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INTELLIGENT DECISION SUPPORT SYSTEM FOR EPIDEMIOLOGICAL DIAGNOSTICS. I. A CONCEPT OF ARCHITECTURE DESIGN¹

Abstract. The problems of decision support for epidemiological diagnostics are investigated. The basis for supporting decision-making is mathematical tools for analyzing morbidity data, as well as modeling of epidemic processes. The current state of research in this area is analyzed. The features of decision-making in epidemiology and public health are formalized. Principles for the development of an intelligent information system for decision-making support for epidemiological diagnostics are proposed. A systemic model of the system, a model of the interaction of elements of the epidemiological diagnostics system and the interaction of logical components of the information system has been developed. Taking into account the identified features of these processes, the concept of the architecture of such an intelligent information system is proposed.

Keywords: decision support system, epidemic monitoring, infectious diseases control, information system, epidemic model.

INTRODUCTION

The object of the research is the process of decision making in epidemiological diagnostics.

The epidemic control system architecture is the subject of the paper. The main tasks of epidemiological diagnostics are to assess the existing epidemic situation, identify causal relationships due to which it has developed, and analyze risk factors, that is, factors whose effect on the epidemic situation determines the probability of its complication.

In the modern period of human development, permanent social changes are taking place in society. The reasons for the changes are an increase in the level of digitalization of human life, communication using information systems, digital transformations of public services and states, the availability of travel around the world, etc. In addition, the global COVID-19 pandemic has shown the world that it is not ready for challenges of this magnitude. Changes affect the evolution of the epidemic process and should be taken into account when carrying out measures aimed at curbing the spread of infections among the population. To solve these problems, epidemiological diagnostics is used [1, 2]. The direct driving forces of the epidemic process itself are the source of infection, the transmission mechanism and the susceptible human body, which create a chain of successive infections [3]. Without these links, the existence of the epidemic process is impossible.

The aim of the paper is to discuss the developed architecture of intelligent information system for epidemiological diagnostics, taking into account the peculiar

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