The Use of Digital Technology in Palliative Care

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***Abstract*— Due to the rising need for palliative care in Russia, it is crucial to provide timely and high-quality solutions for patients, relatives, and caregivers. A methodology for remote monitoring of patients in need of palliative care and the requirements will be developed for a hardware-software complex for remote monitoring of patients' health at home.**

I. Introduction

The number of citizens in need of palliative care is increasing in all regions of the Russian Federation. Also, when a situation arises when a patient begins to need such help, he and his relatives cannot always find the right solution for how to quickly and efficiently organize proper care for such a patient.

To provide timely and high-quality palliative care, it is necessary to provide the patient, his relatives, caregivers with the opportunity to find the right decision on how and where such medical care can be obtained, how to accurately organize the patient's referral to a specialized institution, and how to organize a home telemedicine hospital to ensure proper care. [1]

The purpose of the use of digital methods in medicine is the management of patient flows and the organization of medical care using digital technologies for patients in need of palliative care. [2,3]

II. Objectives

The following results will be achieved:

- Ensuring accessibility and transparency for patients in the process of receiving palliative care;
- Ensuring the availability of essential drugs needed to treat a variety of symptoms, including pain and psychological disorders;
- Integration of palliative care in all levels of the national health system with the creation of the necessary financing and management mechanisms;
- Strengthening and developing human resource capacity for palliative care, including education and psychological support for health workers to prevent burnout;
- Assist in research activities to assess the needs of palliative care and develop effective standards and models for the provision of services in conditions of limited resources.

III. Methodology

The objectives of introducing digital technology into palliative care are as follows:

- Development of a concept for the creation of a Vertically Integrated Information System for Palliative Medical Care for the registration of patients requiring palliative medical care;
- Development of requirements for the Federal Register of Patients in Need of Palliative Care, regulatory documents on its operation, testing;
- Development of requirements for the medical information system for patients in need of palliative care, regulatory documents, testing;
- Development of a methodology for remote monitoring of patients in need of palliative care, requirements for organizing a telemedicine in-patient care at home (including creating a register of mobile devices that allow for effective monitoring of health status), regulatory documentation;
- Development of a methodology for applying virtual and augmented reality methods to alleviate the condition of patients in need of palliative care, developing prototype solutions, regulatory documentation, testing;
- Development of requirements for distance education of medical workers involved in the provision of palliative care, the creation of educational courses, testing educational modules;
- Analysis of information risks and development of proposals for their minimization (protection of personal data, identification, and authentication of a medical worker and patient, etc.).

In developing a methodology for remote monitoring of patients in need of palliative care, requirements will be

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developed for a hardware-software complex for remote monitoring of patients' health at home. The complex will include a set of mobile (compact) medical devices and a device management software package. The experiment method will determine the required set of mobile medical devices, allowing to determine the state of health of the patient accurately, and support the doctor to determine his condition.

An exciting direction in the development of remote monitoring for a patient will be or the realization of video surveillance. It recognizes a patient's position in the bed and movements. Figure 1 shows a fragment of the monitoring system for a bed patient.

Figure 1. Intellectual monitoring system for the bed patient

The system records the position of the patient, the time spent on each side, stalling the bed. When the time is exceeded, it signals the doctor (carer). The system will be expanded by taking into account medical prescriptions and monitoring the required manipulations of the nurse.

IV. Results

As a result of the work described in the Russian Federation, requirements will be developed for the vertically integrated information system of palliative medical care. The implementation will seriously optimize the process of referral to palliative medical care, implement it at home in the form of a telemedicine hospital, apply artificial intelligence, virtual reality and substantially improve the quality of palliative care.

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