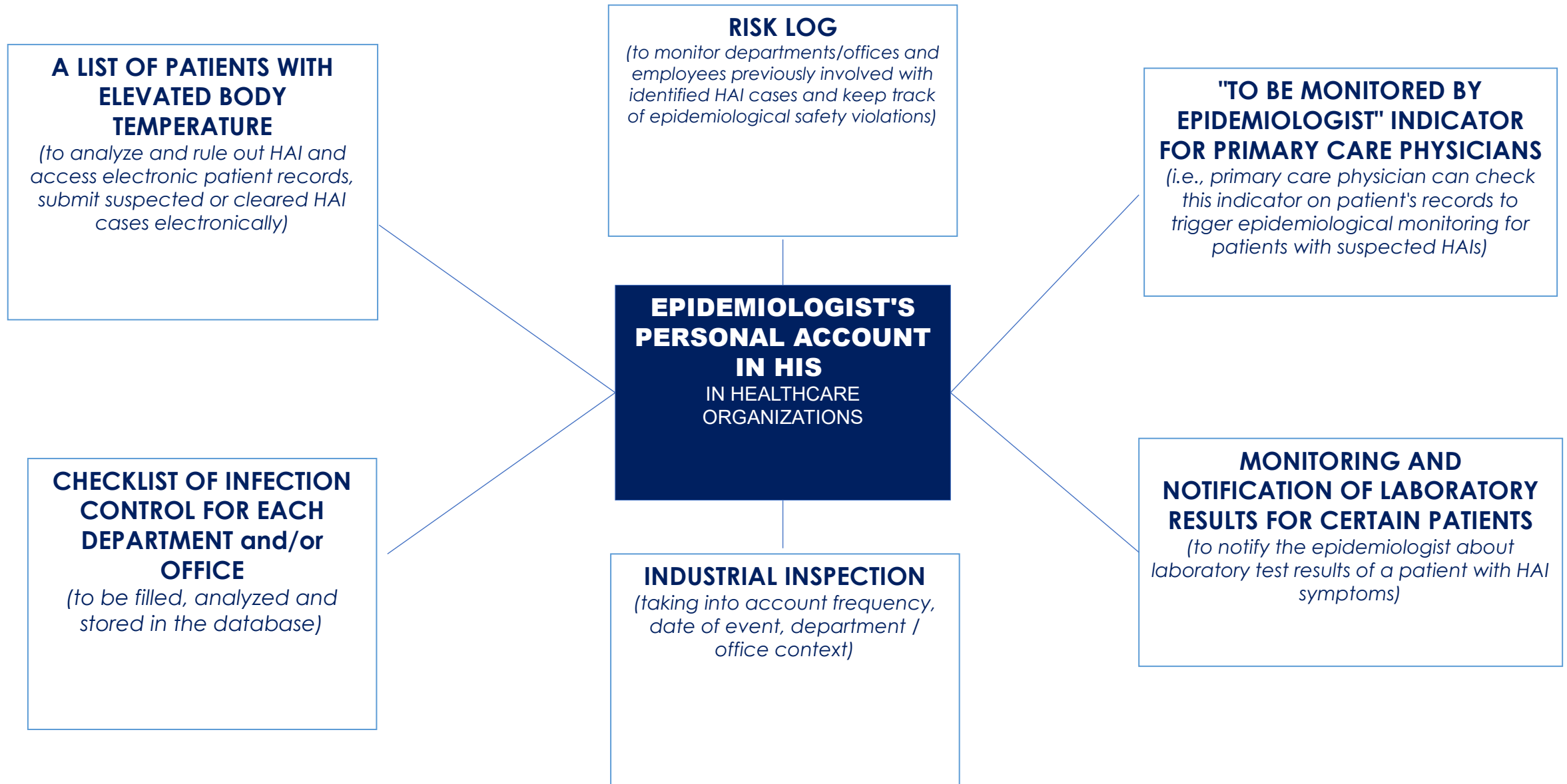
LONG-TERM



**DEVELOPMENT OF AN
EPIDEMIOLOGICAL
SURVEILLANCE INFORMATION
SYSTEM**
(to track HAIs*)

**HAIs – healthcare-associated infections*

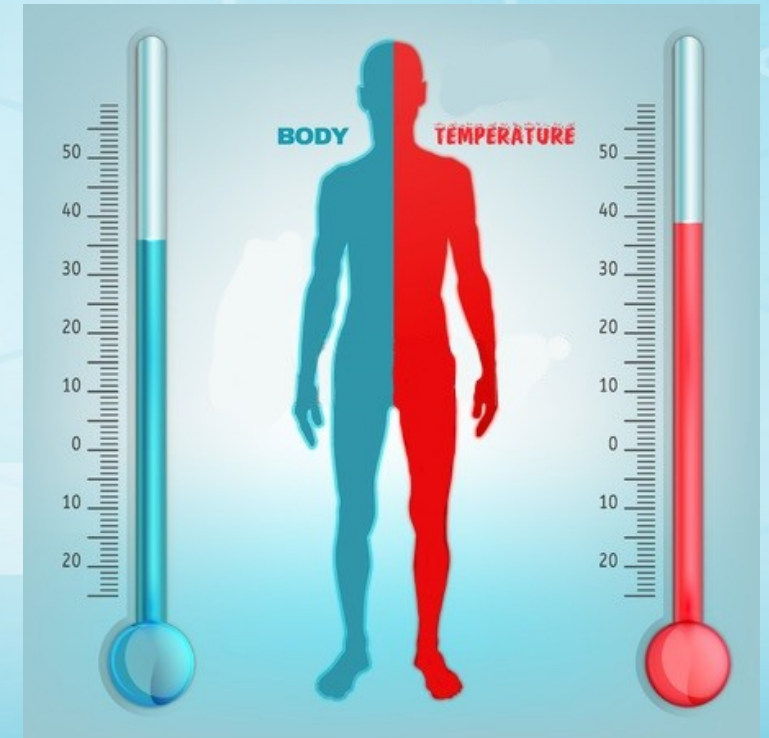
STRUCTURE OF THE HIS EPIDEMIOLOGIST'S OFFICE



EPIDEMIOLOGIST'S OFFICE COMPONENTS

RECEIVING A LIST OF PATIENTS WITH ELEVATED BODY TEMPERATURE

1. A list of patients with persistent elevated body temperature (fever over the course of an illness and other HAI signs) and access to the patient records are available in the HIS.
2. The list of patients is sent to the epidemiologist's personal account for analysis (*with a button to "rule out" suspected cases*).
3. Patient records cleared by the epidemiologist will have an HAI negative label for primary doctor's information.
4. Patient records not cleared by the epidemiologist are stored in the personal account until more information becomes available.



EPIDEMIOLOGIST'S OFFICE COMPONENTS

CHECKLIST ON INFECTION CONTROL FOR EACH DEPARTMENT and/or OFFICE



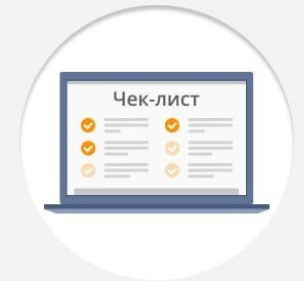
WHERE CHECK-LISTS CAN BE CREATED AND STORED



On paper



In Excel



In specialized software

1. In the personal account, the "IC Checklist" tab is formed. The developed form of the checklist reflects the list of indicators for monitoring on an ongoing basis. One checklist implies a specific department, the frequency of completion is weekly, if necessary more often, i.e. a database of completed survey checklists for a period of up to 1 year will be formed in the personal account.
2. Further, the database can be archived. The checklist is filled in by the person responsible for infection control in the department.
3. Each indicator is equated to a certain number of points, which are then automatically summed up and the percentage of compliance of the department with the IPC is displayed.
4. Branches that do not score enough points receive a red status, which is automatically recorded in the risk log;
5. In order to improve responsiveness and ease of completion, each question includes already entered "yes", "no" answers and possible manual filling in of notes.

EPIDEMIOLOGIST'S OFFICE COMPONENTS

INFECTION CONTROL CHECKLIST

(_____ department)

Subject/item	Results		
	+	-	note
I. Medical records (IC program, standards, accounting and reporting forms, training journals, briefings, etc.)			
II. Department's activities (explanatory work with patients, visual promotion, bathrooms with washbasins, antiseptics, ventilation, air disinfection, temperature conditions, staffing, medical examinations, vaccinations, IPC training)			
III. Hand hygiene (availability and maintenance of a hand hygiene station, hand washing instructions, compliance with proper hand hygiene, hand hygiene checks)			
IV. Personal protective equipment (availability of PPEs, correct use of PPEs)			
V. Cleaning of premises (availability of cleaning equipment, detergents, PPE, proper cleaning, internal control)			
VI. Sterilization/disinfection measures (availability of disinfectants, proper preparation of solutions, compliance with disinfection and sterilization regulations, industrial inspections)			
VII. Medical waste management (availability of containers for safe collection and disposal, PPE*, compliance with waste collection regulatins, storage and disposal)			
<i>*PPE – personal protective equipment</i>			

EPIDEMIOLOGIST'S OFFICE COMPONENTS

DEVELOPMENT OF A DIGITAL MONITORING OF AN INDUSTRIAL INSPECTION

1. In accordance with the Order of the Minister of National Economy of the Republic of Kazakhstan dated June 6, 2016 No. 239, industrial inspections shall be carried out in medical facilities;
2. The obtained inspection results are recorded in the facility database (*date of inspection, department, office, name of inspection, selection control points, responsible person, deviations from the norms, etc.*);
3. In case inspection results are unsatisfactory (*deviations from the normal indicators*), the department (office) receives a red status that is recorded in the risk log;
4. Each unsatisfactory inspection triggers analysis, followed by rectification and repeated inspection.
5. In the office of the epidemiologist, a database of completed forms will be formed for up to 1 year. Further, the database can be archived.

**INDUSTRIAL
CONTROL OVER
SANITARY
COMPLIANCE**



EPIDEMIOLOGIST'S OFFICE COMPONENTS

RISK LOG

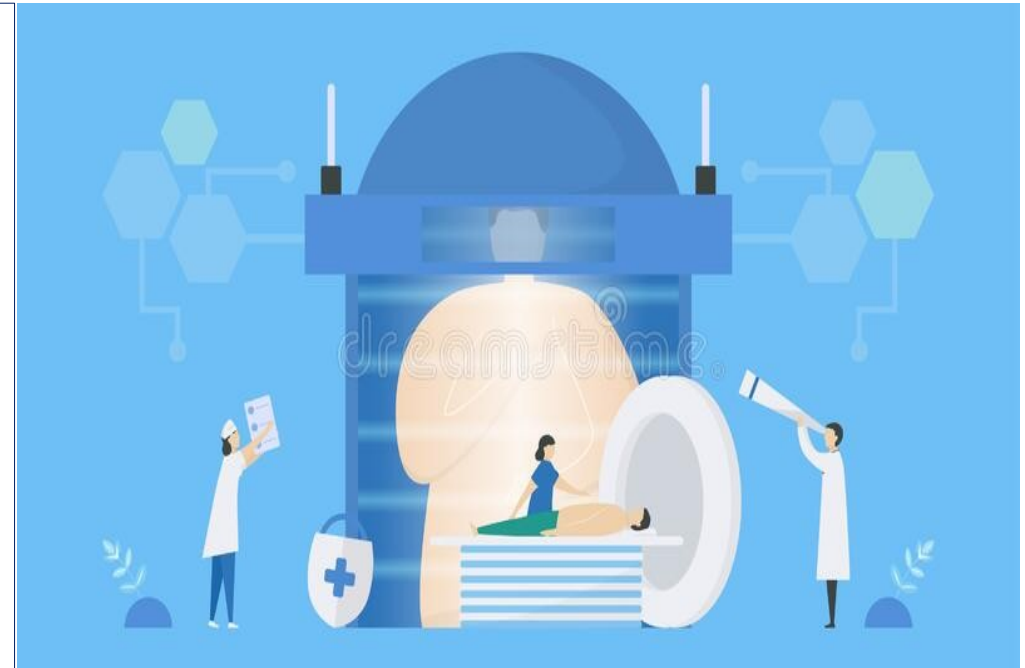
1. Departments and workers who have been involved in HAI cases and other violations of epidemiological safety are recorded in a list (*indicating specific violations*).
2. Monitoring indicators and survey frequency for this category are developed on a case-to-case basis. Each event may involve obtaining a passing score.
3. If no violations/concerns were brought up within 6 months (*threshold*), this department or worker are removed from the risk log.
4. Also, training plans, *training confirmations* and knowledge assessments are available in the system.
5. It also provides for the introduction of a training plan, storing the execution (training log) and knowledge assessment.



EPIDEMIOLOGIST'S OFFICE COMPONENTS

"TO BE MONITORED BY EPIDEMIOLOGIST" INDICATOR FOR PRIMARY CARE PHYSICIANS

1. Design of the To Be Monitored By Epidemiologist indicator for the title page of patient records;
2. Ensure that the attending physician can activate this indicator in any record, if necessary;
3. When a doctor activates this activator, patient records should automatically transfer to the epidemiologist's personal account for clarification and review (*indicating specific signs of HAI per the SCD**);
4. Allow clearing the patient records and excluding them from the monitoring list by using the "rule out" button (*removes patient records from the monitoring list which implies that HAI has been ruled out*);
5. Patient records not cleared by the epidemiologist are stored in their personal account until more information becomes available.



*SCD – standard case definition

EPIDEMIOLOGIST'S OFFICE COMPONENTS

MONITORING AND NOTIFICATION OF LABORATORY RESULTS FOR CERTAIN PATIENTS

1. Development of the "monitoring" indicator for patient's laboratory results (*notification to be sent to the epidemiologist's personal account upon receipt of such results*);
2. Enable the epidemiologist to activate the To Be Monitored By Epidemiologist indicator in any patient records, if necessary;
3. Allow disabling the To Be Monitored By Epidemiologist indicator by the epidemiologist upon completion (*i.e. recovery, discharge of the patient*)

PLATFORM FOR THE EPIDEMIOLOGIST'S OFFICE (in the HIS)

Selection of a healthcare information system (HIS) to implement "Epidemiologist's Office"

In the course of monitoring integrated healthcare information systems (IHIS), **DAMU Information Technology Center LLP**, has been selected to implement the Epidemiologist's Office module of Damumed IHIS. The advantages of this developer and its information system include a wide coverage of medical organizations in **17 regions of Kazakhstan and the following:**

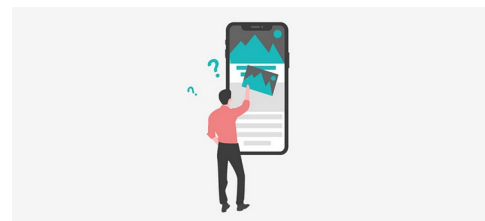
Own BIG DATA repository for information processing and analysis, integrated processes between different health services, ensured continuity between healthcare levels, and availability of a situation center.



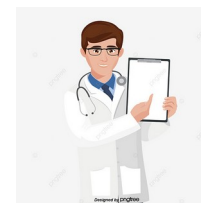
1737 clinics



1061 pharmacies



4,051,562 mobile clients



118,933 medical workers involved



705 904 549 medical records are being processed

PROGRESS IN PROJECT IMPLEMENTATION

Completed activities:

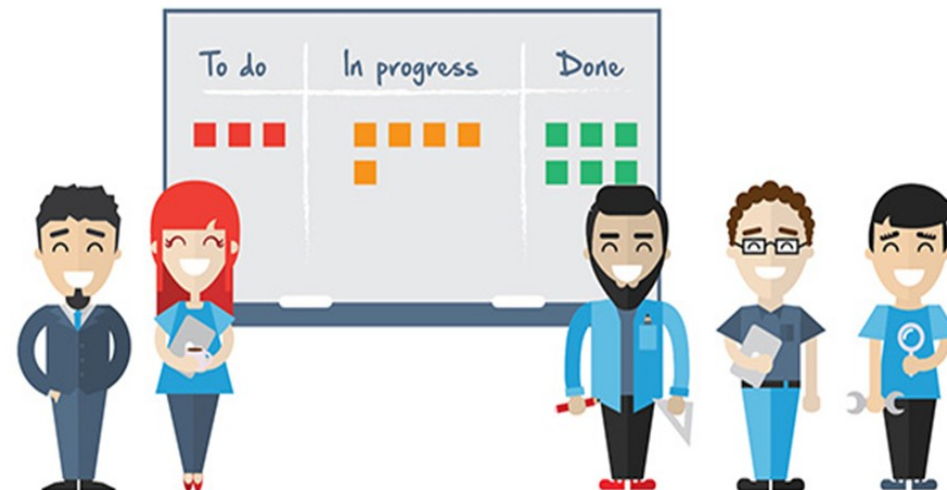
1. Terms of reference have been presented and coordinated with the Ministry of Health, Epidemiological Surveillance Committee
2. The developer of Damumed HIS has been selected to implement Epidemiologist's Office module in the HIS
3. Together with DAMU Information Technology Center LLP, the feasibility of the project has been approved
4. A memorandum of cooperation has been signed between the participants of the pilot project: National Center of Public Health and Municipal Polyclinic No. 10 in Nur-Sultan and the Central City Clinical Hospital in Almaty.
5. Checklists and forms have been designed to facilitate entering of industrial control results implemented in the HIS

Implementation activities:

6. Consultations are being held with Kazakhstan's MoH Epidemiological Surveillance Committee regarding IS concept
7. Meetings are being held with representatives of the pilot healthcare organizations
8. The technical aspects of the new module are being worked out with DAMU Information Technology Center LLP.

Planned events:

1. Presentation of the pilot project in Kazakhstan's MoH
2. Project implementation at pilot healthcare facilities
3. Development of training materials for healthcare professionals on technical innovations
4. Training of healthcare professionals to work with the module
5. Effectiveness evaluation of the project and its components
6. Scalability and implementation of the module in the HIS



EPIDEMIOLOGIST'S OFFICE IMPLEMENTATION OUTCOMES

- This module is designed for epidemiologists of polyclinics and hospitals to centralize medical records of patients with signs of HAI, as well as to strengthen the interaction between clinicians and epidemiologists (infection control healthcare workers) of this medical institution.
- The Epidemiologist's Office will allow the epidemiologist to speed up the decision-making process for suspected HAI cases and further prevent infection and spread of HAI among patients, service staff, and visitors to healthcare institutions.



A doctor in a white lab coat with a stethoscope around their neck is shown from the chest up. They are holding a glowing blue sphere with a white cross in the center of their palms. The sphere is surrounded by concentric white circles and radial lines, creating a futuristic or digital effect. The background is a solid blue color with a pattern of white hexagons. Some hexagons contain white medical icons: a thermometer, test tubes, a flask, a heart, a brain, a 24-hour clock, a magnifying glass, a microscope, a first aid kit, a CD, a stethoscope, a pill, a network of nodes, lungs, a laptop, a brain, a stomach, and a power button. The text "Thank you for your time!" is written in a dark blue, serif font across the center of the image, partially overlapping the doctor's hands and the glowing sphere.

Thank you for your time!