

## ABSTRACT

The thesis is presented in 56 pages. It contains 2 appendixes and bibliography of 48 references. 21 figures and 1 table are given in the thesis.

The aim of this thesis is to create mathematical and software to optimize diagnostic strategies for infected patients and their subsequent isolation of the cost of different methods.

The paper analyzes existing solutions specified tasks - nosocomial spread of viral and bacterial infections and epidemiological pattern at the pediatric department, in view of possible interventions and their consequences. Done comparing them in terms of the accuracy of the resulting solutions, the efficiency of algorithms and adaptation methods to use diagnostic strategies. To solve the problem in the selected optimization method of differential equations.

For each strategy considered the circumstances of use. A system that implements the method chosen. Tests developed system.

Keywords: rotavirus, rapid tests, PCR diagnosis, optimization.