

Combining the Production of Radiopharmaceuticals with the Department of Radionuclide Diagnostics

Authors : Umedov Mekhroz, Griaznova Svetlana

Abstract : In connection with the growth of oncological diseases, the design of centers for diagnostics and the production of radiopharmaceuticals is the most relevant area of healthcare facilities. The design of new nuclear medicine centers should be carried out from the standpoint of solving the following tasks: the availability of medical care, functionality, environmental friendliness, sustainable development, improving the safety of drugs, the use of which requires special care, reducing the rate of environmental pollution, ensuring comfortable conditions for the internal microclimate, adaptability. The purpose of this article is to substantiate architectural and planning solutions, formulate recommendations and principles for the design of nuclear medicine centers and determine the connections between the production and medical functions of a building. The advantages of combining the production of radiopharmaceuticals and the department of medical care: less radiation activity is accumulated, the cost of the final product is lower, and there is no need to hire a transport company with a special license for transportation. A medical imaging department is a structural unit of a medical institution in which diagnostic procedures are carried out in order to gain an idea of the internal structure of various organs of the body for clinical analysis. Depending on the needs of a particular institution, the department may include various rooms that provide medical imaging using radiography, ultrasound diagnostics, and the phenomenon of nuclear magnetic resonance. The production of radiopharmaceuticals is an object intended for the production of a pharmaceutical substance containing a radionuclide and intended for introduction into the human body or laboratory animal for the purpose of diagnosis, evaluation of the effectiveness of treatment, or for biomedical research. The research methodology includes the following subjects: study and generalization of international experience in scientific research, literature, standards, teaching aids, and design materials on the topic of research; An integrated approach to the study of existing international experience of PET / CT scan centers and the production of radiopharmaceuticals; Elaboration of graphical analysis and diagrams based on the system analysis of the processed information; Identification of methods and principles of functional zoning of nuclear medicine centers. The result of the research is the identification of the design principles of nuclear medicine centers with the functions of the production of radiopharmaceuticals and the department of medical imaging. This research will be applied to the design and construction of healthcare facilities in the field of nuclear medicine.

Keywords : architectural planning solutions, functional zoning, nuclear medicine, PET/CT scan, production of radiopharmaceuticals, radiotherapy

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