

# **Nuclear Pharmacy Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Type (Institutional and Commercial), By Purpose (Diagnostic and Therapeutic), By Region and Competition, 2019-2029F**

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## **Abstracts**

Global Nuclear Pharmacy Market was valued at USD 5.85 Billion in 2023 and is anticipated to project impressive growth in the forecast period with a CAGR of 7.72% through 2029. The Global nuclear pharmacy market encompasses the specialized sector of pharmaceuticals dedicated to the preparation, distribution, and dispensing of radioactive drugs used in nuclear medicine procedures. Radiopharmaceuticals contain radioactive isotopes that emit gamma rays or beta particles, allowing healthcare professionals to visualize and treat various diseases and conditions, including cancer, cardiovascular disorders, and neurological disorders. The market is driven by factors such as the increasing prevalence of chronic diseases, advancements in nuclear medicine technologies, and growing demand for personalized medicine. Regulatory approvals for new radiopharmaceuticals, expanding applications of nuclear medicine in oncology and neurology, and rising investments in nuclear medicine infrastructure further propel the growth of the Global Nuclear Pharmacy Market. Collaborations between pharmaceutical companies, research institutions, and healthcare providers aim to enhance product development, streamline distribution channels, and improve patient access to nuclear medicine services worldwide.

### **Key Market Drivers**

#### **Rising Prevalence of Chronic Diseases**

The Global Nuclear Pharmacy Market is driven by the increasing prevalence of chronic

diseases worldwide. Chronic conditions such as cancer, cardiovascular disorders, and neurological diseases require accurate diagnosis and targeted treatment approaches. Nuclear pharmacy plays a crucial role in providing radiopharmaceuticals for diagnostic imaging and therapeutic purposes, aiding in the early detection, staging, and monitoring of these diseases. As the global burden of chronic diseases continues to escalate due to factors such as aging populations, lifestyle changes, and environmental factors, there is a growing demand for nuclear medicine procedures to support timely and effective patient care. Advancements in nuclear imaging technologies, such as positron emission tomography (PET) and single-photon emission computed tomography (SPECT), enable healthcare providers to visualize physiological processes at the molecular level, facilitating personalized treatment strategies and improving patient outcomes.

### Advancements in Nuclear Medicine Technologies

Advancements in nuclear medicine technologies drive innovation and growth in the Global Nuclear Pharmacy Market. Continuous research and development efforts lead to the discovery of novel radiopharmaceuticals, imaging agents, and therapeutic isotopes with improved diagnostic accuracy and therapeutic efficacy. Technological innovations in imaging equipment, such as hybrid PET/CT and PET/MRI scanners, enhance spatial resolution, image quality, and diagnostic capabilities, allowing for more precise localization and characterization of disease processes. The development of theranostic approaches, which combine diagnostic imaging and targeted therapy using the same molecular probe, holds promise for personalized medicine and tailored treatment regimens. These advancements fuel the demand for radiopharmaceuticals and nuclear pharmacy services, driving market growth and expanding the application of nuclear medicine across a wide range of medical specialties.

### Growing Demand for Personalized Medicine

The increasing demand for personalized medicine is a significant driver shaping the Global Nuclear Pharmacy Market. Personalized medicine aims to tailor medical treatment to the individual characteristics of each patient, taking into account genetic makeup, molecular biomarkers, and disease characteristics. Nuclear pharmacy plays a vital role in personalized medicine by providing radiopharmaceuticals for molecular imaging and targeted therapy, enabling healthcare providers to customize treatment strategies based on patients' specific needs and disease profiles. Molecular imaging techniques such as PET and SPECT allow for non-invasive visualization of biological processes at the molecular and cellular levels, guiding treatment decisions and

assessing treatment response in real time. Theranostic approaches utilizing radiolabeled agents enable simultaneous diagnosis and therapy, offering a comprehensive solution for precision medicine in oncology, cardiology, neurology, and other medical specialties.

### Increasing Applications in Oncology and Cardiology

The expanding applications of nuclear medicine in oncology and cardiology drive demand for radiopharmaceuticals and nuclear pharmacy services. Nuclear imaging techniques such as PET and SPECT are widely used for cancer staging, treatment planning, and monitoring response to therapy. Radiolabeled tracers targeting specific tumor biomarkers provide valuable diagnostic information, enabling early detection of cancer, assessment of tumor aggressiveness, and evaluation of treatment efficacy. In cardiology, nuclear imaging plays a crucial role in diagnosing coronary artery disease, assessing myocardial perfusion, and evaluating cardiac function. Radiopharmaceuticals such as technetium-99m-based agents and thallium-201 are used for myocardial perfusion imaging, stress testing, and risk stratification in patients with suspected or known cardiovascular disease. The growing incidence of cancer and cardiovascular disorders worldwide, coupled with the increasing adoption of nuclear medicine techniques for diagnosis and treatment, fuels the demand for radiopharmaceuticals and drives market growth in the oncology and cardiology segments.

### Key Market Challenges

#### Supply Chain Disruptions and Radiopharmaceutical Shortages

Supply chain disruptions and radiopharmaceutical shortages present significant challenges in the Global Nuclear Pharmacy Market, impacting the availability, accessibility, and affordability of radiopharmaceuticals for diagnostic imaging and therapeutic applications. The production of radiopharmaceuticals relies on a complex supply chain involving the procurement of radioisotopes, raw materials, and specialized equipment from multiple suppliers and manufacturers. Disruptions in the supply chain, such as production shutdowns, transportation delays, and regulatory issues, can lead to shortages of critical radioisotopes, affecting the delivery of nuclear pharmacy services and patient care. The limited availability of radioisotopes with short half-lives, such as technetium-99m, poses challenges in maintaining adequate inventory levels and meeting the demand for nuclear medicine procedures.

#### Technological Complexities and Infrastructure Requirements

Technological complexities and infrastructure requirements present challenges in the Global Nuclear Pharmacy Market, particularly in emerging markets and resource-constrained settings. The production and delivery of radiopharmaceuticals require specialized infrastructure, equipment, and expertise to ensure the safe handling, synthesis, quality control, and distribution of radioactive drugs. Establishing and maintaining nuclear pharmacy facilities, cyclotron centers, and radioisotope production facilities entail significant capital investment, regulatory approvals, and operational expertise. Technological advancements in radiochemistry, radiopharmaceutical synthesis, and imaging modalities necessitate ongoing training and education for nuclear pharmacy personnel to stay abreast of new developments and best practices. However, limited access to advanced technology, skilled workforce, and infrastructure in some regions hinders the adoption and expansion of nuclear pharmacy services, leading to disparities in access to nuclear medicine diagnostics and treatments.

## Key Market Trends

### Expanding Geriatric Population

The expanding geriatric population is a key driver of growth in the global nuclear pharmacy market. Aging populations are more prone to chronic diseases, including cancer, cardiovascular disorders, and neurological conditions, which necessitate advanced diagnostic and therapeutic interventions. Nuclear medicine procedures such as PET, SPECT, and radionuclide therapy play a crucial role in the management of age-related diseases by providing accurate diagnosis, treatment monitoring, and targeted therapy options. The elderly population often presents with complex medical conditions and comorbidities, requiring personalized treatment approaches that leverage the capabilities of nuclear pharmacy and radiopharmaceuticals. As the global population continues to age, with projections indicating a significant increase in the proportion of elderly individuals over the coming decades, the demand for nuclear medicine services is expected to rise, driving market growth in the geriatric healthcare segment.

### Technological Innovations in Radiopharmaceutical Production

Technological innovations in radiopharmaceutical production drive efficiency, quality, and accessibility in the Global Nuclear Pharmacy Market. Advances in radiochemistry, automation, and quality control processes enable the production of radiopharmaceuticals with high purity, specific activity, and stability, meeting stringent regulatory requirements and ensuring patient safety. Cyclotron and radioisotope

production facilities equipped with state-of-the-art infrastructure and manufacturing capabilities enable the synthesis of a wide range of radiotracers and therapeutic isotopes for clinical use. Decentralized production methods, such as generator-based systems and kit-based formulations, enhance flexibility and scalability in radiopharmaceutical manufacturing, allowing for on-demand production and decentralized distribution networks. These technological innovations facilitate the expansion of nuclear pharmacy services, improve access to radiopharmaceuticals, and support the growth of nuclear medicine applications in healthcare systems worldwide.

## Segmental Insights

### Type Insights

Based on the type, the institutional sector often dominates over the commercial sector. Institutional nuclear pharmacy primarily serves healthcare institutions such as hospitals, clinics, and academic medical centers, where radiopharmaceuticals are used for diagnostic imaging, therapeutic treatments, and medical research purposes. These institutions rely heavily on nuclear pharmacy services to provide essential nuclear medicine procedures to patients, including positron emission tomography (PET), single-photon emission computed tomography (SPECT), and targeted radionuclide therapy.

One of the key reasons for the dominance of the Institutional sector is the high demand for nuclear medicine services within healthcare settings. Hospitals and medical facilities perform a wide range of nuclear medicine procedures for various medical conditions, including cancer, cardiovascular diseases, neurological disorders, and musculoskeletal conditions. These procedures require a steady and reliable supply of radiopharmaceuticals, which institutional nuclear pharmacies are well-equipped to provide. Institutional nuclear pharmacies often have dedicated facilities, equipment, and personnel trained in radiochemistry, radiopharmaceutical synthesis, quality control, and radiation safety protocols. They adhere to strict regulatory standards and quality assurance measures to ensure the safety, efficacy, and traceability of radiopharmaceuticals used in patient care.

### Purpose Insights

Based on the purpose segment, in the global nuclear pharmacy market, the diagnostic sector often dominates over the therapeutic sector. Diagnostic nuclear pharmacy primarily involves the production, distribution, and administration of radiopharmaceuticals used for diagnostic imaging procedures such as positron

emission tomography (PET) and single-photon emission computed tomography (SPECT). These radiopharmaceuticals contain radioactive isotopes that emit gamma rays or positrons, allowing healthcare providers to visualize physiological processes, detect abnormalities, and diagnose various medical conditions with high sensitivity and specificity. One of the key reasons for the dominance of the Diagnostic sector is the widespread adoption of nuclear medicine imaging techniques in clinical practice. Diagnostic nuclear imaging plays a crucial role in the early detection, staging, and monitoring of diseases such as cancer, cardiovascular disorders, neurological conditions, and musculoskeletal disorders. PET and SPECT scans provide valuable information about tissue metabolism, perfusion, and function, aiding in treatment planning, response assessment, and patient management.

Diagnostic radiopharmaceuticals are widely used in routine clinical practice across a diverse range of medical specialties, including oncology, cardiology, neurology, and nuclear medicine. They are essential tools for non-invasive diagnosis, localization, and characterization of disease processes, facilitating accurate clinical decision-making and personalized treatment strategies.

## Regional Insights

North America is typically considered the region dominating the Global Nuclear Pharmacy Market. Several factors contribute to North America's prominence in this market. North America boasts advanced healthcare infrastructure and extensive networks of hospitals, clinics, and academic medical centers equipped with sophisticated imaging equipment and nuclear medicine facilities. This infrastructure supports the widespread adoption of nuclear medicine procedures for diagnostic imaging, therapeutic treatments, and medical research purposes, driving the demand for radiopharmaceuticals and nuclear pharmacy services.

Regulatory frameworks in North America, particularly in the United States, are well-established and stringent, ensuring the safety, efficacy, and quality of radiopharmaceuticals used in patient care. Regulatory agencies such as the U.S. Food and Drug Administration (FDA) and the Nuclear Regulatory Commission (NRC) enforce rigorous standards for the production, distribution, and administration of radiopharmaceuticals, promoting trust and confidence among healthcare providers and patients.

## Key Market Players



Jubilant Radiopharma (Jubilant Pharma Holdings Inc.)

GE HealthCare Technologies, Inc.

Cardinal Health, Inc.

ARTMS Inc.

AnazaoHealth Corp.

Sofie Biosciences, Inc.

Pacific Radiopharmacy, Ltd.

NTP Radioisotopes SOC Ltd.

Lantheus Medical Imaging, Inc.

ANSTO Nuclear Medicine Pty Ltd.

Report Scope:

In this report, the Global Nuclear Pharmacy Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Nuclear Pharmacy Market,By Type:

oInstitutional

oCommercial

Nuclear Pharmacy Market,By Purpose:

oDiagnostic

oTherapeutic

Nuclear Pharmacy Market, By Region:

## oNorth America

United States

Canada

Mexico

## oEurope

France

United Kingdom

Italy

Germany

Spain

## oAsia-Pacific

China

India

Japan

Australia

South Korea

## oSouth America

Brazil



Argentina

Colombia

oMiddle East Africa

South Africa

Saudi Arabia

UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Nuclear Pharmacy Market.

Available Customizations:

Global Nuclear Pharmacy market report with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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