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Application of Data Science and Artificial Intelligence in the Productive Efficiency of Radiopharmaceuticals

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The present research addresses the application of Data Science and Artificial Intelligence in the production processes of injectable radiopharmaceuticals in the Radiopharmacy Center, at IPEN-CNEN. Center of greatest relevance and production scale in Latin America and one of the main international ones, which is currently undergoing technological adaptation of its production processes.

Given the economic and therapeutic importance of the Nuclear Medicine market in global health systems, valued at USD 5,351.90 million in 2017, it is estimated that it will reach USD 9,981.30 million by 2026, growing at an annual rate. Average of 7.2% over the forecast period.

As a main objective, the study proposes to develop and obtain an innovative operating model applying automation, Artificial Intelligence resources and Data Science techniques (analytics), to make the routine of processes and operational indicators safer, predictable, effective and efficient.

This Doctoral study will provide the scientific community of medicine and nuclear technology with the benefits and returns of the application of artificial intelligence and data science in critical regulatory, diagnostic and therapeutic activities. And the results will lead to the Radiopharmacy Center, modernization, innovation and a differential in the practices of its core activities.

Therefore, it is expected to implement through these technologies the improvement in the critical stages of its production processes, combined with the digital trends of efficiency and good manufacturing practices.